McIDAS-X Version 2002 Upgrade Procedure May 2002

Please take the time to read this entire document; it's important to understand the whole procedure before you begin. If you connect to ADDE remote servers at other sites, contact the site coordinators at those sites. The site coordinators can tell you if any server problems that might affect your system were noted since this upgrade was mailed.

This upgrade procedure is divided into four sections.

- ***Section I. Supported Software Configurations*** contains the software versions to use with McIDAS-X 2002.
- ***Section II. Before Installing McIDAS-X*** describes the Required and Optional Actions to perform before installing McIDAS-X 2002.
- ***Section III. Installing McIDAS-X*** explains how to install McIDAS-X 2002.
- ***Section IV. McIDAS-X Significant Changes*** describes the Required and Optional Actions to perform after installing McIDAS-X 2002.



Section I. Supported Software Configurations

McIDAS-X 2002 is supported on Unix systems running AIX, HP-UX, IRIX, or Solaris, and on personal computers running Linux, Solaris Intel or Windows NT with Interix. The software configurations compatible with McIDAS-X 2002 are listed in the table below and in Chapter 1 of the *McIDAS User's Guide* (revised 5/02).

McIDAS-X 2002 was tested on these versions only. The McIDAS Users' Group (MUG) is extremely limited in its ability to support sites running 2002 with other software versions.

Unix Systems

Vendor: HP

Operating System	HP-UX 11.11
Fortran compiler	*vendor*: HP Fortran 90 2.5.1 **-or-** *f2c*: 19990503
C compiler	*vendor*: HP C/ANSI C 11.11.02 **-or-** *gcc*: 3.0.3
X Window System	packaged with HP-UX 11.11

Operating System	HP-UX 11.0
Fortran compiler	*vendor*: HP Fortran 11.0
C compiler	*vendor*: HP C/ANSI C 11.0
X Window System	packaged with HP-UX 11.0

Vendor: IBM

Operating System	AIX 4.3.3
Fortran compiler	*vendor*: XLF 7.1 **-or-** *f2c*: 19990503
C compiler	*vendor*: XLC 5.0 **-or-** *gcc:* 3.0.1
X Window System	AIXwindows 4.3.3

Vendor: SGI

Operating System	IRIX 6.5.13
Fortran compiler	*vendor*: SGI Fortran 77 7.3 **-or-** *f2c*: 19990503
C compiler	*vendor*: ANSI C 7.3 **-or-** *gcc*: 3.0.1
X Window System	packaged with IRIX 6.5.13

Vendor: Sun

Operating System	Solaris 8
Fortran compiler	*vendor*: SunSoft SPARCompiler Fortran 5 **-or-** *f2c*: 19990503
C compiler	*vendor*: SunSoft SPARCompiler C 5 **-or-** *gcc*: 3.0.3
X Window System	packaged with Solaris 8

PC Systems

Vendor: Red Hat

Operating System	Linux 7.2
Fortran compiler	*f2c*: 1990503
C compiler	*gcc*: 3.0.3
X Window System	packaged with Linux 7.2; we also recommend that you use the GNOME desktop environment, as other desktops, such as KDE, will not display the McIDAS-X windows correctly

Vendor: Sun

Operating System	Solaris Intel 8
Fortran compiler	*f2c*: 19980913
C compiler	*gcc*: 3.0.3
X Window System	packaged with Solaris 8

Vendor: Microsoft

Operating System	Microsoft Windows NT 4.0 with Service Pack 6 and Interix 2.2 with Service Pack 1
Fortran compiler*	*f2c*: 19980516
C compiler*	*gcc:* 2.7.2
X Server	Hummingbird Exceed 6.1.1

* Because McIDAS-X for NT is distributed as a binary package, the Fortran and C compilers are needed only if you do local development on the workstation. The C compiler is included in the Software Development Kit (SDK) available with Interix. The Fortran compiler is available upon request by sending email to *mug@ssec.wisc.edu*.

Section II. Before Installing McIDAS-X

Complete all Required Actions below.

Version Number Format Change

Beginning with this upgrade, the format of McIDAS-X, -XCD and -XRD version numbers are being changed from 7.*x* (e.g., 7.8, 7.801, 7.9, etc) to 200*x* (e.g., 2002, 2002a, 2002b, 2003, etc). This change was made to make it easier to associate the version number with the date of the upgrade.

Required Action:

If you have any local code that reads the -X, -XCD or -XRD version number you must modify it to accommodate the new version number format.

New Compile Optimization Flag

A **-noopt** flag was added to the McIDAS-X, -XCD and -XRD build scripts. The default optimization is -O2 for builds with vendor compilers and -O1 for builds with gcc/f2c. The new **-noopt** flag can be specified in the build or make command (e.g., **sh ./mcidas2002.sh -noopt make**) to build the software with no optimization.

Optional Action:

If desired, use the **-noopt** flag to build -X, -XCD and/or -XRD with no optimization. See the installation documentation for the package (Chapter 1 of the *McIDAS User's Guide* for -X; Chapter 2 of the *McIDAS-XCD Administrator's Guide* for -XCD; the -XRD Software page on the MUG Web Site for -XRD) for instructions.

Compatibility with -X Remote Servers and -XCD

McIDAS-X 2002 can run in a stand-alone mode. However, many commands can access data on other workstations (remote servers). Therefore, your McIDAS-X client workstations and the remote servers they access must be running compatible versions in order for all features to work as expected.

Listed below are items that will work as expected only if the -X clients and the -X and -XCD servers they access are running compatible versions.

- The PTCOPY command in version 2002 will fail if it contains the DAY keyword but no position number in the *sdataset* parameter **and** the dataset resides on a remote server running an earlier version (e.g., 7.8).
- The change to the country codes database, in which 196 of the 280 country codes were changed, requires that both the client and server workstations be on the same version (either version 2002 or a previous version) in order for the codes listed by the CCODE command to match the codes stored in the point (MD) files and files accessed by the *RPT commands (OBSRPT, RAOBRPT, SFCRPT, SYNRPT, TAFRPT). For example, the command **CCODE CANADA** on a workstation running version 2002 indicates that the country code is CA. But a real-time point file on a server running a version prior to 2002 (e.g., 7.8) would still have CN (the old code) assigned to all Canadian observations. **Thus, we recommend that sites running both -X and -XCD try to update their clients and servers at about the same time.** See *Country Codes* in Section IV of this document for more information.
- The maximum grid size allowed in -X and -XCD was increased from 300,000 to 400,000 points in version 2002. Therefore, you must have version 2002 installed on your -XCD servers to decode grids larger than 300,000 points, and must have version 2002 installed on your -X clients to use grids larger than 300,000 points in commands like GRDDISP and GRDCOPY.

Required Action:

Coordinate upgrading your site's McIDAS-X and -XCD systems according to your needs, considering the compatibility requirements listed above.

Operating System and Compiler Changes

Beginning with this upgrade, the following changes were made to operating system and compiler versions that McIDAS-X is supported on.

- The HP-UX versions that McIDAS-X is supported on changed from 10.20 and 11.0 to 11.11 and 11.0. There are also corresponding compiler version changes with the switch to HP-UX 11.11. In particular, note that the supported builds on 11.11 use the HP Fortran 90 compiler (version 2.5.1), whereas supported builds on previous versions of HP-UX used the HP Fortran 77 compiler. The Fortran 90 compiler for HP-UX 11.11 was chosen because it's the default Fortran compiler supplied with 11.11.
- The Red Hat Linux version that McIDAS-X is supported on changed from 6.2 to 7.2. There is a corresponding C compiler version change (from egcs 1.1.2 to gcc 3.0.3) with the switch to Linux 7.2. Like before, the McIDAS-X 2002 ADDE remote server (installed separately with the **`mcinet2002.sh`** script) is NOT supported on Linux systems because it doesn't work properly with the sounding servers (which are used by the ALTIM, HODO, UACROSS, UALIST and UAPLOT commands). Other ADDE remote servers like image, grid, point and text appear to work properly.
- The IRIX version that McIDAS-X is supported on changed from 6.5 to 6.5.13. There are corresponding vendor Fortran compiler changes (from SGI Fortran 77 version 7.2.1 to 7.3) and C compiler changes (ANSI C from 7.2.1 to 7.3 and gcc from 2.8.1 to 3.0.1) with the switch to IRIX 6.5.13.
- The AIX version that McIDAS-X is supported on remains at 4.3.3. However, the gcc compiler version changed from 2.95.3 to 3.0.1.
- The Solaris and Solaris Intel version that McIDAS-X is supported on remains at 8. However, the gcc compiler version changed from 2.8.1 to 3.0.3.

Required Action:

See the table in Section I, *Supported Software Configurations*, for the complete list of operating system and compiler versions that McIDAS-X 2002 is supported on. We recommend that you update the operating systems and/or compiler versions on your McIDAS-X workstation(s) to those listed in the table.

Core Software Changes

Review the changes to core software before installing McIDAS-X 2002. Section IV lists some of the significant changes since the last upgrade. Two ASCII text files, **`MAY02PRG.TXT`** and **`MAY02INQ.TXT`**, list all software changes made to McIDAS-X since the previous upgrade. A third file, **`MAY02OPN.TXT`**, lists all software bugs known at the time this upgrade was distributed. These three files are available on the MUG Web Site (*http://www.ssec.wisc.edu/mug*) and are provided with the upgrade CD for sites that receive their software that way. After installing McIDAS-X 2002, the files are in the **`~mcidas/data`** directory.

Required Action:

See Section IV of this document to review the significant changes made to core software. You can also place the three text files in the **`~mcidas`** directory before installing the upgrade. To do so, complete the instructions in *Obtaining McIDAS-X 2002* in Chapter 1 of the *McIDAS User's Guide* (revised 5/02).

Deleted Commands

With this upgrade's modifications to allow for advection and divergence of derived parameters like THA, MIX and VOR in the SFCCON and RAOBCON commands, they are now considered ADDE functional equivalents of the SC and UC commands. Therefore, SC, UC and three related commands were deleted from McIDAS-X beginning with this upgrade. The commands that were deleted and their replacements are listed below.

Deleted Command	*Replacement Command*
IGTV	GRDDISP
SC	SFCCON
SP	SFCPLOT
UC	RAOBCON
UP	RAOBPLOT

Note: All five of the deleted commands above were removed from McIDAS-X 2002, and placed into McIDAS-XRD 2002. So they are still available to sites that install -XRD 2002. However, they are no longer documented or supported. Therefore, we recommend that you transition to the replacement commands.

Required Action:

Change all occurrences of IGTV, SC, SP, UC and UP to their replacement commands (listed above) in your scripts, macros, BATCH files, F-Key Menus, McBASI programs, and SKE entries.

Disk Space

McIDAS-X disk space requirements increased substantially, mainly due to the addition of HDF servers.

The overall disk space requirements for obtaining, building and installing McIDAS-X 2002 are listed in the table below. The disk space requirements for 7.8 are listed for comparison. The compiler type (vendor or gcc/f2c) used for each build are also listed.

Operating system	*Compilers*	*McIDAS-X 7.8*	*McIDAS-X 2002*
AIX 4.3.3	vendor	260 MB	400 MB
HP-UX 11.11	vendor	n/a	360 MB
IRIX 6.5.13	vendor	325 MB	425 MB
Solaris 8	vendor	290 MB	380 MB
Red Hat Linux 7.2	gcc/f2c	n/a	325 MB
Solaris Intel 8	gcc/f2c	250 MB	310 MB
Windows NT 4.0	gcc/f2c	295 MB	315 MB

Required Action:

Verify that you have sufficient disk space available to obtain, build, and install McIDAS-X 2002.

Section III. Installing McIDAS-X

If you need assistance with the upgrade or want to know if any problems that might affect your site were noted since this upgrade was mailed, call the McIDAS Help Desk at (608) 262-2455 or send email to *mug@ssec.wisc.edu*.

Required Action:

Obtain and install McIDAS-X 2002 using the instructions in *Installing and Configuring McIDAS-X,* beginning on page 1-1 of the *McIDAS User's Guide* (revised 5/02).

Section IV. McIDAS-X Significant Changes

Complete all Required Actions below. Optional Actions are only for your consideration.

Country Codes

As proposed in an 8 March 2002 email message to the *mcidas-users* list, we updated the two-letter country codes in the McIDAS country codes database (**`COUNTRY.TXT`**) and station database (**`STNDB.CORE`**) to match those in the widely-accepted International Organization for Standardization's ISO 3166 list. The main reasons for doing so are that the McIDAS country codes had not been updated for several years, despite there being numerous geopolitical changes over that period, and we believe it's best to switch to a database that contains the country codes normally used in email addresses and web site URLs.

This update to match the ISO 3166 country codes resulted in the vast majority of country codes (196 of 280 in **`COUNTRY.TXT`**) changing from their previous codes. Most of the countries whose code changed are smaller countries that have few stations in the station database, but there are also a significant number that have many such stations. For example, 46 countries whose code changed have 20 or more stations in the station database, and 19 of those countries have 50 or more stations in the station database. The five with the most stations are shown in the table below.

Country	*Old Code*	*New Code*	*Number of Stations*
Canada	CN	CA	1045
China	CI	CN	646
Brazil	BZ	BR	395
Germany	DL	DE	323
United Kingdom	UK	GB	309

These country code changes affect McIDAS-X users and McIDAS-XCD sites in the ways listed below.

- The CCODE command now obtains its information from the updated **COUNTRY.TXT** file.
- Commands STNLIST and STNPLOT now obtain their information from the updated **STNDB.CORE** file (along with the **.USER** and .**SITE** files, if they exist).
- Point (MD) files generated by McIDAS-XCD versions 2002 or later use the new country codes when filing station information in the column headers. For example, Canadian stations are now filed with country code CA instead of CN (the previous code).
- Country codes specified in commands that use point file data, e.g., ALTIM, PTCON, PTCOPY, PTDISP, PTLIST, SFCLIST and UALIST, need to match the country code stored in the point file. If it's a point file created in McIDAS-X or -XCD version 2002 or later, the point file contains the new codes. If it's a point file created in a version prior to 2002 (e.g., 7.8, 7.7, etc.), the point file contains the old codes. Because users have access to these older point files via archives, McIDAS-X versions 2002 and later will include the file **COUNTRY.TXT.OLD**, which contains the list of countries and their two-letter codes used in McIDAS-X versions before 2002. The file is supplied so users who access point files created with a version before 2002 can find out which country codes are used in those files
- Country codes specified in other commands, e.g., OBSRPT, RAOBRPT, SFCRPT, SYNRPT and TAFRPT, need to match those on the McIDAS-XCD server supplying the data.

Required Action:

1. If you specify country codes in your everyday use of McIDAS or in your scripts, macros, BATCH files, F Key Menus, McBASI programs and SKE entries, use the CCODE command to find out if the country codes have changed for any of the countries that you use.
2. If you use archive data or access remote servers running a version prior to 2002, use the **COUNTRY.TXT.OLD** file to determine the country codes for data in those files. For example, to list the 12 UTC Metar data for all Canadian stations, run command **SFCLIST TIME=12 CO=CN** if using a point file created prior to these country code changes, and command **SFCLIST TIME=12 CO=CA** if using a point file created after these country code changes.

McIDAS Configuration GUI

A new option was added to the McIDAS startup script (**`mcidas.sh`**) that brings up a modified version of the Unidata configuration GUI (Graphical User Interface). The configuration GUI, which is started with the command **`mcidas -config`**, allows you to select session configuration settings other than those specified in the **`$HOME/.mcidasrc`** file.

Optional Action:

Use the McIDAS Configuration GUI when starting your McIDAS-X sessions. See *Starting and Ending a McIDAS Session* in Chapter 2 of the *McIDAS User's Guide* (revised 5/02) for details.

McIDAS-X GUI

The McIDAS-X GUI was modified to include the new features listed below.

- Image brightness and infrared temperature monitors that list the values at the cursor location were added to the main GUI window. The values are prefaced by a tilde character (~) because they are approximates of what the IMGPROBE command would list.
- A zoom button was added to the main GUI window.
- The icons for the image and graphics on/off and erase buttons on the main window were replaced with more intuitive ones.
- The Image Select window was modified to include features that make it easier to display NEXRAD data. For example, an option to select NEXRAD stations by ID or by state was added.

Optional Action:

Use the updated GUI by starting it with the GUI command, selecting the *Start McIDAS with the GUI* option in the **`mcidas -config`** GUI described above, or automatically start the GUI with each McIDAS-X session by adding a **-c GUI** command in the *Run commands at startup* section of your **`$HOME/.mcidasrc`** file.

New Command

One new command was added to McIDAS-X. The command, GEO, simplifies geostationary image display so that no prior knowledge of dataset names, image times, bands or resolutions is required. The user simply specifies a location and, optionally, a channel (VIS, NIR, WV, IR or SST) and the command displays the best available image for that region from its list of datasets. For example, the command entry **GEO 'NEW YORK,NY'** finds the most recent GOES-East image (choosing the visible band if it's daytime and the infrared band if it's nighttime), then displays it centered on New York, New York. Command entry **GEO LEMD IR RES=3** finds the most recent Meteosat infrared image, then displays it at 3 km resolution, centered on Madrid, Spain.

See the online help and the *Commands* chapter of the *McIDAS User's Guide* (revised 5/02) for details.

Other Modifications

The modifications below require no special action.

Command / Topic	Modification
GRDDISP	modified the PARAM=WINDV keyword to include wind vectors whose origin lies just outside the edge of the frame
FOUSRPT	modified the LIST option to use the station database files (**STNDB.***) instead of an internal list of stations
IMGCHA, IMGOPER	modified to allow band numbers greater than 32
IMGCOPY	modified the BAND keyword to allow copying of selected bands (not just one band or ALL bands) if the source image is GVAR raw data on an SDI server or MODIS Level 1b data in HDF format
IMGREMAP	modified to improve performance and retain PRD calibrations; also fixed several projection-dependent bugs
PTDISP, RAOBPLOT, SFCPLOT	modified to allow decluttering of wind flags/barbs and wind vectors (FORMAT=FLAG and VECT in PTDISP; WINDB and WINDV parameters in SFCPLOT and RAOBPLOT); the default is to declutter; you can override the default with the DECLUT=NO keyword; also added keyword WIND to PTDISP to allow plotting of wind data stored as u- and v-components instead of as *spd* and *dir* (speed and direction)
RAOBCON, SFCCON	modified to allow for advection and divergence of derived parameters like THA, MIX and VOR
SFCMG	modified the UNIT=M keyword to display wind speed and gusts in knots instead of m/s; changed pressure units label to the right of the diagram from [mb] to [hPa]; added TYPE=ALL keyword to allow plotting of specials in addition to hourly observations
ADDETIMEOUT Environment Variable	added new ADDETIMEOUT environment variable that lets the user control the length of time in seconds that an ADDE request from a command can sit idly waiting for data from a remote or local server; the default is 120 seconds; see *Using the ADDE* in Chapter 2 of the *McDIAS User's Guide* (revised 5/02) for details
CHILLTYPE Keyword	added the CHILLTYPE keyword to the CHILL, SFCCON, SFCLIST and SFCPLOT commands to choose between the wind chill formula implemented by the National Weather Service in November 2001 (the default) and the previous formula
Geographic Resolution	added the GEORES=YES keyword to the IMGDISP command and the (GEORES) placeholder to the FRMLABEL command to allow use of geographic resolution in the frame directory and image label; the default, GEORES=NO, gives the same results as previous versions (i.e., uses the image resolution factors, not geographic resolution)

GRIB Keyword	added the GRIB keyword to the GRDCOPY, GRDDISP, GRDINFO and GRDLIST commands to allow selection of grids based on their GRIB codes
MCTRACK Environment Variable	added new MCTRACK=NO environment variable that disables tracking of area-format data on remote servers; see *Setting the Tracking Mode for Area Servers* in Appendix I of the *McIDAS User's Guide* (revised 5/02) for details
MODIS HDF Servers	added MODIS HDF servers to McIDAS-X to allow creation of datasets containing MODIS data in HDF format on local and remote servers, and display of the data using the IMG* commands; the data must be MODIS Level 1b HDF files or MODIS Level 2 MOD06 (cloud top properties), MOD07 (atmospheric profile) or MOD35 (cloud mask) products in HDF format; see the DSSERVE command's online help or its documentation in the *McIDAS User's Guide* (revised 5/02) for information about creating the datasets
Station Type Specification	added option to twelve commands (IMGCOPY, IMGDISP, IMGFILT, IMGOPER, IMGPLOT, IMGPROBE, IMGREMAP, NAVCALC, NAVDISP, PC, PLAX, SUNLIT) to allow specification of station type in brackets following the station ID, e.g., ARX[N] or ARX[V]; this option was added because some stations of different types in the station database files (**`STNDB.*`**) share the same ID but reside in distant locations (e.g., stations ARX, CXX, MRX)

Data Files

The following changes were made to files in the **~mcidas/data** directory.

File name	Change
CORE.SAT	added entry for MTSAT (successor to GMS)
COUNTRY.TXT	updated two-letter country codes to match the International Organization for Standardization's ISO 3166 list; this resulted in 196 of the 280 previous codes being changed, and some new codes being added
COUNTRY.TXT.OLD	new file containing the list of countries and their two-letter codes used in McIDAS-X versions before 2002; this file is for reference purposes only so users who access point (MD) files created with a version before 2002 can find out which country codes are used in those files
GEO.CORE	new file containing the parameter and keyword settings for the GEO command
GEODATA.CORE	new file containing the satellite dataset, channel, resolution and coverage settings for the GEO command
IMGDISP.CORE	added new **MKX_SRVEL4** product definition and updated other product definitions to allow for easy display of the ten NEXRAD products that were added to the NOAAPORT datastream on 27 November 2001
RAOBCON.CORE	added POWER and UNIT defaults for vorticity and divergence
RAOBPLOT.CORE	updated to plot pressure and wind speed parameters as integers instead of decimals
SATANNOT	changed sensor source numbers 84 from GMS-6 to MTSAT-1R and 85 from GMS-7 to MTSAT-2; moved moved AQUA-L1B and AQUA-CLD from sensor source numbers 103 and 104 to 111 and 112; added sensor source numbers 106-109 for TERRA-TOP, -ATM, -GUE, and -RET; added sensor source numbers 116-119 for AQUA-TOP, -ATM, -GUE, and -RET
SATBAND	added band information for MTSAT; corrected several minor wavelength errors in other satellites; added band information for MODIS cloud top properties, atmospheric profiles, cloud mask, guess retrievals and retrievals
SFCCON.CORE	added CHILL.OLD parameter that's used when CHILLTYPE=OLD is specified with a SFCCON CHILL command; added POWER and UNIT defaults for vorticity and divergence
SFCPLOT.CORE	added CHILL.OLD parameter that's used when CHILLTYPE=OLD is specified with a SFCPLOT CHILL command; changed the plot height of the station ID from 6 to 5 pixels in the PLOT.PMSL definition to match the PLOT.ALTIM definition; updated to plot pressure and wind speed parameters as integers instead of decimals

STNDB.CORE	changed country codes to match those in updated **COUNTRY.TXT** file (see its entry above); updated to most recent NWS version as of 12 April 2002; corrected longitude for stations MNBL and GUA; corrected ST and CO codes for station PGSN; corrected ST code for stations APX and EAX; removed FOUS14 classification for station AIG; corrected FOUS14 classification for station ERI; added FOUS14 classification for stations MI1, IAG, MBG, FWH, P60 and RKS; added three new Antarctic stations and updated seven others with information provided by the AMRC
USCOUNTY.MAP, USSTATE.MAP USZONE.MAP	updated COUNTY map to match NWS version 22Mar02; updated STATE map to match NWS version 24Jan01; updated ZONE map to match NWS Zone Forecast Areas version 16Mar02, Marine Zones version 21Feb02 and Ocean Zones version 23Sep01
XRD2002.TXT	updated with list of commands and data files in McIDAS-XRD version 2002 sidecar package; run McIDAS-X command SEE XRD2002.TXT to view the list

Required Action:

Merge these modifications with all local copies of the data files. For example, if you have **.SITE** and/or **.USER** versions of **IMGDISP.CORE**, **RAOBCON.CORE**, **RAOBPLOT.CORE**, **SFCCON.CORE** or **SFCPLOT.CORE**, you must modify them to include the changes listed above. You can do this using whatever method works best for you. For example, if you have an **IMGDISP.USER** file in your **$HOME/mcidas/data**, you could do the following:

1. open a Unix window or Interix ksh
2. **cd $HOME/mcidas/data**
3. **mv IMGDISP.USER IMGDISP.OLD**
4. **cp ~mcidas/data/IMGDISP.CORE IMGDISP.USER**
5. **diff IMGDISP.OLD IMGDISP.USER**
6. closely examine the output and determine which items are *your local* modifications in **IMGDISP.OLD** and which items are this upgrade's changes/additions to **IMGDISP.CORE** (the lists of changes in the table above should help), then add your local modifications from **IMGDISP.OLD** to **IMGDISP.USER**

Local Code

Compile and link all local code after installing the upgrade. Listed below are some of the software and structural changes most likely to affect your local code.

- Module **idinfo.for** was updated to return values for both station ID and name.
- The McIDAS installation files were updated for the reasons listed below.
  - to accommodate the version number format change from 7.*x* to *yyyy*, where *yyyy* is the year
  - to accommodate f90 flags for HP-UX 11.11
  - to create a **-noopt** flag to turn optimization off
  - to accept **-v** and **-gcc** flags from XRD installation script
  - to use version 3.5 of netCDF libraries
  - to accommodate the inclusion of HDF 4.1r4 libraries
- In preparation of larger grids to be sent in the NOAAP0RT signal, the maximum number of grid points defined in **gridparm.inc** was increased to 400,000.
- Two new environment variables, ADDETIMEOUT and MCTRACK, were added. ADDETIMEOUT, which is used by **agetserv.fp**, has a default value of 120 seconds and can be adjusted for slower servers and/or networks. MCTRACK sets the tracking mode on or off for McIDAS areas. Tracking is used to determine if only the available portion of a real-time image is sent to the client or if the server continues to send data as the new image is written. The routine **rdtrka.for** picks up the value for this environment variable.
- Positional and keyword parameters for station names can now include a station type. The routine **idinfo.for** now parses out the type and uses it as an additional search condition. This allows applications to single out stations that have identical station names but report different data types. The modules listed below were updated for this enhancement.

imgcopy.pgm	**imgdisp.pgm**	**imgfilt.pgm**
imgoper.pgm	**imgplot.pgm**	**imgprobe.pgm**
navcalc.c	**imgremap.pgm**	**navdisp.c**
pc.pgm	**plax.pgm**	**sunlit.pgm**
navcomps.c	**mcasort.for**	

- Variables in the routines listed below are now properly initialized.

kbxmase.dlm	**kbxmasr.dlm**	**nvxairc.dlm**
backgrnd.for	**cur21alo.for**	**dstype.for**
m0dslook.for	**m0idlist.for**	**m0raob.for**
iftok.for	**suok.for**	**kbxaaa.dlm**
mccomp.sh	**tabgra.for**	**mdxgra.dlm**
mdxgrd.dlm	**mdxmd.dlm**	**mdxop.dlm**
kbxavhr.dlm	**kbxmods.dlm**	**kbxqtir.dlm**
kbxtiro.dlm	**kbxvisr.dlm**	**imgprobe.pgm**
ptcon.pgm	**sche.pgm**	**makecw24.c**
ncdffunc.c	**uaedit.pgm**	**imgmag.pgm**
m0ptget.for	**m0pthdr.for**	**m0subsrt.for**
mcadir.for	**mcdirec.for**	**mcfndgrd.for**
mcgdir.for	**mcgget.for**	**mcgput.for**
mclatvap.for	**mclcl.for**	**mctokn.for**
mdtab.for	**nvcod.for**	**nvtiro.for**
pmout.for	**readsort.for**	**rnvblk.for**
sndanal.for	**strmln.for**	**dcodesub.for**
dcoimg.for	**dpsino.for**	**ishc.for**
kextab.for	**keytab.for**	**lltokn.for**
lpcon.for	**m0arasize.for**	**m0auxd.for**
m0auxl.for		

- Integer*4 arguments were changed to integer*2 for calls made to **initblk.for** when called from **adirserv.fp, gtokserv.fp, gdirserv.fp, ggetserv.fp, mdfhserv.fp, mdksserv.fp** and **navgserv.fp**.
- A memory allocation problem found in **navapi.c** was corrected in NAVDISP when using Two-Line Element datasets.
- Updated **mcinet.sh** to use xinetd for Linux 7.*x* workstations. Port 112 was also added as an additional McIDAS port. This port will not be used for at least another year.
- The GEORES keyword for IMGDISP now determines if the geographical resolution of the image is written to frame directory words 54 and 55. The applications and routines that were updated to utilize the geographical resolution are **frmlabel.pgm, imgdisp.pgm, frmlist.pgm** and **mcexptxt.for**.
- The data file **COUNTRY.TXT** now uses the information from an ISO web site. Many changes were made from the previous version. A copy of the old version is still available in the file **COUNTRY.TXT.OLD**. The program **ccode.pgm** was updated to accommodate these changes.
- The PRD calibration of source areas for IMGREMAP is now saved. Previously the calibration information was lost and the destination image used VISR calibration. The modules updated for this change are **imgremap.pgm** and **mcaget.for**.
- The routine **convdlmf.f** now allows the use of the letter C in uppercase or lowercase when beginning a comment.
- A new algorithm was created for more efficient memory allocation in IMGREMAP. The modules that were updated for this change are **imgremap.pgm, mcaput.for, aputserv.fp** and **m0amem_.c**.
- Modules **wwdisp.c, wwmisc.c** and **wwlist.c** were modified to accommodate the 01 November 2001 change in WMO headers for tornado and severe thunderstorm watches from WWUS9 to WWUS20.
- The image brightness level at the current cursor location is now stored in UC word 1900. These brightness values and temperature values (if an IR image is being viewed) are continuously updated on the main GUI window. The modules that were updated for this enhancement are **mci_updt.c, mci_curs.c, m0glue.h,** and **mci_prot.h**.
- In November 2001, the National Weather Service implemented a new algorithm for calculating wind chill values. Both the old and new values are still available when using SFC* commands. The modules listed below were updated for this change.

calcidx.c	**sfccon.pgm**	**chill.pgm**
SFCCON.CORE	**SFCPLOT.CORE**	**McScienceUtils.c**
m0gget.c	**sfcplot.pgm**	**sfclist.c**

Important Note: With the SC, SP, UC and UP commands being moved from McIDAS-X to McIDAS-XRD in this upgrade (as described in the *Deleted Commands* in Section II of this document), there are no more macros in the core McIDAS-X package. Therefore, the module **macro3.fp** will be removed from the -X package beginning with the 2003 upgrade. However, **macro3.fp** is available in -XRD versions 2002 and later. So sites that have locally-developed macros will need to either convert them to Fortran or C programs before the next upgrade (May 2003) or be sure to install -XRD version 2003 when it's available next year.

McIDAS-XRD

A new version of the McIDAS-XRD optional sidecar is available with this upgrade. The new version, 2002, contains 22 new commands to bring the total number of commands to 64. The list of –XRD 2002 commands and data files is available on the MUG Web Site (select McIDAS-XRD in the **Software** section along the left side of the page) or in the file **`~mcidas/data/XRD2002.TXT`** that's distributed with –X 2002. To view the file, run the command **SEE XRD2002.TXT** after –X 2002 is installed.

The –XRD package can only be used in combination with -X and must be installed after -X 2002 has been installed. The -XRD package contains research and development commands that are not part of -X. The -XRD software is provided on an "as is" basis, meaning it is not MUG-supported. The software in -XRD comes from programmers at various MUG sites. The software is added to the package if it may be useful to other sites and it meets some basic code standards.

SSEC McIDAS User Services packages and distributes the -XRD software, but does little or no testing of the commands and does not provide any documentation. Each command's on-line help is all that's available for documentation. McIDAS User Services will forward all bug reports to the programmer that submitted the software. However, there is no guarantee that bugs will be fixed, as it's up to the programmer to decide whether or not to fix them.

Optional Action:

Install McIDAS-XRD 2002 by obtaining the files and completing the installation instructions on the MUG Web Site. Select McIDAS-XRD in the **Software** section along the left side of the page.

McIDAS-Vis5D

The visualization package McIDAS-Vis5D is an optional sidecar that can be used with McIDAS-X. It was most recently updated to version 5.0 with the May 1999 McIDAS-X 7.6 upgrade. There were no -Vis5D modifications for this upgrade, so 5.0 remains the current version. You can optionally install it with McIDAS-X 2002. The -Vis5D software and User's Guide are available on the MUG Web Site.

McIDAS-Vis5D lets you interactively visualize grid datasets in five dimensions. The first three dimensions are organized as rows, columns and levels, or as latitude, longitude and height. The fourth dimension is time. The fifth dimension is the placement of multiple physical variables, such as temperature and pressure, onto the coordinates created by the spatial dimensions. See the *McIDAS-Vis5D User's Guide* for more information.

Optional Action:

Obtain and install McIDAS-Vis5D 5.0 using the instructions in Chapter 1 of the *McIDAS-Vis5D User's Guide* (version 5.0).

McIDAS-X 7.7 Demonstration, June 8, 2000

* Introduction and Upgrade Notes

  - Vendor compilers are the default again
  - Incremental Fastracks
  - REMAP, SVGIF deleted (FRAMESAVE + IMGREMAP
  - Should work with Linux

* New Station Database

  - S/STNLIST/STNPLOT
  - Using STNDB.USER

IDMSL will be gone by version 7.8
↳ STNLIST (try it out!)

* New MAP command

  - USGS maps
  - Using MAP.USER
  - FILE= replaces NAME=

MAP WI, X Cold); MAP WI (New projection WI)

* Image data commands

  - Area directory specification
  - MODIS data
  - IMGPROBE enhancements
  - TERM DMS OFF/ON
  - IMGPLOT FIT=
  - IMGTRACK
  - IMGCOPY/DISP/PROBE handle 4-byte data
  - GOES-L calibration

* Point data commands

  - PT* macros: SFCPLOT/CON, RAOBPLOT/CON
  - Data decoded above 100mb
  - Interactive UAPLOT
  - CAPE calculation fixed
  - UACROSS
  - netCDF point and grid data

* Gridded data commands

  - GRDIMG ADDEized
  - IGU changes
  - Grids derived on client

* Miscellaneous

  - Display Colors (-displayVisualMode)
  - NAVDISP/CALC with 2-line element files
  - WXTLIST additions
  - SVF enhancements
  - FRMSAVE with JPEG, PS, and CPS
  - ASK1 with multiple questions
  - Ctrl-left click echoes lat/lon coordinates
  - GU (SAVE/RESTORE now save ON/OFF setting)
  - DEV=P 'print_command'
  - LOGON changes
  - SKE entries numbered 1-9999
  - Image and Graphics frame numbers listed for Independent Graphics
  - ADDE transaction logging
  - -XRD commands OLDSVF and MDDPI
  - Commands to be deleted 7.8
  - GUI enhancements

IGT
MDX

McIDAS User's Guide

November 1998 Update

The following changes have been made to the *McIDAS User's Guide*. To upgrade your *McIDAS User's Guide* from version 7.4 to 7.5, perform the *Remove* and *Insert* instructions below.

Pages to Remove	Pages to Insert	Section	Modifications
Inside Cover	Inside Cover		Updated revision date and version number
i through vi	i through vi	*Table of Contents*	Updated Table of Contents
1-1 through 1-32	1-1 through 1-32	*Installation*	Version 7.5 installation procedures
2-25 through 2-26	2-25 through 2-26	*Introduction*	Corrected typing error
3-3 through 3-12	3-3 through 3-10, 3-11 and 3-11.1, 3-11.2 and 3-12	*Commands*	Five new commands and ADDE commands by category table
	3-24.1 through 3-24.2	*Commands*	New ALTIM command
3-37 through 3-38	3-37 through 3-38	*Commands*	Clarified Briefing window usage in the BRIEF command
3-41 through 3-42	3-41 through 3-42	*Commands*	Removed the word *only* from the CASEMODE command's title for consistency
3-67 through 3-70	3-67 through 3-70	*Commands*	Added new keyword and remarks for creating netCDF images with the DSSERVE command
3-95 through 3-96	3-95 through 3-96	*Commands*	Corrected punctuation
3-107 through 3-110	3-107 through 3-110	*Commands*	Added the *size* parameter to the TITLE= keyword in the GRDDISP command
3-127 through 3-130	3-127 through 3-130	*Commands*	Changed the FORM= keyword in the GRDLIST command
	3-134.1 through 3-134.2	*Commands*	Added the new HODO command
3-147 through 3-154	3-147 through 3-154	*Commands*	Updated Remarks in IMGCHA; added new UNIT= keyword to the IMGCOPY command and added Remark for netCDF images
3-161 through 3-162	3-161 through 3-162	*Commands*	Changed the SP command example in the IMGDISP command
3-167 through 3-168	3-167 through 3-168	*Commands*	Added new remark for the IMGFILT command
3-173 through 3-176	3-173 through 3-176	*Commands*	Added new options to the FORM keyword in the IMGLIST command
3-183 through 3-184	3-183 through 3-184	*Commands*	Added new remark to the IMGOPER command

3-193 through 3-196	3-193 through 3-196	*Commands*	Changed the description of the DSIZE= keyword and added new remark in the IMGREMAP command
3-207 through 3-208	3-207 through 3-208	*Commands*	Corrected an example in the LS command's Remarks section
3-231 through 3-232	3-231 through 3-232	*Commands*	Corrected typo
	3-276.1 through 3-276.2	*Commands*	New PRDUTIL command
3-279 through 3-296	3-279 through 3-296	*Commands*	Corrected formatting of the MOVIE option of the PARAM= keyword, added the *size* option to the LABEL= keyword, and changed a remark in the PTCON command; Added the *size* option to the TITLE= keyword in the PTDISP command; added Y2K capability statements to the PTCON, PTCOPY and PTDISP commands
3-299 through 3-302	3-299 through 3-302	*Commands*	Changed the FORM=FILE option
3-305 through 3-306	3-305 through 3-306	*Commands*	Added a Y2K capability statement to the PTLIST command
3-307.2 through 3-307.5	3-307.2 through 3-307.5	*Commands*	Changed default units in the RAOBCON command
3-311 through 3-312	3-311 through 3-312	*Commands*	Grammar correction
3-315 through 3-316	3-315 through 3-316	*Commands*	Typo correction
3-319 through 3-322	3-319 through 3-322	*Commands*	Added a Y2K statement to the SC command
3-325.2 through 3-325.3	3-325.2 through 3-325.3	*Commands*	Added the PCP24 parameter to the SC command
3-327 through 3-332.4	3-327 through 3-332.4	*Commands*	Changed the TIME and STATION options and added the OBTIME option for the SORT keyword in the SFCLIST command; added the EG keyword to the SFCMG command; added the PTYPE= keyword to the SFCPLOT command and added the PCP24 parameter
3-349 through 3-350	3-349 through 3-350	*Commands*	Added a Y2K statement to the SP command
3-357 through 3-358	3-357 through 3-358	*Commands*	Grammar correction
3-367 through 3-368	3-367 through 3-368	*Commands*	Corrected an example in the TE command
3-382.1 through 3-382.6	3-382.1 through 3-382.6	*Commands*	New UALIST and UAPLOT commands

3-385 through 3-410	3-385 through 3-410	*Commands*	Added Y2K statements to the UC, UL and UP commands; corrected typos; removed the word only from the V command's title for consistency; edited the Remarks section in the VASTBL command; added five options to the COLOR= keyword in the WWDISP command; added several new options to the TYPE= keyword and new examples for the WWDISP and WWLIST commands; added new options to the DAY= and TIME= keywords, changed the description of the DTIME= keyword and added new remarks in the WXTLIST command
3-410.1 through 3-410.2	3-410.1 through 3-410.2	*Commands*	Repagination caused by changes to the WXTLIST command
3-415 through 3-418	3-415 through 3-418	*Commands*	Added Y2K statement for XSECT; edited Remarks in the Y command
4-11 through 4-12	4-11 through 4-12	*McBASI*	Corrected spelling
4-17 through 4-20	4-17 through 4-20	*McBASI*	Changed DATE$ meaning (Y2K change) on page 4-17 and corrected the screen sample on page 4-20
A-1 through A-4	A-1 through A-4	*Appendix A*	Added the print_flag option to the DEV= keyword; added new example
C-1 through C-4	C-1 through C-4	*Appendix C*	Added sensor source numbers
D-1 through D-4	D-1 through D-4	*Appendix D*	Updated available GOES and POES satellites and added new sensor band for NOAA-15 satellite
D-7 through D-8	D-7 through D-8	*Appendix D*	Updated available Meteosat and GMS satellites
E-1 through E-2	E-1 through E-2	*Appendix E*	Added HODO, UALIST and UAPLOT to the list of commands that output stability parameters
F-1 through F-6	F-1 through F-6	*Appendix F*	Added seven new system files
G-1 through G-2	G-1 through G-2	*Appendix G*	Corrected typo
1-14	1-14	*Index*	Updated the Index

McIDAS User's Guide

May 1998 Update

To update your *McIDAS User's Guide*, remove the following pages and insert the revisions.

Pages to Remove	Pages to Insert	Chapter or Command	Modifications
Inside cover	Inside cover		New title page and copyright.
i through vi	i through vi	*Table of Contents*	Updated Table of Contents.
1-1 through 1-32	1-1 through 1-32	*Installation*	Updated installation instructions and added information about allocating additional frame memory.
2-5 through 2-6	2-5 through 2-6	*Introduction*	Updated information about the plus (+) key.
2-15 through 2-16	2-15 through 2-16	*Introduction*	Added information about graphics points memory.
2-25 through 2-26	2-25 through 2-26	*Introduction*	Added string table information.
2-35 through 2-36	2-35 through 2-36	*Introduction*	Changed logon procedure for ADDE example.
3-1 through 3-2	3-1 through 3-2	*Commands*	Updated keyword format information.
3-7 through 3-10	3-7 through 3-10	*Commands*	Updated *Commands by Categories*.
3-13 through 3-14	3-13 through 3-14	+ (Plus)	Included -X and -OS2 information.
3-45 through 3-48	3-45 through 3-48	CM CU	-X only command. Corrected remarks.
3-67 through 3-70	3-67 through 3-70	DSINFO	Added server restriction information.
		DSSERVE	Updated remarks.
3-75 through 3-76	3-75 through 3-76	EDITMODE	-X only command.
3-83 through 3-84	3-83 through 3-84	F	Updated reference.
	3-86.1 through 3-86.2	FOUSRPT	New command.
3-87 through 3-88	3-87 through 3-88	FRMLABEL	Updated parameter description.
3-103 through 3-116	3-103 through 3-116.2	GRDDISP	Added Mathematical Operations keywords.
3-117 through 3-118	3-117 through 3-118	GRDIMG	Updated example.
3-119 through 3-124	3-119 through 3-124.2	GRDINFO	Added Derived Grid and Mathematical Operations keywords.
3-149 through 3-154	3-149 through 3-154	IMGCOPY	Updated the TIME and SIZE keywords.

Pages to Remove	*Pages to Insert*	*Chapter or Command*	*Modifications*
3-165 through 3-166	3-165 through 3-166	IMGFILT	Updated remarks.
3-175 through 3-176	3-175 through 3-176	IMGLIST	Added examples.
3-179 through 3-184	3-179 through 3-184	IMGOPER	Updated CMAX and CMIN options for the FORM keyword.
3-207 through 3-210	3-207 through 3-210	LS	Updated remarks and examples.
3-219 through 3-220	3-219 through 3-220	MAKNAV	Updated examples.
3-231 through 3-232	3-231 through 3-232	MDE	Updated KEYS keyword.
3-263 through 3-264	3-263 through 3-264	OS	-X and -OS2 command.
3-307 through 3-308	3-307, 3-307.1 through 307.6, and 3-308	RAOBCON RAOBPLOT	New commands.
3-325 through 3-326	3-325, 3-325.1 through 3-325.4, and 3-326	SFCCON	New command.
	3-332.1 through 3-332.4	SFCPLOT	New command.
3-355 through 3-358	3-355 through 3-358	SVF SVGIF	Updated the *file* parameter. Updated the *name* parameter.
3-405 through 3-406	3-405 through 3-406	WWLIST	Corrected example.
4-13 through 4-14	4-13 through 4-14	*McBASI*	Corrected PTABLE example.
E-1 through E-2	E-1 through E-2	*Stability Parameters*	Updated TOTAL and EQUIP.
F-3 through F-4	F-3 through F-4	*System Files*	Added SYSIMAGE.SAV.
H-1 through H-4	H-1 through H-4	*Commands Outside McIDAS-X*	Updated escape character information.
1 through 14	1 through 14	*Index*	Updated Index.

McIDAS

Man computer Interactive Data Access System

McIDAS-X 7.5

for Unix

McIDAS-OS2 7.5

for IBM Operating System/2®

User's Guide

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SFCLIST	Lists surface hourly data from point files.	3-326
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SKEWT	Plots a sounding on a skew T thermodynamic diagram.	3-341
SKL	Lists command scheduler entries.	3-344
SKU	Command scheduler utility.	3-346
SP	Plots surface data.	3-348
SU	Image data stretching utility	3-351
SUNLIT	Lists the sunrise and sunset times for a specified location.	3-354
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SVGIF	Saves a McIDAS frame to the GIF format.	3-357
SYNC	Synchronizes loops running in multiple briefing windows.	3-358
SYNRPT	Lists synoptic observations.	3-360
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TAFRPT	Lists terminal aerodrome forecasts	3-364
TD	Deletes one or more strings from the current string table.	3-365
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TERM	Sets the state of a McIDAS toggle command.	3-369
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TIRCAL (-X)	Calibrates POES (TIROS) areas.	3-377
TL	Lists the strings in a string table.	3-378
TOWNS	Lists the U.S. towns closest to the cursor location.	3-379
TU	String table utility	3-380
TXT2MD	Creates an MD file from an ASCII text data file	3-381
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UC	Grids and contours upper-air data.	3-383
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UP	Plots upper-air data.	3-389
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V (-OS2)	Toggles the velocity cursor on and off when tracking cloud drift winds.	3-396
VASTBL	Creates calibration transforms for Mode AA VAS data.	3-397
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Chapter 1
Installation and Configuration

This chapter consists of these two separate installation and configuration sections:

- Installing and Configuring McIDAS-X
- Installing and Configuring McIDAS-OS2.

The procedures for installing McIDAS-X are below. See *Installing and Configuring McIDAS-OS2* on page 1-23 for the McIDAS-OS2 installation procedures.

Installing and Configuring McIDAS-X

The system administrator or person who installs McIDAS-X will use these installation instructions.

The McIDAS-X installation consists of nine tasks:

- Preparing the Workstation
- Preparing the mcidas Account
- Obtaining McIDAS-X 7.5
- Building and Installing McIDAS-X 7.5
- Installing the McIDAS-X 7.5 ADDE Remote Server
- Removing the Previous Version of McIDAS-X
- Configuring a New User Account
- Configuring McIDAS-X Sessions with .mcidasrc
- Registering MD File Schemas

If you have questions about the installation, call the McIDAS Help Desk at (608) 262-2455, or send email to *mug@ssec.wisc.edu*.

Preparing the Workstation

To prepare the workstation, the system administrator should use the command **ipcs** to verify that your workstation configuration has Inter-Process Communication (IPC) enabled in the system kernel. If IPC is not running, rebuild your system kernel with all IPC functions enabled.

Preparing Sun Systems

McIDAS-X uses shared memory for frame allocation. By default, the shared memory facility is activated and has a sufficient maximum segment size on HP, IBM and SGI systems. However, this is not true for Sun systems running the Solaris 2.*x* operating system. The system administrator must complete the steps below the first time McIDAS-X is installed on a Sun workstation running Solaris 2.*x*.

1. Force the kernel to activate the shared memory system at boot time by adding the line below to the appropriate location in the file **/etc/system**.

```
forceload: sys/shmsys
```

2. Check the maximum size of a shared memory segment using the command below. The value is indicated in bytes; the example lists a 512 MB maximum shared memory segment.

   Type: **/usr/sbin/sysdef | grep SHMMAX**

```
536870912 max shared memory segment size (SHMMAX)
```

   If your value is less than 512 MB, go to step 3. If your value is 512 MB or greater, go to step 4.

3. Set the shared memory size to 512 MB by adding the line below to the appropriate location in the file **/etc/system**.

```
set shmsys:shminfo_shmmax = 536870912
```

4. Reboot the system so the forceload entry and 512 MB maximum shared memory size take effect.

Preparing the mcidas Account

Follow the steps below to prepare the **mcidas** account.

1. If the workstation does not have a **mcidas** account, have the system administrator make one.

2. Log on to the workstation as **mcidas**.

3. Modify the **PATH** of the **mcidas** account so that it contains the necessary directories when you log on; refer to the table below. The default **PATH** of the **mcidas** account may not contain all the required directories or have them in the correct order.

Operating System	Modification
AIX 4.3.1	none necessary
IRIX 6.5	none necessary
HP-UX 10.20	add this directory to your **PATH**: **/usr/bin/X11** also add these two directories: **/opt/ansic/bin** **/opt/fortran/bin** before these directories in your **PATH** **/bin** **/usr/bin**
Solaris 2.6	add these two directories: **/opt/SUNWspro/bin** **/usr/ccs/bin** if your **PATH** contains: **/usr/ucb** it must follow: **/opt/SUNWspro/bin** **/usr/ccs/bin** **/usr/bin**

4. Log out and log on again for the changes to take effect.

Obtaining McIDAS-X 7.5

If your site obtains McIDAS-X upgrades from the McIDAS User's Group Web Site, complete the *Obtaining McIDAS-X 7.5 from the MUG Web Site* on page 1-5. If your site obtains upgrades via tape, complete the *Obtaining McIDAS-X 7.5 via tape* instructions on page 1-5.

The McIDAS-X 7.5 package contains the files below.

File Name	Description
`README`	upgrade information file
`mcidas7.5.sh`	shell script that does the build and install
`mcidas7.5.sp`	disk space requirements file used by `mcidas7.5.sh`
`mcidas7.5.tar.Z`	compressed tar file containing the source and data files
`mcinet7.5.sh`	shell script that configures the ADDE remote server
`NOV98INQ.TXT`	list of changed modules grouped by SSEC inquiry number
`NOV98OPN.TXT`	list of open (unresolved) SSEC inquiries
`NOV98PRG.TXT`	list of changed modules in alphabetical order

Obtaining McIDAS-X 7.5 from the MUG Web Site

1. Use your Web browser to download the files listed above. Access the McIDAS User's Group Web Site at *http://www.ssec.wisc.edu/mug*, and follow the link for the McIDAS-X software. Each site has its own login and password for downloading files. Contact the McIDAS Help Desk if you can't remember yours.

2. Log on to the McIDAS-X workstation as user **mcidas** and move the downloaded files to the **~mcidas** directory.

3. List the files and check the ownership. If the McIDAS-X files are owned by user **mcidas**, skip steps 4-6.

   Type: **ls -l ~mcidas**

4. Change the ownership to user **mcidas**, if needed. You must have root permission to do this. Switch to user **root**.

   Type: **su root**

5. Change to the **~mcidas** directory.

   Type: **cd ~mcidas**

6. Run the command below for each of the downloaded McIDAS-X files.

   Type: **chown mcidas** *file*

Obtaining McIDAS-X 7.5 via tape

1. Log on to the McIDAS-X workstation as user **mcidas**.

2. Change to the **~mcidas** directory.

   Type: **cd ~mcidas**

3. Insert the upgrade tape in the drive and extract or copy the files.

   Run a command similar to the one shown below. Specify *tapedevice* as the device name of your tape unit.

   Type: **tar xvf /dev/***tapedevice*

Building and Installing McIDAS-X 7.5

Next, complete the steps below to build and install McIDAS-X 7.5. Run each command from the **~mcidas** directory.

1. Log on to the workstation as **mcidas**.

2. Build McIDAS-X 7.5.

   Type: **sh ./mcidas7.5.sh make**

   This step first makes the **~mcidas** installation directories and **~mcidas/mcidas7.5** package directories (see the tables below). Then, it uncompresses the data files, source files, and man pages. Finally, it makes the help files, compiles the source code, and writes the compiler output to the file **~mcidas/mcidas7.5/src/makelog**. The message below is displayed when the build is successfully completed.

   ```
   ./mcidas7.5.sh: Make completed normally.
   ```

3. Verify that no McIDAS-X sessions are running. Then enter the command below to uninstall the previous version of McIDAS-X, replacing *version#* with the number of the version (for example, 7.4).

   Type: **sh ./mcidas***version#***.sh uninstall**

   This step removes the hard links between the files in the **~mcidas/mcidas***version#* directories and the appropriate directories in **~mcidas**. The message below appears when the uninstall is successfully completed.

   ```
   ./mcidasversion#.sh: Uninstall completed normally.
   ```

4. Install McIDAS-X 7.5.

   Type: **sh ./mcidas7.5.sh install**

   This step creates hard links from the files in the **~mcidas/mcidas7.5** package directories to the appropriate **~mcidas** installation directories. The message below is displayed when the install is successfully completed.

   ```
   ./mcidas7.5.sh: Install completed normally.
   ```

Installation Directories

The install process makes hard links (as opposed to symbolic links) between the seven installation directories and the files in the five package directories. The uninstall process simply removes the hard links. The installation directories and their contents are listed below.

Directory	Contents
`~mcidas/bin`	program executables
`~mcidas/data`	data files
`~mcidas/help`	help files
`~mcidas/inc`	include files
`~mcidas/lib`	libraries
`~mcidas/man`	man files for subroutines and functions
`~mcidas/tcl`	Tcl and Tk executables and libraries

Other McIDAS packages also make hard links in the installation directories. Thus the installation directories are the repositories for all McIDAS packages currently installed.

Package Directories

Each version of McIDAS-X and other McIDAS packages (for example, McIDAS-XCD) builds its own set of directories. The names of the directories depend on the package name and version number. The McIDAS-X package directories and their contents are listed below.

Directory	Contents
`~mcidas/mcidas7.`*x*`/src`	McIDAS-X source files, help files, and binaries
`~mcidas/mcidas7.`*x*`/data`	McIDAS-X data files
`~mcidas/mcidas7.`*x*`/man`	McIDAS-X man files for subroutines and functions
`~mcidas/mcidas7.`*x*`/tcl`	Tcl 8.0.3 files for the GUI
`~mcidas/mcidas7.`*x*`/tk`	Tk 8.0.3 files for the GUI
`~mcidas/mcidas7.`*x*`/netcdf`	netCDF 3.4 files for ADDE servers

Installing the McIDAS-X 7.5 ADDE Remote Server

Use the steps below to remove the previous version's ADDE remote server, and install the McIDAS-X 7.5 ADDE remote server. For more information about remote servers, see *Clients and Servers* on page 2-31, and *Appendix J* in this manual.

1. Log on to the workstation as **root**.

2. Change to the home directory for user **mcidas**.

   Type: **cd ~mcidas**

3. Verify that a remote server is installed on the workstation.

   Type: **grep mcserv /etc/services**

   If the output is similar to the line below, go to step 4.

   ```
   mcserv 500/tcp # McIDAS ADDE port
   ```

   If no output appears, the workstation doesn't have a remote server installed. If you want to install the McIDAS-X 7.5 ADDE remote server, go to step 5. Otherwise, go to *Removing the Previous Version of McIDAS-X* on page 1-9.

4. Uninstall the previous version's remote server. Replace *version#* in the command below with the previous version number of McIDAS-X (7.4, for example). If you used an account other than **mcadde** for your remote server, insert that account name in place of **mcadde**.

   Type: **sh ./mcinet***version#***.sh uninstall mcadde**

   This step removes the modifications made to the Internet services daemon (**inetd**) configuration files, forces **inetd** to reread its configuration files, and attempts to verify that **inetd** is no longer listening for ADDE requests from McIDAS-X and McIDAS-OS2 clients.

   To install the McIDAS-X 7.5 remote server, go to step 5. Otherwise, go to *Removing the Previous Version of McIDAS-X* on page 1-9.

5. Install the McIDAS-X 7.5 ADDE remote server. If you use an account other than **mcadde** for your remote server, insert that account name in place of **mcadde** in the command below.

   Type: **sh ./mcinet7.5.sh install mcadde**

   This step modifies the Internet services daemon (**inetd**) configuration files to make **inetd** aware of the ADDE service, forces **inetd** to reread its configuration files, and attempts to verify that **inetd** is listening for ADDE requests from McIDAS-X and McIDAS-OS2 clients.

Removing the Previous Version of McIDAS-X

After McIDAS-X 7.5 is installed, tested, and working properly, remove the previous version of McIDAS-X. Run each command from the **~mcidas** directory.

1. Log on to the workstation as **mcidas**.

2. Remove the **mcidas***version#* directory tree and its contents, replacing *version#* with the previous version number.

   Type: **sh ./mcidas***version#***.sh unmake**

   The message below is displayed when the unmake is successfully completed.

   ```
   ./mcidasversion#.sh: Unmake completed normally.
   ```

3. Remove the following files:
   - **mcidas***version#***.sh**
   - **mcidas***version#***.sp**
   - **mcidas***version#***.tar.Z**
   - **mcinet***version#***.sh.**

Configuring a New User Account

The McIDAS-X software is installed in the **mcidas** account. However, you can not run McIDAS-X as user **mcidas**. Ask your system administrator to create individual accounts for running McIDAS-X. Then, the user or system administrator must complete these two tasks for each account:

- Setting the Environment
- Enabling McIDAS-X Keys

Setting the Environment

1. Log on to the account and modify the environment variable **PATH** in the **.profile** (ksh) or **.cshrc** (csh) files. Insert **$HOME/mcidas/bin**, the directory with your site's locally developed code (for example, **~mclocal/mcidas/bin**), and **~mcidas/bin** in your **PATH**, in that order.

2. You may also need to modify the **PATH** if it does not contain all of the required directories or have them in the correct order. If you will be writing and compiling your own McIDAS software, update your **PATH** with the modifications listed in step 3 of *Preparing the mcidas Account* on page 1-3.

   If you will *not* be writing and compiling McIDAS software, update your **PATH** with the modifications listed below.

Operating System	Modification
AIX 4.3.1	none necessary
IRIX 6.5	none necessary
HP-UX 10.20	add this directory to your path: **/usr/bin/X11**
Solaris 2.6	none necessary

3. Log out and log on again for the changes to take effect.

Enabling McIDAS-X Keys

The actions required to enable certain keys used by McIDAS-X (for example, Alt A, Alt F11) vary depending on your workstation and its configuration. This section describes these actions for workstations running the following SSEC-recommended configurations:

- AIX using the Motif window manager
- AIX using the Common Desktop Environment
- IRIX using the Extended Motif window manager
- Solaris using the OPEN LOOK window manager
- Solaris using the Common Desktop Environment
- HP-UX using the Visual Users Environment window manager

These directions assume you are in the account's **$HOME** directory and logged on to the workstation console.

Enabling McIDAS-X Keys for AIX Motif

Follow the steps below if you use an AIX workstation console and the Motif window manager (**mwm**).

1. Make a copy of the **mwm** configuration file; enter the commands below.

   Type: **cp /usr/lib/X11/system.mwmrc .mwmrc**
   chmod u+w .mwmrc

2. Remove **Alt<Key>Fn** from the following lines in the **Menu DefaultWindowMenu** section in the account's **.mwmrc**.

```
"Restore"       _R      Alt<Key>F5          f.restore
"Move"          _M      Alt<Key>F7          f.move
"Size"          _S      Alt<Key>F8          f.resize
"Minimize"      _n      Alt<Key>F9          f.minimize
"Maximize"      _x      Alt<Key>F10         f.maximize
"Lower"         _L      Alt<Key>F3          f.lower
```

   This allows McIDAS-X to use the Alt F3, Alt F5, Alt F7, Alt F8, Alt F9, and Alt F10 keys.

3. Remove **Alt<Key>F4** from the line below in the **Menu DefaultWindowMenu** section in the account's **.mwmrc.**

```
"Close"         _C      Alt<Key>F4          f.kill
```

   This allows McIDAS-X to use the Alt F4 key.

4. Delete or comment out the line below from the **Keys DefaultKeyBindings** section in the account's **.mwmrc**.

```
Alt<Key>F6        window              f.next_key transient
```

This allows McIDAS-X to use the Alt F6 key.

5. Log out and log on again for the changes to take effect.

Enabling McIDAS-X Keys for AIX Common Desktop

Follow the steps below if you use an AIX workstation console and the Common Desktop Environment (**dtwm**).

1. Create or modify the account's **$HOME/.Xdefaults** and add the following line.

```
Dtwm*windowMenu:        NoAcceleratorWindowMenu
```

2. Select the *Edit Dtwmrc* icon from the Desktop_Tools section of the Application Manager. The Application Manager is started by clicking its icon on the Front Panel.

3. Delete or comment out the line below in the **Keys DefaultKeyBindings** and **Keys DtKeyBindings** sections in the account's **dtwmrc** file.

```
Alt<Key>F6      window          f.next_key transient
```

This allows McIDAS-X to use the Alt F6 key.

4. Log out and log on again for the changes to take effect.

Enabling McIDAS-X Keys for IRIX Extended Motif

Follow the steps below if you use an IRIX workstation console and the IRIS Extended Motif window manager (**4Dwm**).

1. Make a copy of the **4Dwm** configuration file; enter the commands below.

Type: **cp /usr/lib/X11/system.4Dwmrc .4Dwmrc**
chmod u+w .4Dwmrc

2. Delete or comment out the line below in the **Keys 4DwmKeyBindings** section in the account's **.4Dwmrc**. The line may contain **Meta** instead of **Alt**.

```
Alt<Key>F6        window          f.next_key transient
```

This allows McIDAS-X to use the Alt F6 key.

3. Remove **Alt<Key>Fn** from the following lines in the **Menu 4DwmWindowMenu** section in the account's **.4Dwmrc**. The lines may contain **Meta** instead of **Alt**.

```
Restore         _R      Alt<Key>F5          f.normalize
Move            _M      Alt<Key>F7          f.move
Size            _S      Alt<Key>F8          f.resize
Minimize        _n      Alt<Key>F9          f.minimize
Maximize        _x      Alt<Key>F10         f.maximize
Raise           _a      Alt<Key>F1          f.raise
Lower           _L      Alt<Key>F3          f.lower
```

This allows McIDAS-X to use the Alt F1, Alt F3, Alt F5, Alt F7, Alt F8, Alt F9, and Alt F10 keys.

4. Log out and log on again for the changes to take effect.

Enabling McIDAS-X Keys for Solaris OPEN LOOK

Follow the steps below if you use a Solaris workstation console and the OPEN LOOK window manager (**olwm**).

1. Copy files **.openwin-init** and **.Xdefaults** to the account's home directory if they do not already reside there.

   Type:
   ```
   cp $OPENWINHOME/lib/Xdefaults .Xdefaults
   cp $OPENWINHOME/lib/openwin-init .openwin-init
   chmod u+w .Xdefaults
   chmod u+wx .openwin-init
   ```

2. Add the following line to the account's **.Xdefaults** file.

```
OpenWindows.KeyboardCommands:    SunView1
```

This allows McIDAS-X to use the Alt Q key.

3. Add the following line to the account's **.openwin-init** file.

```
xmodmap -e 'keycode 16 = F11' -e 'keycode 18 = F12'
```

This allows McIDAS-X to use the F11 and F12 keys, and their Alt, Shift and Ctrl forms.

4. Log out and log on again for the changes to take effect.

Enabling McIDAS-X Keys for Solaris Common Desktop Environment

Follow the steps below if you use a Solaris workstation console and the Common Desktop Environment (**dtwm**).

1. Create or modify the account's Xdefaults file **$HOME/.Xdefaults** and add the following line.

```
Dtwm*windowMenu:        NoAcceleratorWindowMenu
```

2. Select the *Edit Dtwmrc* icon from the Desktop_Tools section of the Application Manager. The Application Manager is started by clicking its icon on the Front Panel.

3. Delete or comment out the line below in the **Keys DefaultKeyBindings** and **Keys DtKeyBindings** sections in the account's **dtwmrc** file.

```
Alt<Key>F6  window  f.next_key transient
```

   This allows McIDAS-X to use the Alt F6 key.

4. Log out and log on again for the changes to take effect.

Enabling McIDAS-X Keys for HP-UX Visual Users Environment

Follow the steps below if you use an HP-UX workstation console and the Visual Users Environment window manager (**vuewm**).

1. Set the environment variable **EDITOR**. If you use **sh** or **ksh**, enter the command below.

   Type: **export EDITOR; EDITOR=vi**

   If you use **csh**, enter the command below.

   Type: **setenv EDITOR vi**

2. Use the command below to display the **vi** editor and the **vuewm** resource file in a separate window.

   Type: **/usr/vue/bin/vueaction EditResources**

3. Add the line below to the **vuewm** resource file using the **vi** editor, write the file, and quit **vi**.

```
Vuewm*windowMenu: NoAcceleratorWindowMenu
```

   This allows McIDAS-X to use the Alt F4 key.

4. Use the command below to display the **vi** editor and the **vuewm** initialization file in a separate window.

   Type: **/usr/vue/bin/vueaction EditVuewmrc**

5. Delete or comment out the line below in the **Keys VueKeyBindings** section of the **vuewm** initialization file. Then, write the file and quit **vi**.

```
Meta<key>F6          window          f.next_key transient
```

   This allows McIDAS-X to use the Alt F6 key.

6. Log out and log on again for the changes to take effect.

Configuring McIDAS-X Sessions with .mcidasrc

Once you have installed McIDAS-X and configured your accounts, you can run McIDAS-X. See Chapter 2 for information about starting, using and ending McIDAS-X sessions.

The first time you run McIDAS-X, the **$HOME/.mcidasrc** configuration file is created. This file stores flags that configure the McIDAS-X session to your preferences. This section contains descriptions of the flags and how to modify their values using a text editor.

The following tables list the flags for changing the Image, and Text and Command Windows settings. The flags can appear in any order in **.mcidasrc**. However, the file is organized in a manner you may want to follow. Default values, if present, are indicated in the tables or in the detailed descriptions that follow.

Image Window Flags	Description
-autoResize	automatically resizes the Image Window to the frame size
-e *amount***k** **-e** *amount***m**	allocates a memory pool of *amount* kilobytes or megabytes for MAKFRM command
-f *framespec*	sets the number and size of frames
-graphicsColors *number*	sets the number of graphics color levels (default = 16)
-igeometry *line + element*	sets the location of the Image Window
-imageColors *number*	sets the number of display levels (default = 128)
-manualResize	resizes the Image Window to the frame size only when you use the R command (default)
-optimizeForSpeed	displays images as quickly as possible (default)
-optimizeForSpace	allows the maximum number of frames for a given amount of memory, but displays images more slowly than **-optimizeForSpeed**

The table below lists the start-up flags for specifying the Text and Command Window setup. See the following sections for more information.

Text and Command Window Flags	Description
-c *'command'*	runs a specified command at startup
-display *workstation*:0	specifies the workstation for displaying the McIDAS-X session
-font *'font'*	sets the font used in the Text and Command Window
-fontListHead *'fonts'*	specifies the fonts for the beginning of the font list for the Text and Command Window
-fontListTail *'fonts'*	specifies the fonts for the end of the font list for the Text and Command Window
-ih *number*	sets the number of commands in the recall buffer (default=100)
-oh *number*	sets the maximum number of output lines in each text frame (default=1000)
-tcolbg*value 'color'*	sets colors for the background attributes in the McIDAS Text and Command Window
-tcolfg*value 'color'*	sets colors for the foreground attributes in the McIDAS Text and Command Window
-tgeometry *height***x***width* + *line* + *element*	sets the size and location of the McIDAS Text and Command Window

The following sections provide more information about changing your McIDAS setup using the start-up flags listed above:

- Setting the number of frames
- Allocating Additional Frame Memory
- Running Commands at Startup
- Setting the Text Fonts
- Setting the Command and Output Recall
- Setting the Workstation Display
- Setting the McIDAS Text and Command Window options
- Setting the McIDAS Image Windows Options

Setting the number of frames

Use the **-f** *framespec* flag to set the number and size of the frames for your McIDAS-X session. You can use the following formats for *framespec*.

Format	Description
number	creates a specified number of 480x640 frames
*lines***x***elements*	creates a frame of specific size
*number***@***lines***x***elements*	creates a number of frames of a specific size

By default, the **.mcidasrc** file contains the line **-f 4**, meaning that McIDAS-X sessions start with four frames that are 480 lines by 640 elements. You can additional sets of frames of different sizes. For example, if you add the line **-f 4@512x512 -f 4@1024x1280**, sessions will have 12 frames: four 512 by 512 frames; four 1024 by 1280 frames, and four 480 by 640 default frames.

The order of the *framespec* options determines the frame numbers. The frames are numbered starting with 1. For example, if you start your session with **-f 6 -f 512x512 -f 512x512 -f 2@1024x1280**, your session has 14 frames with the following numbers and sizes.

- frames 1-4; 480 lines by 640 elements (default frames)
- frames 5-10; 480 lines by 640 elements
- frames 11-12; 512 lines by 512 elements
- frames 13-14; 1024 lines by 1280 elements

You can remove the default by commenting out the line **-f 4** in your **.mcidasrc** file.

Allocating Additional Frame Memory

Use the **-e** *count* option to allocate a memory pool for creating additional frames with the MAKFRM command, and for automatically providing additional graphics points as needed. See the *Image Window* section on page 2-15 and the *Adding Frames* section on page 2-21 in Chapter 2 for more information.

The default size of the **-e** memory pool is 0 bytes. Use a **k** to specify the number of bytes as kilobytes or an **m** to specify the memory in megabytes. For example, to allocate a 5 MB memory pool for MAKFRM, use the flag **-e 5m**. The amount of memory required to add a new frame is slightly more than the number of lines times the number of elements. The figure is slightly higher because additional memory is required for enhancements, stretch tables, graphics tables, etc.

Running Commands at Startup

You can specify commands to run automatically at startup using the **-c** *'command'* flag. Specify this flag at startup or in your **$HOME/.mcidasrc** file as many times as needed to run any set of commands. Each **-c** *command* flag is run asynchronously from all other **-c** flags. To run certain commands in a sequence, specify them all in one **-c** flag. For example, the command **-c 'ECHO{HELLO};ECHO"THERE'** runs two ECHO commands in the sequence they are entered.

To run the commands from the Unix shell, prefix the command with an exclamation point (!). See the exclamation point (!) command documentation for more information. If you do not want the command output displayed in the Text and Command Window, add an at symbol (@) after the exclamation point (!).

Setting the Text Fonts

The **-font** option sets the font that the Text and Command Window automatically uses. The fonts are listed by pixel size and the default font is 9x15 bold. You can specify a list of fonts for the Text and Command Window using the **-fontListHead** *'fonts'* and **-fontListTail** *'fonts'* flags. Once you set the fonts with these flags, you can change the font used in the Text and Command Window using the **Alt <** and **Alt >** keys.

You can specify multiple fonts for the **-fontListHead** and **-fontListTail** flags, but separate them with commas, for example, **-fontListHead '5x8,6x9,6x13bold'**. The **$HOME/.mcidasrc** file lists some sample fonts.

Setting the Command and Output Recall

The **-ih** *number* flag sets the number of commands that you can recall in the McIDAS Text and Command Window. The default is 100. Use the McIDAS-X commands ampersand (&) and caret (^) to recall commands.

The **-oh** *number* flag sets the number of output lines to store in each text frame in the McIDAS Text and Command Window. The default is 1000. Use the Page Up, Page Down and arrow keys or the McIDAS-X command TFIND to scroll the output lines.

Setting the Workstation Display

The **-display** *workstation*:0 flag sets the workstation display for the McIDAS-X session. Typically, you will not have to set this at startup because it is in your **.profile** file. This flag is useful for displaying the McIDAS-X session on a workstation not listed in your **.profile**.

Setting the McIDAS Text and Command Window options

You can specify the following start-up options for the McIDAS Text and Command Window.

- size and location
- colors

To specify the size and location of the McIDAS Text and Command Window use the **-tgeometry** *geometry* flag, where *geometry* is the character width and height of the window and the line and element location. For example, to create a Text and Command Window that is 85 characters by 26 characters, located at line 300 and element 400, enter the flag **-tgeometry 85x26+300+400**.

You can specify colors to use for the Text and Command Window borders, backgrounds, command text, error messages, etc. To change the display, use the **-tcolfg***value* '*color*' and **-tcolbg***value* '*color*' flags. The **-tcolbg** flag sets colors for the background attributes in the McIDAS Text and Command Window and **-tcolfg** sets the attributes for the foreground. Typically, the foreground attributes are text and the background attributes are window backgrounds.

The table below lists the *values* for several McIDAS Text and Command Window attributes. The *value* specifies the attribute to change. For example, to change the color of error messages to yellow, use the flag **-tcolfg14 'yellow'**. The **$HOME/.mcidasrc** file provides a complete list of the attributes that you can change and their corresponding *values*.

Window Attribute	Value
local text	7
echoed commands	10
command editor	11
communications status messages	13
error messages	14
line continuation marks	96

Setting the McIDAS Image Windows Options

You can specify the following start-up options for the Image Window.

- location
- automatic resizing
- graphics colors and image levels
- display speed and memory use

To set the location of the McIDAS Image Window, use the **-igeometry** *geometry* flag where *geometry* is the line and element location. For example, to start a session with the Image Window in the center, use the flag **-igeometry 768+1024**.

The **-manualResize** flag is the default resize flag. This flag requires you to use the R command to resize the Image Window to the size of the displayed frame. To automatically resize the Image Window to the size of the frame, specify the **-autoResize** flag.

Use the **-graphicsColors** *number* option to change the number of graphics colors available. The default number of graphics colors is 16; the maximum is 128. Use the **-imageColors** *number* option to change the number of display levels available. The default number of display levels is 128; the maximum is 253 or 254, depending on your hardware. The more display levels you specify, the less graphics colors there are available and vice versa.

The **-optimizeForSpeed** and **-optimizeForSpace** options change the amount of memory used for displaying images and loops. The **-optimizeForSpeed** option, which is the default, displays images as quickly as possible. This option requires a large amount of memory. The **-optimizeForSpace** option displays images using a minimum amount of memory. This option greatly slows looping, but it more than doubles the amount of frames that can be created for a given amount of memory. Because the looping is slow, you can only use this option if you are running a local McIDAS-X session on your workstation.

Registering MD File Schemas

Each version of McIDAS-X includes copies of the LW files **DCFO14**, **DCIRAB**, **DCISEN**, **DCISFC**, **DCISHP**, **DCPIRP**, **DCRAOB**, **DCSVCA**, and **DCSYN** in the **~mcidas/data** subdirectory. These files define the FO14, IRAB, IRSG, ISEN, ISFC, ISHP, PIRP, RAOB, RSIG, SVCA and SYN MD file schemas. IRAB and IRSG are both contained in the **DCIRAB** file. Additional schemas will be supplied as needed.

When you register a schema using McIDAS-X command SCHE (in the *Commands* section of this manual), the LW file is read and the schema's internal form is copied into LW file **SCHEMA**, which also resides in the **~mcidas/data** subdirectory. Command SCHE can also add locally developed schemas to the workstation.

Commands that read data in an MD file (for example, PTDISP, SFCLIST, XSECT) or edit a preexisting MD file (for example, MDE) do not require the MD file's schema type to be registered. However, commands that create an MD file (for example, ISENT or MDU MAKE) do not work unless the schema is registered. Therefore, you should register the supplied schemas using the SCHE command after installing McIDAS-X for the first time.

Once a schema is registered on the workstation, you don't have to register it each time you install a new version of McIDAS-X. When a schema is updated, it is noted in the *Significant Program Changes* document supplied by SSEC for your site coordinator with McIDAS-X upgrades.

To register the MD file schemas, first complete the software installation procedure. Then start McIDAS-X and use the McIDAS-X command SCHE to register each schema.

For example, to register the schema ISFC,

Type: **SCHE DCISFC**

To register the schemas IRAB and IRSG,

Type: **SCHE DCIRAB**

Use the list schema command, LSCHE, to verify the registered schema types and version numbers or to search the schemas for a specific key.

Installing and Configuring McIDAS-OS2

This section contains the procedure for installing and configuring McIDAS-OS2. Read all instructions before starting the installation. These instructions assume that you are familiar with the OS/2 Presentation Manager™ graphical interface. If you need more information, see the *IBM OS/2 Getting Started Manual.*

The McIDAS-OS2 installation consists of five tasks:

- Preparing the Workstation
- Obtaining McIDAS-OS2 7.5
- Installing McIDAS-OS2 7.5
- Running the SETUP Program
- Registering MD File Schemas

If you have questions about the installation, call the McIDAS Help Desk at (608) 262-2455, or send email to *mug@ssec.wisc.edu.*

Preparing the Workstation

Before installing McIDAS-OS2 7.5, verify that the workstation is compatible according to the specifications listed below. McIDAS-OS2 7.5 was tested on these versions only. The Fortran and C compilers are needed only if you do local development on the workstation.

System Component	Specification
Hardware	386 PCs and above
Operating System	IBM OS/2 WARP 4.0
TCP/IP	IBM TCP/IP for OS/2 version 2.0
Fortran compiler	AT&T f2c version 19950906
C compiler	gcc version 2.7.2 (emx version 0.9b port)

In addition, the PM workstation requires a graphics card that supports 256 colors. Two such graphics cards are the XGA card for Microchannel workstations and the SVGA card for EISA-bus workstations.

To determine if your graphics card is suitable, go to the Desktop and select these four options in order: *OS/2 system, System Setup, System, Screen.* The display shows the available screen resolution values in the format *width x height x number of colors*. If values like (640 x 480 x 256), (800 x 600 x 256) and (1024 x 768 x 256) are listed, you can use the PM mode for McIDAS-OS2. If it shows (640 x 480 x 16), you have a VGA or similar graphics capability and the PM mode will not work.

McIDAS-OS2 may not work well with the PM display if you run other applications that capture many colors. For example, the TCP/IP server for the X Window System, called PMX, uses too many colors for McIDAS-OS2 to work properly on the PM display if PMX is started first.

Obtaining McIDAS-OS2 7.5

Complete the instructions below to download the McIDAS-OS2 7.5 installation files from the McIDAS User's Group Web Site. The files require about 40 MB of free disk space.

1. Open an OS/2 Window or Full Screen session on your McIDAS-OS2 workstation.

2. Change to the `c:\mcidas\install` directory and delete its contents. This directory holds the McIDAS-OS2 installation files.

   Type:
   ```
   c:
   cd \mcidas\install
   del *
   ```

   Use your Web browser to download the ten files listed below to the `c:\mcidas\install` directory. Access the McIDAS User's Group Web Site at *http://www.ssec.wisc.edu/mug* and follow the link for the McIDAS-OS2 software. Each site has its own login and password for downloading files. Contact the McIDAS Help Desk if you can't remember yours.

File name	Description
`code1.zip`	zipped file containing files for `\mcidas\code`
`code2.zip`	zipped file containing files for `\mcidas\code`
`data.zip`	zipped file containing files for `\mcidas\data`
`dev.zip`	zipped file containing development files
`nov98inq.txt`	list of changed modules grouped by SSEC inquiry number
`nov98opn.txt`	list of open (unresolved) SSEC inquiries
`nov98prg.txt`	list of changed modules in alphabetical order

File name	Description
`mcutil.cmd`	script to install McIDAS-OS2
`tools.zip`	zipped file containing the file for `\mcidas\tools`
`unzip.exe`	executable that uncompresses the zipped files

Verify that the ten installation files were successfully copied.

Type: `dir`

If your site has more than one McIDAS workstation and/or you want to make a backup copy of the installation files on diskette, go to the next section, titled *Copying the Installation Files*.

To install McIDAS-OS2 7.5 on this workstation, go to the section titled, *Installing McIDAS-OS2 7.5* on page 1-27.

Copying the Installation Files

After obtaining the McIDAS-OS2 7.5 installation files from SSEC, you may want to do one or more of the following:

- copy the files to your other McIDAS-OS2 workstations via FTP so you can install the software on all the -OS2 workstations at your site
- copy the files to diskettes so you have a backup copy of version 7.5
- copy the files to diskettes so you can transfer the files to your site's McIDAS-OS2 workstations that don't have ftp capability

To copy the files to your site's other McIDAS-OS2 workstations via ftp, repeat steps 1 and 2 in the previous section *Obtaining McIDAS-X 7.5*. Then, use FTP to copy the files from the workstation storing the files; be sure to specify binary file transfers

To copy the files to diskettes, use the procedure below.

1. Obtain 27 blank, formatted diskettes.

2. Place a label indicating the diskette number on each of the diskettes. For example, the first diskette should be labeled *McIDAS-OS2 7.5 disk 1 of 27*, and the last diskette should be labeled *McIDAS-OS2 7.5 disk 27 of 27*.

3. Open an OS/2 Window or Full Screen session on the workstation with the McIDAS-OS2 7.5 installation files.

4. Change to the `c:\mcidas\install` directory.

   Type: `c:`
   `cd \mcidas\install`

5. Verify that the McIDAS-OS2 7.5 files are present.

   Type: **dir**

6. Run the OS/2 **backup** command to copy the files to the 27 blank, formatted diskettes.

   Type: **backup \mcidas\install* a:**

   Insert the 27 diskettes as instructed by the backup command. Be sure to insert the diskettes with the correct number each time so you can properly restore the files at a later time.

Restoring the Installation Files from Diskette

If you received your copy of the McIDAS-OS2 7.5 on diskettes, or you copied the installation files to diskette by completing the previous section, perform the steps below to restore the installation files to the **c:\mcidas\install** directory.

This procedure restores the installation files only; it does not install McIDAS-OS2 7.5.

1. Insert the diskette labeled *McIDAS-OS2 7.5 disk 1 of 27* in drive A.

2. Open an OS/2 Window or Full Screen session.

3. Change to the **c:\mcidas\install** directory and delete its contents.

   Type
   ```
   c:
   cd \mcidas\install
   del *
   ```

4. Run the OS/2 **restore** command to restore the files from the 27 McIDAS-OS2 diskettes to the current directory (**c:\mcidas\install**).

   Type: **restore a:**

   Insert the 27 diskettes as instructed by the restore command. Be sure to insert the diskettes with the correct number each time.

Installing McIDAS-OS2 7.5

If the files listed on page 1-24 are not already on the workstation's hard drive in `c:\mcidas\install`, you must go to the section titled *Copying the Installation Files* on page 1-25 to obtain a copy via FTP or diskette.

The McIDAS-OS2 7.5 installation files are divided into three groups.

- Required software for running McIDAS-OS2 7.5 is installed in the `\mcidas\code`, `\mcidas\data`, `\mcidas\help` and `\mcidas\tools` directories.
- The `TOWNS.TXT` file contains the database for the TOWNS and FIND commands. `TOWNS.TXT` is installed in the `\mcidas\data` directory.
- Development software, which consists of the McIDAS-OS2 7.5 source code, link libraries, and man pages for subroutines and functions is installed in the `\mcidas\source`, `\mcidas\tools`, and `\mcidas\man` directories.

The installation script, `mcutil`, automatically installs the required software but lets you choose to install the `TOWNS.TXT` file or development software. If you plan to use the TOWNS and FIND commands, you must install `TOWNS.TXT`. If you plan to develop local applications, install the development software.

To install McIDAS-OS2 7.5 on a workstation that doesn't have McIDAS-OS2 already installed, you will need about 50 MB of free disk space for the required software, an additional 9 MB to install `TOWNS.TXT`, and another 15 MB to install the development software.

If a previous version of McIDAS-OS2, with the required software, `TOWNS.TXT` file, and development software, is already installed, you will need little additional space when installing McIDAS-OS2 7.5, since there are few new files.

In either case, this disk space is in addition to the 40 MB of McIDAS-OS2 7.5 installation files that may be present in the `\mcidas\install` directory. After installing McIDAS-OS2 7.5, you can delete the files in `\mcidas\install` to free up disk space.

Caution!

All files in your `\mcidas\code`, `\mcidas\man`, `\mcidas\help`, and `\mcidas\source` directories will be deleted during the McIDAS-OS2 7.5 installation. Place locally developed source code in the `\mcidas\working` directory; place locally developed object code in the `\mcidas\user\code` directory.

Complete the steps below to install McIDAS-OS2 7.5.

1. Exit McIDAS-OS2. See the EXIT command for more information.

2. Open an OS/2 Window or Full Screen session.

3. Change to the directory **c:\mcidas\install**.

   Type: **c:**
   cd \mcidas\install

4. Verify that the McIDAS-OS2 7.5 installation files are present.

   Type: **dir**

5. Run the installation script.

   Type: **mcutil**

6. Select the install option.

   Type: **install**

7. Type the drive letter (with no colon) of the **\mcidas\code** directory when the script requests it.

8. Type the drive letter (with no colon) of the **\mcidas\data** and **\mcidas\help** directories when the script requests it.

9. Type the location of the installation files when requested, or press **Enter** if they're in the current directory (**c:\mcidas\install**). The disk space usage summary appears on the screen.

10. Press any key to continue. A message appears warning you that files will be deleted and asking if you want to continue. To stop the installation and return to the OS/2 prompt, enter **N**. To install the required software, enter **Y**. It takes several minutes for the files to be installed. Then the script proceeds to steps 11 and 12.

11. To install the **TOWNS.TXT** file, enter **Y** when prompted. Choose **N** only if you need the extra disk space and you don't plan to use the TOWNS and FIND commands.

12. Type either **N** or **Y** when the script asks if you want to install the development software. Choose **Y** only if you plan to develop local applications.

When the installation is complete, run the **SETUP** program described below.

Running the SETUP Program

After installing the McIDAS-OS2 software, run the **SETUP** program using the instructions below.

> ***Caution!***
> ***The SETUP program alters the \config.sys and \startup.cmd files on your system. Interrupting SETUP with a Ctrl C or BREAK may corrupt these files. If you make a mistake, answer the remaining questions, then rerun SETUP without booting your system.***

1. From an OS/2 prompt, verify that you're in the **\mcidas\tools** subdirectory. Then,

   Type: **SETUP**

   The system prompts you with a series of questions about your system configuration.

2. The question below appears on the screen.

   ```
   Normal host connection: Async, Pronet, TCP, None (A/P/T/N)?
   ```

   This question is referring to communications to a McIDAS-MVS host. Since McIDAS-MVS is no longer supported by the MUG, you should select N (for None). The question was left in **SETUP** for sites that still use McIDAS-MVS systems even though they are no longer supported.

3. The next question is shown below.

   ```
   Printer interface (1-parallel, 2-serial)?
   ```

   If you don't have a printer, select 1, the parallel printer option.

4. If you select 2 for serial printer, the question below appears.

   ```
   Port to use for printer connection.
   ```

   You must type the name of a port, for example, COM1 or COM2.

5. The next question is shown below.

```
Type of display (1-WWW or 8-PM)?
```

If you select 8 (for Presentation Manager), continue with step 6 below. If you select 1 (for WIDE WORD Workstation), and would like more information about WWW frame allocation and briefing frames, see *Appendix A* of the May 1997 version of the *McIDAS-OS2 User's Guide.*

6. When the prompt below is displayed on the screen, choose either the Storage or Speed PM mode.

```
You may select one of two PM modes: Speed or Storage.
Selecting Storage allows twice as many frames for a
fixed memory size; also, frames may be resized. Speed
must be selected if smooth looping is required.

Select PM mode: Storage(0) or Speed(1).....................0
```

The Speed mode allows faster looping, but requires twice the memory of the Storage mode, which uses one byte per pixel. The Storage mode also lets you resize the Image Window with the contents scaled to fit. In this example, the Storage mode (0) is selected. Enter 1 if you want the Speed mode.

7. After you select the PM mode, the system prompts you for the number of frames to create and their size, as shown below.

```
How many frames?.....................................32

If you enter 0 for the line size, a default will be
calculated for you, based on your display size.

Line size for frames................................480
Element size........................................640
```

The Speed or Storage mode, number of frames and frame size determine the amount of memory McIDAS-OS2 will need for frame storage. Don't dedicate too much memory for frames. If you choose the Speed mode and there is not enough available memory, looping will be even slower than if Storage is selected, because the system will load the frames out of swapping disk rather than memory.

The memory requirements for frame storage vary with the area of the rectangle. Four 320 x 240 frames use the same memory as one 640 x 480 frame. Also, small frames can be looped more seamlessly than large ones. Experimenting with your system will help you determine the reasonable limits, which will vary depending on the speed of your processor and the graphics hardware.

Because the above example specifies 32 frames of 480 lines by 640 elements, 9.8 MB (32 x 480 x 640) of memory is required just for frame storage. The Speed mode would require 19.6 MB.

8. If you answer Y (yes) to the question below, your McIDAS search path is modified to include **\mcidas\user\code**.

```
Provide for inclusion of USER programs (Y/N)?
```

SSEC recommends you place any locally developed programs in **\mcidas\user\code** for inclusion with McIDAS-OS2 on your system. **SETUP** sets the McIDAS path in **\startup.cmd** by appending the current value of **PATH** to either **\mcidas\code** (if you answer N to the question above), or **\mcidas\user\code;\mcidas\code** (if you answer Y to the question above).

9. The prompt below lets you specify how many text lines to allocate in the scrollable text frames 0 through 4.

```
Number of text lines in history (80 - 1000)
```

McIDAS-OS2 memory consumption increases as the value specified gets larger. For example, a session with 1000 text lines uses more memory than a session with 500 text lines.

If you have an F Key menu with a U 201 *number* command to set the line number at the top of the text frame, you may need to adjust the command's *number* value if you change the value in this **SETUP** prompt. See the *Sample Menu Files* that begin on page 5-18 for more information.

10. Exit OS/2 using its Shutdown procedure; then restart the workstation. The first logon under OS/2 takes some time due to the memory management software that runs during initialization.

11. If you selected PM display in step 5, enter the McIDAS-OS2 command below when starting up the system for the first time after installing the software. Otherwise, the frame background changes to gray instead of black when the EG command is run.

Type: **EG I 1** *maximum number of frames on the workstation*

Registering MD File Schemas

Each version of McIDAS-OS2 includes copies of the LW files **DCFO14**, **DCIRAB**, **DCISEN**, **DCISFC**, **DCISHP**, **DCPIRP**, **DCRAOB**, **DCSVCA**, and **DCSYN** in the **\mcidas\data** subdirectory. These files define the FO14, IRAB, IRSG, ISEN, ISFC, ISHP, PIRP, RAOB, RSIG, SVCA and SYN MD file schemas. IRAB and IRSG are both contained in the **DCIRAB** file. Additional schemas will be supplied as needed.

When you register a schema using McIDAS-OS2 command SCHE (in *Chapter 3, Commands*), the LW file is read and the schema's internal form is copied into LW file **SCHEMA**, which also resides in the **\mcidas\data** subdirectory. Command SCHE can also add locally developed schemas to the workstation.

Commands that read data in an MD file (for example, PTDISP, SFCLIST, XSECT) or edit a preexisting MD file (for example, MDE) do not require the MD file's schema type to be registered. However, commands that create an MD file (for example, ISENT or MDU MAKE) do not work unless the schema is registered. Therefore, you should register the supplied schemas using the SCHE command after installing McIDAS-OS2 for the first time.

Once a schema is registered on the workstation, you don't have to register it each time you install a new version of McIDAS-OS2. When a schema is updated, it is noted in the *Significant Program Changes* document supplied by SSEC for your site coordinator with McIDAS-OS2 upgrades.

To register the MD file schemas, first complete the software installation procedure. Then bring up McIDAS-OS2 and use McIDAS-OS2 command SCHE to register each schema.

For example, to register the schema ISFC,

Type: **SCHE DCISFC**

To register the schemas IRAB and IRSG,

Type: **SCHE DCIRAB**

Use the list schema command, LSCHE, to verify the registered schema types and version numbers or to search the schemas for a specific key.

Chapter 2
Introduction

This chapter provides general information about McIDAS-X and McIDAS-OS2. It consists of these sections:

- conventions used throughout this manual
- McIDAS workstation characteristics
- starting and ending a McIDAS session
- entering and editing commands
- displaying images and graphics
- using string tables and function keys
- using the McIDAS-X Graphical User Interface
- using the ADDE

Conventions

The following typographical conventions are used in this chapter:

- **bold** - McIDAS keyboard entries appear in bold; type these entries exactly as they appear
- *italics* - variables that you must enter, such as command parameters, appear in italics
- `Courier bold` - file names, system variables, directories, paths, program names and operating-system-level commands (Unix and OS/2) appear in this font

Workstation Characteristics

The chart below shows the characteristics of the McIDAS workstations.

Characteristic	McIDAS-X	McIDAS-OS2
Gray or color levels - image - graphics	 user-defined * user-defined ***	 256 ** 8
Bit plane graphics	yes	no
Frame size	user-defined	user-defined
Add frames dynamically	yes	no
Zoom and roam	yes	no
Loop rate (frames/second)	hardware-dependent	hardware-dependent
Lock cursor on frame	no	yes
Change cursor size with mouse	no	yes
Run commands outside the McIDAS session	yes	no
Run multiple sessions on one workstation	yes	no
SSEC hardware needed	no	no
Remote operation	yes	no
NTSC capable	yes ****	no

* maximum of 253 or 254, depending on hardware
** mapped to 64 gray shades on display
*** maximum of 128
**** with additional hardware

Starting and Ending a McIDAS Session

McIDAS-X and McIDAS-OS2 are started differently. This section describes how to start and end a McIDAS session on each package. It consists of these sections:

- starting McIDAS-X
- ending McIDAS-X
- starting McIDAS-OS2
- ending McIDAS-OS2

Starting McIDAS-X

To start a McIDAS-X session, log on to your account. Then, run the following command from a Unix prompt.

Type: **mcidas** *flags*

Specify *flags* as optional start-up flags described in *Configuring McIDAS-X Sessions with .mcidasrc* in Chapter 1. If you do not specify any *flags*, the current settings in your **$HOME/.mcidasrc** are used. To list the *flags* and their current settings,

Type: **mcidas -help**

The **mcidas** script, started by the **mcidas** *flags* command, first configures the McIDAS session using the user-specifed flags and those defined in **$HOME/.mcidasrc** and then does the following:

- Displays the Text and Command Window and either the Image Window or the McIDAS-X Graphical User Interface, depending on the flags set in the **.mcidasrc** file. See the sections *Entering and Editing Commands* and *Displaying Images and Graphics* in this chapter for more information about these windows.
- Creates shared memory segments and a uniquely named temporary directory in **$HOME/.mctmp** to store session files. McIDAS-X also creates files such as **FRAMED.001** in the temporary directory and adds the name of the temporary directory to **MCPATH** to make the files visible to the rest of McIDAS-X. The directory and its files are deleted when you end the McIDAS-X session.
- Runs the **mcclean** program to delete any inactive directories that it finds with **$HOME/.mctmp** and removes any shared memory segments associated with the directory. Typically, there will not be any inactive temporary directories, but if a session ends in a catastrophic manner (with **kill -9**, for example) the session's temporary directory may not have been deleted.

Running multiple McIDAS-X sessions

Though not recommended because of possible file conflicts, you can run multiple McIDAS-X sessions from the same account. Multiple sessions include those started with the **mcidas** script and McIDAS-X commands run from the **mcenv** process or the Unix scheduler. For more information on using the **mcenv** process or Unix scripts, see *Appendix H Running Commands Outside a McIDAS-X Session*. To differentiate between the files used for various sessions, each session stores many of its files in its own **$HOME/.mctmp** subdirectory. When you run multiple sessions, the **mccheck** program warns you if there are files in a **MCPATH** directory that belong in a **.mctmp** subdirectory. The **mccheck** program only provides warnings when you run multiple sessions.

File conflicts are still possible because certain files and directories may be used by all sessions. For example, the default scheduler file, **SKEDFILE**, is stored in **$HOME/mcidas/data** (not a **.mctmp** directory) because it often contains entries to run in subsequent sessions. Therefore, if you are running multiple sessions and the scheduler is on (SKU command), anything scheduled to run in one session runs in all of them. If you need to set different schedulers in separate sessions under the same account, specify the **-c 'SKED** *file*' flag when starting each session. The *file* should be a different scheduler file for each session. Then use keyword FILE to specify the different scheduler files in the SKE and SKU commands.

Ending McIDAS-X

To end the session, use the McIDAS-X command EXIT. It closes the Text and Command, and Image Windows, and ends all McIDAS processes. Running EXIT from the McIDAS command line is a cleaner way of ending the session than manually closing each window with the mouse.

Starting McIDAS-OS2

When you install McIDAS-OS2 and run the **SETUP** program as instructed in Chapter 1, the **\startup.cmd** and **\config.sys** files are modified so McIDAS-OS2 starts automatically when you boot the workstation. The McIDAS-OS2 session typically begins with an Image Window and a Text and Command Window. See the sections *Entering and Editing Commands*, on page 2-6 and *Displaying Images and Graphics* on page 2-15 for information about these windows.

Ending McIDAS-OS2

Normally, you do not need to end the session if your workstation is running. If you're upgrading your McIDAS-OS2 software or need to change a configuration setting by running **SETUP**, end the session with the McIDAS-OS2 EXIT command. Running EXIT from the McIDAS command line is a cleaner way of ending the session than manually closing the Image Window and Text and Command Window with the mouse. The EXIT command closes the Image Window; the Text and Command Window remains but the prompt changes to an OS/2 prompt.

If you end the session and run **SETUP**, you must reboot for the changes to take effect. If you don't run **SETUP** and you need to restart the session without rebooting, change to the **\mcidas\data** directory in the Text and Command Window and run the **mcidas** command at the OS/2 prompt.

Entering and Editing Commands

This section describes how to enter and edit McIDAS commands. It provides information about:

- the Text and Command Window
- the Command Line Editing Keys
- Entering Commands

Text and Command Window

Use the Text and Command Window for entering McIDAS commands, displaying text output, and displaying workstation status information. You can reposition the Text and Command Window to a different location on the display, and in McIDAS-X, you can also resize it.

The Text and Command Window displays keyboard input regardless of whether it or the Image Window is active. Click in either window to make it active.

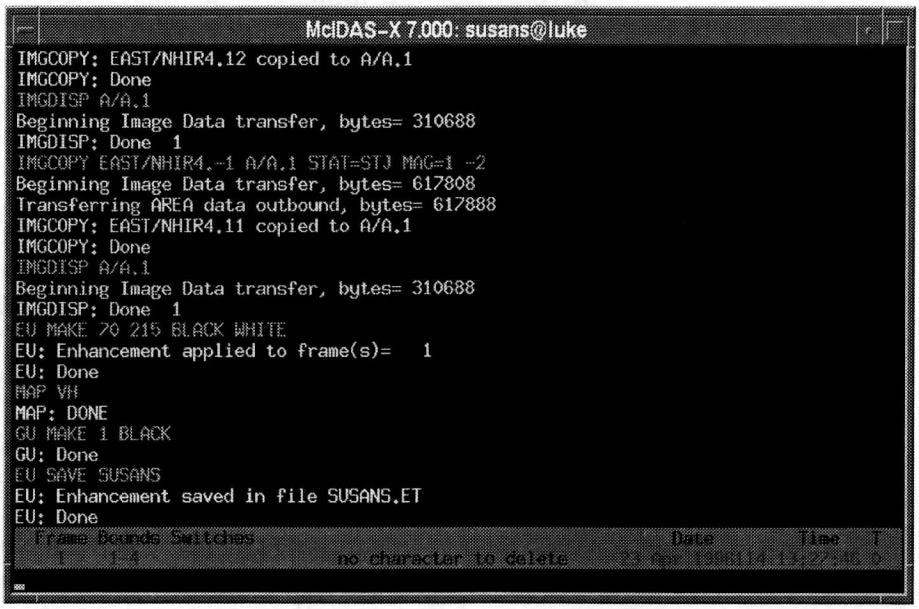
In McIDAS-OS2, use the numeric keypad's plus (+) key to toggle between the Text and Command Window and the Image Window. When you toggle to a window, it becomes active and is raised (displayed on top of any overlapping windows).

In McIDAS-X, use the numeric keypad's plus (+) key to raise the Image Window. To raise the Text and Command Window, press a numeric keypad number. The number you press determines which text frame is displayed in the window. On Sun workstations only, you may have to first enable the Num Lock key or press the Alt Graph key and a numeric keypad number at the same time.

The Text and Command Window consists of these parts:

- Title Bar
- Text Frame
- Command Line
- Status Bar

The McIDAS-X Text and Command Window is shown below.



Title Bar

In McIDAS-X, the title bar displays the version number of the package, the user's logon name and the workstation name. In McIDAS-OS2, the title bar reads *McIDAS-OS2 Text and Command Window*. There is no version number or workstation name.

Text Frame

As you type a command, the characters appear on the command line. When you press Enter, the command is echoed in the current text frame. If the command's output is text, it is displayed in the current text frame.

Ten text frames, numbered 0-9, are available for displaying text. Only one text frame can be displayed at a time. To view a text frame, press its number in the numeric keypad while the Text and Command Window is active. For example, pressing the 3 key on the numeric keypad displays text frame 3. If you are running McIDAS-X on a Sun workstation, you may have to first enable the Num Lock key, or press the Alt Graph key and the number at the same time.

In McIDAS-X, all ten text frames (0-9) are available for general use. In McIDAS-OS2, frames 0-4 are for general use; frames 5-9 are nonscrollable, fixed sized, point-addressable display frames written by PC-based user definable applications; for example, the F Key Menu System and ASK user interface.

In McIDAS-X, text frames 0-9 can contain thousands of lines; in McIDAS-OS2 text frames 0-4 can contain up to 1000 lines. Specify the number lines in your `.mcidasrc` file (McIDAS-X) or by running `SETUP` (McIDAS-OS2). See Chapter 1 for more information. To scroll text output, use the Page Up, Page Down, and the up (↑) and down (↓) arrow keys. In McIDAS-X, you can also use the TFIND command to search for specific expressions in the text frame.

Commands that produce text output allow you to specify a text frame number using the global keyword TWIN. For example, entering command IMGLIST A/A.1 10 TWIN=1 while text frame 5 is raised overrides the default and directs the IMGLIST command output to text frame 1. If you direct the command's output to a nonactive frame, its number is displayed in the status bar's unseen field.

In McIDAS-OS2, text lines with more than 80 characters are wrapped so that characters 81 and beyond are displayed on the next line. In McIDAS-X the Text and Command Window is resizeable. Text lines that extend past the edge of the window are flagged with a > character on the right side. Use one of the following methods to view this text:

- increase the width of the window by dragging the sizing border; if you still can not see all of the text, reduce the font size by pressing the Alt and < keys at the same time; then resize the window again
- press the ALT and] keys at the same time to scroll to the right in the text frame; press the ALT and [keys to return to the left side of the text frame

Command Line

As you type a command, the characters appear on the command line at the bottom of the window. See *Entering Commands* on page 2-13 for a list of conventions that apply.

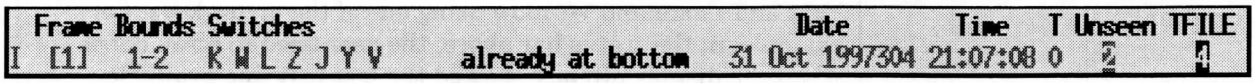
Status Bar

The status bar portion of the Text and Command Window is displayed above the command line. The status bar displays the current frame number, loop bounds, looping status, toggle switches, date, time, and text frame number. This information is updated as the state of your workstation changes; the time is updated every second.

The McIDAS-X and McIDAS-OS2 status bars display the same information. However, because they differ in appearance, each is described separately.

McIDAS-X Status Bar

An example McIDAS-X Text and Command Window status bar is shown below, and is described in the table that follows.



Field	Example	Description
(Edit Mode)	I	The command edit/entry mode: insert or overwrite. An *I* in this field means that whatever you type is inserted in the command line at the cursor position. If this field is blank, the overwrite mode is on; whatever you type, replaces characters at the cursor position.
Frame	[1]	The image frame currently being viewed.
Bounds	1-2	The image frame loop bounds. The word *random* appears here if random loop bounds have been set using the LS command.
Switches	K W L Z J Y V	The active toggle commands. These single-letter commands switch certain display attributes on and off. Press the Alt key and the letter key to run the command. Letters appear in this field only when toggle state is not the default. For example, the K command's default state is image frames on. If you set the toggle to image frames off by pressing Alt K, the letter K appears in the toggle field. McIDAS-X toggle command defaults are listed below:

Toggle	Function	Default
K	turns image frames on/off	on
W	turns graphics frames on/off	on
L	turns looping on/off	off
Z	turns zoom on/off	off
J	turns graphics looping ability on/off	off
Y	turns image looping ability on/off	on
V	turns PCMW velocity cursor on/off	off

Field	Example	Description
(Text or Command Position)	already at bottom	Informational messages. Normally, there is no message in this field. Messages appear only if you try to scroll off any edge of the Text and Command Window using one of the arrow keys. For example, in the status bar above, the user tried to scroll down when the display already showed the last text line available. Possible messages include the following: • already at bottom • already at top • beginning of line • end of line
Date	31 Oct 1997304	The current date (in the format DD MMM YYYYDDD).
Time	21:07:08	The current time (in the format HH:MM:SS).
T	0	The text frame number currently displayed.
Unseen	2	Text frame containing text you have not viewed yet. The number disappears when you view the frame.
TFILE	4	Text frames activated for text capture using the TFILE command.

McIDAS-OS2 Status Bar

An example McIDAS-OS2 Text and Command Window status bar is shown below, and is described in the table that follows.



Example	Description
Δ	The command edit/entry mode: insert or overwrite. A cyan triangle in this field means that whatever you type is inserted in the command line at the cursor position. If this field is blank, the overwrite mode is on; whatever you type, replaces characters at the cursor position.
005	The frame currently being viewed.
001-020	The frame loop bounds. Loop bounds do not appear for random loops using the LS command.

<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>K W L P V</td><td>The active toggle ccommands. These single-letter commands switch certain display attributes on and off. Press the Alt key and the letter key to run the command. Letters appear in this field only when toggle state is not the default. For example, the K command's default state is images on. If you set the toggle to images off by pressing Alt K, the letter K appears in the toggle field. McIDAS-OS2 toggle command defaults are listed below:
<table>
<tr><th>Toggle</th><th>Function</th><th>Default</th></tr>
<tr><td>K</td><td>turns images on/off</td><td>on</td></tr>
<tr><td>W</td><td>turns graphics on/off</td><td>on</td></tr>
<tr><td>L</td><td>turns looping on/off</td><td>off</td></tr>
<tr><td>P</td><td>locks and unlocks the cursor in its present position</td><td>off</td></tr>
<tr><td>V</td><td>turns PCMW velocity cursor on/off</td><td>off</td></tr>
</table></td></tr>
<tr><td>30 Oct 97303</td><td>The current date (in the format DD MMM YYDDD).</td></tr>
<tr><td>192245</td><td>The current time (in the format HHMMSS).</td></tr>
<tr><td>0</td><td>The text frame number currently displayed.</td></tr>
<tr><td>↑↓</td><td>These up/down arrow symbols show your position on the text frame. If the up arrow is present, you're at the bottom of the text frame and can only move up. If the down arrow is present, you're at the top of the frame and can only move down. If both arrows are present, you're in the middle of the frame and can move up or down. Use the Page Up/Down keys to move by 20 lines, or the up and down arrow keys to move by single lines.</td></tr>
<tr><td>01234</td><td>Text frames that you have not viewed yet are indicated by a yellow number on a red background. The number disappears after you view the frame. Text frames activated for text capture by the TFILE command are indicated by a yellow number on a blue background.</td></tr>
</table>

Command Line Editing Keys

Listed below are the command line editing keys available with the default McIDAS command input editor. See the EDITMODE command for other available editors in McIDAS-X.

Key	Function
Home	moves the cursor to the beginning of the line
End	moves the cursor to the end of the line
Insert	toggles the insert typing mode
Delete	deletes the character over the cursor
Backspace	deletes the character to the left of the cursor
Right/Left arrows	moves the cursor one character to the right or left
Tab, Shift Tab	moves the cursor one parameter to the right or left
Enter	runs the command; if the text frame's bottom line is not displayed, Enter forces the display to the bottom showing the echoed command
Esc	erases the command from the command line and places the cursor at the front of the line
Alt ?	displays an abbreviated help for the current command in the command line
& and ^	recalls a command if the command line is empty or contains a command recalled with & or ^; the & recalls the previous command from a circular recall list; ^ scans the recall list in the opposite direction; the recall list consists of the last 100 commands entered (McIDAS-OS2) or the number specified with the `-ih` flag `.mcidasrc` file (McIDAS-X)

NOTE: The Home, End, right/left arrows, Ins and Del keys on the numeric keypad do not work in McIDAS-X.

Entering Commands

Use the following protocols when entering McIDAS commands.

- Enter up to 512 characters in McIDAS-OS2. In McIDAS-X, the number of characters is system-dependent, but at least 512.
- Enter most command, parameter and keyword letters in uppercase. Lowercase letters should only be needed when a command uses a single(') or double quote (") to indicate a text field. To enter lowercase letters after the quote, use the Caps Lock key or press the Shift key while typing. The state of the Caps Lock light may be incorrect.
- After typing a command, press Enter to run it.
- Run system-defined, single-letter commands by pressing the Alt and letter key at the same time, or by typing the letter and pressing Enter. You can enter single-letter commands using the Alt key while entering a multiple-letter command in the Text and Command Window.
- Enter single-letter strings with a pound sign (#). Press Ctrl and the letter if the single-letter string is a complete command.
- Generally, parameters and keywords are separated by one space. McIDAS interprets multiple spaces between parameters and keywords as a single space.
- Run multiple commands in a single entry by concatenating the commands. Concatenate commands by placing a semicolon (;) between commands. For example, SF 3;EG;MAP USA. To concatenate commands that use quote fields, substitute curly brackets ({ }) for the quotes. For example,
  PC L KMSN;ZA 3 10 {Madison};PC L KMIA;ZA 3 10 {Miami}.
- Use the question mark (?) command to display status. Active processes are listed with a Process IDentification (PID) number. To stop a command, use the slash (/) or KILL command with the appropriate PID value. See Chapter 3 for more information.

Problems in McIDAS-OS2

Although you can enter and run commands in the McIDAS-OS2 Text and Command Window while the Image Window is active, you should be aware of these three anomalies.

- Some keystrokes may be lost if you type while an image or graphic is being drawn to the frame. Avoid this by typing slower or activating the Text and Command Window while the image or graphic is being drawn to the frame.
- Commands that draw images and graphics usually run faster if the Text and Command Window is active rather than the Image Window because OS/2 assigns its priorities based on its active window.
- Using the numeric keypad when the Image Window is active may have different results than when the Text and Command Window is active. For example, pressing 3 on the numeric keypad with the Image Window active produces a Page Down action. Pressing 3 with the Text and Command Window active raises text frame 3. Use the Num Lock key to switch to the preferred definition.

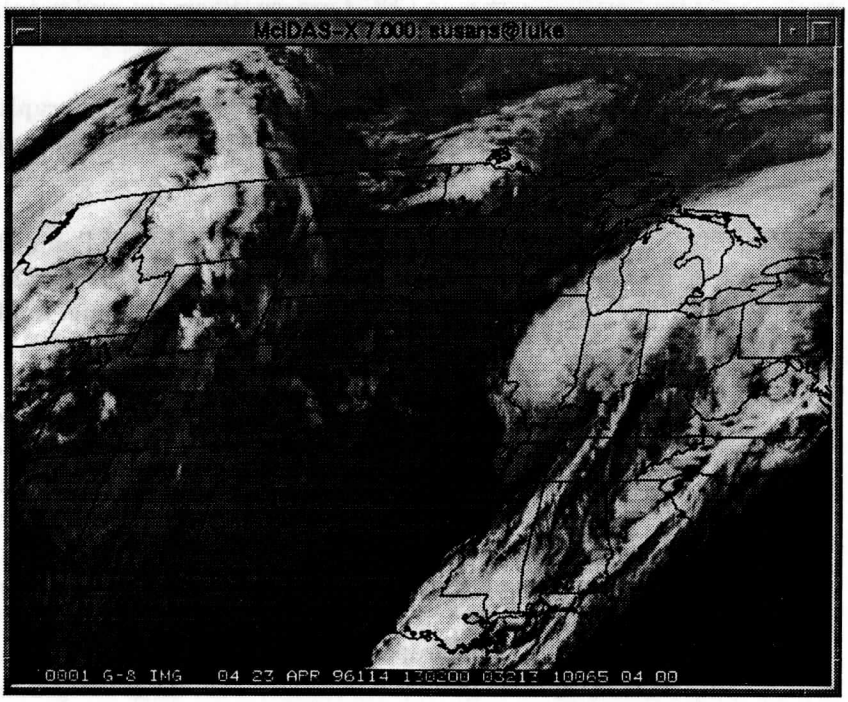
Displaying Images and Graphics

This section explains how to display images and graphics, adjust their configuration settings, and use the McIDAS cursor. It provides information about the following topics:

- The Image Window
- McIDAS-X Independent Graphics
- Resizing, Zooming, and Roaming Frames
- Image and Graphics Colors
- Frame Panels
- Adding Frames
- The McIDAS Cursor
- Displaying Loops

Image Window

The Image Window displays images and graphics generated by entering commands in the Text and Command Window. Images and graphics are displayed on frames. Graphics overlay the image. For example, in the McIDAS-X Image Window below, the map is displayed over the satellite image.



In McIDAS-X, the title bar displays the version number of package, the user's logon name, and the workstation name. The McIDAS-OS2 Image Window's title bar reads *McIDAS-OS2 Image Window*.

To make the Image Window active and display it on top of any overlapping windows, either click in the window or press the numeric keypad's plus (+) key while the Text and Command Window is active.

The information below applies to all McIDAS-OS2 sessions and to McIDAS-X sessions without independent graphics (the default mode). See the *McIDAS-X Independent Graphics* section on page 2-17 for specific information about -X sessions with independent graphics.

Frames are numbered beginning with 1, and display both images and graphics, meaning that you cannot loop images or graphics independently. The current frame number is displayed at the bottom left of the Image Window. In the example above, 0001 means that frame 1 is displayed.

The following commands are used to control the Image Window display. See *Displaying Loops* on page 2-22 for commands that control frame looping.

- SF displays a frame.
- K toggles the images on and off. When images are turned off, graphics are easier to see.
- W toggles the graphics on and off. When graphics are turned off, the image is eaiser to see. McIDAS-OS2 cannot turn off graphics; the graphics colors are set to a medium gray.
- EG erases the graphics from the frame. In McIDAS-OS2, the command EG I erases the image and graphics; in -X, it erases the image only.

More than 30 commands display, or draw, graphics on a frame. The new graphics are displayed on top of the previously displayed image and graphics.

Only three commands (AAMAP, IMGDISP and IMGMAG) display images on a frame. Displaying an image in McIDAS-OS2 overwrites any previously displayed image AND graphics in the frame. In McIDAS-X, only the image is overwritten.

In McIDAS-X, there is a limited number of graphics points for each session. The number is proportional to the number of frames at startup plus the size of the memory pool set with the **-e** flag in your **.mcidasrc** file. The memory pool is used for graphics points only if you've used up all the points allocated for the frames. Graphics points taken from the memory pool are returned to it when they are freed up with the EG command.

If an "Out of graphics storage" message appears when you run a McIDAS-X graphics command, it means that all of the graphics points for the session have been used. Run the EG command to erase graphics on as many frames as you can and retry the command that failed.

McIDAS-X Independent Graphics

The information in the previous section applies to McIDAS-X sessions without independent graphics. This is the default mode at startup unless you include the command `-c 'TERM IG ON'` in your `.mcidasrc` file.

With independent graphics, McIDAS uses separate image and graphics frames, so you can display or loop them independently. This mode is useful if you create loops of colocated images because you don't have to draw the same map on every frame. Instead, you can draw the map on a single graphics frame and display that single graphics frame while looping through a series of image frames.

The following commands are valid only on sessions with independent graphics.

- SG displays a graphics frame.
- LS G and LB G define the graphics frame sequence for the loop.
- Y toggles the image frames to and from the loop control system.
- J toggles the graphics frames to and from the loop control system.

The following commands have new definitions on sessions with independent graphics.

- SF is redefined to display the specified image frame; the graphics frame is not changed.
- LS and LB are redefined to set the image frame sequence for the loop; the graphics frame sequence is not changed.

You can specify `-c 'TERM IG OFF'` or `-c 'TERM IG ON'` in your `.mcidasrc` file to have McIDAS-X automatically start in the desired mode. If a TERM IG command is not set in your `.mcidasrc` and you want to change independent graphics mode, you should run the appropriate TERM command when you first start McIDAS-X (before displaying images or graphics). Changing modes later may not work correctly. Problems are more likely to arise if you switch from ON to OFF than from OFF to ON. If problems do arise, it's best to exit and restart McIDAS-X.

Resizing, Zooming, and Roaming Frames

McIDAS-X

You may want to resize the Image Window because you've zoomed the current frame with the Z command, or because you've displayed a different size frame. Use the R command to resize the Image Window so that it shows the contents of the entire frame. If you specified the `-autoResize` flag at startup or in your `.mcidasrc` file, the Image Window is automatically resized to show the entire frame.

If you do not resize the McIDAS-X Image Window to view the entire frame, roam the frame to view the desired section. With the cursor in the Image Window, hold down the middle mouse button while moving the mouse. Release the button when the display is positioned where you want it. Press the right mouse button to reposition the frame so its upper-left corner appears in the upper-left corner of the Image Window.

McIDAS-OS2

If you select the Storage mode while running the `SETUP` program during installation, you can resize the Image Window using its sizing border. When you do so, the entire frame is resized to fit the Image Window. If you make the window larger, frame pixels are replicated; if you make the window smaller, pixels are dropped and graphics quality deteriorates. Since you always view the entire frame, regardless of the window size, there is no roam function. The Z command returns the Image Window to its original size.

If you select the Speed mode while running `SETUP`, the Image Window does not have a sizing border, although you can minimize and maximize the window. In the minimized mode, the window shows a reduced view of the current frame rather than a conventional icon. Maximizing the Image Window in either the Speed or Storage mode will expand it to fit the entire screen.

Image and Graphics Colors

The number of colors used for displaying images and graphics is specified by the user in McIDAS-X and is fixed in McIDAS-OS2. The colors used for displaying images are called image display levels. The colors used for displaying graphics are called graphics color levels.

In general, you don't need to know the specific image display level numbers. You do need to know the graphics color level numbers, because many commands require you to specify the output color by level number. For example, in the MAP command you specify a graphics color level number to pick the color of the map.

Each graphics color level is assigned a default color. For example, level 1 is assigned magenta. Graphics color level 0 has a special definition as the graphics background. You cannot draw graphics in level 0, but you can change it from the default color of black to a color of your choice for the background to graphics you draw. Use the GU command to list and change the graphics color levels.

McIDAS-X

In McIDAS-X, the number of colors used for displaying images and graphics depends on the number you request at startup and the number of colors available on your workstation. The maximum number of colors is 253 or 254, depending on your hardware.

The total of number of image display levels and graphics color levels cannot exceed the number of available colors (253 or 254). If you specify a total that exceeds the number of available colors, the workstation provides as many colors as possible. The more image display levels you request, the fewer colors there are available for graphics color levels and vice versa.

Use the **`-imageColors`** and **`-graphicsColors`** flags at startup or in your **`.mcidasrc`** file to specify the number of image display levels and graphics color levels in your McIDAS-X session. The default number of image display levels is 128. The default number of graphics color levels is 16 and the maximum is 128.

Because there are fewer image display levels (128 default, 254 maximum), than grayshades defined in most images (256), some image display levels are assigned multiple grayshades. For example, grayshades 0-16 may all be displayed as image display level 17. The SCALE ON and OFF options in the TERM command provide two methods of assigning grayshades to image display levels. See the TERM command in Chapter 3 for more information.

McIDAS-OS2

Although only 64 image display levels can be displayed at one time, you can use the EU command to produce a true 8-bit (256 color) enhancement. Like McIDAS-X, you can also use the SCALE ON and OFF options in the TERM command to choose between two methods of assigning grayshades to image display levels.

There are nine graphics color levels available in McIDAS-OS2. Level 0 is the graphics background; levels 1 through 8 are used to draw graphics.

Frame Panels

The PANEL command divides a frame into sections called panels. This allows you to have many separate image and graphics displays in a single frame. For example, you could use the IMGDISP command to display different bands of image data in each of the panels in a frame. Or you could create a four-panel forecast chart using the GRDDISP command to contour different parameters, levels, or valid times from forecast grids.

At startup, all frames are single-panel, meaning that image and graphic commands write output to the entire frame. Single-panel frames have a panel number of 1. In multipanel frames, all panels are the same size and are numbered from left to right and from top to bottom. For example, the command PANEL 2 2 configures the current frame to have four equal-size panels, with panel 1 in the upper-left quadrant, panel 2 in the upper-right quadrant, panel 3 in the lower-left quadrant, and panel 4 in the lower-right quadrant.

When image and graphic commands write output to a multipanel frame, the output appears in only one of the frame's panels. By default, the output appears in the panel where the cursor is located. Use the global keyword PAN to override the default and display the output in a different panel. For example, MAP USA PAN=3 displays the map on panel 3. Use the PAN keyword to specify input for commands as well. For example, IMGPROBE PAN=1 lists image data in panel 1.

The commands listed below deal with multipanel frames in ways that you may not expect.

- CM, EB, EU and GU change the image or graphics colors in all panels because the frame uses a single color table.
- SVGIF saves the entire frame, even if you specify the global keyword PAN.
- SVF and RVF can only be used with single-panel frames that are all the same size.

The commands listed below have features added specifically for dealing with multipanel frames.

- EG lets you erase a range of panels by specifying beginning and ending panel numbers with the global keyword PAN.
- FRMLIST has a FORM=PANEL keyword that lists the frame directory information and size of each panel. The other FRMLIST options list only information for a single panel.
- ZA has a FULLFRAME=YES keyword that lets you write text to the entire frame instead of being restricted to one panel. This keyword is useful for labeling multipanel displays.

Adding Frames

By default, a McIDAS-X session starts with four, 480 by 640 frames. To start a McIDAS-X session with additional frames, use the `-f` start-up flag. If you plan to add more frames during your McIDAS-X session, also specify a memory pool for the frames at startup using the `-e` flag. See the section *Configuring McIDAS-X Sessions with .mcidasrc* in Chapter 1 for more information. Use the F command to list the current frame configuration for your session. To add more frames during the session, use the MAKFRM command. New frames are appended to the end of the current frame list.

Caution !
If your workstation does not have the available memory to create the number of frames requested in your MAKFRM entry, McIDAS-X tries to create frames in storage mode. If that fails, MAKFRM informs you that there is insufficient memory available.

McIDAS Cursor

When you move the pointer into the Image Window, it becomes the McIDAS cursor. The McIDAS cursor is used by many commands to list, locate or draw data on the frame. The cursor type, size, and color are defined with the CUR command.

In McIDAS-OS2 you can interactively change the cursor size using the mouse. Hold down the left mouse button while moving the mouse. Release the button when the cursor is the size you want. In -OS2, you can also lock and unlock the cursor in its present position with the P command.

Displaying Loops

McIDAS can display an automatically repeating sequence of frames much like a movie loop.

Defining Loops

Define the sequence of frames using either the LS or LB command. Command DR determines the amount of time that each frame is displayed.

Once a loop is defined, use the single-letter commands L, A and B to control the state of the display.

- L starts and stops the loop. If the loop is actively stepping through frames, pressing Alt L stops on the first frame of the loop. Similarly, if looping is inactive, pressing Alt L starts the animation.
- A manually advances one frame while the loop is stopped.
- B command backs up one frame while the loop is stopped.

In McIDAS-X sessions with independent graphics, the Y and J commands toggle image and graphics frames to and from the loop control system. If Y is toggled on, image frames step thourough their LB or LS sequence when looping is started with the L command. If Y is toggled off, the displayed image frame does not change when looping is started. The J command controls graphics frame looping in the same way. At startup, Y is on and J is off, meaning that only image frames are looped with the L command.

Saving and Recalling Loops

After you define a loop or display using the commands described above, use the DEFLOOP command or the F Key Menu System pseudocommand *S to save it. You can define up to 99 loops. For more information, see Chapter 5, the *F Key Menu System*, or DEFLOOP in the *Commands* chapter.

Display saved loops in the Image Window using a defined function key, or using the MOVIE or DEFLOOP REST command. The MOVIE command automatically steps through predefined loops at user-defined rates.

Using Briefing Windows

In addition to displaying loops in the Image Window, you can also create briefing windows to view saved loops. Each briefing window can display a frame or loop different than those currently shown in the Image Window or other briefing windows.

Use the command BRIEF to create a briefing window. You can create up to ten additional briefing windows to display the loops. If you resize a briefing window, its displayed frames are automatically rescaled to fill the window.

You can only display loops 1 through 9 in a briefing window. Use the MOVIE command with the WIN keyword, or make the briefing window active and press a key between 1 and 9 that corresponds to the loop number. Use the A, B and L keys in briefing windows to control frame stepping.

Use the SYNC command to define and display frame sequences in multiple briefing windows. The loops are synchronized, making it easier to compare loops of visible and infrared satellite imagery, for example.

Automatically Updating Loops

If you have access to a server ingesting images in real time, you can use the SKE, SKL and SKU scheduler commands with the IMGDISP command to automatically display the latest image in a loop of frames. You can also adjust the loop's dwell rates or frame sequence to emphasize the new image. Two methods are available to do this.

You can run the DR AUTO command after each new image is displayed. This command rotates the dwell rates, assigning the longest dwell to the most recent image in the loop.

Or, you can define the loop's frame sequence using the LS command with the UPDATE=Y keyword, which automatically rotates the frame sequence each time a new image is displayed with IMGDISP. The new image moves to position 1 in the loop. Dwell rates are not changed, so the new image has the dwell initially set for position 1. The advantages of this method are that you only run the LS command once, and that the new image is displayed if you stop the loop with the L command.

Optimizing the Loop Display

Both McIDAS-X and McIDAS-OS2 have configuration options that determine the quality of frame looping. In McIDAS-X, the options are the **-optimizeForSpeed** or the **-optimizeForSpace** start-up flags. In McIDAS-OS2, the option is set by answering the speed or storage question in the **SETUP** program. See the sections titled *Configuring McIDAS-X Sessions with .mcidasrc* and *Running the SETUP Program* in Chapter 1 for more information.

Although McIDAS-X allows frames of different sizes in any session, you should make all frames in the loop bounds the same size when using the L command for looping. Different size frames display poorly and are handled roughly by the window manager.

Using Strings and Function Keys

Strings are used to store long, difficult-to-remember, or commonly used commands or values. For example, you might use a string named LL to store a latitude/longitude coordinate (like -35:30:15 98:25:40) that you frequently use when copying or displaying images. Use the commands TE, TD, TL, and TU to work with strings. These commands are described below; for more information see Chapter 3, *Commands*.

- TE creates strings and enters them in the current string table.
- TD deletes strings from the current string table.
- TL lists strings in the current srting table.
- TU is the string table utility. Use it to save and restore string tables.

The following conventions apply to creating strings:

- String names can be up to 12 alphanumeric characters. Letters must be in uppercase.
- The maximum number of characters that can be stored in a string is 160 characters, including spaces.
- String names can be single letters, but cannot be H, Y, or X. The strings named H and Y contain the current time and date and cannot be redefined or deleted. You cannot use the string name X because McIDAS interprets it as a place holder for default values in a command.
- In McIDAS-OS2, do NOT create a string named C; it can kill the McIDAS session if you run it using the Ctrl key.

Using Strings

To run a string containing a command, type a pound symbol (#) followed by the string name and press Enter. For example, if the string LAX contains the value PC L KLAX, type #LAX on the command line and press Enter to run the PC command.

To use a string's value in a command, type *#string* in the appropriate position on the command line. For example, if the string LL contains the value -35:30:15 98:25:40, the entry IMGDISP GOES/IR LATLON=#LL is converted to IMGDISP GOES/IR LATLON=-35:30:15 98:25:40 when you press Enter.

Strings can be nested, meaning that one string is used in another. For example, if you create a string called IMAGE using the command TE IMAGE "IMGDISP GOES/IR LATLON=#LL, the string #LL is expanded so that the string IMAGE contains the value IMGDISP GOES/IR LATLON=-35:30:15 98:25:40. Nested strings must be defined before they can be used in another string.

If the nested string contains a value that will change, use two pound signs in the command string instead of one. This forces the nested string's value to be expanded when the command string is run rather than when it is created with TE. For example, if the value of LL will change, create the string IMAGE with the command TE IMAGE "IMGDISP GOES/IR LATLON=##LL. The command string IMAGE now contains IMGDISP GOES/IR LATLON=#LL; in other words, it contains a string for latitude/ longitude rather than an actual value. The value for the nested string LL will be substituted when you enter the command #IMAGE.

If a string with a single-letter name contains a command, run the command by typing *#letter* and pressing Enter, or by pressing the Ctrl key and the letter at the same time. For example, if the string T contains the value IMGPROBE LIST BOX TEMP, run the IMGPROBE command by entering #T, or by pressing Ctrl T.

Using Function Keys

If a command string is named KEYF*n*, where *n* is a number between 1 and 12, run the string by pressing the corresponding function key (F1 to F12). Strings named KEYAF*n*, KEYCF*n* or KEYSF, are run by pressing the Alt, Ctrl or Shift key, and a function key at the same time. When you run the function key strings, McIDAS ignores the command line. This means that you can use a function key command even while entering a command on the command line. In McIDAS-X, the function key combinations work correctly only if the workstation is configured according to the instructions in *Configuring a New User Account* on page 1-10.

The 48 function key combinations can also be used in a menuing system. See Chapter 5, *F Key Menu System*, for more information.

String Tables

When you create a string with the TE command, it is placed in the current string table. McIDAS-X and -OS2 work differently when it comes to keeping strings in the current string table. In McIDAS-OS2, the strings stay in the table even if you EXIT and restart. The only way you lose the strings you created with TE is to delete them with the TD command, or to restore a saved table with the TU REST command (which overwrites all strings in the current table).

In McIDAS-X, you also lose the strings in the current table if you run TD or TU REST. Unlike -OS2 though, you lose your strings in the current table if you EXIT and restart McIDAS. Because the string table (**STRTABLE**) file is kept in the session's **.mctmp** subdirectory, it's deleted when you end your McIDAS session. To prevent this, move or copy **STRTABLE** to your **$HOME/mcidas/data** directory. Because the strings will be shared by all the sessions, this will increase the likelihood of conflicts if you run multiple McIDAS-X sessions from the same account.

Using the McIDAS-X Graphical User Interface

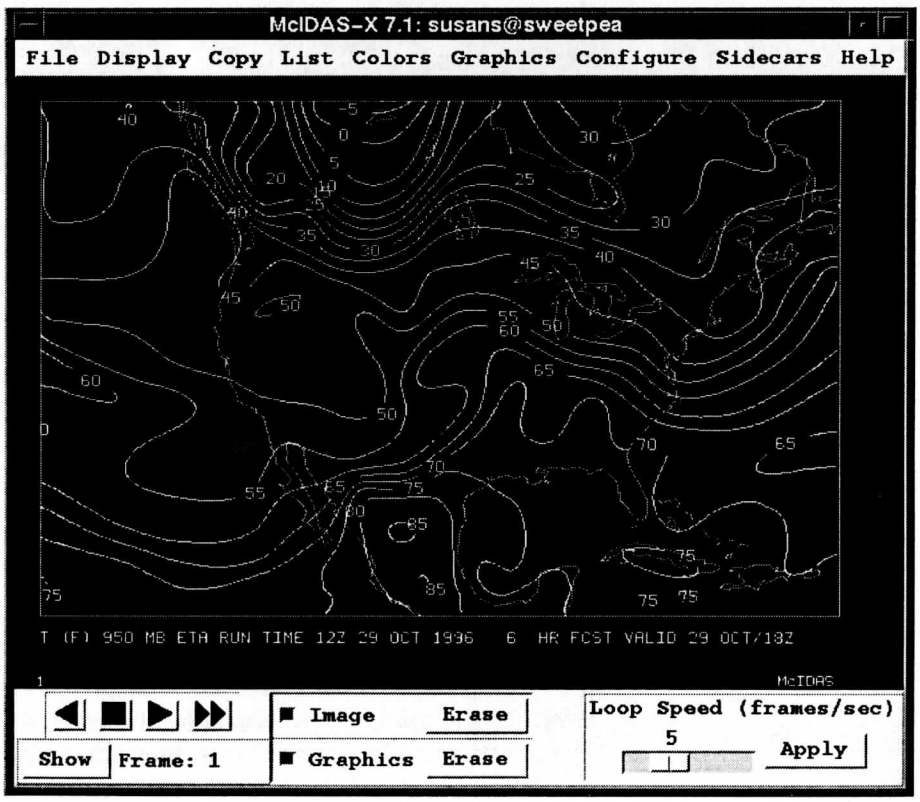
The McIDAS-X Graphical User Interface (GUI) lets you display images and data without using the McIDAS-X Text and Command Window. However, you can still run commands from the McIDAS-X Text and Command Window while the GUI is displayed.

This section provides a brief introduction to the McIDAS-X GUI. The McIDAS-X GUI online help provides more detailed information.

Starting and Exiting

If you updated your **.mcidasrc** file with the McIDAS-X 7.1 upgrade, the McIDAS-X GUI starts automatically when you open a McIDAS-X session. If you did not update your **.mcidasrc** file, you can start the GUI by running the command GUI (McIDAS-X only) from the McIDAS-X Text and Command Window. To start the GUI automatically when you open a McIDAS-X session, add the line **-c 'GUI'** to your **.mcidasrc** file.

When you start the GUI, a menu bar and frame controls are added to the Image Window as shown below. For information about using the GUI frame controls, select **Getting Started** from the Help menu.



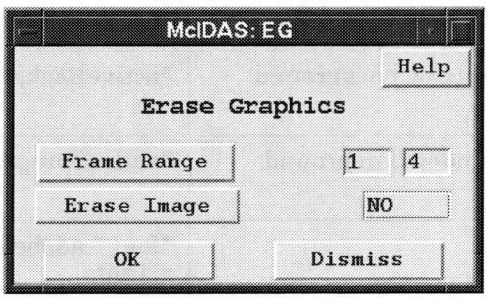
To exit the GUI, choose **Exit GUI** from the File menu. The GUI closes and the standard McIDAS-X Image Window reappears. To exit both the GUI and the McIDAS-X session, choose **Exit McIDAS** from the File menu.

Conventions

To display a menu, click the left mouse button once on the menu item. The title bar for the dialog box lists the name of the corresponding McIDAS command. The dialog box shown below runs the EG command. Additional information about the command can be found in the *Commands* section in this manual.

Some dialog boxes require a double-click; the dialog box indicates when this is necessary. To move between fields in a dialog box, reposition the cursor and click or press the Tab key. To move sliders, press the mouse button and drag the slider in the appropriate direction or use the arrow keys on the keyboard.

Buttons generally appear as labeled, raised areas. When you click a button, the result appears in the entry area to the right of the button. You cannot edit entry areas that are flat, like Erase Image in the example below. However, you can edit sunken entry areas, like Frame Range in the example below.



To display the online help for a dialog box, click the **Help** button located in the box's upper-right corner.

Some dialog boxes have a More button. Click this button to display additional, but less-used options.

Press **OK** to run the command from the dialog box. The Text and Command Window lists the McIDAS command that the GUI is running and the cursor changes to a watch. To exit the dialog box without running the command, click the **Dismiss** button.

Displaying Real-time Data

You can display real-time images, grids, surface data, and upper air data using the McIDAS-X GUI. To display real-time grids, surface data and upper air data, the ADDE Client Routing Table must contain the groups RTGRIDS and RTPTSRC. To add the groups, select **ADDE** from the File menu, then click **Edit Client Routing Table**. See the *Edit Client Routing Table* online help or the DATALOC command in the *Commands* chapter of this manual for more information.

Changing the GUI Display

By default the McIDAS-X GUI uses the default attributes listed in the table below. You can change the default arguments and other Tcl/Tk settings by creating a file with any text editor called **.mcguirc** file. You must name the file **.mcguirc** or the McIDAS-X GUI will not display your changes. After you create the file, store the file in a directory that is named in the **MCPATH** environment variable. See *Appendix G MCPATH* for more information. The *Tcl/Tk User's Guide* provides more information about the attributes you can change.

Attribute	*Default Argument*
window background color	*background gray 90
window foreground color	*foreground navy
active window background color	*activeBackground navy
active window foreground color	*activeForeground yellow
GUI font	*font "-adobe-courier-bold-r-normal–*-120*"
error message font	*Messagefont "-adobe-courier-bold-r-normal–*-140*"

The example below shows a **.mcguirc** file for the default attributes listed above.

```
*background gray90
*foreground navy
*activeBackground navy
*activeForeground yellow
*font "-adobe-courier-bold-r-normal--*-120*"
*messageFont "-adobe-courier-bold-r-normal--*-140*"
```

Using the ADDE

This section provides an overview of the ADDE (Abstract Data Distribution Environment) system. The ADDE allows your workstation to act as a client, efficiently accessing data from multiple McIDAS servers. This chapter introduces you to ADDE concepts and use. The following topics are included:

- definitions of commonly used terms
- an explanation of client and server functions
- the scheme used for naming data
- information about look-up tables
- information about naming data on your local server
- using compressed data transfers

Terminology

The terms below are used throughout this chapter. Remember, because a workstation can store and display data, it can act as a server and a client.

Term	Definition
Alias	a short, user-defined name representing an ADDE dataset name; for example, the alias GV1 might represent the dataset name SSEC-RT/GOES-1KVIS
Client	workstation receiving and displaying data
Dataset	collection of one or more files with a common format; for example, one dataset may consist of areas 101 to 104, another dataset may consist of MD files 1 to 10
Dataset Name	name used by ADDE to reference a dataset; the dataset name consists of a group name and a descriptor name separated by a slash (/); for example, SSEC-RT/GOES-1KVIS
Descriptor	name used to reference a dataset; for example, a dataset of areas 105 to 108 containing GOES visible data at 4 km resolution might have the descriptor GOES-VIS-4K
File Number	number used to reference a McIDAS format file (the standard McIDAS numbering scheme)
Format	file format; McIDAS formats include area, grid and MD; non-McIDAS formats include HDF and NetCDF
Group	name used to reference a collection of descriptors; used by the client to determine which server should receive data requests

Term	Definition
Position	absolute or time-relative position of a file in a dataset; position numbers greater than zero represent an absolute position in the dataset; position numbers less than or equal to zero represent a relative position, 0 is the most recent and -1 is the next most recent; for example, if a dataset has four images with times 13 UTC, 14 UTC, 15 UTC and 12 UTC, they have the positions -2, -1, 0 and -3
Server	machine storing and supplying data
Type	data type: image, grid, point, navigation, or text

Clients and Servers

ADDE distributes data using networked servers and clients. Servers store data and distribute it to the client. Clients request and receive data and run applications that use the data. Clients and servers communicate using the TCP/IP communications protocol.

Each McIDAS-OS2 workstation and each account running McIDAS-X acts as both a client and local server. When a McIDAS-X client requests data from the local server, it searches for the data in the directories specified in the user's **MCPATH** environment variable or another directory specified in a REDIRECT entry. When a McIDAS-OS2 client requests data from the local server, it searches for the data in the **\mcidas\data** directory or another directory specified in a REDIRECT entry.

The client can also request data from a remote server. A remote server can be either of the following:

- a different account on the same McIDAS-X workstation configured as a remote server
- an account on another McIDAS-X workstation configured as a remote server

The difference between a local server and a remote server on a McIDAS-X workstation is that the data in a local server is available only to the McIDAS-X sessions started under that account name. Data in a remote server account is accessible to all McIDAS-X and McIDAS-OS2 ADDE clients. Remote servers are discussed more thoroughly in *Appendix J*, which is titled *McIDAS-X Site Administration and Management*.

Data Naming Scheme

In the non-ADDE core commands (for example, IGG, MDX, SP, XSECT), all image, grid and point files are referenced by file numbers. If you don't know the file numbers, finding data can be difficult. The ADDE commands use dataset names (in a group/descriptor format) that map to datasets. If the descriptors and group names follow a logical convention, it's easy to locate the data.

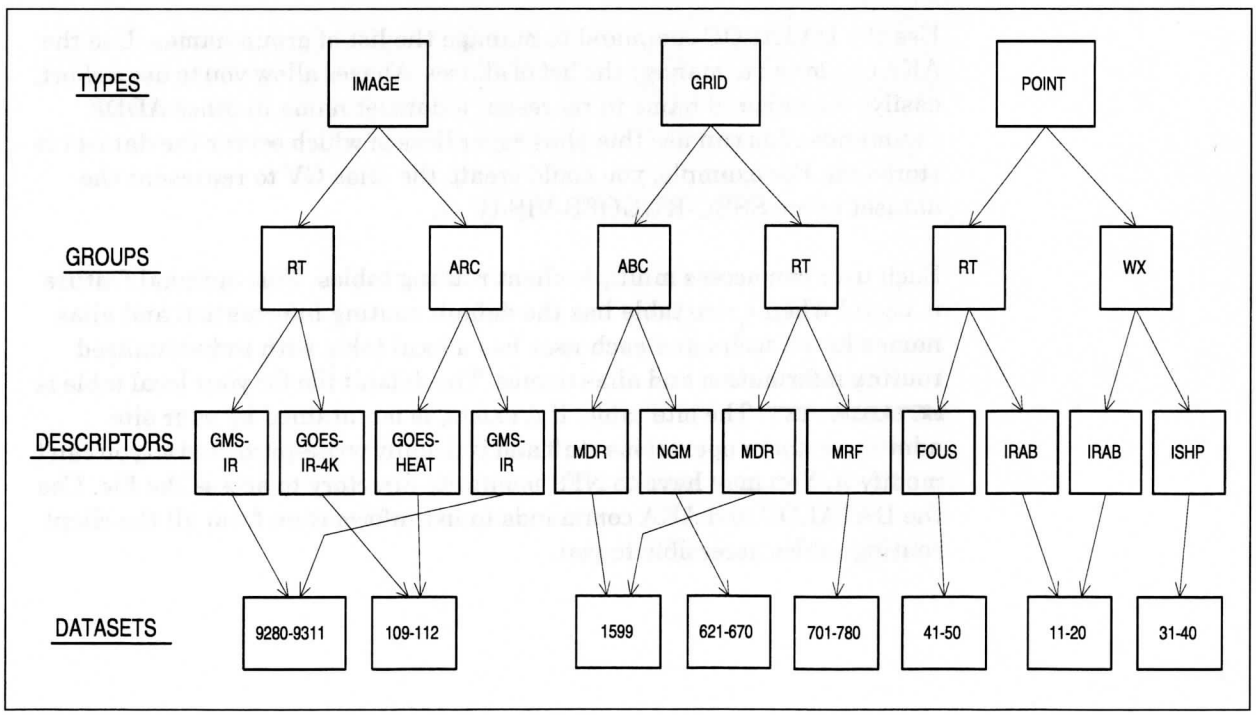
The naming scheme for datasets consists of three parts:

- type
- group
- descriptor

In the diagram below, *type* is the top tier in ADDE's hierarchical naming scheme. Image, grid and point indicate the type of data in the dataset files. McIDAS area files are image data; McIDAS grid files are grid data; McIDAS MD files are point data.

Group is the next tier in the naming scheme. A group name can be used only once under each type. The group tier in Figure 1 has three groups named RT. Notice that RT is used only once under each type.

Descriptors are the bottom tier in the naming scheme. Descriptors are not data files; they are names that point to datasets. Identical descriptors under different groups can point to the same or different datasets.



Since each ADDE command that accesses data works only with a single type, you don't have to specify the type in the command entry. For example, the command IMGDISP does not have a parameter or keyword for type because it limits its search to datasets of type IMAGE. The following command displays the most recent image in the dataset named SSEC-RT/GOES-IR-4K on frame 1, centered on St. Louis, Missouri.

IMGDISP SSEC-RT/GOES-IR-4K 1 STATION=STL

Client and Server Look-up Tables

Each ADDE client command starts a transaction by requesting data from a server. Both the client and server must recognize the command's specified dataset name in their look-up tables. On the client, this table is called the *routing table* because it determines which server to route the data request to. On the server, this table is called the *mapping table* because it maps the group and descriptor to a specific image, grid, point, navigation or text dataset.

Client Routing Table

The client routing table contains two lists: a list of group names with their associated server IP addresses, and a list of aliases with the dataset names they represent. When you enter an ADDE command, the client routing table is scanned for an entry with the specified group name or alias. If an entry is found, the data request is routed to the server specified in the entry. If the group name or alias is not found in the client routing table, the request is routed to the local server.

Use the DATALOC command to manage the list of group names. Use the AKA command to manage the list of aliases. Aliases allow you to use a short, easily remembered name to represent a dataset name in other ADDE commands. You can use this alias regardless of which server the dataset is stored on. For example, you could create the alias GV to represent the dataset name SSEC-RT/GOES-VIS-GLO.

Each user can access multiple client routing tables. This optional feature is useful when a site table has the default routing information and alias names for all users and each user has a local table with individualized routing information and alias names. The default file for your local table is **MCTABLE.TXT**. The site table, if it exists, is maintained by your site administrator or operations staff and is usually write-protected so you can't modify it. You may have to NFS mount its directory to access the file. Use the DATALOC and AKA commands to list information from all the client routing tables accessible to you.

If you decide to use multiple client routing tables, you must set the Unix or OS/2 environment variables **MCTABLE_READ** and **MCTABLE_WRITE**. The **MCTABLE_READ** value specifies, in order of precedence, the client routing tables accessed when searching for a group or alias match. The tables must be separated by semicolons (;) and specified as either file names or fully qualified path names (directory and file name). The **MCTABLE_WRITE** value specifies the single client routing table you can modify by creating or deleting group or alias entries with the ADD and DEL parameters of the DATALOC and AKA commands.

You cannot specify more than one table in **MCTABLE_WRITE**. SSEC recommends that the table you specify be the same as the first table in **MCTABLE_READ**. See the appropriate example below for your system.

McIDAS-OS2 Example

If you want to use **c:\mcidas\data\mctable.txt** for your local table and **r:\addesite.txt** for your site table, define **MCTABLE_READ** and **MCTABLE_WRITE** in your **config.sys** file as follows:

```
SET MCTABLE_WRITE=C:\MCIDAS\DATA\MCTABLE.TXT
SET MCTABLE_READ=C:\MCIDAS\DATA\MCTABLE.TXT;R:\ADDESITE.TXT
```

McIDAS-X Example

If you want to use **$HOME/mcidas/data/MCTABLE.TXT** for your local table and **/data/ADDESITE.TXT** for your site table, enter the following Unix commands (for Korn or Bourne shells) to set the environment variables.

```
export MCTABLE_WRITE;MCTABLE_WRITE="$HOME/mcidas/data/MCTABLE.TXT"
export MCTABLE_READ;MCTABLE_READ="$HOME/mcidas/data/MCTABLE.TXT;/data/ADDESITE.TXT"
```

If you want these values for **MCTABLE_WRITE** and **MCTABLE_READ** set each time you login to your account, add the commands above to your **$HOME/.mcenv** file and add the following line to your **$HOME/.profile** file. Be sure to leave a space between the period (.) and **$HOME**.

```
. $HOME/.mcenv
```

Server Mapping Table

The server mapping table maps dataset names to the files that make up the datasets. When the server receives a data request from a client, it reads the mapping table to locate the correct dataset. The server sends the requested data back to the client so it can list or display the data.

Use the DSSERVE command to list or modify the server mapping table. Clients can only modify their local server's mapping table; they cannot modify a remote server's mapping table. The remote server's administrator must inform the client's administrator or user which ADDE group names the client may access. The client's administrator then modifies the client routing table with command DATALOC so applications can request data from groups located on the remote sever.

Naming Data On Your Local Server

Use the DSSERVE command to create dataset names on your local server. DSSERVE assigns the group and descriptor to a dataset consisting of one or more files of the specified format. You can also add a description of up to 80 characters. For example, the following command assigns the dataset name PLANET/IMAGES to areas 7001 through 7199 on the local server:

DSSERVE ADD PLANET/IMAGES AREA 7001 7199 "Planetary images from Voyager

You can use the same group or descriptor with each data type. For example, if you have image, grid and point data for a case study of a major flood event, you may want to use the group name FLOOD for all the datasets. Or if you have large numbers of images that you use as part of a demonstration, you may want to use the group name DEMO with logical descriptor names like TSTORM, FOREST-FIRES, ECLIPSE and HURRICANE.

When naming data on your local server, you must use group names that are not mapped to other servers in your client routing table. Use the command entry DATALOC LIST to list the group names in your client routing table. Since ADDE commands that request data from a group name not found in the client routing table are automatically routed to the local server, you do not have to add your local server's group names to the table.

Using Compressed Data Transfers

If your McIDAS-X client workstation and ALL of the remote servers you access are running McIDAS-X 7.3 or later, you can set an environment variable to use data compression during transfers from remote servers to your client workstation.

This feature, which is available only to McIDAS-X clients, utilizes the Unix **compress** command on the remote server and **uncompress** command on the client. It is most beneficial to users who transfer large data files or those with slow data connections. However, it only reduces the amount of data during the transfer, it does not change the resultant file size or accounting (byte counts remain the same). For example, the destination file size from an IMGCOPY command is the same whether or not you use the data compression feature.

Before setting the environment variable to enable data compression, it's very important that you verify that ALL the remote servers you access are running 7.3 or later. If any of the remote servers are running a version prior to 7.3 (or if you're unsure of the version), do not set the variable for the following reasons:

- Data compression is either on or off for the entire McIDAS-X session. That is, you cannot request compressed transfers from one remote server, and uncompressed transfers from another. The only way to switch is to exit your McIDAS-X session, reset the environment variable, then restart McIDAS-X.
- If you request compressed transfers from a remote server running a version prior to 7.3, your McIDAS-X command and the **uncompress** command waiting for data will fail.

Once you've verified that your client workstation and all the remote servers are running McIDAS-X 7.3 or later, enter the following Unix command (for Korn or Bourne shells) to set the environment variable and use the compress feature.

Type: **export MCCOMPRESS; MCCOMPRESS=""**

If you want to set the the environment variable each time you log on to your account, add the command above to your **$HOME/.mcenv** file and add the following line to your **$HOME/.profile** file. Be sure to leave a space between the period (.) and **$HOME**.

```
. $HOME/.mcenv
```

Getting Started with ADDE

The exercise below introduces you to ADDE concepts such as dataset names, aliases, clients and servers. Use this exercise to practice adding entries to your client routing table and local server's mapping table, and displaying and copying image data from a remote server on an SSEC McIDAS-X workstation. The examples below use image datasets, but the concepts apply to all dataset types (grid, image, navigation, point and text). When you type a command, press Enter to run it. For more information about the commands, see Chapter 3, *Commands* and the online helps.

1. Log on to the workstation as user DEMO with project number 1234.

   Type: **LOGON DEMO 1234 X WS**

   Logging on is required only if the ADDE remote servers you access require a user name and a project number for accounting. Administrators can allow access only to specific logon names and project numbers.

2. List your client routing table's groups and associated server IP addresses.

   Type: **DATALOC**

   If this is the first time you are using the ADDE, the table is empty and the following listing is displayed.

```
Group Name      Server IP Address
```

3. Modify your client routing table so that commands requesting data from a dataset in the group BLIZZARD are routed to the SSEC remote server with the IP address 144.92.109.163.

   Type: **DATALOC ADD BLIZZARD 144.92.109.163**

   The following listing is displayed. The last line informs you that commands requesting data from a group with the Server IP Address <LOCAL-DATA> are routed to the local server.

```
Group Name      Server IP Address
BLIZZARD        144.92.109.163

<LOCAL-DATA> indicates that data will be accessed from the local
data directory.
```

4. List all datasets of type IMAGE in the group BLIZZARD.

   Type: **DSINFO IMAGE BLIZZARD**

The following listing is displayed. The NumPos value is the number of positions in the dataset. This data is located on the remote server at 144.92.109.163.

```
Dataset Names of Type: IMAGE in Group: BLIZZARD

Name              NumPos     Content
G7-IR-4K            3        Storm of the Century G7 IR
G7-VIS-1K           1        Storm of the Century G7 1K
G7-VIS-4K           3        Storm of the Century G7 VIS
G7-VIS-FD           1        Storm of the Century G7 16K
M3-IR               3        Storm of the Century M3 IR
M3-VIS              3        Storm of the Century M3 VIS
```

5. List all the images in the dataset BLIZZARD/G7-VIS-4K.

   Type: **IMGLIST BLIZZARD/G7-VIS-4K.ALL**

   The following listing is displayed. The Pos value is the absolute position of the image in the dataset.

```
Image file directory listing for:BLIZZARD/G7-VIS-4K

Pos  Satellite/      Date          Time       Center      Band(s)
___  sensor         __________    ________    Lat Lon     _______
 1    GOES-7        13 MAR 93072  17:01:00    26  87         1
 2    GOES-7        13 MAR 93072  17:31:00    26  87         1
 3    GOES-7        13 MAR 93072  18:01:00    26  87         1
```

6. List the two most recent images (positions 0 and -1) in the dataset BLIZZARD/G7-VIS-4K.

   Type: **IMGLIST BLIZZARD/G7-VIS-4K.-1**

   The following listing is displayed. The Pos value is the absolute position of the image in the dataset. The image in position 3 is listed first because it is the most recent image, relative position 0. The image in position 2 is the second most recent image, relative position -1.

```
Image file directory listing for:BLIZZARD/G7-VIS-4K

Pos  Satellite/      Date          Time       Center      Band(s)
___  sensor         __________    ________    Lat Lon     _______
3    GOES-7        13 MAR 93072  18:01:00    26  87         1
2    GOES-7        13 MAR 93072  17:31:00    26  87         1
```

7. Create the aliases GV4 and GI4 for the dataset names BLIZZARD/G7-VIS-4K and BLIZZARD/G7-IR-4K.

   Type: **AKA ADD GV4 BLIZZARD/G7-VIS-4K**

   AKA ADD GI4 BLIZZARD/G7-IR-4K

8. List the aliases in your client routing table.

   Type: **AKA**

   The following listing is displayed.

```
Alias Name          Group/Descriptor
GI4                 BLIZZARD/G7-IR-4K
GV4                 BLIZZARD/G7-VIS-4K
```

9. Display the most recent image in the dataset with the alias name GV4. Display the image on frame 1 centered on Athens, Georgia, and draw a map on it. The AKA listing in step 7 shows that the alias GV4 represents dataset BLIZZARD/G7-VIS-4K.

   Type: **IMGDISP GV4 1 STATION=AHN SF=YES REFRESH='MAP VH 2'**

10. Assign the dataset name MYDATA/IMAGES to areas 1 through 9999 on the local server.

    Type: **DSSERVE ADD MYDATA/IMAGES AREA 1 9999 "All areas on local server**

11. Use the IMGLIST command to find five empty areas on the local server.

    Type: **IMGLIST MYDATA/IMAGES.991 995**

    If data exists in this block of areas, move or delete the areas or use the IMGLIST command to find a different block of empty areas.

12. Assign the dataset name MYDATA/TEST-IMAGES to the empty block of areas.

    Type: **DSSERVE ADD MYDATA/TEST-IMAGES AREA 991 995 "Scratch areas for testing**

13. List the datasets on the local server.

    Type: **DSSERVE**

    A listing similar to the following is displayed.

```
Group/Descriptor     Type    Format & Range  RT   Comment
MYDATA/IMAGES        IMAGE   AREA    1-9999       All areas on local server
MYDATA/TEST-IMAGES   IMAGE   AREA  991-995        Scratch areas for testing
```

14. Modify your client routing table so that commands which request data from the group MYDATA are routed to the local server.

    Type: **DATALOC ADD MYDATA LOCAL-DATA**

    This step is optional because ADDE commands that request data from a group not found in your client routing table are automatically routed to the local server. If you add your local server's groups to the table, you can use the **DATALOC LIST** command to list all the groups you can access, on local and remote servers.

15. List the groups in your client routing table.

    Type: **DATALOC**

```
Group Name          Server IP Address
BLIZZARD            144.92.109.163
MYDATA              <LOCAL-DATA>

<LOCAL-DATA> indicates that data will be accessed from the local data
directory.
```

16. Create the alias TI for the dataset name MYDATA/TEST-IMAGES.

    Type: **AKA ADD TI MYDATA/TEST-IMAGES**

17. List the aliases in your client routing table.

    Type: **AKA**

    The following listing is displayed.

```
Alias Name          Group/Descriptor
GI4                 BLIZZARD/G7-IR-4K
GV4                 BLIZZARD/G7-VIS-4K
TI                  MYDATA/TEST-IMAGES
```

18. List all the images in the dataset with the alias name TI. The AKA listing in step 17 shows that the alias TI represents dataset MYDATA/TEST-IMAGES.

    Type: **IMGLIST TI.ALL**

    The following output is displayed because the dataset has no images.

```
Image file directory listing for:TI
IMGLIST: No images satisfy the selection criteria
```

19. Copy the most recent image in the dataset with the alias name GI4 to position 5 in the dataset with the alias name TI. Place Athens, Georgia, at its center. The AKA listing in step 17 shows that the aliases GI4 and TI represent datasets BLIZZARD/G7-IR-4K and MYDATA/TEST-IMAGES.

    Type: **IMGCOPY GI4 TI.5 STATION=AHN**

20. List all the images in the dataset with the alias name TI.

    Type: **IMGLIST TI.ALL**

    The following listing is displayed

```
Image file directory listing for:BLIZZARD/G7-VIS-4K

Pos  Satellite/      Date          Time       Center      Band(s)
___  _sensor_       __________    ________   Lat Lon     _______
 5    GOES-7 IR     13 MAR 93072  18:01:00   34  83        8
```

21. Display the image in position 5 in the dataset with the alias name TI. Display the image on frame 2 and draw a map on it.

    Type: **IMGDISP TI.5 2 SF=YES REFRESH='MAP VH 2'**

Chapter 3
Commands

The McIDAS commands in this chapter are organized alphabetically. To help you determine which command may be appropriate for a particular situation, refer to the *Commands by Categories* section on page 3-3.

The conventions used in documenting the commands are described below.

Interpreting Bold and Italicized Terms

Actual keyboard entries appear in **BOLD** type.Type these entries exactly as they appear. Command names, some parameters, all keywords and examples appear in bold. For example:

IGG MAKE 2 SUB 1

Variable entries, such as parameters, appear in *italics*. For example:

HELP *command*

When you enter commands, use capital letters and leave a space between each term or number in the command line. Replace terms in italics with the appropriate information. In the example above, replace *command* with the name of the command for which you want to display online help. To get help on the CUR command, enter the command below.

If you want to list the online documentation for command CUR, type:

HELP CUR

Recognizing Screen Displays and Text Files

Screen displays, system prompts and the contents of text files look like this:

```
Boxed text displayed in this typestyle indicates a screen
message or lines in a text file.
```

Interpreting Command Information

Most commands have Format, Parameter, Keyword, Remark and Example sections. To better understand the information in each of these sections, see the *Command Example* on page 3-2.

Command Example

This line gives a brief description of the command's function.

Format

The format contains the command name along with any positional parameters and keywords that it needs to perform its function. Commands can have several formats. Enter **BOLD** terms exactly as they appear in the command format. Terms in *italics* are variables. You must enter a value or option in place of them in the command. If a format is too long to fit on one line, the second line is indented.

Parameters

Parameters are numbers or letters that provide information to a command. To the right of each parameter is an explanation of its function. Enter parameters in the exact order specified in the command format. It is not always necessary to use every parameter. Parameters are listed in the documentation in the order they appear in the command line. Enter **BOLD** parameters exactly as they appear in the text. If a parameter is in *italics*, insert the appropriate number or letter in the command format. A quotation mark (quote field) is sometimes used to delineate a text string. The text string can be used as input to search a file, or to provide descriptive text to a command or database.

Keywords

Keywords further clarify a command function; they are optional. Keywords are one or more characters followed by an equal sign (or comma) and a value. For example, COLOR=3 LAT=20 40 UNIT=A can be entered as COLOR,3 LAT,20 40 UNIT,A. Type text values exactly as they are listed with the keyword. Use as many keywords as you like in a single command format. Although keywords are listed alphabetically in the documentation, their order in the command line is not important as long as they come after the parameters. To the right of each keyword is an explanation of its function. Most keywords may be truncated to three characters, though some require more. The required characters are given in capital letter. For example, **COLor** means that you can enter COL, COLO, or COLOR; **DERive** means that you can enter DER, DERI, DERIV, or DERIVE.

Remarks

Additional information about the command is contained here.

See Also

Mentioned here are other related commands to reference.

Examples

One or more examples are provided for each command. The first example is the shortest useful version of the command. If an example takes more than one line, the second line is indented. Below each bold command line is an explanation of what the entry does.

Commands by Categories

The command categories below are ordered from the basic to the complex. Basic commands are those that every user needs to know to run McIDAS (system utilities, frame and cursor control). Next are the Graphics and frame analysis commands, which are general applications. The Weather Analysis category contains those commands that list or display weather data. This category is followed by commands that are specific to each data type (image, point, grid and text). The Navigation category contains commands that are used to display dataset navigation data. The last categories are the optional tools and administrative utilities that are infrequently used.

Category	See Page	Category Class
System Utilities	3-4	Basic
Other Utilities	3-4	
Frame and Cursor Control	3-5	
Graphics	3-6	Graphics and Frame Analysis
Frame Analysis	3-6	
Image and Graphics Coloring	3-7	
Weather Analysis	3-7	Weather Analysis
Image	3-8	Data Type Specific
Point	3-9	
Grid	3-9	
Text	3-10	
Navigation	3-10	Navigation
Tools	3-11	Tools and Administrative Utilities
Administrative Utilities	3-11	
ADDE commands	3-11.1	ADDE dataset manipulation commands

System Utilities

Commands in this category perform basic workstation control tasks or list information about the current session.

Command	Purpose
&	Recalls a previously entered command.
^	Recalls previously entered commands.
!	Sends a command to the Unix shell. (McIDAS-X only)
+	Raises the Image Window in McIDAS-X; toggles workstation windows in McIDAS-OS2.
?	Lists the status of McIDAS commands and processes.
/	Stops McIDAS commands.
C	Lists a frame's directory.
CASEMODE	Sets the case mode for entering McIDAS-X commands. (McIDAS-X only)
CLEAR	Clears output from text frames.
COLORS	Lists the colors available with the global keyword TCOL.
DMAP	Lists information about files.
ECHO	Displays a line of text on a text frame.
EDITMODE	Lists and changes the McIDAS command input editor. (McIDAS-X only)
EXIT	Ends a McIDAS-X session and associated windows.
F	Displays the workstation's state.
FRMLIST	Lists frame directory information.
HELP	Lists online helps.
KILL	Terminates McIDAS commands.
LOGOFF	Logs you off the workstation.
LOGON	Logs you on to the McIDAS session.
OS	Switches the image frame position to the opposite frame.
TFILE	Sends text output to a disk file.
TFIND	Searches the current text frame. (McIDAS-X only)

Other Utilities

Commands in this category perform miscellaneous actions that don't fit in the other categories.

Command	Purpose
CCODE	Lists country codes.
CU	Lists a quantity in up to eight different units.
DATELIST	Lists the specified date in several formats.
FIND	Locates U. S. towns by name and state.
GLOBKEY	Lists global keyword parameters and examples.
LVF	Lists virtual frame files. (McIDAS-X only)
MSL	Lists the international master weather station list.
RVF	Restores virtual frames saved with command SVF. (McIDAS-X only)
SUNLIT	Lists the sunrise and sunset times for a specified location.
SVF	Saves frames to a virtual frame file. (McIDAS-X only)
SVGIF	Saves a McIDAS frame to the GIF format.
TIMEOUT	Runs a McIDAS command, stopping it after a waiting period.

Frame and Cursor Control

Commands in this category manipulate image frames, graphic frames and the cursor.

Command	Purpose
A	Advances one frame.
B	Backs up one frame position.
BRIEF	Opens a briefing window.
CUR	Defines cursor size, type and color.
DIST	Finds the distance on a navigated frame.
DR	Defines the dwell rates for frame looping.
EG	Erases graphics and images.
J	Toggles graphics frames to and from the loop control system. (McIDAS-X only)
K	Toggles image frames on and off.
L	Toggles frame looping on and off.
LB	Sets image or graphics frame loop bounds.
LS	Creates random loop sequences for image and graphics frames.
MAKFRM	Adds new frames to a McIDAS-X session. (McIDAS-X only)
O	Switches the image frame position to the opposite frame.
P	Locks and unlocks the cursor in its present position. (McIDAS-OS2 only)
PANEL	Configures frames with multiple panels.
PC	Positions the cursor at a desired point on the frame.
PLAX	Calculates parallax at cursor position.
R	Resizes the Image Window to the size of the current frame. (McIDAS-X only)
SF	Displays a frame.
SG	Displays a graphics frame. (McIDAS-X only)
SYNC	Synchronizes loops running in multiple briefing windows.
TERM	Sets the state of a McIDAS toggle command.
TOWNS	Lists the U.S. towns closest to the cursor location.
W	Toggles the graphics frame on and off.
X	Tracks cloud drift wind targets with one keystroke. (McIDAS-OS2 only)
Y	Toggles image frames to and from the loop control system. (McIDAS-X only)
Z	Toggles the McIDAS-X zoom function on and off; resizes the McIDAS-OS2 image window.
ZM	Sets the zoom factor to use with the Z command. (McIDAS-X only)

Graphics

Commands in this category manipulate graphics colors and settings, restore saved graphics, and draw text, symbols and shapes. Note that many commands in other categories also draw graphics.

Command	Purpose
CM	Circulates the graphics color table. (McIDAS-X only)
CW	Fills or erases the graphics in the cursor.
EG	Erases graphics and images.
FONT	McIDAS graphics font utility.
FRMLABEL	Displays an image label on a frame.
GD	Defines graphics display parameters.
GU	Graphics utility.
MAP	Displays a map and latitude/longitude lines on a graphics frame.
SHOWVG	Displays virtual graphics.
ZA	Displays annotations on the current graphics frame at the cursor position.
ZLM	Draws graphics using the mouse.

Frame Analysis

Commands in this category use navigation, calibration or directory information from data displayed on a frame to list or draw data, or move the cursor. Many of the commands are also listed under other categories.

Command	Purpose
BAR	Draws a grayscale bar on a frame containing an image.
C	Lists a frame's directory.
D	Lists the digital values at the cursor center.
DIST	Finds the distance on a navigated frame.
E	Lists the earth coordinates at the cursor center.
FIND	Locates U. S. towns by name and state.
FRMLABEL	Displays an image label on a frame.
FRMLIST	Lists frame directory information.
IMGPLOT	Displays a scatter plot of data values from two images.
IMGPROBE	Lists or plots image data for a region of the displayed image.
MAP	Displays a map and latitude/longitude lines on a graphics frame.
PC	Positions the cursor at a desired point on the frame.
PCMW	Computes a velocity vector.
PLAX	Calculates parallax at cursor position.
TOWNS	Lists the U.S. towns closest to the cursor location.
V	Toggles the velocity cursor on and off when tracking cloud drift winds. (McIDAS-OS2 only)

Image and Graphic Coloring

Commands in this category are used to change image and graphics colors.

Command	Purpose
CM	Circulates the graphics color table. (McIDAS-X only)
EB	Black and white contrast stretching.
EU	Enhancement utility.
GU	Graphics utility.

Weather Analysis

Commands in this category list or display weather information. Those that deal with a specific data type (image, grid, point, or text) also appear in those categories.

Command	Purpose
CHILL	Calculates the wind chill index.
FOUSRPT	Lists FOUS14 forecasts.
HEAT	Calculates the heat index and relative humidity.
HODO	Plots a hodograph of upper-air data.
OBSRPT	Lists the observational text reports.
RAOBCON	Contours upper-air data from IRAB-schema point files.
RAOBPLOT	Plots upper-air data from IRAB-schema point files.
RAOBRPT	Lists upper air (RAOB) observations.
SC	Grids and contours surface data.
SFCCON	Contours surface hourly data from ISFC-schema point files.
SFCLIST	Lists surface hourly data from point files.
SFCMG	Displays a surface meteorogram.
SFCPLOT	Plots surface hourly data from ISFC-schema point files.
SFCRPT	Lists surface hourly observations.
SKEWT	Plots a sounding on a skew T thermodynamic diagram.
SP	Plots surface data.
SYNRPT	Lists synoptic observations.
TAFRPT	Lists terminal aerodrome forecasts.
UALIST	Lists upper-air data.
UAPLOT	Plots a sounding on a thermodynamic diagram.
UC	Grids and contours upper air data.
UL	Lists upper air data.
UP	Plots upper air data.
WWDISP	Displays active weather warnings, watches and advisories.
WWLIST	Lists active weather warnings, watches and advisories.
WXTLIST	Lists weather text products.
XSECT	Displays a vertical cross section.

Image

Commands in this category operate on image data, like satellite and radar images.

Command	Purpose
AAMAP	Remaps an area into a Lambert conformal, Mercator or polar stereographic projection.
ADUMP	Lists the contents of an area in hexadecimal.
AVGI	Reduces image resolution by averaging.
AXFORM	Generates multiple files from an area.
BAR	Draws a grayscale bar on a frame containing an image.
D	Lists the digital values at the cursor center.
EB	Black and white contrast stretching.
EU	Enhancement utility.
GRDIMG	Generates an area from a grid.
IMGCHA	Changes an image directory.
IMGCOPY	Copies image data from one dataset to another.
IMGDEL	Deletes images in a dataset.
IMGDISP	Displays image data.
IMGFILT	Applies filters to image data.
IMGLIST	Lists images in a dataset.
IMGMAG	Changes the magnification of a displayed image.
IMGOPER	Applies mathematical functions to image data.
IMGPLOT	Displays a scatter plot of data values from two images.
IMGPROBE	Lists or plots image data for a region of the displayed image.
IMGREMAP	Remaps images into different projections.
MAKNAV	Creates a navigation entry for an area.
MAP	Displays a map and latitude/longitude lines on a graphics frame.
PCMW	Computes a velocity vector.
PRDUTIL	Calibration utility for 1-byte PRD image files.
REMAP	Remaps an area into a different projection.
SU	Image data stretching utility.
TIRCAL	Calibrates POES (TIROS) areas. (McIDAS-X only)
V	Toggles the velocity cursor on and off when tracking cloud drift winds. (McIDAS-OS2 only)
VASTBL	Creates calibration transforms for Mode AA VAS data.

Point

Commands in this category operate on point data, including McIDAS MD files containing conventional data such as synoptic, surface hourly, ship, buoy, and upper-air observations.

Command	Purpose
ALTIM	Calculates sounding data at standard aviation heights or pressures
DOQTL	Selectively deletes MD files.
HODO	Plots a hodograph of upper-air data.
ISENT	Calculates theta surface levels for upper air data.
LSCHE	Lists an MD file schema.
MDE	Edits MD files.
MDU	MD file utility.
MDX	Plots or grids data from MD files or grids.
MFPLOT	Plots a frequency distribution of MD file data.
PTCON	Converts point data to grids; displays contours and plots.
PTCOPY	Copies point data from one dataset to another.
PTDISP	Displays point data.
PTLIST	Lists point data in a dataset.
RAOBCON	Contours upper-air data from IRAB-schema point files.
RAOBPLOT	Plots upper-air data from IRAB-schema point files.
SC	Grids and contours surface data.
SCHE	Adds a schema to the schema file.
SFCCON	Contours surface hourly data from ISFC-schema point files.
SFCLIST	Lists surface hourly data from point files.
SFCPLOT	Plots surface hourly data from ISFC-schema point files.
SFCMG	Displays a surface meteorogram.
SKEWT	Plots a sounding on a skew T thermodynamic diagram.
SP	Plots surface data.
TXT2MD	Creates an MD file from an ASCII text data file.
UALIST	Lists upper-air data.
UAPLOT	Plots a sounding on a thermodynamic diagram.
UC	Grids and contours upper air data.
UL	Lists upper air data.
UP	Plots upper air data.
XSECT	Displays a vertical cross section.

Grid

Commands in this category operate on grid data, including numerical model forecast grids such as ETA, MRF, NGM, and RUC.

Command	Purpose
GRDCOPY	Copies grids from one dataset to another.
GRDDISP	Generates contours, streamlines or plots from grid data.
GRDIMG	Generates an area from a grid.
GRDINFO	Lists, modifies, or statistically analyzes grid point values.
GRDLIST	Lists grids in a dataset.

Command	Purpose
IGG	Grid utility.
IGTV	Generates contours and streamlines from grids.
IGU	Grid file utility.
MDX	Plots or grids data from MD files or grids.
PTCON	Converts point data to grids; displays contours and plots.

Text

Commands in this category operate on ASCII text files, LW format files and weather text data such as that from the National Weather Service Family of Services data stream.

Command	Purpose
DOSTOLW	Converts ASCII text format files to LW format text files.
FOUSRPT	Lists FOUS14 forecasts.
LWCON	Converts a McIDAS-OS2 LW file to a McIDAS-X LW file. (McIDAS-X only)
LWTODOS	Converts LW format files to ASCII text format files.
LWU	LW file utility.
OBSRPT	Lists the observational text reports.
RAOBRPT	Lists upper air (RAOB) observations.
READ	Lists the contents of an ADDE text dataset.
SEE	Lists the text in an LW file.
SFCRPT	Lists surface hourly observations.
SYNRPT	Lists synoptic observations.
TAFRPT	Lists terminal aerodrome forecasts.
TFILE	Sends text output to a disk file.
TXT2MD	Creates an MD file from an ASCII text data file.
WWDISP	Displays active weather warnings, watches and advisories.
WWLIST	Lists active weather warnings, watches and advisories.
WXTLIST	Lists weather text products.

Navigation

Commands in this category list or display data from navigation datasets. See *Frame Analysis* on page 3-6 for commands that use the navigation information of data displayed on a frame.

Command	Purpose
NAVCALC	Calculates satellite subpoints and orbit times.
NAVDISP	Displays polar orbital tracks and coverage.
NAVLIST	Lists system navigation entries.
PACORB	Displays polar orbital tracks and coverage for the Pacific Test Range.
USAORB	Displays polar orbital tracks and coverage for North America.

Tools

Commands in this category manipulate tools like the F Key Menu system, Soft Tablet, McBASI programs, BATCH files, strings, command schedulers and saved loops. These tools can be used to help simplify or automate complicated procedures. This category also includes commands to start the McIDAS-X GUI or McIDAS-Vis5D.

Command	Purpose
ASK1	Defines a question to prompt the user for string input. (separate McIDAS-X and -OS2 versions)
BATCH	Runs commands serially from a text file.
DEFLOOP	Lists, saves and restores loops.
GUI	Starts the McIDAS-X Graphical User Interface. (McIDAS-X only)
MAKMNU	Starts the F Key Menu System. (McIDAS-OS2 only)
MCEVAL	Runs a McIDAS command substituting McIDAS string values.
MCMENU	Starts the F Key Menu System. (McIDAS-X only)
MOVIE	Displays a sequence of loops.
PROMPT	Displays command text for editing and then runs the command. (McIDAS-OS2 only)
PSB	Displays a PLEASE STAND BY message on the text frame. (McIDAS-OS2 only)
REPEAT	Repeats a McIDAS command.
RUN	Runs a McBASI program.
SHOMNU	A debugging tool for the F Key Menu System. (McIDAS-OS2 only)
SKE	Enters a McIDAS command in the system command scheduler.
SKED	Starts a scheduler process. (McIDAS-X only)
SKL	Lists command scheduler entries.
SKU	Command scheduler utility.
TD	Deletes one or more strings from the current string table.
TE	Enters a string in the string table.
TEDIT	Edits a string in the string table. (McIDAS-OS2 only)
TL	Lists the strings in a string table.
TU	String table utility.
VIS5D	Starts a McIDAS-Vis5D session. (McIDAS-X only)

Administrative Utilities

Commands in this category configure the McIDAS session so it can access data on other workstations, or share data with other workstations.

Command	Purpose
AKA	Adds, deletes and lists aliases for dataset names.
DATALOC	Manages and lists the client routing table.
DSINFO	Lists datasets on local and remote servers.
DSSERVE	Manages and lists dataset names on the local server.
REDIRECT	Writes the LW file path redirection memory block.
SYSKEY	Sets system values for local McIDAS workstation networks.
SYSVAL	SYSKEY utility.
UCU	Inspects the User Common (UC) memory block.

ADDE Commands

Commands in this category operate on ADDE datasets.

Command	Purpose
AKA	Adds, deletes and lists aliases for dataset names.
ALTIM	Calculates sounding data at standard aviation heights or pressures
DATALOC	Manages and lists the client routing table.
DSINFO	Lists datasets on local and remote servers.
DSSERVE	Manages and lists dataset names on the local server.
FOUSRPT	Lists FOUS14 forecasts.
GRDCOPY	Copies grids from one dataset to another.
GRDDISP	Generates contours, streamlines or plots from grid data.
GRDINFO	Lists, modifies, or statistically analyzes grid point values.
GRDLIST	Lists grids in a dataset.
HODO	Plots a hodograph of upper-air data.
IMGCHA	Changes an image directory.
IMGCOPY	Copies image data from one dataset to another.
IMGDEL	Deletes images in a dataset.
IMGDISP	Displays image data.
IMGFILT	Applies filters to image data.
IMGLIST	Lists images in a dataset.
IMGMAG	Changes the magnification of a displayed image.
IMGOPER	Applies mathematical functions to image data.
IMGPLOT	Displays a scatter plot of data values from two images.
IMGPROBE	Lists or plots image data for a region of the displayed image.
IMGREMAP	Remaps images into different projections.
NAVCALC	Calculates satellite subpoints and orbit times.
NAVDISP	Displays polar orbital tracks and coverage.
NAVLIST	Lists system navigation entries.
OBSRPT	Lists the observational text reports.
PACORB	Displays polar orbital tracks and coverage for the Pacific Test Range.
PTCON	Converts point data to grids; displays contours and plots.
PTCOPY	Copies point data from one dataset to another.
PTDISP	Displays point data.
PTLIST	Lists point data in a dataset.
RAOBCON	Contours upper-air data from IRAB-schema point files.
RAOBPLOT	Plots upper-air data from IRAB-schema point files.
RAOBRPT	Lists upper air (RAOB) observations.
READ	Lists the contents of an ADDE text dataset.
SFCCON	Contours surface hourly data from ISFC-schema point files.
SFCLIST	Lists surface hourly data from point files.
SFCMG	Displays a surface meteorogram.
SFCPLOT	Plots surface hourly data from ISFC-schema point files.
SFCRPT	Lists surface hourly observations.
SYNRPT	Lists synoptic observations.
TAFRPT	Lists terminal aerodrome forecasts.

Command	Purpose
UALIST	Lists upper-air data.
UAPLOT	Plots a sounding on a thermodynamic diagram.
USAORB	Displays polar orbital tracks and coverage for North America.
WWDISP	Displays active weather warnings, watches and advisories.
WWLIST	Lists active weather warnings, watches and advisories.
WXLIST	Lists weather text products.

& (Ampersand)

Recalls a previously entered command.

Remarks

The ampersand (&) displays a previously entered command on the screen's command line. You can backtrack up to 100 commands by repeatedly typing the ampersand.

You can modify the command line before entering the command.

The ampersand command works in this manner only if you have not typed any other characters on the command line.

See Also

The ^ (Caret) command tracks previously entered commands in the opposite direction.

^ (Caret)

Recalls previously entered commands.

Remarks

To recall commands in the direction opposite the ampersand (&),

Type: ^

Each press of the caret key backs up the command queue by one.

See Also

See the & (Ampersand) command description on the previous page for more information.

+ (Plus)

Raises the Image Window in McIDAS-X; toggles workstation windows in McIDAS-OS2.

McIDAS-X Remarks

Use the numeric keypad's plus (+) key to raise (display on top of any overlapping windows) the Image Window. To raise the Text and Command Window, press a numeric keypad number. The number you press determines which text frame is displayed in the window.

McIDAS-OS2 Remarks

Use the numeric keypad's plus (+) key to toggle between the Image Window and the Text and Command Window. When you toggle to a window, it becomes active and is raised (displayed on top of any overlapping windows).

! (Exclamation Point) (McIDAS-X only)

Sends a command to the Unix shell.

Format

! *command*

Parameter

command Unix command to run; spaces between the exclamation point and the Unix command are optional

Remarks

This command lets you run a Unix command from the McIDAS-X Text and Command Window. The Unix command should include the correct path, if needed. The Unix command should not invoke a program, such as Telnet, that expects a user input while running.

Once you type the exclamation point (!), the case mode automatically changes to the opposite mode. For example, if you typed the previous command in upper case, all characters entered after the exclamation point (!) appears in lowercase unless you use the Shift or CapsLock key.

This command performs the same function as the OS command, but differs in the following ways:

- You don't need to preface the Unix command with a space and double quotation mark (").
- The case mode is automatically switched.

See Also

The OS command also sends commands to the Unix shell.

Examples

! ls -1 /data/AREA*
This entry runs the Unix `ls` command to list all file names beginning with AREA in the `/data` directory.

! echo $MCPATH
This command runs the Unix `echo` command to list the current setting of the `MCPATH` environment variable.

? (Question Mark)

Lists the status of McIDAS commands and processes.

McIDAS-X Remarks

The question mark (?) command lists all the McIDAS commands and processes running in your Unix account. The information listed depends on the workstation type. Output information is described below.

Header	Description
UID or USER	user ID of the person who started the process
PID	process identification number to use when stopping a command
PPID	parent process ID number
C	processor utilization for scheduling
TT or TTY	controlling workstation for the process
STAT	state of the process
STIME	start time of the process
TIME	amount of CPU time used
CMD or COMMAND	process or command; most McIDAS commands are listed in uppercase

Use command KILL to stop processes. Do not stop the IMPORT, SKED, or TCPIP processes; they are required to run McIDAS-X.

McIDAS-OS2 Remarks

The OS/2 operating system assigns a unique Process ID (PID) to each active process. This command lists only processes related to the McIDAS-OS2 session. Use the Process ID with the KILL or slash (/) command to stop an active process. Do not stop any of the system processes listed below, however, as they are required when running McIDAS-OS2.

- `OS.EXE`
- `TCP.EXE`
- `TCPIP.EXE`
- `SKED.EXE`
- `SKED1.EXE`
- `KBDCTL.EXE`
- `SCRCTL.EXE`
- `WWW.EXE`
- `PM.EXE`

/ (Slash)

Stops McIDAS commands.

Format

/ pid1 . . pidn

Parameter

pid process ID numbers of the commands to stop

Remarks

To stop McIDAS commands, enter a slash followed by the Process IDentification (PID) numbers. If you don't know the PID numbers, use the question mark (?) command to list them.

Examples

/ 374
This entry terminates the McIDAS command running under PID number 374.

/ 27347 27348 34272
This entry terminates McIDAS commands running under PID numbers 27347, 27348, and 34272.

A

Advances one frame.

Remarks

To advance the frame position by one,

Press: **Alt A**

or

Type: **A**

Press: **Enter**

AAMAP

Remaps an area into a Lambert conformal, Mercator or polar stereographic projection.

Format

AAMAP *sarea darea frame proj clat clon res line ele [keywords]*

Parameters

sarea	source area number of the data	
darea	destination area number; it must be different than *sarea*	
frame	image frame number for display; the data in *darea* is displayed on this frame (default=does not display image)	
proj	**LAMB**	remaps to a Lambert conformal projection
	MERC	remaps to a Mercator projection
	PS	remaps to a polar stereographic projection
clat	center latitude	
clon	center longitude	
res	remapped image resolution in kilometers (default=1)	
line	number of lines in *darea* (default=number of lines in *frame*)	
ele	number of elements in *darea* (default=number of elements in *frame*)	

Keywords

ASIze=	**ALL**	creates a destination area to contain the entire source area (default=same as the *line* and *ele* parameters)
BAND=	band number for multiband *sarea*	
SLAT=	*slat1 slat2*	
	slat1	first standard latitude (default=30 for LAMB, 0 for MERC, and 60 for PS)
	slat2	second standard latitude; used for LAMB projection only (default=50)
SLON=	standard longitude (default=*clon*)	

SMOoth= *limb data*
provides limb and/or data smoothing

limb	**NO**	no limb smoothing (default)
	YES	provides limb smoothing
data	**NO**	no data smoothing (default)
	YES	provides data smoothing

SPLINE= spline size (default=20)

Remarks

Command AAMAP remaps any navigated image to a Lambert conformal, Mercator or polar stereographic projection.

Use keyword SPLINE to improve the quality of the remapped image, especially along the edges. Choosing a spline size smaller than the default of 20 may increase the quality, but will also increase the time and cost of running the AAMAP command.

Do not use keyword SLON for Mercator projections.

Examples

AAMAP 4960 6848 X MERC 35 90
This entry remaps area 4960 into a Mercator projection centered on 35° N and 90° W. It stores the new image in area 6848 but does not display it.

AAMAP 7500 7501 5 PS 70 140 SPLINE=5
This entry remaps area 7500 into a polar stereographic projection with a spline size of 5 centered on 70° N and 140° W. The new image, which has a 1 km resolution, is stored in area 7501 and displayed on image frame 5.

ADUMP

Lists the contents of an area in hexadecimal.

Format

ADUMP *area bline eline bele eele [keywords]*

Parameters

area	area number of the data to list
bline	beginning area line to list (default=1)
eline	ending area line to list (default=1)
bele	beginning area element to list (default=1)
eele	ending area element to list (default=50)

Keywords

DATa=	**ALL**	lists the prefix and data
	DOC	lists the documentation section of the prefix
	LNE	lists the area line data (default)
	LVL	lists the level section of the prefix
	NVC	lists the line data when the validity code is bad
	PFX	lists the prefix (validity code, documentation section and level section)
	VLC	lists the validity code of the prefix
FACt=	factor by which to divide data; useful for shifting 10-bit data (default=1)	
FORm=	**ALL**	lists the entire area directory
	STND	lists the abbreviated area directory (default)

Remarks

Line and element numbers are in area coordinates with the first line and element of the area being 0,0.

Lines with a bad validity code are displayed as zeros unless the NVC option is used.

When listing multibanded data, the actual number of band elements listed is the number of elements requested times the number of bands. For example, if area 8016 has five bands, the command ADUMP 8016 10 10 200 219 lists the 100 band elements present in area elements 200 to 219 on area line 10.

You can enter multiple options with keyword DATA.

Examples

ADUMP 100 240 340 100 300
This entry lists the data in elements 100 to 300 of lines 240 to 340 in area 100.

ADUMP 100 240 240 0 100 DATA=ALL
This entry lists the data and prefixes in elements 0 to 100 of line 240 in area 100.

ADUMP 100 0 200 0 100 DATA=VLC
This entry lists the validity codes in elements 0 to 100 of lines 0 to 200 in area 100.

ADUMP 104 1200 1230 1 400 DATA=NVC LNE
This entry lists the data and validity codes (even if they are bad) in elements 1 to 400 of lines 1200 to 1230 in area 104.

AKA

Adds, deletes and lists aliases for dataset names.

Formats

AKA ADD *alias dataset*
AKA DEL *alias*
AKA LIST *alias [keyword]*

Parameters

ADD	adds an alias for an ADDE dataset name
DEL	deletes an alias for an ADDE dataset name
LIST	lists the aliases (default)
alias	alias name; up to 24 characters (no default for ADD and DEL; default=all aliases for LIST)
dataset	ADDE dataset name that the alias represents; specify in group/descriptor format

Keyword

GROup=	lists all aliases for the specified group name (default=all groups)

Remarks

AKA adds, deletes or lists aliases in the client routing table.

You cannot assign the same alias to more than one ADDE dataset name because the ADD option overwrites an existing alias without warning. You may, however, assign more than one alias to an ADDE dataset name.

An alias can be used in place of the ADDE dataset name (group/descriptor) in other commands.

Examples

AKA
This entry lists all aliases and the dataset names they represent.

AKA ADD VIS RTSERV/G8-VIS-CONUS
This entry creates an alias named VIS that can be used to represent the dataset name RTSERV/G8-VIS-CONUS in other commands.

AKA ADD R RADAR/MDR_IMAGES
This entry creates an alias named R that can be used to represent the dataset name RADAR/MDR_IMAGES in other commands.

AKA LIST GROUP=RTSERV
This entry lists all aliases for dataset names in the group RTSERV.

AKA LIST VIS
This entry lists the alias VIS and the dataset name it represents.

AKA DEL VIS
This entry deletes the alias VIS, but does not affect the dataset that the alias represents.

ALTIM

Calculates sounding data at standard aviation heights or pressures.

Format

ALTIM *ddataset time day [keywords]*

Parameters

ddataset	destination ADDE point dataset name and absolute position; specify as *group/descriptor.position* or *alias.position*; only positive integers are valid for position
time	observation time (default=0 if current time is between 0 UTC and 11:59 UTC, otherwise default=12)
day	observation date; valid formats include YYYYDDD, YYYY/MM/DD and DD/MON/YYYY where YYYY, DDD, MM and DD are integers and MON is three or more letters, e.g., JAN or JANUARY (default=current)

Keywords

COuntry=	*c1..cN*	calculate and write data for soundings in these countries; use CCODE command to list valid country codes; see the Remarks (default=all countries)
DATaset=	*mand sig*	source ADDE point dataset names for mandatory- and significant-level data; specify as *group/descriptor* or *alias*; you must specify SIG=NO keyword to use only mandatory data, i.e., ignore the significant data (default=**RTPTSRC/UPPERMAND RTPTSRC/UPPERSIG**)
DELete=	**YES**	delete the destination file before copying
	NO	do not delete the destination file before copying (default)
LAT=	*slat nlat*	calculate and write data for soundings in this latitude range, where *slat* and *nlat* are the southern and northern latitudes, respectively; see the Remarks (default= –90 90)
LON=	*elon wlon*	calculate and write data for soundings in this longitude range, where *elon* and *wlon* are the eastern and western longitudes, respectively; see the Remarks (default= –180 180)

OPTion=	**H**	calculate and write data at heights from 0 to 45,000 feet at 1,000 foot increments; see the Remarks (default)
	P	calculate and write data at standard pressures from 18,000 to 45,000 feet at 1,000 foot increments
SIG=	**YES**	include data from the significant-level dataset specified in the DATASET keyword (default)
	NO	do not include data from the significant-level dataset specified in the DATASET keyword; use only its mandatory-level dataset
STate=	*s1..s*N	calculate and write data for soundings in these states; see the Remarks (default=all states)
TITLE=	*'text'*	title of the destination point filep; must be 32 characters or less (default=Altimeter Interpolation: *yyyyddd*); *yyyyddd* in the default is the date of the source dataset

Remarks

ALTIM reads data from the source upper-air dataset and interpolates the values to standard aviation heights or pressures, then writes the data to the destination dataset (an IHGT schema MD file). The IHGT schema must be registered with command SCHE DCIHGT before you use this command. If the specified destination file already exists, you must delete it with DEL=YES since ALTIM cannot append data to an existing file.

Because of the large number of calculations performed for each sounding, ALTIM may take a long time to complete. You can minimize this time and the number of soundings by specifying only the needed data with the LAT and LON, COUNTRY or STATE keywords.

Standard pressures, as specified with OPT=P, are the pressures of the standard atmosphere from 18,000 feet to 45,000 in 1000 foot increments (i.e., 18000, 19000, 20000, etc.). Use OPT=P to calculate the data at these "standard atmosphere" pressures. Use OPT=H to calculate the data at heights from 0 to 45,000 feet at 1000 foot increments, using the heights in the source dataset (converted to thousands of feet), not the standard atmosphere pressure model.

Examples:

ALTIM LOCAL/AVIATION.10 0
This entry calculates upper-air data from 0 to 45,000 feet at 1000 foot increments using today's 0 UTC data in the default source datasets RTPTSRC/UPPERMAND and RTPTSRC/UPPERSIG. The data is written to position 10 of dataset LOCAL/AVIATION, an IHGT-schema point file.

ALTIM LOCAL/AVIATION.10 12 DEL=YES ST=FL TITLE='12 UTC IHGT data for Florida' OPT=H

This entry calculates upper-air data at standard pressures from 18,000 to 45,000 feet at 1000 foot increments for the state of Florida. It uses today's 12 UTC data in the default datasets RTPTSRC/UPPERMAND and RTPTSRC/UPPERSIG. The data is written to position 10 of dataset LOCAL/AVIATION, an the IHGT-schema point file. The DEL=YES and TITLE keywords delete the existing destination point file and create a new one with the title *12 UTC IHGT data for Florida*.

ASK1 (McIDAS-X version)

Defines a question to prompt the user for string input.

Format

ASK1 *string "question*

Parameters

string	string name to place the user's answer in
"question	the question to ask; quotes are required; use either uppercase or lowercase letters

Remarks

You must have Motif installed to run ASK1. The ASK1 command defines a question and generates a window that prompts the user for a value. The value entered in the window is entered in the string named by ASK1. After entering the value, click the OK button or press Enter. Everything you typed in the window is placed in the string. To cancel the command, press the Cancel button or press Esc; the value of the string will not change.

Returned strings greater than 160 characters are truncated to 160 characters.

ASK1 is well suited for the user interface tools like the F Key Menu System.

Full editing keys are available to change the string entry.

Examples

ASK1 TIME "Enter time for plot (currently set to #TIME):
This entry generates a window with the prompt "Enter time for plot (currently set to #TIME):" where #TIME is filled with the current value for the string TIME. Entering text and clicking the OK button or pressing the Enter key enters the new value in the string TIME. If no text is entered and the Cancel button is clicked, the string TIME does not change.

ASK1 (McIDAS-OS2 version)

Defines a question to prompt the user for string input.

Format

ASK1 *row column color string [keyword] "question*

Parameters

row	row of the display to use for the question; the range is 0 to 22 (default=1)
column	column of the display to start the question; the range is 0 to 75 (default=1)
color	color level for the question; the range is 0 to 255 (default=3)
string	string name to place the user's answer in
"question	the question to ask; quotes are required; use either uppercase or lowercase letters

Keywords

Clear=	**YES**	clears the text frame before asking the question
	NO	does not clear the text frame (default)

Remarks

Command ASK1 defines a question that prompts the user for a value which is entered in the string named by ASK1. It is well suited for user interface tools like the F Key Menu System.

ASK1 uses text frame 8 to ask its question.

Full editing keys are available to change the string entry.

When you press the Enter key, everything you typed following the question on frame 8 is placed in the string.

Examples

ASK1 10 15 14 PARA "Enter parameter to be plotted:
This entry prints *Enter parameter to be plotted:* on row 10, column 15 in yellow. The result goes into string PARA in the current string table.

AVGI

Reduces image resolution by averaging.

Format

AVGI *sarea darea lres eres [keyword]*

Parameters

sarea	source area to average
darea	destination area of the averaged data
lres	resolution reduction for lines (default=1)
eres	resolution reduction for elements (default=*lres*)

Keywords

BAND=	band number from multibanded areas (default=lowest numbered band)

Remarks

The area size cannot exceed 26000 elements.

Examples

AVGI 12 15
This entry averages area 12 by one line and element and places the new area in area 15.

AVGI 10 20 4
This entry blows down area 10 four times by averaging pixel values. The new area number is 20.

AXFORM

Generates multiple files from an area.

Format

AXFORM *area file [keywords]*

Parameters

area area number

file file name for the output; eight alphanumeric characters maximum; no extension can be specified

Keywords

BANd= band numbers for a multibanded *area* (default=first band)

- **ALL** all bands of *area*

FLIp=

- **YES** flip bytes
- **NO** do not flip bytes (default)

FORmat=

- **I1** output elements are 1-byte integers
- **I2** output elements are 2-byte integers
- **I4** output elements are 4-byte integers

(default=see the Remarks)

FTYpe=

- **ASC** ASCII text files with 25I10 format
- **BIN** binary files, as specified in keyword FORMAT (default)
- **BOTH** both ASCII and binary file types

MISs= missing data value for .LAT/.LON extension files (default=65535 Hex FFFF)

NAV=

- **YES** *inc* produces .LAT/.LON data files with an element increment; these files contain LAT/LON stored as degrees*100 (2 bytes per element; the increment is the number of data elements associated with each LAT/LON element (default=NO 1)

UNIt= physical quantity of the output files; see the Remarks (default=calibration units of *area*)

- **ALL** all calibration units defined by *area*

Remarks

AXFORM creates a set of files containing data from *area*. These files can be ported to other non-McIDAS systems. Data is represented as 2-dimensional arrays of binary or ASCII fields with the same dimensions as the original *area* lines/elements.

An ASCII output text file documents the format of the output data files, and contains a listing for each data file generated. Output files are assigned the extensions below. The definitions for .LAT, .LON, .ALT, and .ALN assume keyword NAV=YES.

Extension	**Meaning**
.HDR	header file containing ASCII text describing *area* and the contents of the output data files
.*nnn*	data file containing binary data for a single calibration of a specific band; the range for *nnn* is 001 to 999
.A*nn*	data file containing ASCII data for a single calibration of a specific band; the range for *nn* is 01 to 99
.LAT	binary file containing a 2-dimensional array of latitudes corresponding to the elements in the output data files
.LON	binary file containing a 2-dimensional array of longitudes corresponding to the elements in the output data files
.ALT	ASCII file containing a 2-dimensional array of latitudes corresponding to the elements in the output data files
.ALN	ASCII file containing a 2-dimensional array of longitudes corresponding to the elements in the output data files

Specify FLIP=YES when the byte order on the destination system is the reverse of the source system, e.g. from a PS/2 to a RISC 6000.

The defaults for keyword FORMAT are shown below. They assume FTYPE=BIN or BOTH.

If UNIT=	Then FORMAT=
BRIT	I1 (1-byte integer)
TEMP	I2 (2-byte integer)
RAD	I3 (3-byte integer) (McIDAS-OS2) I4 (4-byte integer) (McIDAS-X)
ALB	I2 (2-byte integer)
RAW	number of bytes/element from *area* directory
other	I1 (1-byte integer)

Examples

AXFORM 12 GOES_VIS
This entry creates a binary file of brightness values from area 12 and places the information in `GOES_VIS.001`.

AXFORM 12 GOES_VIS FTYPE=BOTH
This entry creates binary and ASCII files of the brightness values from area 12. The data is placed in `GOES_VIS.001` and `GOES_VIS.A01`.

AXFORM 43 MULTBAND BAND=2 3 5 UNIT=TEMP . NAV=YES 45
This entry creates binary files for the TEMP values from bands 2, 3 and 5 of area 43. The information is placed in `MULTBAND.001`, `MULTBAND.002` and `MULTBAND.003`, respectively. Latitude and longitude grid files are also created and placed in `MULTBAND.LAT` and `MULTBAND.LON`. The lat/lon resolution is 1 lat/lon point for every 45 image elements.

B

Backs up one frame position.

Remarks

To back up the frame position by one,

Press: Alt B

or

Type: **B**

Press: **Enter**

BAR

Draws a grayscale bar on a frame containing an image.

Format

BAR *frame [keywords]*

Parameters

frame frame number (default= current frame)

Keywords

COLor= graphics color level for bar labels (default=3)

GRA= graphics frame to display labels (default=current if running McIDAS-X with independent graphics; otherwise, number specified in the *frame* parameter)

LINt= label interval; must be a value greater than zero (default=computed)

LSIze= height of labels (default=computed)

ORIent=
- **VER** bar is displayed vertically (default)
- **HOR** bar is displayed horizontally

POSition= *line ele short long*
user-specified location and size (default)
- *line* starting TV line (default=computed)
- *ele* starting TV element (default=computed)
- *short* length in pixels of the bar's short axis (default=computed)
- *long* length in pixels of the bar's long axis (default=computed)
- **CUR** draws a bar the size the cursor at its current location

RANge= *min max* range of values to display (default=computed)

SU= stretch table name to apply to the grayscale bar; see the Remarks (default=table specified in the IMGDISP command)

Remarks

The BAR command displays a grayscale bar and labels. The bar is written to the image so an enhancement created with commands EU or EB appears on the bar. Because the labels are written as graphics, the EG command erases the labels but not the bar. The *frame* parameter specifies the frame to write the bar, and the GRA keyword specifies the frame to write the labels.

The POSITION keyword determines the location of the bar. If you do not use this keyword, the bar is drawn in a vertical orientation along the right side of the frame. If you use the POS=*line ele short long* format, *line* and *ele* define the TV line and element of the upper-left corner of the bar, and *short* and *long* define the dimensions of the bar. If you use ORIENT=VER, *short* is the horizontal length and *long* is the vertical length. If you use ORIENT=HOR, *short* is the vertical length and *long* is the horizontal length.

If the image was displayed with a stretch table (for example, using IMGDISP with the SU keyword), BAR's SU and RANGE keywords are ignored. If the image has an auxiliary block (for example, NIDS radar images), the RANGE keyword is ignored and the LINT keyword is valid only if the image was displayed with a stretch table.

The following three rules determine the units of the labels.

- If the image was displayed with a stretch table, the label units are the same as the calibration units of the stretch table.
- If the image has an auxiliary block and was not displayed with a stretch table, the label units are the same as the units in the auxiliary block.
- If the image was not displayed with a stretch table and does not have an auxiliary block, the units are the same as the calibration units of the stretch table specified in the BAR command's SU keyword. If SU is not specified, the units are brightness values.

Examples

BAR

This entry displays a vertical grayscale bar and graphics labels along the right side of the current frame.

BAR ORIENT=HOR LINT=15 LSIZE=6 COLOR=5

This entry displays a horizontal grayscale bar and graphics labels along the bottom of the current frame. The labels are drawn every 15 brightness levels along the bar in graphics color level 5 with a character height of six pixels.

BAR POS=CUR

This entry displays a grayscale bar that fills the cursor at its current location. The dimensions of the cursor determine the orientation of the bar and labels. If the cursor is square or is longer in the vertical direction than in the horizontal direction, the bar and labels are oriented vertically. If the cursor is longer in the horizontal direction than in the vertical direction, the bar and labels are oriented horizontally.

BAR POS=20 20 10 600 ORIENT=HOR SU=QVISRB RANGE=180 330 LINT=15

This entry displays a horizontal grayscale bar and graphics labels along the top of the current frame. The bar, which displays only values between 180 and 330, is 10 pixels high, 600 pixels long, and starts at TV line 20, element 20. The labels appear every 15 values along the bar in units matching the calibration units of the stretch table QVISRB.

BATCH

Runs commands serially from a text file.

Formats

BATCH *file [keywords]*
BATCH *par1 par2 . . parn file [keywords]*

Parameters

file	name of the batch file containing the commands; see the Remarks
par1 . . n	value to substitute wherever the corresponding *%n* notation (%1, %2, etc.) appears in the batch file

Keywords

CONtinue=	**NO**	stops the batch file if any command stops abnormally (default)
	YES	ignores any abnormal terminations and continues with subsequent commands
DEST=		name of the text file to write commands into instead of running them; the file contains the list of expanded commands and can be used by other programs
	C	directs commands to the text frame for viewing only

Remarks

The batch file containing the commands must be in text format, created with a text editor. Commands in the batch file may be up to 512 characters long. Commands are performed serially; each must finish before the next one begins.

Normal string table substitution may be used within each command and will take place as the command is run. Use the TERM command to change the state of the single letter command toggles.

To add a remark in the batch file, specify REM or REM? followed by a space and the remark text. Remarks prefaced by REM? are echoed to the text frame.

Pseudocommands

BATCH also allows for some rudimentary flow control by permitting the following eight pseudocommands in the batch file. The term *value* in the formats below may be up to 512 characters, and is one of the following:

- a character string (for example, 1234ABC)
- a McIDAS string, preceded by a pound sign (for example, #STATION)
- a variable, enclosed in percent symbols (for example, %STATION%)
- a BATCH command parameter number, preceded by a percent symbol (for example, %1)

SET *variable=value*
This pseudocommand replaces the value of the *variable*, which is only available while the BATCH command is running. Reference the variable elsewhere in the batch file by using *%variable%* or *#variable*. If *variable* is not defined with SET, it is obtained from the McIDAS string table. You can define and use up to 30 variables, which are simply names storing strings of characters. Variable names may be up to eight alphanumeric characters.

SETSTRING *string=value*
This pseudocommand replaces the value of *string* in the McIDAS string table.

IF *value1==value2 command*
This pseduocommand runs the specified command if the two values are identical.

IF NOT *value1==value2 command*
This pseudocommand runs the specified command if the two values are NOT identical.

IF NOT ERRORCODE *command*
This pseduocommand runs the specified command if the last McIDAS command completed successfully. (That is, it returned a zero status.)

IF ERRORCODE *command*
This pseudocommand runs the specified command if the last McIDAS command had an error. (That is, returned a non-zero status.)

GOTO *label*
This pseudocommand causes the BATCH command to jump forward to the next line tagged with *:label*. See the *:label* pseudocommand below.

:label
This pseudocommand tags a line with a label so that it can be found with the GOTO pseudocommand. The *label* is a character string of up to 12 characters (for example, DONE!). You can add a comment after the label as long as one or more spaces separate the label and comment.

Examples

BATCH KMIA 0 6 LIST.BAT

If your BATCH file, **LIST.BAT**, contains the line below, this entry runs the McIDAS command **SFCLIST KMIA TIME=0 6.**

```
SFCLIST  %1  TIME=%2  %3
```

BATCH KTUL DISPLAY.BAT CONTINUE=YES

If your BATCH file, **DISPLAY.BAT**, contains the lines below, this entry sets the value of the variable ID to KTUL for use in the IMGDISP and PC commands. If station KTUL is in the image, it is displayed with a high resolution map, then the cursor is moved to the station location. If the image doesn't exist or station KTUL isn't in it, the message *** *OOPS! Station must be invalid or not on image* *** appears on text frame.

```
SET ID=%1
IMGDISP A.100 STA=%ID%  REFRESH='MAP VH'
IF NOT ERRORCODE GOTO CURSOR
REM? *** OOPS! Station must be invalid or not on image ***
GOTO DONE
:CURSOR
REM? *** Another successful image load! ***
PC L %ID%
:DONE
```

BRIEF

Opens a briefing window.

Format

BRIEF *window*

Parameter

window briefing window number; the range is 0-9 (default=0)

Remarks

Use briefing windows to display loops 1 through 9 saved with the DEFLOOP command. Do not create briefing windows with the same window number.

Use the following commands and procedures to control briefing windows and loops.

To:	Do This:
Advance one frame in the loop	Press **A**
Back up one frame in the loop	Press **B**
Close the briefing window	Choose Close from the Window menu or let the window automatically close when you exit McIDAS
Display a loop in a briefing window	Use the MOVIE command with the WIN keyword, or make the briefing window active and press the keyboard key that corresponds to the loop number
Resize the briefing window	Click and drag the window border
Restore the loop to the Image Window (McIDAS-OS2 only; this action is not available in McIDAS-X)	Double click in the briefing window
Return the briefing window to its original size	Press **R**
Start or stop looping	Press **L**

BRIEF makes the briefing window the same size as frame 1. When you display a loop in the briefing window that was saved on a frame of a different size, the loop's frames are rescaled to fit the briefing window. For example, if the loop was saved on 700 x 900 frames and the briefing window is 480 x 640, the loop's frames are rescaled to 480 x 640 to display the entire frame.

When you resize briefing windows using the window border, the frames displayed in the briefing window are automatically rescaled to fit the window. If you decrease the size of the briefing window, the graphics on the displayed frames will deteriorate.

The delay between frame advances in a briefing window is 250 milliseconds. Thus, the fastest loop speed you can attain in a briefing window is four frames per second, even if you specified a much faster loop speed when you saved the loop with DEFLOOP.

Examples

BRIEF
This entry creates briefing window 0. Use command DEFLOOP and/or MOVIE to display loops in the window.

BRIEF 3
This entry opens briefing window 3. Use command DEFLOOP and/or MOVIE to display loops in the window.

C

Lists a frame's directory.

Remarks

To list the current image frame's directory,

Press: **Alt C**

or

Type: **C**

Press: Enter

The output looks like this:

```
Frame SS Description Band Date  Time     Line Elem  Data Source
----- -- ----------- ---- ----- -------- ---- ----- -----------
    1 70 G-8 IMG      1   96171 16:02:00 3344 11935 A/ALL.4
```

Each field is defined below.

Field	Definition
Frame	frame number
SS	sensor source number
Description	sensor source description
Band	image band number
Date	image's Julian day, or date displayed if a graphic
Time	image's time, or the time displayed if a graphic
Line	line number, in image coordinates, of the upper-left corner of the frame
Elem	element number, in image coordinates, of the upper-left corner of the frame
Data Source	ADDE dataset name and position number if displayed with the IMGDISP command

CASEMODE (McIDAS-X only)

Sets the case mode for entering McIDAS-X commands.

Formats

CASEMODE LIST
CASEMODE SWAP
CASEMODE NONE

Parameters

LIST lists the current case-swap mode, either ON or OFF (default)

SWAP sets the automatic case-swap mode to ON so text is automatically entered in uppercase; this is the default mode when starting McIDAS-X; see the Remarks

NONE sets the automatic case-swap mode to OFF to make the Caps Lock indicator light correct

Remarks

The CASEMODE command automatically changes entered text to upper or lowercase.

By default, McIDAS-X is started in the SWAP mode since most McIDAS-X command names, parameters and keywords are typed in uppercase. Using the SWAP mode, you don't have to press the Caps Lock key when you first start McIDAS-X to switch to uppercase for typing McIDAS-X commands. However, it also makes the Caps Lock indicator light incorrect. If you enter the command CASEMODE NONE, text is automatically entered in lowercase and the Caps Lock indicator light is correct.

You can use the Shift or Caps Lock key to switch from lowercase to uppercase and vice versa without using the CASEMODE command.

Examples

CASEMODE
This entry lists the current case-swapping mode.

CCODE

Lists country codes.

Format

CCODE *country*

Parameter

country country to list (default=all)

Remarks

If *country* is two characters, CCODE looks for the one country whose code matches it. If one character or more than two characters are specified, all string matches are found.

Examples

CCODE
This entry lists all country codes.

CCODE UK
This entry lists the country with UK as its country code.

CCODE FRANCE
This entry lists the country code for France.

CCODE ISLAND
This entry lists all countries that have the word ISLAND in them.

CCODE Z
This entry lists all country codes and countries containing the letter Z.

CHILL

Calculates the wind chill index.

Format

CHILL *temp t-units speed s-units*

Parameters

temp temperature for calculating the wind chill index

t-units units of the specified temperature and output

- **F** Fahrenheit
- **C** Celsius
- **K** Kelvin

speed wind speed for calculating the wind chill index

s-units units of the specified wind speed

- **KTS** knots
- **KPH** kilometers per hour
- **MPH** miles per hour
- **MPS** meters per second
- **FPS** feet per second

Remarks

The wind chill index is listed in the same units as the input temperature.

Examples

CHILL -15 C 17 KTS
This entry lists the wind chill index for a temperature of -15° C and a wind speed of 17 knots.

CHILL 12 F 40 MPH
This entry lists the wind chill index for a temperature of 12° F and a wind speed of 40 miles per hour.

CLEAR

Clears output from text frames.

Format

CLEAR *bframe eframe*

Parameters

bframe	beginning text frame to clear; the range is 0 to 4 for McIDAS-OS2, 0 to 9 for McIDAS-X (default=current)
eframe	ending text frame to clear; the range is 0 to 4 for McIDAS-OS2, 0 to 9 for McIDAS-X (default=*bframe*)

Examples

CLEAR
This entry clears all text from the current text frame.

CLEAR 4
This entry clears text frame 4.

CLEAR 0 3
This entry clears text frames 0, 1, 2, and 3.

CM (McIDAS-X only)

Circulates the graphics color table.

Format

CM *blevel elevel [keywords]*

Parameters

blevel beginning graphics color level to loop

elevel ending graphics color level to loop

Keywords

GO= **YES** starts looping immediately

NO does not loop immediately (default)

INT= interval between steps, in milliseconds; the range is 5 to 5000 (default=100)

TIMeout= number of steps to complete before stopping (default=500)

Remarks

CM circulates the graphics colors through the specified graphics levels. Press the middle mouse button to begin, the right button to pause, and both buttons to stop the program. CM remains active until you press both mouse buttons or the program times out.

You can animate wind flow using the CM command to process the streamline output from the GRDDISP or the PTCON commands. You must use the PARAM=MOVIE keyword with these commands.

Examples

CM 1 3 INT=500
When you press the middle mouse button, the graphics will loop between color levels 1 and 3, pausing 500 msec (½ sec) between steps.

Time (sec)		0	½	1	1½. . .
Level	1	red	blue	green	red . . .
	2	green	red	blue	green . . .
	3	blue	green	red	blue . . .

CM 2 4
This entry loops graphics color levels 2 to 4.

COLORS

Lists the colors available with the global keyword TCOL.

Format

COLORS *bcolor ecolor*

Parameters

bcolor	beginning color to list; the range is 0 to 127 (default=0)
ecolor	ending color to list; the range is 0 to 127 (default=*bcolor*)

Remarks

If you don't specify *bcolor* and *ecolor*, all 128 colors are listed. The 128 colors consist of eight sets of background colors, each with the same 16 text colors to choose from. For example, colors 0 through 15 have a black background, while colors 16 through 31 have a blue background.

Each color value is listed on a separate line in its defined text and background colors.

Use the global keyword TCOL to specify the desired text color.

See Also

See *Appendix A, Global Keywords* for more information about the global keyword TCOL.

Examples

COLORS
This entry lists all 128 colors.

COLORS 64 79
This entry lists colors 64 through 79, which have a red background.

CU

Lists a quantity in up to eight different units.

Formats

CU *value unit nunits1 . . nunits8*
CU LIST

Parameters

value	amount of the unit; must be a real number
unit	unit to convert
nunits1 . . nunits8	new units converted to; specify up to eight units
LIST	lists a table of units and abbreviations (default)

Remarks

To square or cube the units, append 2 or 3 to the units. For example, IN2 means square inches and IN3 means cubic inches.

The tables below list the valid units and abbreviations.

Distance		Speed		Temperature	
CM	centimeters	FPS	feet per second	C	Celsius
DEGL	degrees of latitude	KTS	knots	F	Fahrenheit
FT	feet	KPH	kilometers per hour	K	Kelvin
IN	inches	MPH	miles per hour		
KM	kilometers	MPS	meters per second		
M	meters				
MI	miles				
MM	millimeters				
NMI	nautical miles				
YD	yards				

Weight		Pressure		Time	
G	grams	INHG	inches of mercury	DAY	days
KG	kilograms	MB	millibars	HR	hours
LB	pounds	HPA	hectopascals	MIN	minutes
OZ	ounces	PA	pascals	SEC	seconds
TON	tons			YR	years

Examples

CU
This entry lists the table of valid units and their abbreviations.

CU 1 MI IN FT YD NMI
This entry converts 1 mile to inches, feet, yards and nautical miles.

CU 30.37 INHG MB
This entry converts 30.37 inches of mercury to millibars.

CUR

Defines cursor size, type and color.

Formats

CUR *height width type color*
CUR *height width type blue green red* (McIDAS-X only)
CUR *option*

Parameters

height	cursor height in pixels; even size is rounded up to odd size; if entered as X, the size does not change (default=31)	
width	cursor width in pixels; even size is rounded up to odd size (default=*height*)	
type	**BOX**	box cursor
	XHAIR	crosshair cursor (default)
	XBOX	crosshair inside box cursor
	SOLID	solid box cursor (McIDAS-X only)
color	predefined color name; see the Remarks (default=red)	
blue	blue color intensity; the range is 0 to 255 (default=0)	
green	green color intensity; the range is 0 to 255 (default=0)	
red	red color intensity; the range is 0 to 255 (default=255)	
option	**ON**	makes the cursor visible (default)
	OFF	makes the cursor invisible

Remarks

Command GU COLORS lists the valid predefined cursor colors for McIDAS-X workstations. The valid predefined cursor colors for McIDAS-OS2 workstations are red, green, blue, cyan, magenta and yellow.

The *color* default only applies when entering CUR with no positional parameters. For all other command formats, the default is the current color.

Examples

CUR
This entry displays a 31 x 31 red crosshair cursor.

CUR 21
This entry makes the cursor 21 x 21 pixels.

CUR 20 40 BOX GREEN
This entry changes the cursor to a green box, 21 x 41 pixels.

CUR 40 30 XBOX BLUE
This entry makes a 41 x 31 pixel, blue, crosshair inside box cursor.

CUR X 53 XHAIR
This entry makes a crosshair cursor, 53 pixels wide; the height and color do not change.

CUR 32 25 BOX 200 80 120
This entry makes a 33 x 25 box cursor colored by the intensities for blue, green and red as 200, 80 and 120, respectively, on McIDAS-X workstations.

CUR OFF
This entry turns off the cursor making it invisible.

CW

Fills or erases the graphics in the cursor.

Format

CW *level frame height width*

Parameters

level	graphics color level; the range is zero to the maximum available for the display type (default=0 to erase all graphics within the cursor)
frame	graphics frame number (default=current)
height	height of the area to erase, in pixels (default=cursor height)
width	width of the area to erase, in pixels (default=cursor width)

See Also

Use command EG to erase the entire graphics frame.

Examples

CW
This entry erases the graphics within the cursor.

CW 1 3
This entry fills the cursor with graphics color level 1 on graphics frame 3.

CW 4 2 50 30
This entry fills a 50 x 30 box centered at the cursor with graphics color level 4 on graphics frame 2.

D

Lists the digital values at the cursor center.

Remarks

To list the digital values and other appropriate units of the image pixel under the cursor's center,

Press: **Alt D**

or

Type: **D**

Press: **Enter**

The D command lists the dataset name, file coordinates, image coordinates, raw digital values, brightness values, radiance, and blackbody temperatures, or other units appropriate to the data source.

The nominal image coordinates correspond to the cursor location. They may not be the original image coordinates of the displayed data value. Image coordinate values may vary if the image file was blown down from the original image and then redisplayed with a magnification factor of two or more.

Any 2-byte IR or dwell-sound GOES data converted to 1-byte data using the IMGCOPY command, assigns missing temperature or brightness values of zero. Brightness values of 255 also indicate missing values such as data off the earth edge or missing lines.

You can use the ADDE command IMGPROBE in place of D.

See Also

Use the IMGPROBE command to list the data for the area inside the cursor.

DATALOC

Manages and lists the client routing table.

Formats

DATALOC ADD *group address*
DATALOC DEL *group*
DATALOC LIST *group*

Parameters

ADD	adds an entry to the client routing table; the entry maps a group name to a server's IP address
DEL	deletes an entry from the client routing table
LIST	lists the client routing table (default)
group	group name (no default for ADD and DEL; default=all groups for LIST)
address	IP address of the server; specify LOCAL-DATA for the local server

Remarks

DATALOC manages the client routing table, which links ADDE groups to IP addresses of servers. When you enter an ADDE command, the client routing table is scanned to locate the server that will receive the data request. When the server receives the data request, it scans its own mapping table to determine which data the client is requesting.

If an ADDE command specifies a group name that is not in the client routing table, the data request is sent to the local server.

You cannot assign the same group name to more than one server because the ADD option overwrites an existing group name without warning. You may, however, assign more than one group name to a server.

Examples

DATALOC
This entry lists the client routing table.

DATALOC ADD MYDATA LOCAL-DATA
This entry modifies the client routing table so that commands requesting data from a dataset in the group MYDATA are routed to the local server.

DATALOC ADD RTSERV WEATHER.SSEC.WISC.EDU
This entry modifies the client routing table so that commands requesting data from a dataset in the group RTSERV are routed to the server at the IP address WEATHER.SSEC.WISC.EDU.

DATALOC ADD RADAR 123.456.789.012
This entry modifies the client routing table so that commands requesting data from a dataset in the group RADAR are routed to the server at the IP address 123.456.789.012.

DATALOC LIST RADAR
This entry lists the client routing table entry for the group RADAR.

DATALOC DEL RADAR
This entry deletes the client routing table entry for the group RADAR.

DATELIST

Lists the specified date in several formats.

Format

DATELIST *date offset* **FORM=**

Parameters

date date to list; valid formats are YYYYDDD, YYYY/MM/DD and DD/MON/YYYY where YYYY, DDD, MM and DD are integers and MON is three or more letters, for example, JAN or JANUARY (default=current)

offset number of days to offset the date; a positive integer increments the specified date, while a negative integer decrements the date (default=0)

Keyword

FORm= *'text'* customize output format using text and/or predefined place holders; see the Remarks for a list of place holders default= '(YYYY)(DDD) = (DD) (SMON) (YYYY) = (YYYY)/(MM)/(DD)'

Remarks

The minimum date that can be listed is 1 January 1970. The maximum date is system dependent.

The FORM keyword lets you customize the output format. You can mix regular text with the predefined place holders listed below.

Place Holder	Description	Example
(DOW)	day of week	Thursday
(SDOW)	3-character day of week	Thu
(DD)	2-digit day of month	31
(DDD)	3-digit Julian day	365
(MM)	2-digit month of year	12
(MON)	full month name	December
(SMON)	3-character month name	Dec
(YY)	2-digit year	98
(YYYY)	4-digit year	1998

Examples

DATELIST
This entry lists the current day in the formats YYYYDDD, DD MON YYYY and YYYY/MM/DD.

DATELIST X 1
This entry lists tomorrow's date in the formats YYYYDDD, DD MON YYYY and YYYY/MM/DD.

DATELIST 97264
This entry lists day 264 of 1997 in the formats shown below.

```
1997264 = 21 Sep 1997 = 1997/09/21
```

DATELIST 2012/05/23
This entry lists 23 May 2012 in the formats shown below.

```
2012144 = 23 May 2012 = 2012/05/23
```

DATELIST 1/MAR/2004 -1
This entry lists the day before 1 March 2004 in the formats shown below.

```
2004060 = 29 Feb 2004 = 2004/02/29
```

DATELIST 1998365 FORM='The date is: (DOW) (SDOW) (DD) (DDD) (MM) (MON) (SMON) (YY) (YYYY)'
This entry lists 31 December 1998 in the formats shown below.

```
The date is: Thursday Thu 31 365 12 December Dec 98 1998
```

DEFLOOP

Lists, saves and restores loops.

Formats

DEFLOOP LIST *bloop eloop*
DEFLOOP SAVE *loop "label*
DEFLOOP REST *loop*

Parameters

LIST	lists the directory of saved loops
SAVE	saves the current loop
REST	restores a previously saved loop
bloop	beginning loop to list (default=all defined loops)
eloop	ending loop to list (default=*bloop*)
loop	loop number to save or restore; the range is 1 to 99
"label	label to save with the loop state; 48 characters maximum including blanks

Remarks

The DEFLOOP SAVE option saves the state of the workstation display by storing the display parameters in User Common. The display parameters include the loop bounds, dwell rates, image and graphics on/off state, cursor state, nortel key (N), and loop state. The REST option restores the loop with its saved settings to the Image Window.

You can use either DEFLOOP or the F Key Menu pseudocommand *S to save the state of your workstation display. They use the same filing system to save loops.

You can restore loops 1 through 9 to a briefing window created with the BRIEF command. All the loop settings except the cursor position, image on/off, and graphic on/off are restored. To restore the loop to a briefing window, use the MOVIE command with keyword WIN or make the briefing window active and press the keyboard key corresponding to the loop number between 1 and 9. Press **L** to manually start or stop looping, **A** to advance a frame, and **B** to back up a frame in the loop.

Always add new loops consecutively to save disk space since you will need 16 Kbytes on disk to store the context for a loop.

Examples

DEFLOOP SAVE 3 "East US visible hourly
This entry saves the current loop as loop number 3 with the label *East US visible hourly*.

DEFLOOP REST 27
This entry restores loop 27 and displays its label if one was specified. You can use the LS, DR and F commands to interrogate the state.

DEFLOOP LIST
This entry lists the loop numbers and labels for loops saved with a label.

DIST

Finds the distance on a navigated frame.

Formats

DIST CIR *angle inc distance [keywords]*
DIST ROT *angle inc distance [keywords]*
DIST STE *angle din distance [keywords]*
DIST E *lat lon [keywords]*
DIST I *line ele [keywords]*
DIST T *raster pictel [keywords]*

Parameters

CIR	draws a circle around the initial cursor location beginning at a specified distance and angle
ROT	draws all or part of a circle around the initial cursor location beginning at a specified distance and angle
STE	steps the cursor away from the initial cursor location at a specified distance and angle
E	steps the cursor away from the initial cursor location by the specified latitude and longitude increments
I	steps the cursor away from the initial cursor location by the specified line and element increments
T	steps the cursor away from the initial cursor location by the specified raster and pictel increments
angle	moves the cursor away from the original location by this angle, in degrees (default=0)
inc	increment (in degrees) to shift the cursor along its circular path
distance	distance to move the cursor from its original location
din	increment to step the cursor along its straight-line path
lat	degrees of latitude to move the cursor; northward is positive
lon	degrees of longitude to move the cursor; westward is positive
line	number of image lines to move the cursor; downward is positive
ele	number of image elements to move the cursor; rightward is positive

raster number of TV lines (rasters) to move the cursor; downward is positive

pictel number of TV elements (pictels) to move the cursor; rightward is positive

Keywords

Color= graphics color level of the characters (default=2)

SIze= height of the plotted characters, in pixels (default=5)

SYm= **.** a period marks off the distances (default)

+ a plus sign marks off the distances

***** an asterisk marks off the distances

o a lowercase letter O marks off the distances

Unit= **KM** measures distance in kilometers (default)

MI measures distance in statute miles

NMI measures distance in nautical miles

Remarks

Command DIST will not run unless the satellite image is navigated or a MAP command is run.

Each cursor location marked on the graphics frame is indicated by a period (default) or a symbol chosen with keyword SYM. A symbol is plotted on the graphics frame at the new cursor location each time you press the left mouse button (McIDAS-OS2) or the middle mouse button (McIDAS-X).

DIST runs interactively when specified with no parameters, or with the ROT, STE, E, I or T parameter.

Examples

Position the cursor at the point on a navigated frame that is the starting point of the calculation. Then,

Type: **DIST**

For McIDAS-X, the program replies:

```
Press MIDDLE mouse button to measure point
Press RIGHT button to reset the starting point
Press BOTH mouse buttons or ALT+Q to exit DIST
```

For McIDAS-OS2, the program replies:

```
Press LEFT mouse button to measure point
Press RIGHT button to reset the starting point
Press BOTH mouse buttons or ALT+Q to exit DIST
```

Move the cursor to the point where you want the distance measured. Press the left mouse button (McIDAS-OS2) or the middle mouse button (McIDAS-X). The latitude and longitude, and the angle and distance to the initial and previous cursor locations are listed on the text frame.

A symbol and the distance to the initial cursor location are plotted on the graphics frame. Relocate the cursor and press the left mouse button (McIDAS-OS2) or the middle mouse button (McIDAS-X) to measure more locations. You can reset the initial point by pressing the right mouse button.

DIST CIR 45 30 100 SYM=*
This entry draws a circle of asterisks on the graphics frame 100 km away from the original cursor location beginning at angle 45. The circle contains 12 asterisks since the increment is 30°.

DIST ROT 90 15 200 UNIT=NMI SYM=* SIZE=20 COLOR=4
This entry draws an arc or circle of asterisks on the graphics frame 200 nautical miles away from the original cursor location, beginning at an angle of 90°. The asterisks are 20 pixels high in graphics color level 4.

DMAP

Lists information about files.

Formats

DMAP *string [keyword]*
DMAP *bletter eletter [keyword]*

Parameters

string	character string in the file name; you can include the wild card characters asterisk (*) and question mark (?) (default=lists all files)
bletter	beginning letter of the file name
eletter	end of the range of letters beginning the file name (default=*bletter*)

Keywords

Form=	**ALL**	lists all versions of the specified file names; the unreachable versions are flagged by a pound sign (#)

Remarks

DMAP lists file information in the ASCII collating sequence. The permissions, size, date, file name and directory are given for each entry in the list.

If you specify *string* without a wild card character, DMAP lists all files that begin with the specified character string. If you specify *bletter* and *eletter*, all files with names that begin with a letter in the range *bletter-eletter* are listed.

The output's PERM field indicates the user's permissions. A *d* in the first field position indicates the entry is a directory; a hyphen (-) indicates a file. The letters *r, w* or *x* in the next three positions indicate read, write or execute permissions. A hyphen (-) in any of the positions indicates that the user does not have that permission.

The FORM=ALL list also includes unreachable files in the REDIRECT entries and the **McPATH** (McIDAS-X only) directories. Unreachable files are flagged by a pound sign (#) before the fully qualified path name in the PATHNAME field. If the file is in a REDIRECT directory, the FROM field contains an *R* followed by the REDIRECT entry. For McIDAS-OS2, if the file is in the **\mcidas\data** directory, the FROM field is a period (.); for McIDAS-X, if the file is in a **MCPATH** directory, the FROM field is an M.

Examples

DMAP
This entry lists information about all files.

DMAP M
This entry lists information about all files with names beginning with M.

DMAP MDX
This entry lists information about all files with names that begin with the character string MDX.

DMAP ?MDX
This entry lists information about all files with names beginning with a single character followed by the character string MDX.

DMAP *.PIX
This entry lists information about all files with the .PIX extension.

DMAP F J
This entry lists information about files with names beginning with F, G, H, I and J.

DOQTL

Selectively deletes MD files.

Format

DOQTL *bfile efile cutoff*

Parameters

bfile	beginning MD file in the range (no default)
efile	ending MD file in the range (no default)
cutoff	maximum number of MD files kept on the system, in days (no default)

Remarks

Command DOQTL allows you to delete unwanted MD files on the workstation according to the specified cutoff. If *cutoff*=4, only the MD files for the last four days are retained on the workstation; the rest are deleted. This assumes that the MD files 1 to 10 are for ISFC schema data, MD files 11 to 20 are for IRAB schema data, etc.

Examples

DOQTL 1 30 2
If the current day is 91223, this entry saves MD files 2, 3, 12, 13, 22 and 23, and deletes the rest.

DOSTOLW

Converts ASCII text format files to LW format text files.

Format

DOSTOLW *sfile dfile* **R**

Parameters

sfile	source ASCII text file name and extension
dfile	destination LW file name; it must be different than *sfile*
R	replaces the destination file if it already exists

Remarks

The *sfile* must be an ASCII text file with a new line character at the end of each line.

A line in LW file format is an 80-character card image, blank padded as needed, with no carriage returns or linefeeds.

Examples

DOSTOLW SFCPLT.RUN SFCPLT
This entry converts the ASCII text file named **SFCPLT.RUN** to an 80-character card image format LW file named SFCPLT.

DR

Defines the dwell rates for frame looping.

Formats

DR *rate1 rate2 . . raten*
DR *repeat*rate repeat*rate . . .*
DR INI
DR AUTO

Parameters

rate1 . . n	dwell rate for each frame (no default)
repeat	number of frames the rate applies to (no default)
INI	initializes the dwell rates to nine units for the first frame and six units for all subsequent frames
AUTO	assigns the longest dwell to the latest image in the current loop.

Remarks

For McIDAS-X, the rate is in units of 1/15 second; it is workstation-dependent for McIDAS-OS2. The last frame assigned a rate determines the rate for all subsequent frames in that loop. See the examples.

Set the dwell rates to compensate for irregularly spaced image times. Graphics frames in loops have dwell rates identical to image frames. The PM workstation does not differentiate graphics from image frames.

You can mix the command formats. For example, **DR 3 3 5*8 3** is the same as **DR 3 3 8 8 8 8 8 3**.

Examples

DR
This entry lists the current dwell rates in the loop.

DR 7
This entry sets all frames to dwell rate 7

DR 12 6 6 12
This entry sets dwell rates to six for the second and third frames, and 12 for the first, fourth and all subsequent frames of the loop.

DR AUTO
This entry rotates the dwell rates so the longest dwell is assigned to the most recent image in the loop. If the dwell rates of all the frames are equal, this entry has no effect.

DSINFO

Lists datasets on local and remote servers.

Format

DSINFO *type group*

Parameters

type	data type; valid types are **GRID**, **IMAGE**, **NAV**, **POINT**, **TEXT** or **ALL** (default=**ALL**)
group	group name (default=all groups)

Remarks

DSINFO scans the client routing table to find the server with the data type and group name specified in the command. It then lists information about the server's datasets with that data type and group name.

Use the **DATALOC LIST** command to list the groups currently defined in the client routing table.

If the ADDE remote servers you access require a user name and project number for accounting, you must logon to your workstation (using the LOGON command) before requesting data with DSINFO or other ADDE commands.

Examples

DSINFO
This entry lists all datasets in the groups defined in the client routing table.

DSINFO ALL RTSERV
This entry lists all datasets in the group RTSERV.

DSINFO IMAGE RTSERV
This entry lists all datasets of data type IMAGE in the group RTSERV.

DSINFO IMAGE
This entry lists all datasets of data type IMAGE in the groups defined in the client routing table.

DSSERVE

Manages and lists dataset names on the local server.

Formats

DSSERVE ADD *dataset format bfile efile [keywords] "comment*
DSSERVE DEL *dataset*
DSSERVE LIST *group format*

Parameters

ADD	adds a new ADDE dataset name to the local server
DEL	deletes an ADDE dataset name from the local server
LIST	lists the ADDE dataset names on the local server (default)
dataset	ADDE dataset name to add or delete; must be specified in the group/descriptor format; see the Remarks for restrictions
format	file format; valid formats include **AREA**, **GRID**, **MD**, **NCDF**, **SYSN**, and **TEXT** (no default for ADD; default=all formats for LIST)
bfile	beginning file number assigned to the ADDE dataset; *bfile* and *efile* are required for AREA, GRID, MD, NCDF and SYSN formats
efile	ending file number assigned to the ADDE dataset
"*comment*	description of the ADDE dataset; up to 80 characters; the description cannot include an equal sign (=), apostrophe ('), or comma (,)
group	group name (default=all groups)

Keywords

INFO=	'*text*'	additional information for the server about the data; not needed or used with McIDAS file formats (AREA, GRID, MD, and SYSN); 72 characters maximum; the beginning and ending single quotes are mandatory; see the Remarks
TYPE=		data type of the dataset created with the ADD option; valid types are **IMAGE**, **GRID**, **NAV**, **POINT** and **TEXT**; must be specified for all non-McIDAS file formats except TEXT (default=**IMAGE** for AREA *format*, **GRID** for GRID *format*, **NAV** for SYSN *format*, **POINT** for MD *format*, **TEXT** for TEXT *format*)

Remarks

The *dataset* parameter must be specified in the group/descriptor format. The total length of *dataset*, including the slash, must be 24 characters or less. The group and descriptor names are each limited to 12 characters or less. The group name cannot be entirely numeric. The following characters are not valid in the group or descriptor name: slash (/), period (.), blank ( ), left bracket ([ ), right bracket ( ]).

The ADD option overwrites an existing ADDE dataset name without warning. This means you cannot assign the same ADDE dataset name to more than one dataset, even if the datasets have different file formats.

After adding the dataset name, the ADD option maps the dataset's group name to the local server in the DATALOC table. If the group name is already mapped to a remote server, the DATALOC table entry is not changed.

When adding a TEXT-format dataset, you must specify the file name with the INFO keyword. In McIDAS-X, the file name is case-sensitive. If you do not include the full path name, the file must be located in a **MCPATH** or REDIRECT directory for McIDAS-X, or in **\mcidas\data** or a REDIRECT directory for McIDAS-OS2.

When adding a SYSN-format dataset, the descriptor portion of the dataset name must exactly match a satellite name in the text file **CORE.SAT**. For McIDAS-X, this file is located in **~mcidas/data**; for McIDAS-OS2, this file is located in **\mcidas\data**. The server uses this file to map the descriptor to the correct sensor source number and locate the needed information in the dataset's system navigation files. For example, NAV/GOES9, NAV/GOES-9, NAV/G9, NAV/G-9 and NAV/WEST are all valid dataset names because all the descriptors are entries in the **CORE.SAT** file. You cannot add new satellite names or edit existing names in **CORE.SAT**; you must use a satellite name that exists in the SSEC-supplied version of the file.

In McIDAS-X only, you can create netCDF image files from AREA format datasets. To do so, make a netCDF image dataset with a DSSERVE command similar to: DSSERVE ADD NETCDF/GOES NCDF 1 9999 TYPE=IMAGE "netCDF GOES image files. Then specify NETCDF/GOES as the destination dataset with a positive position number in an IMGCOPY, IMGFILT, IMGOPER or IMGREMAP command. The output file name consists of the descriptor name and position number followed by **.nc**. For example, the command IMGCOPY GOESEAST/VIS NETCDF/GOES.300 SIZE=ALL creates an output file named **GOES0300.nc** that's mapped to position 300 of the dataset NETCDF/GOES.

Examples

DSSERVE
This entry lists information about all datasets on the local server.

DSSERVE ADD LOCALDATA/AREAS AREA 1 9999 "Areas in my data directory

This entry assigns the dataset name LOCALDATA/AREAS to areas 1 through 9999 on the local server.

DSSERVE ADD NAV/NOAA-14 SYSN 1 6 "NOAA-14 System Navigation

This entry assigns the dataset name NAV/NOAA-14 to system navigation files 1 through 6 on the local server.

DSSERVE ADD HURRICANE/GOES-WV-8KM AREA 6001 6100 "Hurricane Bob images

This entry assigns the dataset name HURRICANE/GOES-WV-8KM to areas 6001 through 6100 on the local server.

DSSERVE ADD ADMIN/SATDATA TEXT INFO='/u/oper/mcidas/info/satdata.txt' "Listing of all available satellite data

This McIDAS-X entry assigns the dataset name ADMIN/SATDATA to the text file `/u/oper/mcidas/info/satdata.txt`. Use the READ command to list the file.

DSSERVE ADD T/CONTOUR TEXT INFO='CONTOUR.DEF' "Default contour intervals for the GRDDISP command

This McIDAS-OS2 entry assigns the dataset name T/CONTOUR to the text file CONTOUR.DEF located in the `\MCIDAS\DATA` directory. Use the READ command to list the file.

DSSERVE ADD GOES/VIS_4KM HDF TYPE=IMAGE INFO='D:\INGEST\HDFDATA' "GOES-8 HDF data

This McIDAS-OS2 entry assigns the dataset name GOES/VIS_4KM to HDF image data on the local server. The directory specified with the INFO keyword is used by the locally-developed HDF server to locate the data.

DSSERVE ADD GOES/VIS_4KM HDF TYPE=IMAGE INFO='/users/ingest/hdfdata' "GOES-8 HDF data

This McIDAS-X entry assigns the dataset name GOES/VIS_4KM to HDF image data on the local server. The directory specified with the INFO keyword is used by the locally-developed HDF server to locate the data.

DSSERVE LIST HURRICANE

This entry lists information about all datasets in the group HURRICANE on the local server.

DSSERVE DEL HURRICANE/GOES-WV-8K

This entry deletes the dataset name HURRICANE/GOES-WV-8K from the local server, but does not affect the data to which the dataset name was assigned.

E

Lists the earth coordinates at the cursor center.

Remarks

To list the earth coordinates at the cursor center,

Press: **Alt E**

or

Type: **E**

Press: **Enter**

Command E lists:

- the latitude and longitude of a pixel on a navigated frame in the format HH:MM:SS
- satellite image line and element coordinates
- TV raster and pictel coordinates; position raster=1 and pictel=1 is the upper-left corner of the frame

The output format of E is shown below. In the McIDAS-X, the E key lists the coordinates of the current image frame if it's toggled on, and the coordinates of the current graphics frame if the image frame is toggle doff. Press **K** to toggle the image frame.

```
Frame  Latitude  Longitude  Tvline  Tvelem  Line  Elem
  nn   DDD:MM:SS  DDD:MM:SS   nnnn    nnnn  nnnn  nnnn
```

EB

Black and white contrast stretching.

Format

EB *inlo inhi outlo outhi*

Parameters

inlo	lowest input brightness value (default=0)
inhi	highest input brightness value (default=255)
outlo	new low brightness value (default=0)
outhi	new high brightness value (default=255)

Remarks

The input brightness values correspond to the brightness values on the image frame. Input brightness values below *inlo* and above *inhi* are not changed. *Inlo* is output at value *outlo* and *inhi* at value *outhi*. Brightness values between *inlo* and *inhi* are output at values determined by linear interpolation from *outlo* and *outhi*.

When using the mouse-controlled version, moving the cursor to the right along the x-axis decreases the upper brightness bound (from level 255) to be enhanced as white (255). Moving the cursor upward along the y-axis increases the lower brightness bound (from level 0) to be enhanced as black (0).

Occasionally, a brightness range will contain a value that will not need to change as the new values are assigned by EB. In the example below, the data's brightness value of 104 happens to match the value assigned during the EB stretch. Since value 104 did not need to change, it becomes a breakpoint in the EU TABLE listing and is not shown on the output below. Command EB 62 164 2 250 produces output from EU TABLE like this:

```
 Brightness      Blue        Green        Red
  min  max     min  max    min  min     min  max
  ---  ---     ---  ---    ---  ---     ---  ---
   62  103       2  102      2  102       2  102
  105  164     107  250    107  250     107  250
```

See Also

Command EU SAVE will save the current enhancement. Command EU MAKE will apply color enhancements to any frame.

Examples

EB

This entry invokes interactive mouse-controlled contrast stretching. Press the right mouse button to end the process, leaving the current enhancement.

EB 50 150 0 255

This entry rescales input brightness level 50 as 0 (black) and input brightness level 150 as 255 (white). The 101 counts from 50 to 150 are linearly stretched along the 256 counts from 0 to 255.

EB 30 255 50 200

This entry rescales input brightness level 30 as 50, and input brightness level 255 as 200. The 226 counts from 30 to 255 are linearly stretched along the 151 counts from 50 to 200.

ECHO

Displays a line of text on a text frame.

Format

ECHO *"text*

Parameter

"text text to display on the text frame; the double quote is mandatory

Remarks

ECHO is useful in a RUN command.

Examples

ECHO
This entry echoes a blank line.

ECHO "This is a test
This entry prints *This is a test* on the text frame.

EDITMODE (McIDAS-X only)

Lists and changes the McIDAS command input editor.

Formats

EDITMODE LIST
EDITMODE *editor*

Parameters

LIST list the available editors, with the current setting denoted (default)

editor editor to use for entering McIDAS commands

- **MCIDAS** standard McIDAS input editor (default)
- **VI** vi input editor
- **EMACS** emacs input editor
- **DEBUG** keyboard input debugging editor; press any key three times to exit to the previous editor

Remarks

You can also enter the EDITMODE command as EMODE.

The EDITMODE vi and emacs editors support a small subset of the commands available in the actual editors. See the list of the supported commands below.

The EDITMODE vi editor supports the following commands.

Command	Function
ESC key	Switch to the vi command editor from the McIDAS editor.
l	Move the cursor forward (right) one character.
w or W	Move the cursor forward one word.
h	Move the cursor back (left) one character.
b or B	Move the cursor back one word.
0	Move the cursor to beginning of the line.
$	Move the cursor to end of the line.
k or -	Recall the previous command.
j or +	Recall the next command.

Command	Function
a	Return to the McIDAS editor and enter text after the current character.
A	Append text to the end of the line. Equivalent to $a.
c*motion*	Delete the current character through the character defined by *motion*, and return to the McIDAS editor. For example, cw deletes a word starting at the cursor position and returns to the McIDAS editor. If *motion* is c, the entire line is deleted.
C	Delete the current character through the end of line and return to the McIDAS editor. Equivalent to c$.
s	Delete the current character and return to McIDAS editor.
S	Delete the current line and return to the McIDAS editor. Equivalent to cc.
D	Delete the current character through the end of line. Equivalent to d$.
d*motion*	Delete current character through the character defined by *motion*. For example, dw deletes a word starting at the cursor position. If *motion* is d, the entire line is deleted.
i	Return to McIDAS editor and insert text before the current character.
I	Insert text before the beginning of the line. Equivalent to 0i.
R	Return to McIDAS editor and replace characters on the screen with characters you type overlay fashion.
x	Delete the current character.
X	Delete the preceding character.

EDITMODE emacs editor supports the following emacs-like commands:

Command	Function
^F	Move the cursor forward (right) one character.
^B	Move the cursor back (left) one character.
^A	Move the cursor to beginning of the line.
^E	Move the cursor to end of the line.
^H	Delete the previous character.
^D	Delete the current character.
^K	Delete the current line starting at the cursor.
^G	Delete the current line.
^U	Delete the current line. Same as ^G.
^P	Recall the previous command.
^N	Recall the next command line.

Examples

EDITMODE
This entry lists the available McIDAS command input editors, noting the current setting with *[cur]*.

EDITMODE VI
This entry switches the McIDAS command input editor to the vi editor allowing you to edit the command line using the vi-like commands listed in the Remarks.

EG

Erases graphics and images.

Formats

EG *bframe eframe [keyword]*
EG I *bframe eframe*

Parameters

bframe	beginning frame in the range to erase (default=current)
eframe	ending frame in the range to erase (default=*bframe*)
I	in McIDAS-X, erases the image and the frame directory; in -OS2, erases the graphics, the image, and the frame directory

Keywords

LEV=	graphics color level to erase; only the graphics drawn in this color are erased; valid only in McIDAS-X (default=all levels)

Remarks

The EG *bframe eframe* format erases only graphics; the image and the frame directory (information about what's displayed in the frame) are not erased. The EG I *bframe eframe* format erases the graphics, the image, and the frame directory in McIDAS-OS2; and the image and the frame directory (but not the graphics) in McIDAS-X. The EG command does not change the current image and graphic enhancement tables.

If you have multiple panels on a frame, you can erase a range of panels by specifying beginning and ending panel numbers with the global keyword PAN. For example, EG 1 5 PAN=2 4 erases the graphics on panels 2, 3, and 4 on frames 1 through 5.

Examples

EG
This entry erases graphics on the current frame.

EG 3 5
This entry erases the graphics on frames 3, 4 and 5.

EG I 2 3
This entry erases the images and the frame directory information on frames 2 and 3 in McIDAS-X. It also erases the graphics in McIDAS-OS2.

EG LEV=3
In McIDAS-X, this entry erases graphics drawn in color level 3 on the current frame.

EU

Enhancement utility.

Formats

EU COLORS
EU DEL *name*
EU LIST *string*
EU MAKE *lo hi bcolor ecolor bframe eframe*
EU MAKE *lo hi bcolor ecolor [keyword]*
EU MAKE *lo hi blo bhi glo ghi rlo rhi bframe eframe*
EU MAKE *lo hi blo bhi glo ghi rlo rhi [keyword]*
EU REST *name bframe eframe*
EU REST *name [keyword]*
EU SAVE *name*
EU TABLE *name*

Parameters

COLORS lists the predefined colors in the `MCRGB.TXT` data file

DEL deletes a saved enhancement

LIST lists the saved enhancements

MAKE sets the enhancement

REST restores a saved enhancement (default)

SAVE saves the current enhancement

TABLE lists the values of an enhancement (default=current)

name enhancement name; eight alphanumeric characters maximum (REST option default=default enhancement; TABLE option default=current; no default for DEL and SAVE options)

string lists only the enhancements beginning with this character string (no default; list all enhancements)

lo lowest brightness value; the range is 0 to 255 (default=0)

hi highest brightness value; the range is 0 to 255 (default=255)

bcolor beginning predefined color; use EU COLORS to list the valid colors

ecolor ending predefined color; use EU COLORS to list the valid colors (default=*bcolor*)

bframe beginning image frame (default=current)

eframe	ending image frame (default=*bframe*)
blo	lowest blue intensity value; the range is 0 to 255 (default=0)
bhi	highest blue intensity value; the range is 0 to 255 (default=0)
glo	lowest green intensity value; the range is 0 to 255 (default=0)
ghi	highest green intensity value; the range is 0 to 255 (default=0)
rlo	lowest red intensity value; the range is 0 to 255 (default=0)
rhi	highest red intensity value; the range is 0 to 255 (default=0)

Keywords

LOOP=	**YES**	applies the enhancement to all frames in a loop
	NO	does not apply the enhancement (default)

Remarks

Brightness values are only listed with EU TAB when they vary from the default table, i.e., brightness values 0 to 255 have intensities 0 to 255 for blue, green and red. For example, EU MAKE 20 120 20 120 20 120 20 120 lists nothing because the blue, green and red intensities have not altered the default range.

Occasionally, a brightness range will contain a value that will not need to change as the new values are assigned by command EB. In the example below, the data's brightness value of 104 happens to match the value assigned during the EB stretch. Since value 104 did not need to change, it becomes a breakpoint in the EU TABLE listing and is not shown on the output below. Command EB 62 164 2 250 produces the following output from EU TABLE.

```
Brightness      Blue        Green        Red
 min  max     min  max    min  min     min  max
 ---  ---     ---  ---    ---  ---     ---  ---
  62  103       2  102      2  102       2  102
 105  164     107  250    107  250     107  250
```

When an area is displayed on a McIDAS-OS2 PM workstation, the image's brightness values 0 through 16 are assigned to the display's brightness value 16. The display's brightness values 0 through 15 are reserved for graphics and cursor colors. For some images, this will affect the results and may affect enhancements made to the data. To avoid having these image brightness values mapped to the display's brightness value 16, use the SU command with the IMGDISP command to stretch or map these brightnesses to different values. Use the EU command to enhance the displayed data.

See Also

Use command EB for interactive, mouse-controlled contrast stretching.

Examples

EU
This entry restores the default enhancement to the current frame.

EU LIST
This entry lists all the saved enhancement tables on the workstation.

EU LIST VAP
This entry lists all the saved enhancement tables beginning with VAP.

EU MAKE 20 75 255 255 0 0 255 255
This entry color enhances all image pixels with brightness values between 20 and 75 to solid magenta.

EU MAKE 100 200 RED YELLOW 1 3
This entry color enhances the image pixel brightness values between 100 and 200 on image frames 1 to 3 from red to yellow.

EU SAVE VAPOR
This entry saves the enhancement on the current frame to a file named VAPOR.

EU REST VAPOR LOOP=YES
This entry restores an enhancement called VAPOR to all frames defined in a loop.

EU TABLE
This entry lists the values of the current enhancement.

EXIT

Ends a McIDAS-X session and associated windows.

Remarks

Use EXIT command to end the McIDAS-X or McIDAS-OS2 session and close its associated windows. This method is preferred over manually closing down the windows with the mouse buttons.

To restart McIDAS-X after using EXIT, type the following command from the Unix command prompt and press **Enter**.

Type: **`mcidas`**

To restart McIDAS-OS2 after using EXIT, change to the **`\mcidas\data`** directory in the OS/2 Window. Then type the following command and press **Enter**.

Type: **MCIDAS**

F

Displays the workstation's state.

Remarks

To list the workstation's state,

Press: **Alt F**

or

Type: **F**

Press: **Enter**

The output format of F is workstation dependent; a sample output is shown below.

```
Video Status for Your Workstation
                                Image Frame(s)   Graphics Frame(s)
Number Available                nn               nn
Current                         nn (Opp=nnn)     nn
Loop Bounds                     n to n/Random    n to n
Visible (K & W toggle)          Yes/No           Yes/No
Connected (Y & J toggle)        Yes/No           Yes/No
Looping (L toggle)              Yes/No           Yes/No
Cursor parameters:  Size=nnn/nnn                 Type=cursor type
                 Center position=nnn/nnn         Color=color

Image frames nn-nn and Graphics frames nn-nn are nnnn BY nnnn.
```

The F command will not display the Graphics Frame(s) column on McIDAS-OS2 PM workstations, since image and graphics frames are identical on them.

If you use command LB to set image or graphics loop bounds, the table indicates the loop bound set. If you use command LS to set the loop bounds, random looping is in effect. In this case, you can enter **LS** or **LS G** to list the current loop definition.

The final lines of the output information describe the number and size of the image and graphics frames. They vary, depending on your workstation. In McIDAS-X, add new frames with the MAKFRM command. In McIDAS-OS2, you can redefine the frame allocation and frame sizes. See *Running the SETUP Program* on page 1-29 for more information.

Use commands K, W, J, Y and L to toggle elements of the loop control system on and off. Command K toggles the image. W toggles the graphics. J toggles the graphics loop control. Y toggles the image loop control. L toggles the image and graphics looping.

FIND

Locates U. S. towns by name and state.

Format

FIND *state 'string'* **E**

Parameters

state	two-letter state Post Office abbreviation
'string'	character string; lists all towns beginning with this string
E	specify E after '*string*' to list only exact matches

Remarks

The parameters are not case sensitive.

If only one match is found, the cursor is moved to its location.

The town name, county, latitude, longitude and elevation, if available, are listed on the text frame.

This command uses the data files **TOWNS.ND1**, **TOWNS.ND2** and **TOWNS.TXT** in McIDAS-OS2, and **towns.nd1**, **towns.nd2** and **towns.txt** in McIDAS-X. These files are derived from data provided by the U.S. Geological Survey.

Examples

FIND NY 'NEW YORK'
This entry lists all New York towns beginning with NEW YORK. They are New York and New York Mills.

FIND NY 'NEW YORK' E
This entry lists only towns in New York that exactly match the string NEW YORK. The cursor is moved to its location if it's on the current frame.

FIND WI 'MAD'
This entry lists all Wisconsin towns beginning with MAD. They are Madge, Madison and Madsen.

FONT

McIDAS graphics font utility.

Formats

FONT LIST
FONT RESET
FONT SET *type*

Parameters

LIST lists the available font types (default)

RESET resets the font type to the default McIDAS font

SET sets the font type for McIDAS graphics; this option lists the current setting if you don't specify *type*

type font type to use, in the format *fffws*

fff three-character family name

w
- **B** bold weight
- **M** medium weight

s
- **I** italic slant
- **O** oblique slant
- **R** Roman slant

Remarks

You can use the global keyword FONT with any graphics command to override the current font setting. Each font type has an index file with the extension .FFD. The index file lists the font used when a specific size is requested in a McIDAS command. If the size you request is not available, another size is substituted. For example, if you run this command:

ZA 3 20 FONT=COUBO "Courier Bold Font

The text is plotted in 18 point Courier bold oblique rather than 20 point. The index file `COUBO.FFD` specifies that the file `COURBO18.BDF` is used when a McIDAS-OS2 command requests 20 point text; `courbo18.bdf` is used when a McIDAS-X command requests 20 point text.

The default McIDAS font and those in the Courier family are non-proportional. Use these fonts to display evenly-spaced characters.

See Also

See *Appendix A* for more information about the global keyword FONT.

Examples

FONT
This entry lists all the available font types.

FONT SET TIMMR
This entry sets the McIDAS graphics font type to Times Roman, medium weight.

FOUSRPT

Lists FOUS14 forecasts.

Formats

FOUSRPT LIST *state*
FOUSRPT *id1 . . idn nfcst [keyword]*

Parameters

LIST	lists the valid FOUS14 stations (default)
state	lists valid stations for a specific state; specify a single two-character state P.O. abbreviation (default=**ALL**)
id1 . . idn	lists forecasts for specified stations and states; use three-character station IDs and two-character state P.O. abbreviations
nfcst	number of forecasts to list (default=1)

Keyword

DATaset=	ADDE dataset name; specify as *group/descriptor* or *alias* (default=**RTWXTEXT/FOUS14**)

Remarks

FOUS14 forecasts are generated from Model Output Statistics (MOS) based on multiple linear regression analysis of forecasts from the Nested Grid Model (NGM).

Examples

FOUSRPT
This entry lists the valid FOUS14 stations for all states.

FOUSRPT LIST CA
This entry lists the valid FOUS14 stations in California.

FOUSRPT LAR
This entry lists the latest FOUS14 forecast for Laramie, Wyoming.

FOUSRPT LAR 3
This entry lists the last three FOUS14 forecasts for Laramie, Wyoming.

FOUSRPT SEA OR 2
This entry lists the last two FOUS14 forecasts for Seattle, Washington, and all stations in Oregon.

FRMLABEL

Displays an image label on a frame.

Format

FRMLABEL *[keywords] "text*

Parameters

"text text to display on an image frame; all text is displayed in uppercase; 250 characters maximum; you can specify the following placeholders to list information about the displayed image in the label

(BAND)	band number, NN
(DATASET)	ADDE dataset name, 24 characters maximum
(DAY)	day, DD MON YY
(ERES)	element resolution, NN.NN
(FRAME)	frame number, NNN
(HH)	image time, HH
(HHMM)	image time, HH:MM
(HHMMSS)	image time, HH:MM:SS
(JDAY)	Julian day, YYDDD
(LRES)	line resolution, NN.NN
(MEMO)	memo field, 32 characters maximum
(POS)	ADDE dataset position, NNNN
(RES)	displayed resolution of the image, NN.NN
(SS)	sensor source number, NNN
(STYPE)	image type, 12 characters maximum
(TIME)	image time, HHMMSS

Keywords

CRAwl=	**FOREVER**	crawls the text across the frame continuously until stopped with **Alt Q**
	N *num*	number of times the entire text string crawls across the frame; the range is 0 to 100 (default=10); when completed, the text is repositioned to the location specified with keyword JUST
	T *sec*	number of seconds the text crawls across the frame; the range is 0 to 600 (default=120); when the specified number of seconds expires, the text is repositioned to the location specified with keyword JUST
IMA=	image frame number (default=current)	
JUSt=	**C**	centers the text on the frame (default)
	L	left justifies the text on the frame
	R	right justifies the text on the frame
LEVel=	*text bg*	brightness level for the text and background (default=255 0)
LINe=	starting frame line (default=12 lines from bottom of frame)	
NLIne=	number of lines blanked out for text (default=12)	

Remarks

The image label is not a graphic; it is written to the image plane of the frame. In McIDAS-X, the EG command will not erase the label. You must reload the image to erase the image label.

In McIDAS-OS2, the image label is not saved as part of the back plane. When you erase the graphics using EG, the original, default image label reappears.

Each character is eight pixels square with a 1-pixel separation. Thus, the maximum number of characters you can display on a frame is the number of elements divided by nine.

If you specify keyword CRAWL, the text moves slowly across the screen from right to left. The crawl continues even if a new image is loaded onto the frame. Press **Alt Q** to end the text crawl and reposition the text to the location specified in keyword JUST.

Examples

FRMLABEL "GOES-9 INFRARED IMAGE

This entry displays an image label with the text *GOES-9 INFRARED IMAGE* on the bottom 12 lines of the frame.

FRMLABEL LINE=1 CRAWL=FOREVER "SEVERE THUNDERSTORM WARNING FOR DANE COUNTY

This entry displays an image label with the specified text on the top 12 lines of the frame. The text continuously crawls across the frame from right to left until **Alt Q** is pressed.

FRMLABEL JUST=L "GOES-8 BAND (BAND) FROM (DAY) AT (HHMM) UTC

This entry displays an image label with the specified text left justified on the bottom 12 lines of the frame. The place holders (BAND), (DAY), and (HHMM) are replaced with the corresponding values from the displayed image.

FRMLABEL LINE=22 LEVEL=0 255 "IMAGE FROM DATASET (DATASET), POSITION (POS)

This entry displays an image label with the specified text in black (brightness level 0) with a white (brightness level 255) background beginning at line 22. The place holders (DATASET) and (POS) are replaced with the corresponding values from the displayed image.

FRMLIST

Lists frame directory information.

Format

FRMLIST *bframe eframe*

Parameters

bframe beginning frame number to list (default=current)

eframe ending frame number to list (default=*bframe*)

Keywords

Form= **ALL** lists the entire frame directory

EXP provides an expanded listing containing the sensor source number and description, Julian date, time, image coordinates of the upper-left pixel, and the data source

PANEL provides a standard listing for all panels in each frame, plus panel size

STN provides a standard listing containing the sensor source description, date, time and data source (default)

Remarks

FORM=PANEL is useful with multipanel frames. It lists frame directory information for all panels on each frame; FORM=ALL, EXP, and STN list information only for the current panel or the panel specified with the global keyword PAN.

Examples

FRMLIST
This entry lists frame directory information for the current frame.

FRMLIST 2 6
This entry lists frame directory information for frames 2 through 6.

FRMLIST 2 6 FORM=EXP
This entry lists expanded frame directory information for frames 2 through 6.

GD

Defines graphics display parameters.

Formats

GD INI
GD *width dlength gcolor glength*

Parameters

INI	initializes the graphics parameters to their logon values
width	graphics line width in pixels; the range is 1 to 64 (default=last value set; at logon, it is 1)
dlength	length of the dashes in a line; the range is 0 to 64 (default=last value set; at logon, it is 10 pixels)
gcolor	graphics color level of the gaps in dashed lines (default=last value set; at logon, it is 255, which is transparent)
glength	length of the gaps in dashed lines; the range is 0 to 64 (default=last value set; at logon, it is 10 pixels)

Examples

GD
This entry lists the current graphics parameters.

GD 3 5 3 5
This entry defines the line width as three pixels, the length of the dashes and gaps in the dashed lines as five pixels, and the color of the gaps as graphics color level 3.

GLOBKEY

Lists global keyword parameters and examples.

Format

GLOBKEY *keyword*

Parameters

keyword global keyword to list; valid options are **DEV**, **FONT**, **PAN**, **TCOL**, **TWIN**, **VIRT** and **ALL** (default=**ALL**)

Examples

GLOBKEY
This entry lists information about all global keywords.

GLOBKEY VIRT
This entry lists information about the global keyword VIRT.

GRDCOPY

Copies grids from one dataset to another.

Format

GRDCOPY *sdataset ddataset [keywords]*

Parameters

sdataset source ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

only positive integers or **ALL** (all positions) are valid for *position* (no default for group/descriptor or alias; default=**ALL** for *position*)

ddataset destination ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers for *position*

Search Keywords

DAY= *d1 . . dn* copies grids with the specified days

DRAnge= *bday eday inc* copies grids in the range of days *bday* through *eday,* incremented by *inc* days (no default for *bday*; *eday* default=*bday*; *inc* default=1)

FDAy= copies grids with the specified forecast day; a grid's forecast day is determined by adding the forecast hour to the day and time; for example, a 12 UTC grid from day 95300 with a forecast hour of 72, has a forecast day of 95303; you cannot use FDAY with the FHOUR or FRANGE keyword

FHOur= *h1 . . hn* copies grids with the specified forecast hours; you cannot use FHOUR with the FRANGE, FDAY or FTIME keyword

FRANGe=	*bhr ehr inc*	copies grids in the range of forecast hours *bhr* through *ehr,* incremented by *inc* hours; you cannot use FRANGE with the FHOUR, FDAY or FTIME keyword (no default for bhr; ehr default=bhr; inc default=1)
FTIme=		copies grids with this forecast time; a grid's forecast time is determined by adding the forecast hour to the time; for example, a 12 UTC grid with a forecast hour of 18, has a forecast time of 6 on the following day; you cannot use FTIME with the FHOUR or FRANGE keyword
GPRo=	*g1 . . gn*	copies grids with the specified projection, for example, **MERC**, **PS**, **LAMB**, **EQUI**
GRId=	*bgrid egrid*	copies grids *bgrid* through *egrid*; enter a grid number or **LAST** (last grid) for *bgrid* and *egrid*; see the Remarks (no default for *bgrid*; *egrid* default=*bgrid*)
LEV=	*l1 . . ln*	copies grids with the specified levels, for example, **SFC**, **1000**, **850**
PARam=	*p1 . . pn*	copies grids with the specified parameters, for example, **T**, **Z**, **RH**; see the Remarks
SRC=	*s1 . . sn*	copies grids with the specified sources, for example, **MDX**, **MRF**, **ETA**
TIMe=	*t1 . . tn*	copies grids with the specified times
TRAnge=	*btim etim inc*	copies grids in the time range of *btim* through *etim,* incremented by *inc* (no default for *btim*; *etim* default=*btim*; *inc* default=1, meaning one hour)

Derived Grid Keywords

DERive=	derives a grid of the specified parameter, for example, DST or VOR; searches for the component grids using the search keywords, derives the grid, and copies it to the *ddataset*; do not use with the PARAM keyword; see the Remarks

MERidional= **YES** adds a correction term to account for the convergence of longitude lines at the poles

NO does not add a correction term; only valid with DERIVE=ABV, DSH, DST, DVG, or VOR; see the Remarks (default)

PLAnet= planet for which derive calculations are done; valid options are **MERCURY**, **VENUS**, **EARTH**, **MARS**, **JUPITER**, **SATURN**, **NEPTUNE**, **URANUS** (default=**EARTH**)

Mathematical Operations Keywords

G*n*= '*clause1*; *clause2*; . . ; *clausen*'
grids to be used with the MATH keyword; separate select clauses with semicolons; single quotes are mandatory; specify *clause* using the following format:

searchkeyword value

valid options for *searchkeyword* are **DAY**, **FHOUR**, **GPRO**, **GRID**, **LEV**, **PARAM**, **SRC**, **TIME**; you can specify numbers between 1 and 99 in the keyword name (G1, G2, . . , G99); see the Remarks

MATh= '*expression*' mathematical operation to perform on the grids specified with the G*n* keywords; single quotes are mandatory; see the Remarks

NEWpar= *param punit level lunit*
header information for the grid copied with the MATH keyword; parameter and level values, and associated units

param grid parameter; four characters maximum (default=**MATH**)

punit units of grid parameter; four characters maximum (default=**NONE**)

level grid level (default=from grid)

lunit units of grid level; two characters maximum (default=from grid)

Output Keywords

BYTecount= **YES** lists the number of bytes received from the server

NO does not list the number of bytes (default)

DEL= **YES** delete the destination grid file before copying; see the Remarks

NO do not delete the destination grid file (default)

DGRid= beginning grid number in the destination grid file to place the copied grids; this keyword may overwrite existing grids; see the Remarks (default=append after the last grid in the grid file)

INFo= *'text'* string placed in the header of the copied grid when the MATH keyword is used; maximum of 48 characters

MAXgrd= maximum number of grids the newly created destination grid file can store; see the Remarks (default=1000)

NUM= number of grids matching the criteria defined with the search keywords to copy; for example, if you specify NUM=50, the first 50 grids matching the search keywords are copied (default=1)

ALL copies all grids matching the search keywords

SUBsect= *slat nlat elon wlon incrow inccol*
geographic region, and row and column reduction intervals used to subsect the grid; see the Remarks

slat southern latitude of the subsected region

nlat northern latitude of the subsected region

elon eastern longitude of the subsected region

wlon western longitude of the subsected region

incrow row reduction interval; 1 means copy every row of grid points in the subsect region, 2 means copy every other row of grid points, etc. (default=1)

inccol column reduction interval; 1 means copy every column of grid points in the subsect region, 2 means copy every other column of grid points, etc. (default=1)

TITLE= *'text'* title of the newly created destination grid file; 32 characters maximum; see the Remarks

Remarks

Individual grids are stored in grid files. Each dataset position points to a single grid file. GRDCOPY copies grids from one or more grid files in the source dataset to a single grid file in the destination dataset.

If you specify DEL=YES or a position number of a nonexistent grid file in the *ddataset* parameter, the grids are copied into a newly created grid file with the attributes specified in keywords MAXGRD and TITLE.

Using the DGRID keyword may result in grids being overwritten in the destination grid file. For example, if the destination grid file has 50 grids (in grids 1 to 50) and you specify NUM=10 DGRID=25, the new grids will overwrite grids 25 to 34 in the destination grid file.

The GRID keyword copies grids from the grid file specified with the *sdataset position* number; the default *position* value, ALL, is not valid. When using the GRID keyword, do not specify additional search keywords, PARAM, LEV, DAY, etc., or NUM.

If you specify PARAM=STREAML, WINDB or WINDV, GRDCOPY does not search for grids with that parameter. Instead, it locates the u-component grids that match the other search keywords, then locates the matching v-component grids, and copies both sets of grids to the destination dataset. These grids may be used to draw streamlines, plot wind barbs or plot wind vectors with the GRDDISP command. If you specify any other parameter with the PARAM keyword, the value entered is the value searched for in the grid's parameter field.

Use command GRDLIST to preview the grids to be copied with GRDCOPY.

Use the SUBSECT keyword to copy a portion of the original grid. This keyword is useful because the subsected grid is smaller and can be copied more quickly than the source grid. If the *elon* and *wlon* values span the dateline (180°) or the Greenwich Meridian (0°), the entire grid is copied rather than the requested region. When subsecting a conformal projection grid, the *incrow* and *inccol* values must be the same.

Use the DERIVE keyword to create grids of a variety of common meteorological parameters. The valid options are defined in the table below. In these equations, the following variables appear often:

u = u-component of the wind
v = v-component of the wind
x = grid point distance in the east-west direction
y = grid point distance in the north-south direction

DERIVE=	Description	Equation
ABV	absolute vorticity	$\frac{\partial u}{\partial x} - \frac{\partial v}{\partial y} + f$ f=coriolis parameter: $2\Omega\sin\phi$ (see COR)
BETA	beta parameter	$\frac{\partial f}{\partial y} = \frac{2\Omega\cos\phi}{a}$ f=coriolis parameter: $2\Omega\sin\phi$ (see COR) Ω=angular speed of the rotation of the planet (7.292×10^{-5} radians/second for Earth) ϕ=latitude in degrees a=radius of the planet
COR	coriolis parameter	$2\Omega\sin\phi$ Ω=angular speed of the rotation of the planet (7.292×10^{-5} radians/second for Earth) ϕ=latitude in degrees
DIR	wind direction	atan2($-u$,$-v$)
DSH	shearing deformation	$\frac{\partial v}{\partial x} + \frac{\partial u}{\partial y}$
DST	stretching deformation	$\frac{\partial u}{\partial x} - \frac{\partial v}{\partial y}$
DVG	divergence	$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y}$
SPD	wind speed	$\sqrt{u^2 + v^2}$
TD	dew point temperature	$\left[\frac{1}{T} - \frac{Rv \times \ln RH}{2500800 - 2397.5 \times (T - 273.15)}\right]^{-1}$ T=temperature in Kelvin RH=relative humidity Rv=moist gas constant: 461.5 Joules per kilogram per degree Kelvin
VOR	relative vorticity	$\frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}$

Use the MERIDIONAL keyword to correct for the convergence of longitude lines at the poles. When deriving divergence and stretching deformation grids (DVG and DST), specify MERIDIONAL=YES to subtract the following correction term from the calculation.

$$v \times \tan\left(\frac{\phi}{r}\right)$$

When deriving vorticity, absolute vorticity, or shear deformation grids (VOR, ABV, or DSH), specify MERIDIONAL=YES to add the following correction term to the calculation.

$$u \times \tan\left(\frac{\phi}{r}\right)$$

For both the correction terms above:

u = u-component of the wind
v = v-component of the wind
ϕ = latitude in degrees
r = radius, in kilometers, of the planet at ϕ latitude

The MERIDIONAL keyword has no effect with other DERIVE keyword options.

Use the G*n* keywords to specify the grids to be used with the MATH keyword. Each G*n* keyword specifies a single grid. G*n* is followed by a list of select clauses in single quotes. By default, subsequent G*n* keywords have the same select clauses, unless specified differently. For example, to request 850 and 1000 mb height grids from the 0:00 UTC MRF run, specify

G1='LEV 850;PARAM Z;TIME 0;SRC MRF' G2='LEV 1000'

The MATH keyword defines the operation to perform on the specified grids, for example, MATH='G1**(SQRT(G2))'. The table below shows the operations available with the MATH keyword.

MATH= option	Function
+	addition
-	subtraction
*	multiplication
/	division
**	power
SQRT	square root
EXP	exponential (the number e raised to a power)
LOG	natural logarithm
LOG10	base 10 logarithm
SIN	sine

MATH= option	Function
COS	cosine
TAN	tangent
ASIN	arcsine
ACOS	arccosine
ATAN	arctangent
ABS	absolute value
MIN	minimum of two grids
MAX	maximum of two grids
DDX	derivative with respect to x
DDY	derivative with respect to y
DELSQ	laplacian
COR	coriolis parameter ($2\Omega\sin\phi$)
BETA	beta parameter $\left(\frac{\partial f}{\partial y}\right)$
LAT	creates a grid of latitude
LON	creates a grid of longitude

When specifying powers of ten, such as 10^2 or 10^{-3} in the MATH keyword, use one of the two methods shown in the examples below.

MATH='2*7.292*(10e-5)*(SIN(G1))'

MATH='2*7.292*(10(-5))*(SIN(G1))'**

In these entries both 10e-5 and 10**(-5) represent 10^{-5}. You must include the parentheses with 10**(-5); 10**-5 will not be interpreted correctly.

When using the MATH keyword and the range of output data values is larger than five orders of magnitude, the output grid is scaled based on the maximum end of the range. This means that small data values may be replaced by zeros in the output grid.

Grids created using GRDCOPY and those created using IGG MAKE with the DERIVE or MATH keyword may not yield numerically identical results. However, the values for both are correct. The differences are the result of one of the following:

- Grids created using GRDCOPY will be in Standard International units, whereas grids created using IGG MAKE may not be. For example, a grid created using the TADV (temperature advection) function in IGG MAKE will be in degrees per day, while a similar grid created using GRDCOPY with the MATH keyword will be in degrees per second unless a factor is added to the equation to compute it in degrees per day.
- By default, IGG MAKE applies a smoothing function and, if applicable, a meridional correction term to the data. GRDCOPY does not do this by default. You can override the IGG MAKE defaults by specifying SMO=NO and ADD=NO.

Examples

GRDCOPY NMC/MRF MYDATA/GRIDS.1
This entry copies the first grid in the first grid file in dataset NMC/MRF to the grid after the last grid in position 1 of dataset MYDATA/GRIDS.

GRDCOPY NMC/MRF.5 MYDATA/GRIDS.2 LEV=850 NUM=10 DGRID=5
This entry copies the first 10 grids with a level of 850 mb in position 5 of dataset NMC/MRF to grids 5 through 14 in position 2 of dataset MYDATA/GRIDS.

GRDCOPY NMC/MRF.5 MYDATA/GRIDS.1 NUM=ALL DEL=YES TITLE='All grids in NMC/MRF position 5'
This entry copies all grids in position 5 of dataset NMC/MRF to position 1 of dataset MYDATA/GRIDS. The keyword DEL=YES deletes the existing destination grid file and creates a new file with the title *All grids in NMC/MRF position 5* for the copied grids. Since the destination grid file is new, the copied grids begin in grid 1. Be careful when using NUM=ALL; grid files can contain thousands of grids. Use the search keywords to copy only the desired grids, as shown in the following examples.

GRDCOPY NMC/ETA.ALL G/SCRATCH.10 LEV=500 PARAM=Z T TD RH ABV DAY=#Y TIME=0 NUM=ALL
This entry copies all 500 mb height, temperature, dew point temperature, relative humidity and absolute vorticity grids from today's 00 UTC run in all grid files in dataset NMC/ETA to position 10 of dataset G/SCRATCH. The grids are appended after the last grid in the destination grid file.

GRDCOPY NMC/ETA.1 G/MODEL.2 LEV=TRO PARAM=Z T FHOUR=12 36 NUM=ALL DGRID=1
This entry copies all 12- and 36-hour forecast tropopause height and temperature grids in position 1 of dataset NMC/ETA to position 2 of dataset G/MODEL. The copied grids begin in grid 1 of the destination grid file.

GRDCOPY NMC/ETA.1 G/MODEL.2 LEV=TRO PARAM=Z T FRANGE=12 36 6 NUM=ALL DGRID=100

This entry copies all 12-, 18-, 24-, 30-, and 36-hour forecast tropopause height and temperature grids in position 1 of dataset NMC/ETA to position 2 of dataset G/MODEL. The copied grids begin in grid 100 of the destination grid file.

GRDCOPY NMC/ETA.1 G/MODEL.2 LEV=TRO PARAM=Z T FDAY=#Y FTIME=18 NUM=ALL

This entry copies all forecast tropopause height and temperature grids valid at 18 UTC today in position 1 of dataset NMC/ETA to position 2 of dataset G/MODEL. The grids are appended after the last grid in the destination grid file.

GRDCOPY MODEL.5 GRD.1 GRID=1 20 DGRID=1

This entry copies grids 1 through 20 in position 5 of the dataset with the alias name MODEL to grids 1 through 20 in position 1 of the dataset with the alias name GRD.

GRDCOPY GRIDS/MRF CASE/STUDY.1 DAY=#Y TIME=12 PARAM=U V LEV=200 SUBSECT=-20 20 -180 -120 1 2 NUM=ALL

This entry copies all 200 mb height u- and v-component grids from today's 12 UTC run in dataset GRIDS/MRF to position 1 of dataset CASE/STUDY. The copied grids contain every source grid point in the row direction and every other source grid point in the column direction in the region 20°S to 20°N and 180°E to 120°E.

GRDCOPY GG.1 GRD.4000 DERIVE=SPD LEV=500 FHOUR=48

The entry creates a 500 mb wind speed grid using component grids in position 1 of the dataset with the alias GG. The grids used to derive wind speed are the u- and v-components of the wind with 48-hour forecast times. The derived grid is copied to position 4000 of the dataset with the alias GRD.

GRDCOPY RTGRIDS/NGM LOCAL/MYGRIDS.10 DERIVE=VOR LEV=500 DAY=96284 TIME=12 FHOUR=12 24 36 48 NUM=ALL

This entry creates 500 mb relative vorticity grids using component grids from dataset RTGRIDS/NGM. The grids used to derive relative vorticity are the u- and v-components of the wind from day 96284 at 12:00 UTC with 12-, 24-, 36-, and 48-hour forecast times. The derived grids are copied to position 10 of the dataset LOCAL/MYGRIDS.

GRDCOPY GRD.8000 GRD.4000 G1='PARAM Z;LEV 850;FHOUR 48' G2='LEV 1000' MATH='G1-G2' NEWPAR=THCK

This entry finds two 48-hour forecast geopotential height grids in position 8000 of the dataset with the alias GRD. The 1000 mb grid is subtracted from the 850 mb grid and the result is copied to position 4000 of the dataset with the alias GRD. The copied grid is labeled with the new parameter name THCK and units NONE.

GRDCOPY GRD.4004 GRD.4004 G1='PARAM T;LEV 1000'
G2='LEV 850' G3='PARAM U;LEV 1000'
G4='LEV 850' NEWPAR=M DEG
MATH='(COR(G1))/9.8*((G1+G2)/2)*((G3-G4)/(G1-G2))'

This entry creates a grid of frontal slope (Margules equation) from the 1000 and 850 mb temperature grids, and the 1000 and 850 mb u-component grids in position 4004 of the dataset with the alias GRD. The grid is copied into the same dataset, and labeled M with units DEG.

GRDCOPY G/G.4000 G/G.4000 G1='PAR T;LEV 1000;TIME 12;
DAY 93070;SRC NGM' G2='PAR U;SRC ROI' G3='PAR V;
SRC ROI' MATH='-(G2*(DDX(G1))+G3*(DDY(G1)))'
INFO='Temperature Advection at 1000 MB'
NEWPAR=TADV K/S

This entry creates a grid of 1000 mb temperature advection using the 1000 millibar NGM model temperature grid, and the 1000 mb ROI model u- and v-component grids in position 4000 of the dataset G/G. The grid is copied into the same dataset, and labeled TADV with units of degrees Kelvin per second. The string *Temperature Advection at 1000 MB* is placed in the header of the new grid.

GRDDISP

Generates contours, streamlines or plots from grid data.

Format

GRDDISP *dataset frame [keywords]*

Parameters

dataset ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

only positive integers or **ALL** (all positions) are valid for *position*; when a grid matching the conditions specified in the search keywords is found, the search stops (no default for *group/descriptor* or *alias*; default=**ALL** for *position*)

frame frame number to display the output; specify **OPP** to display the output on the frame opposite the current frame (default=current)

Search Keywords

DAY= displays grids with the specified day

FDAy= displays grids with the specified forecast day; a grid's forecast day is determined by adding the forecast hour to the day and time; for example, a 12 UTC grid from day 95300 with a forecast hour of 72, has a forecast day of 95303; you cannot use FDAY with the FHOUR or FRANGE keyword

FHOur= *h1 . . hn* displays grids with the specified forecast hours; use with the keyword GRA to display the *h1* grid in the first frame, *h2* grid in the second frame, etc.; you cannot use FHOUR with the FRANGE, FDAY or FTIME keyword

FRANge= *bhr ehr inc* displays grids in the range of forecast hours *bhr* through *ehr*, incremented by *inc* hours; use with the keyword GRA to display the grids in forecast hour order (*bhr* to *ehr*); you cannot use FRANGE with the FHOUR, FDAY or FTIME keyword (no default for *bhr*; *ehr* default=*bhr*; *inc* default=1)

FTIme= displays grids with the specified forecast time; a grid's forecast time is determined by adding the forecast hour to the time; for example, a 12 UTC grid with a forecast hour of 18, has a forecast time of 6 on the following day; you cannot use FTIME with the FHOUR or FRANGE keyword

GPRo= displays grids with the specified projection, for example, **MERC**, **PS**, **LAMB**, **EQUI**

GRId= displays the specified grid or last grid (**LAST**) in the grid file specified in the dataset position number; when using this keyword, the default *position* value in *dataset* (ALL) is not valid and all other search keywords (PARAM, LEV, DAY, etc.) are ignored

LEV= displays grids with the specified level, for example, **SFC**, **1000**, **850**

PARam=

param	displays grids with the specified grid parameter, for example, **T**, **Z**, **RH**; see the Remarks
MOVIE	draws streamlines with colored line segments that can be animated using the CM command
STREAML	draws streamlines using u- and v-component grids
WINDB	plots wind barbs using u- and v-component grids
WINDV	plots wind vectors using u- and v-component grids

SRC= displays grids with the specified source, for example, **MDX**, **MRF**, **ETA**

TIMe= displays grids with the specified time

Multiple Contour/Plot Keywords

GRA= *bfra efra* generates contours or plots for the grids matching the criteria defined with search keywords in frames *bfra* through *efra*; the grids are displayed by forecast hour in the order specified with the FHOUR keyword or sequentially from the range *bhr* to *ehr* in FRANGE; you cannot specify both GRA and NUM (*bfra* default=current; *efra* default=*bfra*)

NUM= number of grids matching the criteria defined with the search keywords to contour or plot, beginning on the current frame; the grids are not sorted, they are displayed in the order they are found in the grid files; you must specify FHOUR or FRANGE with NUM; you cannot specify both NUM and GRA

Derived Grid Keywords

DERive= derives a grid of the specified parameter, for example, **DST** or **VOR**; searches for the component grids using the search keywords, derives the grid, and copies it to the *ddataset*; do not use with the PARAM keyword; see the Remarks

MERidional=

- **YES** adds a correction term to account for the convergence of longitude lines at the poles
- **NO** does not add a correction term; only valid with DERIVE=ABV, DSH, DST, DVG, or VOR; see the Remarks (default)

PLAnet= planet for which derive calculations are done; valid options are **MERCURY**, **VENUS**, **EARTH**, **MARS**, **JUPITER**, **SATURN**, **NEPTUNE**, **URANUS** (default=**EARTH**)

Mathematical Operations Keywords

G*n*= '*clause1*; *clause2*; . . ; *clausen*'
grids to be used with the MATH keyword; separate select clauses with semicolons; single quotes are mandatory; specify *clause* using the following format:

searchkeyword value

valid options for *searchkeyword* are **DAY**, **FHOUR**, **GPRO**, **GRID**, **LEV**, **PARAM**, **SRC**, **TIME**; you can specify numbers between 1 and 99 in the keyword name (G1, G2, . . , G99); see the Remarks

MATh= '*expression*' mathematical operation to perform on the grids specified with the G*n* keywords; single quotes are mandatory; see the Remarks

NEWpar= *param punit level lunit*
title information for the plot or contour displayed when the MATH keyword is used

- *param* grid parameter; four characters maximum (default=**MATH**)
- *punit* units of grid parameter; four characters maximum (default=**NONE**)

level grid level (default=from grid)

lunit units of grid level; two characters maximum (default=from grid)

Navigation Keywords

LAT= *lat1 lat2* latitudes of the points at the lower-right and upper-left corners of the map; you cannot use LAT with the NAV or MAP keyword

LON= *lon1 lon2* longitudes of the points at the lower-right and upper-left corners of the map; you cannot use LON with the NAV or MAP keyword

MAP= map for the contour or plot; see the MAP command for a list of valid predefined maps, for example, **MID**, **USA**, **WORL**; you cannot use MAP with the NAV, LAT or LON keyword (default=grid extents)

MCOlor= graphics color level of map (default = 1)

NAV= draw the contour or plot using the navigation of the specified frame; no map is drawn; you cannot use NAV with the MAP, LAT or LON keyword

num frame number to use for navigation

C use the current frame's navigation

F use the navigation of the frame where the contour or plot is drawn

PRO= **CONF** polar stereographic or Lambert conformal projection

MERC Mercator projection (default=grid's projection)

SLAt= *lat1 lat2* standard latitudes for a CONF projection; two values for a general Lambert conformal projection; one value for a polar stereographic projection (default=from grid header when the LAT and LON, or MAP keywords are not used; 60 60 for northern hemisphere maps defined with the LAT and LON, or MAP keywords; -60 -60 for southern hemisphere maps defined with the LAT and LON, or MAP keywords)

SLOn= standard longitude for a CONF projection (default=computed)

Contour and Plot Keywords

COLor= graphics color level (default=2 for contour, 3 for plot)

ELE= *bele eele* beginning and ending frame elements for output; specify **MAX** for maximum element number (default=1 MAX when using the NAV keyword; default=20 MAX-20 when using the MAP keyword)

FORMAT= *designator 'text'*
output format for grid point values or contour labels, and associated text; valid formats are **I**, **F**, or **E**; if multiple parameters are requested, FORMAT cannot be specified; see the Remarks (*designator* default=from *dataset*; no *text* default)

LINE= *blin elin* beginning and ending frame lines for output; specify **MAX** for maximum line number (default=1 MAX-57 when using the NAV keyword; default=20 MAX-57 when using the MAP keyword)

LSIze= height of the plot characters or contour labels, in pixels; specify 0 (zero) for no contour labels (default=8)

OUT= **CON** draws contours using the grid data (default)

PLOT plots the grid points

POWer= power of 10 to multiply the grid point values by for display (default=0)

TDAy= **CAL** display calendar day on the default title; not valid if the ELE, LINE or PAN keyword is used

JUL display the Julian day on the default title (default)

TITLE= *'text' col line ele size*
text, color, location and size for the contour or plot title

'text' 72 characters maximum; specify **X** without quotes for the default title (default=computed)

col graphics color level of the title (default=1 if PARAM=MOVIE, otherwise default=value from the COLOR keyword)

line beginning TV line to write the title (default=below contour or plot)

ele beginning TV element to write the title (default=below contour or plot)

size height of the title text in pixels (default=8)

UNIt= units for the contour or plot; see the Remarks (default=from the grid header)

Contour-Specific Keywords

CINt= *num* contour interval; specify 0 to let GRDDISP compute a reasonable interval; specify your own interval as an integer or decimal value greater than zero

string contour values; specify a string name that contains up to 64 values

see the Remarks for information about the default value

DASh= **ALL** dash all contours

NEG dash negative contours only

POS dash positive contours only

(default=solid contours)

LINT= contour label interval (default=1, meaning label every contour)

MOVie= *bcol ecol bspd espd blen elen*
change the defaults for the PARAM=MOVIE output

bcol beginning graphics color level for line segments (default=2)

ecol ending graphics color level for line segments (default=maximum color level)

bspd beginning wind speed represented by *blen*, units are from the grid data (default=computed)

espd ending wind speed represented by *elen*, units are from the grid data (default=computed)

blen beginning length of line segments (default=2)

elen ending length of line segments (default=40)

SMOoth= contour smoothing factor; the range is 0 through 50; larger numbers produce smoother contours; not valid with PARAM=MOVIE or PARAM=STREAML (default=20)

Plot-Specific Keyword

PINt= *row col* row and column intervals of grid points to plot with OUT=PLOT, PARAM=WINDB or PARAM=WINDV; for example, PINT=4 3 plots every fourth grid point in the row direction and every third grid point in the column direction (*row* default=1; *col* default=*row*)

Output Keyword

BYTecount= **YES** lists the number of bytes received from the server

NO does not list the number of bytes (default)

SUBsect= *slat nlat elon wlon incrow inccol*
geographic region, and row and column reduction intervals used to subsect the grid; see the Remarks

slat southern latitude of subsected region

nlat northern latitude of the subsected region

elon eastern longitude of the subsected region

wlon western longitude of the subsected region

incrow row reduction interval; 1 means use every row of grid points in the subsect region, 2 means use every other row of grid points, etc. (default=1)

inccol column reduction interval; 1 means use every column of grid points in the subsect region, 2 means use every other column of grid points, etc. (default=1)

Remarks

Individual grids are stored in grid files. Each dataset position points to a single grid file. If you know which grid file contains the grid you want to display, specify its position in the *dataset* parameter to reduce the searching time.

The GRDDISP command draws contours or streamlines, or plots data from the first grid or set of grids that matches the conditions specified with the search keywords. If you don't specify any search keywords, GRDDISP displays the first grid in the dataset. If, for example, you specify PARAM=T LEV=850 TIME=12 SRC=ETA, GRIDDISP displays the first grid with T in its parameter field, 850 in its level field, 12 in its time field, and ETA in its source field. To choose the exact grid you want, you may need to specify several search keywords.

Use the GRDLIST command to preview the grids to be displayed with GRDDISP.

Use the keyword FHOUR or FRANGE with GRA or NUM to generate a contour or plot using more than one grid with a single GRDDISP command. The keyword GRA displays the grids in the order entered with FHOUR or sequentially from the range *bhr* to *ehr* in FRANGE. For example, if you specify SRC=MRF TIME=12 PARAM=Z LEV=500 FHOUR=0 36 24 60 GRA=11 14, the 12 UTC MRF 500 mb height grids with forecast hours 0, 36, 24 and 60 are displayed in frames 11, 12, 13 and 14.

The default contour interval for a grid is taken from the text file **CONTOUR.DEF**. If no file entry matches the grid's parameter, units and level, the default is calculated to produce a reasonable number of contours, usually between 10 and 20. To change, add or delete entries in **CONTOUR.DEF**, first back up the current version, then modify it using the format described near the top of the file.

If you specify PARAM=MOVIE, STREAML, WINDB or WINDV, GRDDISP does not search for a grid with that parameter. Instead, it locates the first u-component grid that matches the other search keywords, then it locates the matching v-component grid and uses those grids to contour streamlines, plot wind barbs, or plot wind vectors. In all other cases, the value entered in the keyword PARAM is the value searched for in the grid's parameter field.

Use the SUBSECT keyword to analyze a portion of the original grid. The analysis can be performed slightly faster because there is less data to transfer and analyze. If you specify NAV=F or the *elon* and *wlon* values span the dateline (180°) or the Greenwich Meridian (0°), the entire grid is transferred and analyzed rather than the requested region. When subsecting a conformal projection grid, the *incrow* and *inccol* values must be the same.

When you use the navigation keywords NAV, MAP, or LAT and LON, GRDDISP automatically subsects the grid to a region slightly larger than that defined by the navigation keywords. A larger region is used so the contours near the edge of the frame are accurate.

Wind barb symbols use triangular flags, and long and short lines, or barbs, to represent wind speed. For example, the wind barb shown here represents a wind speed of 75 knots or 37.5 meters/second.



- a flag represents 50 knots or 25 meters/second
- a long barb represents 10 knots or 5 meters/second
- a short barb represents 5 knots or 2.5 meters/second.

When using the UNIT keyword, you can specify the following units:

Unit type	UNIT=	Definition
Distance	**CM**	centimeters
	DM	decameters
	FT	feet
	GPM	geopotential meters
	IN	inches
	KM	kilometers
	M	meters
	MI	miles
	MM	millimeters
	NMI	nautical miles
	YD	yards
Pressure	**HPA**	hectopascals
	INHG	inches of mercury
	MB	millibars
Speed	**KT or KTS**	knots
	MPH	miles per hour
	MPS	meters per second
Temperature	**C**	Celsius
	F	Fahrenheit
	K	Kelvin

Use the DERIVE keyword to display grids of a variety of common meteorological parameters. The valid options are defined in the table below. In these equations, the following variables appear often:

u = u-component of the wind
v = v-component of the wind
x = grid point distance in the east-west direction
y = grid point distance in the north-south direction

DERIVE=	Description	Equation
ABV	absolute vorticity	$\frac{\partial u}{\partial x} - \frac{\partial v}{\partial y} + f$ *f*=coriolis parameter: $2\Omega\sin\phi$ (see COR)
BETA	beta parameter	$\frac{\partial f}{\partial y} = \frac{2\Omega\cos\phi}{a}$ *f*=coriolis parameter: $2\Omega\sin\phi$ (see COR) Ω=angular speed of the rotation of the planet (7.292×10^{-5} radians/second for Earth) ϕ=latitude in degrees *a*=radius of the planet
COR	coriolis parameter	$2\Omega\sin\phi$ Ω=angular speed of the rotation of the planet (7.292×10^{-5} radians/second for Earth) ϕ=latitude in degrees
DIR	wind direction	atan2(-*u*,-*v*)
DSH	shearing deformation	$\frac{\partial v}{\partial x} + \frac{\partial u}{\partial y}$
DST	stretching deformation	$\frac{\partial u}{\partial x} - \frac{\partial v}{\partial y}$
DVG	divergence	$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y}$
SPD	wind speed	$\sqrt{u^2 + v^2}$
TD	dew point temperature	$\left[\frac{1}{T} - \frac{Rv \times \ln RH}{2500800 - 2397.5 \times (T - 273.15)}\right]^{-1}$ *T*=temperature in Kelvin *RH*=relative humidity *Rv*=moist gas constant:461.5 Joules per kilogram per degree Kelvin

DERIVE=	Description	Equation
VOR	relative vorticity	$\frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}$

Use the MERIDIONAL keyword to correct for the convergence of longitude lines at the poles. When deriving divergence and stretching deformation grids (DVG and DST), specify MERIDIONAL=YES to subtract the following correction term from the calculation.

$$v \times \tan\left(\frac{\phi}{r}\right)$$

When deriving vorticity, absolute vorticity, or shear deformation grids (VOR, ABV, or DSH), specify MERIDIONAL=YES to add the following correction term to the calculation.

$$u \times \tan\left(\frac{\phi}{r}\right)$$

For both the correction terms above:

u = *u-component of the wind*
v = *v-component of the wind*
ϕ = *latitude in degrees*
r = radius, in kilometers, of the planet at ϕ latitude

The MERIDIONAL keyword has no effect with other DERIVE keyword options.

Use the G*n* keywords to specify the grids to be used with the MATH keyword. Each G*n* keyword specifies a single grid. G*n* is followed by a list of select clauses in single quotes. By default, subsequent G*n* keywords have the same select clauses, unless specified differently. For example, to request 850 and 1000 mb height grids from the 0:00 UTC MRF run, specify

G1='LEV 850;PARAM Z;TIME 0;SRC MRF' G2='LEV 1000'

The MATH keyword defines the operation to perform on the specified grids, for example, MATH='G1**(SQRT(G2))'. The table below shows the operations available with the MATH keyword.

MATH= option	Function
+	addition
-	subtraction
*	multiplication
/	division
**	power
SQRT	square root

MATH= option	Function
EXP	exponential (the number e raised to a power)
LOG	natural logarithm
LOG10	base 10 logarithm
SIN	sine
COS	cosine
TAN	tangent
ASIN	arcsine
ACOS	arccosine
ATAN	arctangent
ABS	absolute value
MIN	minimum of two grids
MAX	maximum of two grids
DDX	derivative with respect to x
DDY	derivative with respect to y
DELSQ	laplacian
COR	coriolis parameter ($2\Omega\sin\phi$)
BETA	beta parameter $\left(\frac{\partial f}{\partial y}\right)$
LAT	creates a grid of latitude
LON	creates a grid of longitude

When specifying powers of ten, such as 10^2 or 10^{-3} in the MATH keyword, use one of the two methods shown in the examples below.

MATH='2*7.292*(10e-5)*(SIN(G1))'

MATH='2*7.292*(10(-5))*(SIN(G1))'**

In these entries both 10e-5 and 10**(-5) represent 10^{-5}. You must include the parentheses with 10**(-5); 10**-5 will not be interpreted correctly.

When using the MATH keyword and the range of output data values is larger than five orders of magnitude, the output grid is scaled based on the maximum end of the range. This means that small data values may be replaced by zeros in the output grid.

Use the FORMAT keyword options below to format output based on FORTRAN designators for data output. To add text to the numeric output, follow the designator with a text in single quotes.

Designator	Description
I	integer
F	floating point
E	exponential

To specify a parameter's output format, use a designator followed by a number. For example, I4 specifies an integer of up to four digits; F10.1 specifies a floating point decimal of up to 10 digits (including the decimal point) with one digit to the right of the decimal; E10.3 specifies an exponential number of up to 10 characters (including the decimal point and the four-character exponential flag) with three digits to the right of the decimal. Specify an X to use the parameter's default format. If the specified integer or floating point format is too small for the parameter's values, a series of asterisks (***) is displayed.

Examples

GRDDISP G/LOCAL

This entry draws a contour using the first grid in the first grid file in dataset G/LOCAL. The map and contours cover the grid's entire domain. The contour interval is taken from the text file `CONTOUR.DEF` if it has an entry that matches the grid's parameter, units and level. If `CONTOUR.DEF` does not have a matching entry, GRDDISP calculates the contour interval.

GRDDISP G/LOCAL.9 GRID=5 OUT=PLOT PINT=1 3 NAV=C

This entry plots grid point values from grid 5 in the grid file in position 9 of dataset G/LOCAL. Every grid point in the row direction and every third grid point in the column direction is plotted using the navigation of the current frame.

GRDDISP NMC/ETA LEV=1000 PARAM=WINDV DAY=#Y TIME=0 FDAY=#Y FTIME=18 MAP=MID PRO=MERC TITLE='ETA 1000 mb wind vectors, valid at 18 UTC today'

This entry plots the 1000 mb wind vector forecast valid at 18 UTC today over the Midwest. The vectors are created using the u- and v-component grids from today's 00 UTC model run in dataset NMC/ETA. The default title below the plot is replaced with the text *ETA 1000 mb wind vectors, valid at 18 UTC today*.

GRDDISP NMC/MRF LEV=500 PARAM=Z CINT=60 FHOUR=24 LAT=-40 -40 LON=-90 90 SLAT=-40 PRO=CONF

This entry draws a contour of the 24-hour forecast 500 mb heights with an interval of 60 over the South Pole. The data is taken from the first 24-hour forecast 500 mb height grid in dataset NMC/MRF.

GRDDISP NMC/MRF LEV=500 PARAM=Z CINT=60 DAY=#Y TIME=12 FRANGE=0 120 24 GRA=1 6

This entry draws a contour of the 0-, 24-, 48-, 72-, 96- and 120-hour forecast 500 mb heights with an interval of 60. The contours are displayed over a map of the grids' domain in frames 1, 2, 3, 4, 5 and 6. The data is taken from today's 12 UTC model run grids in dataset NMC/MRF.

GRDDISP MODEL.2 LEV=850 PARAM=T UNIT=C CINT=5 SRC=NGM DASH=NEG COLOR=5

This entry draws a contour of the first 850 mb NGM temperature grid in the grid file in position 2 of the dataset with the alias name MODEL. The map and contours cover the grid's entire domain. The contours are drawn in graphics color level 5 with an interval of 5 degrees Celsius. Negative contours are dashed.

TE SNOW "0 10 20 32 40 60
GRDDISP NMC/ETA LEV=850 PARAM=T UNIT=F CINT=SNOW MAP=USA PRO=CONF

The **TE** command entry creates a string called SNOW containing contour values for the GRDDISP entry. The GRDDISP entry draws a contour of the first 850 mb temperature grid in dataset NMC/ETA. The map and contours cover the USA, and only the 0, 10, 20, 32, 40 and 60 degree Fahrenheit contours are drawn. Do not specify a pound sign (#) before the string name in the CINT keyword.

GRDDISP GRIDS/MRF LEVEL=SFC PARAM=T DAY=97300 FHOUR=24 MAP=USA SUBSECT=25 50 60 100

This entry draws 24-hour forecast surface temperature contours from the dataset GRIDS/MRF. A map of the United States is drawn, but the contours are drawn only for the geographic region specified in the SUBSECT keyword (25-50°N and 60-100°W). If the SUBSECT keyword was not specified, GRDDISP would subsect a region slightly larger than the map and draws contours in the entire frame.

GRDDISP GRD.8000 4 LAT=20 50 LON=75 145 PRO=CONF DERIVE=SPD LEV=500 FHOUR=48

This entry draws a 500 mb wind speed contour with a 48-hour forecast time. The component grids used to derive wind speed are the u- and v-components of the wind from position 8000 in the dataset with the alias GRD. The contour is displayed on frame 4 over a polar stereographic map between 20° and 50° latitude and 75° and 145° longitude.

GRDDISP RTGRIDS/NGM MAP=USA PRO=MERC DERIVE=VOR LEV=500 DAY=96284 TIME=12 FHOUR=12 24 36 48 GRA=1 4 DASH=NEG

This entry draws contours for a sequence of 500 mb relative vorticity grids from day 96284 at 12:00 UTC. The component grids are from dataset RTGRIDS/NGM. The 12-, 24-, 36-, and 48-hour forecast contours are displayed on frames 1, 2, 3, and 4, and displayed over the USA in a Mercator projection. All negative contours are dashed.

GRDDISP RTGRIDS/MRF PARAM=MOVIE LEV=500 DAY=#Y TIME=0 FHOUR=18 MAP=USA MOVIE=2 8
TE MOVIECOLORS "GU MAKE !1 0 !2 0
REPEAT MOVIECOLORS 2 TO 8 BY 1 0 BY 40
CM 2 8 GO=YES

The GRDDISP entry draws the 18-hour MRF forecast 500 mb streamlines with colored line segments on a map of the U.S. The TE and REPEAT entries set graphics color levels 2 to 8 to increase linearly from black (level 2) to bright green (level 8). The CM entry then circulates the graphics color levels to animate the wind flow.

GRDIMG

Generates an area from a grid.

Format

GRDIMG *grid area rmag cmag [keywords]*

Parameters

grid	source grid number
area	destination area number
rmag	grid row magnification factor (default=1)
cmag	grid column magnification factor (default=1)

Keywords

COL= *beg end* beginning and ending column limits (default=1 *maximum column*)

GRIDF= grid file number (default=current file set by IGU SET *gridf*)

RANGE= *loval hival britlo brithi*
the range of grid values; see the Remarks

loval	low grid data value (default=minimum value)
hival	high grid data value (default=maximum value)
britlo	low pixel brightness value (default=0)
brithi	high pixel brightness value (default=255)

ROW= *beg end* beginning and ending row limits (default=1 *maximum row*)

Remarks

Use keyword COL to define a data subset. The maximum element size is 2000. Use a smaller column magnification or specify keyword COL if an error results.

To create an area with enough data points to fill the frame, use the equations below to determine the *rmag* and *cmag* values.

rmag =(number of lines in frame -1) / (number of rows in grid -1)

cmag =(number of elements in frame -1) / (number of columns in grid -1)

Grid values outside the *loval* to *hival* range specified in the RANGE keyword are assigned product values equal to zero.

Examples

GRDIMG 5 2500
This entry uses grid 5 data to generate area 2500. It uses the minimum and maximum grid values to determine the pixel brightness range.

GRDIMG 1 5000 RANGE=270 300 100 200
This entry uses grid 1 to generate area 5000. If grid 1 contains temperature data, then temperatures from 270 to 300 K are assigned product calibration values (named T) equal to their temperature, and brightness values ranging from 100 to 200. Temperatures below 270 K are assigned product calibration values of 0 and brightness values less than 100. Temperatures above 300 K are assigned product calibration values of 0 and brightness values over 200.

GRDINFO

Lists, modifies, or statistically analyzes grid point values.

Formats

GRDINFO *sdataset* **EDIT** *ddataset [keywords]*
GRDINFO *sdataset* **HIST** *[keywords]*
GRDINFO *sdataset* **LIST** *[keywords]*
GRDINFO *sdataset* **STAT** *[keywords]*

Parameters

sdataset source ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers or **ALL** (all positions) for *position* (no default for *group/descriptor* or *alias*; default=**ALL** for *position*)

EDIT modifies grid point values and copies the new grid to *ddataset*

HIST displays histogram for grid point values

LIST lists grid point values

STAT displays statistical analysis for grid point values; statistics include the minimum and maximum values, mean, and standard deviation (default)

ddataset destination ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers for *position*

Search Keywords

DAY=	*d1 . . dn*	selects grids with the specified days
DRAnge=	*bday eday inc*	selects grids in the range of days *bday* through *eday*, incremented by *inc* days (no default for *bday*; *eday* default=*bday*; *inc* default=1)

FDAy= selects grids with the specified forecast day; a grid's forecast day is determined by adding the forecast hour to the day and time; for example, a 12 UTC grid from day 95300 with a forecast hour of 72, has a forecast day of 95303; you cannot use FDAY with the FHOUR or FRANGE keyword

FHOur= *h1 . . hn* selects grids with the specified forecast hours; you cannot use FHOUR with the FRANGE, FDAY or FTIME keyword

FRANGe= *bhr ehr inc* selects grids in the range of forecast hours *bhr* through *ehr,* incremented by *inc* hours; you cannot use FRANGE with the FHOUR, FDAY or FTIME keyword (no default for *bhr*; *ehr* default=*bhr*; *inc* default=1)

FTIme= selects grids with the specified forecast time; a grid's forecast time is determined by adding the forecast hour to the time; for example, a 12 UTC grid with a forecast hour of 18, has a forecast time of 6 on the following day; you cannot use FTIME with the FHOUR or FRANGE keyword

GPRo= *g1 . . gn* selects grids with the specified projection, for example, **MERC**, **PS**, **LAMB**, **EQUI**

GRId= *bgrid egrid* selects grids *bgrid* through *egrid* in the grid file specified in the *dataset* parameter; enter a grid number or **LAST** (last grid) for *bgrid* and *egrid*; see the Remarks (no default for *bgrid*; *egrid* default=*bgrid*)

LEV= *l1 . . ln* selects grids with the specified levels, for example, **SFC**, **1000**, **850**

PARam= *p1 . . pn* selects grids with the specified parameters, for example, **T**, **Z**, **RH**; do not use with the DERIVE keyword; see the Remarks

SRC= *s1 . . sn* selects grids with the specified sources, for example, **MDX**, **MRF**, **ETA**

TIMe= *t1 . . tn* selects grids with the specified times

TRAnge= *btim etim inc* selects grids in the range of times *btim* through *etim,* incremented by *inc* (no default for *btim*; *etim* default=*btim*; *inc* default=1, meaning one hour)

Derived Grid Keywords

DERive= selects the component grids needed to derive a grid with the specified parameter, for example, **DST** or **VOR**; the grid listed with the HIST, LIST, or STAT parameters does not exist, but the components needed to derive such a grid do; do not use with the PARAM keyword; see the Remarks

MERidional=
- **YES** adds a correction term to account for the convergence of longitude lines at the poles
- **NO** does not add a correction term; only valid with DERIVE=ABV, DSH, DST, DVG, or VOR; see the Remarks (default)

PLAnet= planet for which derive calculations are done; valid options are **MERCURY**, **VENUS**, **EARTH**, **MARS**, **JUPITER**, **SATURN**, **NEPTUNE**, **URANUS** (default=**EARTH**)

Mathematical Operations Keywords

G*n*= *'clause1; clause2; . . ; clausen'*
grids to be used with the MATH keyword; separate select clauses with semicolons; single quotes are mandatory; specify *clause* using the following format:

searchkeyword value

valid options for *searchkeyword* are **DAY**, **FHOUR**, **GPRO**, **GRID**, **LEV**, **PARAM**, **SRC**, **TIME**; you can specify numbers between 1 and 99 in the keyword name (G1, G2, . . , G99); see the Remarks

INFo= *'text'* string placed in the header of the copied grid when the MATH keyword is used; maximum of 48 characters

MATh= *'expression'* mathematical operation to perform on the grids specified with the G*n* keywords; single quotes are mandatory; see the Remarks

NEWpar= *param punit level lunit*
header information for the grid copied with the MATH keyword; parameter and level values, and associated units

param	grid parameter; four characters maximum (default=**MATH**)
punit	units of grid parameter; four characters maximum (default=**NONE**)
level	grid level (default=from grid)
lunit	units of grid level; two characters maximum (default=from grid)

Grid Point Selection Keywords

COL=	*bcol ecol*	range of columns to list or edit; specify **MAX** for the last column in the grid (default=1 **MAX** for the STAT and HIST options; default=1 *bcol* for the LIST and EDIT options)
LAT=	*lat1 lat2*	range of latitudes to list or edit; range must be south to north (default=grid latitude extents)
LON=	*lon1 lon2*	range of longitudes to list or edit; range must be east to west (default=grid longitude extents)
RANge=	*bval eval*	range of grid point values to list or edit; *bval* can be **MISS** for missing values (default=all values)
	MISS	list or edit grid points with missing values
ROW=	*brow erow*	range of rows to list or edit; specify **MAX** for the last row in the grid (default=1 **MAX** for the STAT and HIST options; default=1 *brow* for the LIST and EDIT options)

EDIT Option Keywords

DEL=	**YES**	delete the destination grid file before copying the edited grid; see the Remarks
	NO	do not delete the destination grid file (default)

DGRid= beginning grid number in the destination grid file to place the edited grids; this keyword may overwrite existing grids; see the Remarks (default=append after the last grid in the grid file)

MAXgrd= maximum number of grids the newly created destination grid file can store; see the Remarks (default=1000)

TITLE=	*'text'*	title of the newly created destination grid file; 32 characters maximum; see the Remarks
VALue=	*num*	value to assign to grid points specified with the grid point selection keywords
	MISS	assigns a missing data value to the specified grid points

Output Keywords

BINsize=		increment, or bin width, for the histogram; valid only with the HIST option (default=from *sdataset*)
BYTecount=	**YES**	lists the number of bytes received from the server
	NO	does not list the number of bytes (default)
FORmat=		output format for grid point values; if multiple parameters are requested, FORMAT cannot be specified; see the Remarks
NUM=		number of grids matching the criteria defined with the search keywords to list or edit; for example, if you specify NUM=50, the first 50 grids matching the search keywords are used (default=1)
	ALL	use all grids matching the search keywords
UNIt=		units to list for grid point values; not valid if multiple parameters are requested with the PARAM keyword (default=from grid header)

Remarks

Individual grids are stored in grid files. Each dataset position points to a single grid file. GRDINFO lists or edits individual grid point values in one or more grid files in a dataset. Use the search keywords to limit grid selection.

Use the RANGE, LAT and LON, and ROW and COL keywords to limit the selection of grid points. Using a combination of these grid point selection keywords limits grid points to those that meet all the specified criteria.

More than one grid can be altered using the EDIT option; however, only one value can be assigned to modify all the grids.

If you specify DEL=YES or a position number of a nonexistent grid file in the *ddataset* parameter, the edited grids are copied into a newly created grid file with the attributes specified in keywords MAXGRD and TITLE.

Using the DGRID keyword may result in grids being overwritten in the destination grid file. For example, if the destination grid file has 50 grids (in grids 1 to 50) and you specify NUM=10 DGRID=25, the edited grids will overwrite grids 25 to 34 in the destination grid file.

The GRID keyword copies grids from the grid file specified with the *sdataset position* number; the default *position* value, ALL, is not valid. When using the GRID keyword, do not specify additional search keywords, PARAM, LEV, DAY, etc., or NUM.

When using the DERIVE keyword with the LIST, HIST, and STAT options, GRDINFO lists information for a virtual grid: a grid that could be derived. The command searches for grids with components needed to derive a grid with the specified parameter. Only one derived parameter can be specified at a time, but you can request multiple grids, by specifying multiple levels or times, for example. Use GRDCOPY with the DERIVE keyword to create derived grids.

Use the FORMAT keyword options below to format output based on FORTRAN designators for data output:

Designator	Description
I	integer
F	floating point
E	exponential

To specify a parameter's output format, use a designator followed by a number. For example, I4 specifies an integer of up to four digits; F10.1 specifies a floating point decimal of up to 10 digits (including the decimal point) with one digit to the right of the decimal; E10.3 specifies an exponential number of up to 10 characters (including the decimal point and the four-character exponential flag) with three digits to the right of the decimal. Specify an X to use the parameter's default format. If the specified integer or floating point format is too small for the parameter's values, a series of asterisks (***) is displayed.

See Also

See the Remarks and Examples in the GRDCOPY or GRDDISP command for additional information on DERIVE, MERIDIONAL, and MATH keywords.

Examples

GRDINFO NGM/12
This entry lists the statistics for the first grid in the first grid file in dataset NGM/12. The statistics include the minimum and maximum values, mean, and standard deviation.

GRDINFO RT/GRID.10 HIST PARAM=T LEV=850 FHOUR=12
This entry displays the histogram of the 12-hour forecast, 850 mb temperature grid in position 10 of dataset RT/GRID.

GRDINFO GRIDS/ETA.1 DERIVE=SPD LEV=500 FHOUR=48
This entry lists the statistics for a wind speed grid that could be derived from 500 mb, 48-hour forecast time component grids in position 1 of dataset GRIDS/ETA.

GRDINFO CASEA.21 LIST PARAM=T LEV=700 FHOUR=24 ROW=15 COL=30 40 UNIT=C FORMAT=F5.1
This entry lists the temperature values stored in columns 30 through 40 of row 15 of a 24-hour forecast, 700 mb temperature grid in position 21 of the dataset with the alias name CASEA. The temperatures are listed in degrees Celsius. The temperature output is formatted as real numbers containing up to five digits (including the decimal point) with one digit to the right of the decimal point.

GRDINFO BLIZZARD/NGM.8000 EDIT BLIZZARD/EDIT.4003 VALUE=MISS LAT=40 45 LON=90 95 DERIVE=VOR LEV=500 FHOUR=48 DGRID=15
This entry creates a derived grid of relative vorticity using the 48-hour forecast, 500 mb u- and v- wind component grids in position 8000 of the dataset BLIZZARD/NGM. The new grid is placed in grid number 15 in position 4003 of the dataset BLIZZARD/EDIT, overwriting all pre-existing data. The values of grid points between 40° and 45° latitude and between 90° and 95° longitude are changed to missing data values (MISS).

GRDLIST

Lists grids in a dataset.

Format

GRDLIST *dataset [keywords]*

Parameters

dataset ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers or **ALL** (all positions) for *position* (no default for *group/descriptor* or *alias*; default=**ALL** for *position*)

Search Keywords

DAY= *d1 . . dn* lists grids with the specified days

DERive= lists derived grids with the specified parameter, for example, **DST** or **VOR**; the grid listed does not exist, but the components needed to derive such a grid do; do not use with the PARAM keyword; see the Remarks

DRAnge= *bday eday inc* lists grids in the range of days *bday* through *eday,* incremented by *inc* days (no default for *bday*; *eday* default=*bday*; *inc* default=1)

FDAy= lists grids with the specified forecast day; a grid's forecast day is determined by adding the forecast hour to the day and time; for example, a 12 UTC grid from day 95300 with a forecast hour of 72, has a forecast day of 95303; you cannot use FDAY with the FHOUR or FRANGE keyword

FHOur= *h1 . . hn* lists grids with the specified forecast hours; you cannot use FHOUR with the FRANGE, FDAY or FTIME keyword

FRANge= *bhr ehr inc* lists grids in the range of forecast hours *bhr* through *ehr,* incremented by *inc* hours; you cannot use FRANGE with the FHOUR, FDAY or FTIME keyword (no default for *bhr*; *ehr* default=*bhr*; *inc* default=1)

FTIme= lists grids with the specified forecast time; a grid's forecast time is determined by adding the forecast hour to the time; for example, a 12 UTC grid with a forecast hour of 18, has a forecast time of 6 on the following day; you cannot use FTIME with the FHOUR or FRANGE keyword

GPRo= *g1 . . gn* lists grids with the specified projection, for example, **MERC**, **PS**, **LAMB**, **EQUI**

GRId= *bgrid egrid* lists grids *bgrid* through *egrid* in the grid file specified in the *dataset* parameter; enter a grid number or **LAST** (last grid) for *bgrid* and *egrid*; see the Remarks (no default for *bgrid*; *egrid* default=*bgrid*)

LEV= *l1 . . ln* lists grids with the specified levels, for example, **SFC**, **1000**, **850**

PARam= *p1 . . pn* lists grids with the specified parameters, for example, **T**, **Z**, **RH**; do not use with the DERIVE keyword; see the Remarks

SRC= *s1 . . sn* lists grids with the specified sources, for example, **MDX**, **MRF**, **ETA**

TIMe= *t1 . . tn* lists grids with the specified times

TRAnge= *btim etim inc* lists grids in the range of times *btim* through *etim,* incremented by *inc* (no default for *btim*; *etim* default=*btim*; *inc* default=1, meaning one hour)

Mathematical Operations Keywords

G*n*= '*clause1*; *clause2*; . . ; *clausen*'
lists grids to be used with the MATH keyword; separate select clauses with semicolons; single quotes are mandatory; specify *clause* using the following format:

searchkeyword value

valid options for *searchkeyword* are **DAY**, **FHOUR**, **GPRO**, **GRID**, **LEV**, **PARAM**, **SRC**, **TIME**; you can specify up to 99 G*n* keywords (G1, G2, . . , G99); see the Remarks

MATh= '*expression*' mathematical operation to be performed on the grids specified with the G*n* keywords; single quotes are mandatory; see the Remarks

Output Keywords

BYTecount= **YES** lists the number of bytes received from the server

NO does not list the number of bytes (default)

FORm= **SHORT** lists a one-line summary for each grid (default)

OLD lists a one-line summary for each grid in the IGG LIST format

ALL lists all information for each grid

FILE *bpos epos*

lists only the grid file directories; none of the grids in the grid files are listed; all other keywords are ignored; *bpos* is the beginning position number or ALL; *epos* is the ending position number or LAST; *bpos* and *epos* override the position specified in the *dataset* parameter (*bpos* default=position specified in the *dataset* parameter, *epos* default=*bpos*)

NUM= number of grids matching the criteria defined with the search keywords to list; for example, if you specify NUM=50, the first 50 grids matching the search keywords are listed (default=1)

ALL lists all grids matching the search keywords

Remarks

Individual grids are stored in grid files. Each dataset position points to a single grid file. GRDLIST lists grids in one or more grid files in a dataset. The listing includes the parameter, level, day, time, source, forecast hour, forecast day, forecast time, grid number and projection. Use the search keywords to limit the output to the desired grids.

The GRID keyword lists grids in the grid file specified in the *dataset position* number; the default *position* value, ALL, is not valid. When using the GRID keyword, do not specify additional search keywords, PARAM, LEV, DAY, etc., or NUM.

If you specify PARAM=STREAML, WINDB or WINDV, GRDLIST does not search for grids with that parameter. Instead, it locates the u-component grids that match the other search keywords, then locates the matching v-component grids, and lists both sets of grids. These grids may be used to draw streamlines, plot wind barbs or plot wind vectors with the GRDDISP command. If you specify any other parameter with the PARAM keyword, the value entered is the value searched for in the grid's parameter field.

The DERIVE keyword lists a virtual grid: a grid that could be derived. GRDLIST searches for grids with the components needed to derive a grid with the specified parameter. The listing is for the grid that would be created using the GRDCOPY command. Use GRDCOPY with the DERIVE keyword to create derived grids. Once the derived grid is created, use GRDLIST with the PARAM keyword to list the output grid.

Use the G*n* keywords to specify the grids to be used with the MATH keyword. GRDLIST lists the grids but the mathematical operation is not performed. Each G*n* keyword specifies a single grid. G*n* is followed by a list of select clauses in single quotes. By default, subsequent G*n* keywords have the same select clauses, unless specified differently. For example, to request 850 and 1000 mb height grids from the 0:00 UTC MRF run, specify G1='LEV 850;PARAM Z;TIME 0;SRC MRF' G2='LEV 1000'.

The MATH keyword defines the operation to be performed on the specified grids, for example, MATH='G1**(SQRT(G2))'. Even though the math is not done, the MATH keyword must be used with the G*n* keywords.

See Also

See the GRDCOPY command for additional information on MATH keyword parameters. See the GRDCOPY or GRDDISP command for additional information on DERIVE keyword parameters.

Examples

GRDLIST NMC/MRF
This entry lists the first grid in the first grid file in dataset NMC/MRF.

GRDLIST NMC/MRF.5
This entry lists the first grid in the grid file in position 5 of dataset NMC/MRF.

GRDLIST NMC/MRF.5 LEV=850 NUM=10
This entry lists the first 10 grids with a level of 850 mb in the grid file in position 5 of dataset NMC/MRF.

GRDLIST NMC/MRF.5 NUM=ALL
This entry lists all grids in the grid file in position 5 of dataset NMC/MRF. Be careful when using **NUM=ALL**; grid files can contain thousands of grids. Use the search keywords to limit the output to the desired grids, as shown in the following examples.

GRDLIST NMC/ETA.ALL LEV=500 PARAM=Z T TD RH ABV DAY=#Y TIME=0 NUM=ALL
This entry lists all 500 mb height, temperature, dew point temperature, relative humidity and absolute vorticity grids from today's 00 UTC run in all grid files in dataset NMC/ETA.

GRDLIST NMC/ETA.1 LEV=TRO PARAM=Z T FHOUR=12 36 NUM=ALL

This entry lists all 12- and 36-hour forecast tropopause height and temperature grids in the grid file in position 1 of dataset NMC/ETA.

GRDLIST NMC/ETA.1 LEV=TRO PARAM=Z T FRANGE=12 36 6 NUM=ALL

This entry lists all 12-, 18-, 24-, 30- and 36-hour forecast tropopause height and temperature grids in the grid file in position 1 of dataset NMC/ETA.

GRDLIST NMC/ETA.10 LEV=TRO PARAM=Z T FDAY=#Y FTIME=18 NUM=ALL

This entry lists all forecast tropopause height and temperature grids valid at 18 UTC today in the grid file in position 10 of dataset NMC/ETA.

GRDLIST LOCAL/GRIDS.2 GRID=1 20

This entry lists grids 1 through 20 in the grid file in position 2 of dataset LOCAL/GRIDS.

GRDLIST MYGRIDS.2 GRID=LAST

This entry lists the last grid in the grid file in position 2 of the dataset with the alias name MYGRIDS. This information may be useful for subsequent GRDLIST or GRDCOPY commands, as it usually indicates about how many grids are in the grid file. For example, if this command shows that grid 800 is the last grid, then the grid file contains 800 or less grids. There are less than 800 grids only if there are "holes" in the grid file. For example, if grid 800 is the last grid, but there are no grids between 600 and 649, the grid file contains 750 grids.

GRDLIST STORM/FORECAST.ALL FORM=FILE

This entry lists the directories for all grid files in dataset STORM/FORECAST. None of the grids in the dataset are listed. If the grid file directories contain useful information such as day, time and contents, you can determine which grid file has the grids you want to list, copy or display. Then you can specify that grid file in the dataset parameter's position in your GRDLIST, GRDCOPY and GRDDISP commands to limit the search to that grid file.

GRDLIST MYGRIDS.1 DERIVE=SPD LEV=500 FHOUR=48

This command lists the wind speed grids that could be derived from 500 millibar, 48 hour forecast time component grids in position 1 of the dataset with the alias MYGRIDS.

GRDLIST MYGRIDS.1
G1='SRC NGM;PARAM Z;LEV 500;FHOUR 12'
G2='FHOUR 24' G3='FHOUR 36' MATH='(G1+G2+G3)/3'

This command lists the three 500 millibar geopotential height grids from the NGM model needed for an average of the 12, 24, and 36 forecast hours. The grids listed are from position 1 of the dataset with the alias MYGRIDS.

GU

Graphics utility.

Formats

GU COLORS
GU DEL *name*
GU LIST *string*
GU MAKE *level color bframe eframe*
GU MAKE *level blue green red bframe eframe*
GU OFF *level bframe eframe* (McIDAS-X only)
GU ON *level bframe eframe* (McIDAS-X only)
GU REST *name bframe eframe*
GU SAVE *name frame*
GU TABLE *name*

Parameters

COLORS	lists the predefined color levels in the `MCRGB.TXT` data file
DEL	deletes a graphics file
LIST	lists the saved graphics files
MAKE	sets the graphics levels
OFF	turns a graphics level off; use with McIDAS-X only
ON	turns a graphics level on; use with McIDAS-X only
REST	restores a saved graphics file (default)
SAVE	saves the current graphics table to a file
TABLE	lists the values in a graphics file
name	graphics file name; eight alphanumeric characters maximum; do not specify an extension, for example, .GRX (REST option default=default table; TABLE option default=current; no default for DEL and SAVE options)
string	lists only the graphics files beginning with this character string (no default; list all graphics files)
level	graphics color level (OFF and ON options default=all levels; no default for MAKE option)
color	predefined color; use GU COLORS to list the valid colors
bframe	beginning graphics frame number (default=current)
eframe	ending graphics frame number (default=bframe)

blue blue color intensity; the range is 0 to 255 (default=0)

green green color intensity; the range is 0 to 255 (default=0)

red red color intensity; the range is 0 to 255 (default=0)

frame graphics frame number (default=current)

Remarks

The default file extension for the LIST, REST, SAVE and TABLE options is .GRX on McIDAS-X, and .GRP on McIDAS-OS2..

Examples

GU
This entry restores the default graphics table to the current graphics frame.

GU MAKE 4 WHITE 1 3
This entry sets graphics color level 4 to white for graphics frames 1, 2 and 3

GU OFF 4 1 3
This entry turns graphics color level 4 off on graphics frames 1, 2 and 3 (McIDAS-X only).

GU TABLE
This entry lists the values in the current graphics table.

GUI (McIDAS-X only)

Starts the McIDAS-X Graphical User Interface.

Remarks

When you start the McIDAS-X GUI, a menu bar and frame control buttons are added to the Image Window. The Text and Command Window remains displayed and can be used to view text output or run McIDAS-X commands outside the GUI.

For more information, see the Help menu in the GUI or the section titled *Using the Graphical User Interface* in Chapter 2.

HEAT

Calculates the heat index and relative humidity.

Format

HEAT *temp dewpt units*

Parameters

temp temperature for calculating the heat index

dewpt dew point temperature for calculating the heat index; must be less than or equal to the value in *temp*

units units of the specified temperature, dew point and output

F Fahrenheit (default)

C Celsius

K Kelvin

Remarks

The heat index is calculated using an empirical algorithm developed by NOAA.

Valid temperature ranges are 80-110°F, 26.6-43.3°C, or 299.8-316.5°K.

The valid dew point temperature range is 55-85°F, 12.7-29.4°C, or 285.9-302.6°K.

Examples

HEAT 97 72
This entry lists the heat index and relative humidity for a temperature of 97° F and a dew point temperature of 72° F.

HEAT 38 29 C
This entry lists the heat index and relative humidity for a temperature of 38° C and a dew point temperature of 29° C.

HELP

Lists online helps.

Formats

HELP *command*
HELP *McBASI program*

Parameters

command	McIDAS command name
McBASI program	McBASI program name

Remarks

HELP lists the contents of *command*'s help file. The help file must have the extension .hlp. For McIDAS-OS2, the help file must reside in a directory in the REDIRECT list, **\mcidas\user\help** or **\mcidas\help**; for McIDAS-X, the help file must reside in a directory in the REDIRECT list or in a directory in the **MCPATH** environment variable.

To display help for a McBASI program with a name identical to a McIDAS command, you must include the .MCB extension with the program name.

You can list an abbreviated HELP (the command syntax) while entering a command from the keyboard. After typing the command name or more,

Press: **ALT ?**

Examples

HELP
In McIDAS-OS2, this entry lists the first line of all help files in the REDIRECT list, **\mcidas\user\help**, and **\mcidas\help** directories.

In McIDAS-X, this entry lists the first line of all help files in the REDIRECT list and **MCPATH** directories.

HELP CUR
This entry lists the online documentation for the McIDAS command CUR.

HELP WHO.MCB
This entry lists the help for the McBASI program **WHO.MCB**.

HODO

Plots a hodograph of upper-air data.

Format

HODO *station time day [keywords]*

Parameters

station 3- or 4-character station ID, or 5-digit station ID number, e.g., KGRB or 72645

time observation time (default=0 if current time is between 0 UTC and 11:59 UTC, otherwise default=12)

day observation date; valid formats include YYYYDDD, YYYY/MM/DD and DD/MON/YYYY where YYYY, DDD, MM and DD are integers and MON is three or more letters, e.g., JAN or JANUARY (default=current)

Keywords

ANAlysis= **YES** output all sounding/parcel analysis values in the text frame and selected values below the diagram in the graphics frame; see the Remarks

NO suppress sounding/parcel analysis values; output only the diagram in the graphics frame (default)

COLor= *low mid hi lab bg title par*
graphics color level for each component; specify 0 to omit the component (default=2 3 7 1 8 3 1)

low line segments depicting low (surface to 699 mb) winds

mid line segments depicting middle (700 mb to 400 mb) winds

hi line segments depicting high (399 mb to 1 mb) winds

lab wind speed labels, sounding table labels, and wind points

bg background grid (wind speed circles)

title plot title and sounding/parcel analysis values

par sounding/parcel analysis labels

DATaset= *mand sig* source ADDE point dataset names for mandatory- and significant-level data; specify as *group/descriptor* or *alias*; you must specify the SIG=NO keyword to use only mandatory data, i.e., ignore the significant data (default=**RTPTSRC/UPPERMAND RTPTSRC/UPPERSIG**)

GRA= graphic frame number to display the hodograph (default=current)

INT= interval for wind speed circles in the units specified in the UNIT keyword (default=calculated, based on the maximum wind speed)

OUTLonly= **YES** draws a hodograph without any data

NO draws a hodograph and plots the upper-air data for the specified station (default)

PRANge= *min max* mimimum and maximum pressure in mb; all winds in this range are plotted (default=all pressures)

SIG= **YES** include data from the significant-level dataset specified in the DATASET keyword (default)

NO do not include data from the significant-level dataset specified in the DATASET keyword; use only its mandatory-level dataset

UNit= units for wind speed circles; run CU LIST to list the valid units and abbreviations (default=KTS)

Remarks

HODO automatically erases the graphics before plotting the data.

A hodograph is a profile of a wind sounding representing the changing wind shear with height. Wind direction is the azimuth from the origin and wind speed is the radial distance from the origin. Northerly winds are plotted below the origin, and westerly winds are plotted to the right of the origin. The curve, or hodogram, between any two plotted points gives the wind shear between the two levels.

The table to the left of the wind speed circles lists pressure, height, wind speed and wind direction. The table includes all mandatory levels, plus significant wind and pressure levels whose pressure difference (from the adjacent levels in the table) is at least 30 mb.

Use the ANA=YES keyword to list all available sounding/parcel analysis values in the text frame and plot selected values in the graphics frame below the diagram. To obtain the sounding/parcel analysis values, the reported heights are recomputed for hydrostatic consistency, though the adjustments are generally less than 10 meters. Also, the computed parcel temperature of a 12 UTC sounding is warmed 2 K to account for daytime heating. No adjustment is made to the computed parcel temperature of a 0 UTC sounding.

The following abbreviations are used for the sounding/parcel analysis values below the diagram: KI=K Index, LI=Lifted Index, SwI=Sweat Index, TTI=Total Totals Index, CVT=Convective Temperature in C, FMAX=Forecast Maximum Temperature in C, ThE=Equivalent Potential Temperature in K, EL=Equilibrium Level in mb, MIX=Mixing Ratio in g/kg, PW=Precipitable Water in mm, CAPE=Covective Available Potential Energy in J/kg, and HELI=Helicity in m**2/s**2.

Examples

HODO OUTL=YES
This entry plots a blank hodograph without data from any station.

HODO KOUN 0
This entry plots a hodograph of mandatory- and significant-level data for Norman, Oklahoma at 0 UTC of the current day. The sounding table to the left of the hodograph lists pressure, height, wind speed and wind direction at each level. Note that you can also specify the station using Norman's 5-digit station ID number, 72357.

HODO KEYW 12 PRANGE=400 1000 INT=10 UNIT=MPH ANA=YES
This entry plots a hodograph of mandatory- and significant-level data for Norman, Oklahoma at 12 UTC of the current day. Only winds between 1000 and 400 mb are plotted. Since there are only five wind speed circles and an interval of 10 miles per hour was specified with the INT and UNIT keywords, the circles represent 10, 20, 30, 40 and 50 MPH winds respectively. The ANA=YES keyword outputs all parcel/sounding analysis values in the text frame and selected values below the hodograph in the graphics frame.

HODO KMFR 12 06/JUNE/1998 DATASET=LOCAL/MAND.1017 SIG=NO
This entry plots a hodograph of mandatory-level data for Medford, Oregon at 12 UTC on 6 June 1998. The data is obtained from the file in position 1017 of the dataset LOCAL/MAND. The SIG=NO keyword ensures that significant-level data will not be plotted.

IGG

Grid utility.

Formats

IGG DEL *bgrid egrid* **GRIDF=**
IGG GET *sgridf bgrid egrid dgridf dgrid*
IGG LIST *bgrid egrid* **FORM= GRIDF=**
IGG MAKE *grid1 doption grid2 [keywords]*
IGG MAKE *grid1 option1 . . gridn optionn [keywords]*

Parameters

DEL deletes grids

GET copies grids from one file to another or within the same file

LIST lists grid headers; see the Remarks

MAKE arithmetic operations performed on the grids; see *doption* and *optionn* below

bgrid beginning grid number; specify LAST for the last grid in the grid file (default=1)

egrid ending grid number; specify LAST for the last grid in the grid file (default=option dependent; see the Remarks)

dgrid destination grid number; if more than one grid is copied, *dgrid* is the beginning destination grid number (default=first available)

sgridf source grid file number (default=from IGU SET *gridf*)

dgridf destination grid file number (default=*sgridf*)

grid1 . . n a grid number

doption

ABV creates a grid of absolute vorticity with units 10^{-5} sec^{-1} ; specify the u-component grid as *grid1* and the v-component grid with the keyword V; *grid2* is ignored

ADV creates an advection grid of the *grid2* parameter in units/day; specify the u-component grid as *grid1* and the v-component grid with the keyword V

DSH creates a deformation shear grid; specify the u-component grid as *grid1* and the v-component grid with the keyword V; *grid2* is ignored

	DST	creates a deformation stretch; specify the u-component grid as *grid1* and the v-component grid with the keyword V; *grid2* is ignored
	DVG	creates a divergence grid with units 10^{-6} sec $^{-1}$; specify the u-component grid as *grid1* and the v-component grid with the keyword V; if *grid2* is specified, the divergence of its parameter is computed
	GEO	creates u- and v-component grids of the geostrophic wind; specify a height grid as *grid1*; *grid2* is ignored
	SPD	creates a grid of wind speed; specify the u-component grid as *grid1* and the v-component grid with the keyword V; *grid2* is ignored
	VOR	creates a grid of vorticity with units 10^{-6} sec-^{1}; specify the u-component grid as *grid1* and the v-component grid in the keyword V; *grid2* is ignored
option1 . . n	**ADD**	adds grids on a point-by-point basis, or adds a constant to a grid; see the Remarks
	AVG	averages grids on a point-by-point basis
	CHGT	changes all input grid points with values greater than the specified constant to that constant in the output grid; grid points with values less than the constant are not changed; see the Remarks
	CHLT	changes all input grid point values less than the specified constant to that constant in the output grid; grid points with values greater than the constant are not changed; see the Remarks
	COM	compares two grids for overlapping values; for a threat score, the second grid should be followed by two numbers that specify the range of values to include, for example, MAK 12 COM 18 -500 500
	COR	creates a grid of the coriolis force using the *grid1* boundaries
	DIV	divides a grid by another grid or constant; see the Remarks

FIL creates a grid with the specifications of the first grid but fills it with the value specified for the second grid, for example, MAK 12

MPY multiplies a grid by another grid or constant; see the Remarks

RMS computes RMS and bias differences of two named grids

SQR square root; applies to the first grid only; it can be used with any two successive grids to reproduce a grid of the square root of the sum of the squares

SUB subtracts a grid from another grid or a constant; see the Remarks

Keywords

ADD=
- **YES** corrects for meridional flow; valid only with the derived options ABV, DSH, DVG, VOR, and DST (default)
- **NO** does not correct for meridional flow

DGRID= destination grid number for the MAKE parameter (default=next available grid)

FORm=
- **SHORT** lists a one-line summary for each specified grid (default)
- **EXP** lists an expanded summary for each grid

GRIDF= grid file number (default=from IGU SET *gridf*)

LAB= labels the resulting grid (default depends on operation)

PLANET= planet name (default=earth)

SMO=
- **YES** smooths the resulting grid; only works with the derived options ABV, DVG, VOR, ADB, DST, and DSH (default)
- **NO** does not smooth the resulting grid

V= number of the v-component grid; used with the MAKE option when *grid1* is the u-component grid (default=u-grid +1)

Remarks

When using LIST, *egrid's* default is *bgrid*. If you do not specify *bgrid* and *egrid*, *egrid's* default is LAST if FORM=SHORT and *bgrid* if FORM=EXP. When using DEL or GET, *egrid*'s default is *bgrid*.

To apply a constant to an arithmetic function (ADD, DIV, MPY, SUB), enter a negative number for the second named *grid*. The absolute value of this number is used as a constant.

In the CHLT and CHGT options, the number specified for the second named parameter (*gridn*) is used as a constant. Input grid point values less than (CHLT option) or greater than (CHGT option) this constant are changed to the constant in the output grid. See the last example.

Grids created using IGG MAKE and those created using GRDCOPY with the DERIVE or MATH keyword may not yield numerically identical results. However, the values for both are correct. The differences are the result of one of the following:

- By default, IGG MAKE applies a smoothing function and, if applicable, a meridional correction term to the data. GRDCOPY does not do this by default. You can override the IGG MAKE defaults by specifying SMO=NO and ADD=NO.
- Grids created using GRDCOPY will be in Standard International units, whereas grids created using IGG MAKE may not be. For example, a grid created using the TADV (temperature advection) function in IGG MAKE will be in degrees per day, while a similar grid created using GRDCOPY with the MATH keyword will be in degrees per second unless a factor is added to the equation to compute it in degrees per day.

The output of command IGG LIST contains the information below.

Column	Definition
1	grid number
2	year, Julian day
3	hours, minutes and seconds of the grid
4	name of the gridded parameter
5	description of the atmospheric level and units
6	name of the program generating the grid
7	hours the forcast grid is valid after generation
8	number of rows in the grid
9	number of columns in the grid
10	latitude and longitude of the upper-left corner
11	row grid spacing, in degrees
12	column grid spacing, in degrees

You can use the ADDE commands GRDCOPY and GRDLIST in place of IGG GET and IGG LIST respectively.

See Also

See commands GRDDSP, IGTV and MDX to plot and contour grid point values.

Examples

IGG LIST
This entry lists all the grids in your workstation's default grid file.

IGG LIST 1 20
This entry lists all grids from 1 to 20 from the default grid file.

IGG DEL
This entry deletes grid one in the default grid file.

IGG GET 10 5 7 20 1
This entry moves grids 5, 6 and 7 from grid file 10 into grid file 20, starting at grid 1, or the next available grid.

IGG MAKE 2 SUB 1
This entry creates a new grid by subtracting grid 1 from grid 2.

IGG MAKE 2 MPY -4 ADD 5 DIV -60
This entry creates a new grid by multiplying each grid point in grid 2 by the constant 4, adding them to grid 5 and dividing by the constant 60.

IGG MAKE 100 CHLT 273
This entry creates a new grid by checking each grid point value in grid 100 and changing all grids point values less than 273 to 273. The grid points with values greater than 273 are not changed.

IGTV

Generates contours and streamlines from grids.

Format

IGTV *grid interval map [keywords]*

Parameters

grid number of the grid to contour; see keyword V and the Remarks for drawing streamlines or contouring the wind's u-component or v-component

interval contour interval; use integer values 1 through 10 or a multiple of 10 (default=2) or enter a string name that contains up to 64 values

map

DEF	defines your own boundaries; use the LAT and LON keywords
MID	Midwest USA map
NA	North America map
NONE	does not draw a map
SAT	satellite projection
USA	USA map

State Post Office Abbreviation (default is the grid domain)

Keywords

CMAP=		graphics color level for the map (default=1)
COLOR=		graphics color level for contours; use positive numbers for solid lines and negative numbers for dashed lines; no map is drawn with negative numbers (default=2)
DASH=	**NEG**	dash negative contours only
	POS	dash positive contours only
	ALL	dash all contours
ELE=	*min max*	graphics TV element bounds
GRA=		graphics frame to display the plot (default=current)
GRIDF=		grid file number (default=current)
IMA=		image frame number (default=current)

LAT=	*min max*	minimum and maximum latitude extents
LIN=	*min max*	graphics TV line bounds
LINT=		contour label interval; do not use this keyword when the contour interval is a string name (default=1)
LON=	*min max*	minimum and maximum longitude extents
LSIZE=		height of the contour labels, in pixels (default=7)
MAG=		magnifies the data by an order of magnitude (default=0)
PRO=	**CONF**	conformal projection
	MERC	Mercator projection (default is the grid projection)
SCALE=		map scale for a CONF projection; values up to 1,000 are multiplied by 1,000,000 (default=no scale)
SF=	**YES**	displays the frame after contouring
	NO	does not display the frame (default)
SLAT=	*lat1 lat2*	standard latitude; for polar stereographic, specify *lat1*; for Lambert conformal, specify *lat1 lat2* (default=60)
SLON=	*lon*	normal longitude; for polar stereographic and Lambert conformal, for example, PRO=CONF (default=center longitude of the map limits)
TEXT=	**YES**	plots the grid text label (default)
	NO	does not plot the grid text label
UNIT=		contour units; depends on the contoured parameters
V=		number of the v-component grid; used for drawing streamlines; see the Remarks (default=u-grid + 1)

Remarks

IGTV does not generate gridded data. Use commands MDX, SC, UC, etc., to generate the grids. Use commands IGG and IGU to manipulate grids and grid files.

IGTV allows for map scales (keyword SCALE) up to 10^8. Entered values should be integers less than 1000. The scale value is the integer multiplied by 1,000,000; for example, SCALE=33 gives a 33,000,000:1 scale.

To draw streamlines, specify the u-component grid number as *grid* and the v-component grid number in the keyword V. To contour the wind's u-component, specify its grid number as *grid* and specify V=0. To contour the wind's v-component, just specify its grid number as *grid*.

IGTV defines grid point values outside the latitude and longitude domain as missing values. Since the contouring routine will not draw to a missing value, if the latitude and longitude limits are not defined as exact multiples of the grid latitude and longitude increments offset from the northwest corner latitude and longitude, the contours may not be drawn to the edges of the map domain, but only to the last available grid point.

You can use the ADDE command GRDDISP in place of IGTV.

Examples

IGTV 4
This entry contours grid 4 and displays it with a contour interval of 2.

IGTV 3 10 USA DASH=NEG GRIDF=14
This entry displays the contours from grid 3 in grid file 14 on a USA Mercator projection. It uses a contour interval of 10 with dashed negative values.

IGTV 23 4 USA MAG=2
This entry displays the contours from grid 23 on a USA map using a contour interval of 4. Grid 23 is a precipitation grid with values in hundredths of an inch. The MAG=2 allows IGTV to contour the actual values to hundredths of an inch by magnifying the data by 10**2. Therefore, a data value of 0.04 inches is contoured on the frame as a 4; a data value of 0.08 inches is contoured as an 8, etc.

IGTV 17 4 USA PRO=CONF SLAT=25 50 SCALE=10
This entry displays the contours from grid 17 with a contour interval of 4. The map is a Lambert conformal projection of the USA with standard latitudes of 25°N and 50°N. The map is scaled 10,000,000 to 1.

TE LEV 30 50 60 65 80
IGTV 1 LEV MID UNIT=F
The first entry creates a string called LEV. The second entry contours only the 30, 50, 60, 65 and 80 degree isotherms. In this special feature of IGTV, there is no pound sign before the string name, #LEV.

IGU

Grid file utility.

Formats

IGU LIST *bgridf egridf [keywords]*
IGU DEL *bgridf egridf*
IGU SET *gridf*
IGU COPY *sgridf dgridf* **RENUMBER**
IGU MAKE *gridf maxgrd "text*
IGU DIR *gridf date project "text*

Parameters

LIST	lists a directory on the text frame
DEL	deletes a grid file
SET	sets the current grid file number
COPY	copies a grid file
MAKE	generates a grid file
DIR	modifies a directory for a grid file
RENUMBER	renumbers grids after copying a file
bgridf	beginning grid file number
egridf	ending grid file number
gridf	grid file number
sgridf	source grid file number
dgridf	destination grid file number
maxgrd	maximum number of grids in the grid file (default=159)
date	date the grid file was generated (default=current)
project	your project number (default=the project number specified at logon)
"text	identification text for your grid file; the double quote is mandatory

Keywords

DAY=	lists the grid files with this date or range of dates, YYDDD
PROJ=	lists the grid files with this project number or range of project numbers

Remarks

There is no definitive limit to the number of grids that can be stored in a grid file. It is determined by the amount of disk space. The recommended limit is 1000.

You can use the ADDE command GRDCOPY in place of IGU COPY and IGU MAKE. You can use the ADDE command GRDLIST in place of IGU LIST.

Examples

IGU LIST 1000 1020 DAY=95100
This entry lists the grid files from 1000 to 1020 for day 100 in 1995.

IGU COPY 1000 2000 RENUMBER
This entry copies grid file 1000 into grid file 2000 renumbering the grids to compact the file.

IGU SET 2000
This entry points at grid file 2000. All subsequent grid operations are performed on file 2000 until you run another IGU SET command.

IMGCHA

Changes an image directory.

Format

IMGCHA *dataset [keywords]*

Parameter

dataset ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

only positive integers are valid for *position*

Keywords

BANd= image band number; the range is 1 to 32

NA makes the band sequence unavailable; reserved for GOES visible images prior to GOES-8

CTYpe= calibration type

DAY= Julian day (YYDDD) of the image

ELE= beginning image element number

LINe= beginning image line number

MEMo= *'text'* text in the memo field; 32 characters maximum

RES= *line ele* line and element resolution

SS= sensor source number

STYpe= source type

TIMe= time (HH:MM:SS) of the image

VALcode= validity code

Remarks

IMGCHA only changes the directory of an image on the local server; you cannot modify an image directory on a remote server.

CAUTION:
Do NOT change any directory values unless you are familiar with the structure of the image data and its source.

Use command IMGLIST with FORM=EXP to list the image directory values that can be changed with the IMGCHA command. An example is shown below.

```
Pos  Satellite/    Date          Time       Center        Res (km)     Image_Size
      Sensor                                Lat   Lon     Lat   Lon
---  --------   ------------  -------    ---   ---     ---   ---     ----------
11   G-10 IMG   17 OCT 98290  19:00:00    34    118
Band: 4  10.7um Surface temp; longwave window          4.0   4.0    480 X 640
proj:   0  created 1998290  191138  memo:  RT GVAR
type:GVAR    cal type:RAW
offsets:  data=3328 navigation=  256 calibration= 2816 auxillary=  0
doc length:   0  cal length:   0  lev length:   0 PREFIX=   0
valcod:          0 zcor:   0 avg-smp: N
start yyddd: 1998290 start time:190014  start scan:  332
lcor: 3605  ecor: 16561  bytes per pixel: 2  ss: 74
Image Center Point Res (derived)  Lat:   5.53 (km)  Lon:   2.54 (km)
```

The table below shows which IMGCHA keywords correspond to the output fields.

IMGCHA keyword	IMGLIST output field
BAND	Band
CTYPE	cal type
DAY	Date
ELE	ecor
LINE	lcor
MEMO	memo
RES	Res Lat and Lon
SS	ss
STYPE	type
TIME	Time
VALCODE	valcod

Examples

IMGCHA RT/GOES-IR.1 TIME=16:14:59

This entry changes the directory of the image in position 1 of dataset RT/GOES-IR.1. The image time is changed to 16:14:59.

IMGCHA N14.99 LINE=2075 MEMO='Band 2 NOAA-14 HRPT over Florida'

This entry changes the directory of the image in position 99 of the dataset with the alias name N14. The beginning image line number is changed to 2075 and the memo field is changed to "Band 2 NOAA-14 HRPT over Florida."

IMGCOPY

Copies image data from one dataset to another.

Format

IMGCOPY *sdataset ddataset [keywords]*

Parameters

sdataset source ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

a position greater than zero represents an absolute position in the dataset; a position less than or equal to zero represents a relative position in the dataset based on image time, for example, 0 is the most recent and -1 is the next most recent; to use the default position, do not specify *.position* (no default for *group/descriptor* or *alias*; default=0 for position)

ddataset destination ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers or the default for *position*; to use the default position, do not specify *.position* (no default for *group/descriptor* or *alias*; *position* default=the position following the most recent image)

Image Positioning Keywords

LATlon= *lat lon* latitude and longitude of the *sdataset* image to place at the *ddataset* image location specified in the PLACE keyword

LINele= *line ele sys*

line line number of the *sdataset* image to place at the *ddataset* image location specified in the PLACE keyword (default=0)

ele element number of the *sdataset* image to place at the *ddataset* image location specified in the PLACE keyword (default=*line*)

sys coordinate system of the *sdataset* image

F file (area) coordinate system (default)

I image coordinate system

PLAce= location in the *ddataset* image to place the point specified in the LATLON, STATION or LINELE keywords; use one of the following:

ULEFT upper-left corner of the image (default when the LINELE keyword is used)

CENTER center of the image (default when the LATLON or STATION keyword is used)

STAtion= station ID, for example, **MSN**, **YSSY**, **72201**; placed at the *ddataset* image location specified in the PLACE keyword

Image Selection Keywords

DAY= selects the most recent *sdataset* image from the specified day (default=most recent image)

RTIme= *bmin emin* selects the most recent *sdataset* image in the specified range of minutes in the current hour; overrides the TIME keyword (default=most recent image)

TIMe= *btime etime* selects the most recent *sdataset* image in the specified time range (default=most recent image)

btime etime **C** copies all POES data for the specified time range; valid only with real-time POES data on an SDI server; cannot be used with LATLON, LINELE, PLACE, STATION, or SIZE keyword

Output Keywords

BANd= image band number to copy (default=existing band for single-band images; no default for multiband images)

ALL copies all bands; do not use with STYPE=VISR

DOC= **NO** does not include image documentation when copying the *sdataset* image data (default)

YES includes image documentation; specify DOC=YES to include necessary calibration values when copying POES images

GAUge=	*percent*	displays the system's progress during the image copy; specify *percent* as a number between 0 and 50 to control how often status messages are displayed; for example, if you specify 25, a message is shown when the copy is 25%, 50%, and 75% complete
MAG=	*lmag emag*	line and element magnification of the data; use a positive integer for blowup and a negative integer for blowdown (default=1 *lmag*)
SIZe=	*line ele*	number of lines and elements to copy (default=480 640 unless copying POES data and specifying the C option with the TIME keyword)
	ALL	copies the entire *sdataset* image including all bands and documentation; if the image has multiple bands with different sizes and resolutions (Stretched Data Format files on SDI servers, for example), all bands are copied at the lowest resolution and smallest size; the only other keywords valid with SIZE=ALL are DAY, RTIME, TIME, ALL, REPEAT, and CYCLE
	SAME	retains the original image size; can be used to copy a single band from a multibanded image
STYpe=	**VISR**	reduces 2-byte data to 1-byte brightness data without image documentation; do not use with BAND=ALL or SIZE=ALL; see the Remarks
UNIT=		calibration unit for the output image file; use this keyword with NCDF-format destination datasets; to determine available units, display the source image and run the D command (default=primary calibration unit in the source image)

Loop Maintenance Keyword

CYCle=	*inc*	updates the destination dataset by copying the image specified in *sdataset* to the *ddataset* position determined by the following formula: position=modulus(*time/inc,numpos*)+1 see the Remarks (default=1:00, a 1-hour increment)

Multiple Copy Keywords

ALL= **YES** copies multiple *sdataset* images into *ddataset* positions; if the number of positions is greater than or equal to the number of images, all *sdataset* images are copied in time order with the oldest image in *ddataset* position 1; if the number of positions is less than the number of images, images are copied to all positions with the most recent image in the last *ddataset* position, the second most recent image in the previous position, etc; this keyword overrides the positions specified in *sdataset* and *ddataset*

NO does not copy multiple images (default)

REPeat= number of *sdataset* images to copy; the image specified in *sdataset* is copied to the position specified in *ddataset*, the next image is copied to the next position, etc.; this keyword is valid only if the position numbers for *sdataset* and *ddataset* are positive integers (default=1)

Remarks

By default, the upper-left 480 lines and 640 elements of the *sdataset* image are copied to the specified position in *ddataset*. Use the keywords LATLON, LINELE, STATION and PLACE to specify different locations in the *sdataset* or *ddataset* images. Use the keyword SIZE to specify a different line and element size and the keyword MAG to blowup or blowdown the image.

Use the keyword STYPE=VISR to convert the original 2-byte data to 1-byte brightness data without image documentation. 2-byte image data is usually a raw value which can be operated on with calibration coefficients to convert the data to other values such as radiance, temperature or albedo. If you do not need documentation or values other than albedo, use this keyword.

The keywords TIME and RTIME select an image to copy. They allow you to limit image selection to a specific time range. This is useful for choosing an image when new images are received frequently, such as GOES images during a Rapid Scan schedule. These keywords also allow you to spread out the scheduled image copies so scheduler activity is more evenly distributed throughout the hour.

The keyword CYCLE is most useful when used with the time scheduler to copy the most recent image to another dataset. The image is copied to the position in the destination dataset determined by the following formula.

position=modulus(*time/inc,numpos*)+1

Time is the image time of the selected image, *inc* is the increment specified in the CYCLE keyword, and *numpos* is the number of positions defined in the destination dataset. The position determined with this keyword overrides the *position* specified in *ddataset*.

For example, if the command:

IMGCOPY SAT/GOES-IR4K CLIENT/GOESIR STATION=DCA CYCLE=1:00

is scheduled to run once an hour and five positions are defined in the dataset CLIENT/GOESIR, the 13:00 UTC image in SAT/GOES-IR4K is copied to position 4 in CLIENT/GOESIR, since *time*=13.0, *inc*=1.0 and *numpos*=5 (13.0/1.0=13; 13/5=2 with a remainder of 3; 3+1=4). The 14:00 UTC image is copied to position 5; the 15:00 UTC image is copied to position 1, etc.

If a similar IMGCOPY command is scheduled to run every half-hour, but CYCLE=00:30 and the destination dataset has six positions, the 20:00 UTC image is copied to position 5, since *time*=20.0, *inc*=0.5 and *numpos*=6 (20.0/.5=40; 40/6=6 with a remainder of 4; 4+1=5). The 20:30 UTC image is copied to position 6; the 21:00 UTC image is copied to position 1, etc.

In McIDAS-X only, you can use IMGCOPY to create a netCDF image file. You can use the UNIT keyword to select the calibration unit for the file. To create a netCDF file, the destination dataset must be NCDF-format and IMAGE-type. See the Remarks section in the DSSERVE command for more information.

Examples

IMGCOPY G8/VIS-CONUS MY/DATA
This entry copies the most recent image in dataset G8/VIS-CONUS to the position following the most recent image in dataset MY/DATA. The destination image is 480 lines by 640 elements with the upper-left corner of the source image placed at its upper-left corner.

IMGCOPY G8/VIS-CONUS.-1 MY/DATA.12 STATION=STL SIZE=600 1000
This entry copies the second most recent image in dataset G8/VIS-CONUS to position 12 in dataset MY/DATA. The destination image is 600 lines by 1000 elements with St. Louis placed at its center.

IIMGCOPY G8/VIS-CONUS.5 MY/DATA.1 LATLON=35.5 100.2 PLACE=ULEFT MAG=2
This entry copies the image in position 5 in dataset G8/VIS-CONUS to position 1 in dataset MY/DATA. The destination image is 480 lines by 640 elements, is blown up by a factor of 2 from the source image's resolution, and has earth coordinate 35.5° N, 100.2° W placed at its upper-left corner.

IMGCOPY G8/VIS-GLOBE.5 MY/DATA.1 LINELE=1400 2400 F PLACE=CENTER MAG=-7

This entry copies the image in position 5 in dataset G8/VIS-GLOBE to position 1 in dataset MY/DATA. The destination image is 480 lines by 640 elements, is blown down by a factor of 7 from the source image's resolution, and has file (area) coordinate 1400,2400 placed at its center.

IMGCOPY G8/VIS-GLOBE.5 MY/DATA.1 SIZE=ALL

This entry copies the image in position 5 in dataset G8/VIS-GLOBE to position 1 in dataset MY/DATA. The entire source image, including all bands and the documentation section, is copied to the destination image.

IMGCOPY N14/GAC SCRATCH/POES.9 DAY=#Y TIME=11:45 12:15 BAND=2 SIZE=SAME

This entry copies band 2 of the image in dataset N14/GAC with today's date and an image time between 11:45 and 12:15 UTC to position 9 in dataset SCRATCH/POES. The destination image is the same size and coverage as the source image. If more than one image in the source dataset meets the specified time and date criteria, the most recent of those images is copied. If none of the source dataset's images meets those criteria, no image is copied.

IMGCOPY N14/GAC SCRATCH/POES.9 DAY=#Y TIME=11:45 12:15 BAND=ALL SIZE=900 408

This entry copies all bands of the image in dataset N14/GAC with today's date and an image time between 11:45 and 12:15 UTC to position 9 in dataset SCRATCH/POES. The destination image is 900 lines by 408 elements with the upper-left corner of the source image placed at its upper-left corner. If more than one image in the source dataset meets the specified time and date criteria, the most recent of those images is copied. If none of the source dataset's images meets those criteria, no image is copied.

IMGCOPY N14/GAC SCRATCH/POES.9 DAY=#Y TIME=12:34 12:36 C BAND=ALL

This entry copies all POES satellite data in dataset N14/GAC recorded today between 12:34 and 12:36 UTC. This data is copied to position 9 in dataset SCRATCH/POES. Because the TIME keyword's C option is specified, the command ignores the start times of the images in dataset N14/GAC and instead copies all data recorded during the specified time range. The C option is valid only with POES data on an SDI server. Use the NAVDISP command to preview the data coverage for a time range before copying it with IMGCOPY.

IMGCOPY RADAR/MDR_IMAGES.1 LOCAL/MDR.10 STATION=PIT REPEAT=4

This entry copies four consecutive images in dataset RADAR/MDR_IMAGES to four consecutive positions in dataset LOCAL/MDR. The images in positions 1, 2, 3 and 4 in dataset RADAR/MDR_IMAGES are copied to positions 10, 11, 12 and 13 in dataset LOCAL/MDR, respectively. The destination images are each 480 lines by 640 elements with Pittsburgh placed at the center.

IMGCOPY RADAR/MDR _IMAGES MY/MDR STATION=PIT PLACE=ULEFT ALL=YES

This entry copies multiple images from dataset RADAR/MDR_IMAGES to dataset MY/MDR. The number of images copied depends on the number of images in RADAR/MDR_IMAGES and the available positions in MY/MDR. For example, if RADAR/MDR_IMAGES contains 10 images and MY/MDR has six positions, the 6 most recent images are copied in time order to positions 1 through 6. If RADAR/MDR_IMAGES contains 10 images and MY/MDR has 10 or more positions, all 10 images are copied in time order beginning with the oldest image in position 1. The destination images are each 480 lines by 640 elements with Pittsburgh placed in the upper-left corner.

NOTE: You can run either of the two commands below once an hour from the time scheduler (see commands SKE, SKL and SKU) to copy the current hour's image to another dataset. The only difference between them is that they use different methods of choosing the position in the destination dataset. In the first example, the image is always copied to the position following the most recent image. In the second example, the image is copied to the position determined by this formula:

position=modulus(*time/inc,numpos*)+1

IMGCOPY RT/GOES-IR MY/GOES LATLON=40 100 RTIME=0 5

This entry copies the image in dataset RT/GOES-IR with an image time between 0 and 5 minutes after the current hour to the position following the most recent image in dataset MY/GOES. The destination image is 480 lines by 640 elements with earth coordinate 40° N, 100° W placed at its center.

IMGCOPY RT/GOES-IR MY/GOES LATLON=40 100 RTIME=0 5 CYCLE=1:00

This entry copies the image in dataset RT/GOES-IR with an image time between 0 and 5 minutes after the current hour to dataset MY/GOES. The destination image is 480 lines by 640 elements with earth coordinate 40° N, 100° W placed at its center. The position number in MY/GOES of the destination image is determined by the formula:position=modulus(*time/1,numpos*)+1 where *numpos* is the number of positions in MY/GOES. For example, if MY/GOES has six positions, the 17:00 UTC image is copied to position 6, the 18:00 UTC image is copied to position 1, etc. See the Remarks for additional details and examples.

IMGDEL

Deletes images in a dataset.

Format

IMGDEL *dataset epos [keywords]*

Parameters

dataset ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

a *position* greater than zero represents an absolute position in the dataset; a *position* less than or equal to zero represents a relative position in the dataset based on image time, for example, 0 is the most recent and -1 is the next most recent; the *position* **ALL** represents all positions in the dataset

epos ending position number of the data on the server; must be greater than 0; valid only if the *position* specified in *dataset* is greater than 0

Keywords

DAY=	*bday eday*	deletes images in the range of dates specified (no default for *bday; eday* default=*bday*)
PREview=	**YES**	lists the results of the delete operation without deleting the images
	NO	deletes the specified images (default)
SS=		deletes images with the specified sensor source number
TIMe=	*btime etime*	deletes images in the time range specified (no default for *btime; etime* default=*btime*)
VERify=	**YES**	asks for verification before deleting each image
	NO	deletes the images without verification (default)

Remarks

If you specify VERIFY=YES, you are prompted with the following instructions for each image selected.

```
Press Alt X to DELETE the image file
Press Alt G to SKIP the image file
Press Alt Q to EXIT the program
```

The images marked for deletion with **Alt X** are not deleted until you have responded with an **Alt X** or **Alt G** for every image. If you exit the program using **Alt Q** before marking all the images, none are deleted.

Examples

IMGDEL STORM/GOES-IR.0
This entry deletes the most recent image in the dataset STORM/GOES-IR.

IMGDEL STORM/GOES-IR.1
This entry deletes the image in position 1 in the dataset STORM/GOES-IR.

IMGDEL STORM/GOES-IR.5 10
This entry deletes the images in positions 5 through 10 in the dataset STORM/GOES-IR.

IMGDEL STORM/GOES-IR.ALL
This entry deletes all the images in the dataset STORM/GOES-IR.

IMGDEL STORM/GOES-IR.ALL VERIFY=YES
This entry lists all the images in the dataset STORM/GOES-IR one at a time. For each image you are prompted to press Alt X to delete it, Alt G to keep it, or Alt Q to exit the program.

IMGDEL STORM/GOES-IR.ALL DAY=95100 95110
This entry deletes all the images with dates 95100 through 95110 in the dataset STORM/GOES-IR.

IMGDEL STORM/GOES-IR.ALL DAY=95100 95110 TIME=0 12
This entry deletes all the images in dataset STORM/GOES-IR with times 0 through 12 UTC on each day 95100 through 95110.

IMGDEL IR.1 4
This entry deletes the images in positions 1 through 4 in the dataset with the alias name IR.

IMGDISP

Displays image data.

Format

IMGDISP *dataset frame [keywords]*

Parameters

dataset ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

a *position* greater than zero represents an absolute position in the dataset; a *position* less than or equal to zero represents a relative position in the dataset based on image time, for example, 0 is the most recent and -1 is the next most recent; to use the default position, do not specify *.position* (no default for *group/descriptor* or *alias*; default=0 for *position*)

frame frame number to display the image; specify **OPP** to display the image on the frame opposite the current frame; see the CYCLE and SEQ keywords to specify a range of frames for maintaining an image loop (default=current)

Frame Positioning Keywords

LATlon= *lat lon* latitude and longitude of the image to place at the frame location specified in the PLACE keyword

LINele= *line ele sys*

line line number of the image to place at the frame location specified in the PLACE keyword (default=0)

ele element number of the image to place at the frame location specified in the PLACE keyword (default=*line*)

sys coordinate system of the image

F file (area) coordinate system (default)

I image coordinate system

PLAce= location on the frame to place the point specified in the LATLON, STATION or LINELE keywords; use one of the following:

- **ULEFT** upper-left corner of the frame (default when the LINELE keyword is used)
- **CENTER** center of the frame (default when the LATLON or STATION keyword is used)

STAtion= station ID, for example, MSN, YSSY, 72201; placed at the frame location specified in the PLACE keyword

Image Selection Keywords

DAY= selects the most recent image from the specified day (default=most recent image)

RTIme= *bmin emin* selects the most recent image in the specified range of minutes in the current hour; overrides the TIME keyword (default=most recent image)

TIMe= *btime etime* selects the most recent image in the specified time range (default=most recent image)

Output Keywords

BANd= image band number to display (default=existing band for single-band images; no default for multiband images)

EU= name of the enhancement table to apply to the image

GRAy=

- **NO** does not display a grayscale bar (default)
- **YES** adds a continuous grayscale bar to the bottom of the image

repeat inc start line
adds a custom grayscale bar to the image

- *repeat* brightness repeat factor (default=5)
- *inc* brightness level increment; if greater than 0, the bar is incremented from 0 to 255; if less than 0, the bar is incremented from 255 to 0 (default=2)
- *start* starting brightness level (default=0)

	line	starting TV line; must be greater than zero (default=number of lines in the frame minus 23)
MAG=	*lmag emag*	line and element magnification of the data; use a positive integer to blow up and a negative integer to blow down (default=1 *lmag*)

REFresh= *'commands' gframe*
runs the specified McIDAS commands after IMGDISP displays the image; use *gframe* to specify the beginning frame to display graphics created with the commands; see the Remarks (no default for *commands*; *gframe* default=*bfra* when using the SEQ, CYCLE, or ALL keyword, otherwise default=*frame*)

SIZe=	*line ele*	number of lines and elements of the image to display; do not exceed the frame size (default=image size or frame size, whichever is smaller)

SU= name of the stretch table to apply to the image

TEXt= *'text' fgd bgd*
the annotation line's text and foreground and background brightness levels; the beginning and ending single quotes are mandatory for specifying text other than the default image annotation (default=X 232 32 for McIDAS-X; X 255 15 for McIDAS-OS2)

Multiple Image Load Keywords

ALL=	*bfra efra*	displays multiple images; if the number of frames in the range *bfra-efra* is greater than or equal to the number of images, all images are displayed in time order with the oldest image in *bfra*; if the number of frames is less than the number of images, images are displayed in all positions with the most recent image in *efra*, the second most recent image in the previous frame, etc.; do not use this keyword if a *position* other than the default value of 0 is specified in *dataset*

	REPeat=	*num pinc finc*	displays *num* number of images in the dataset; the image specified in *dataset* is displayed in the frame specified in *frame*; *pinc* and *finc* determine the position and frame increments for subsequent image loads; this keyword is valid only if the *dataset position* number, *num, pinc* and *finc* are positive integers (default=1 1 1)
Loop Maintenance Keywords	**CYCle=**	*inc bfra efra*	updates the range of frames *bfra-efra* by displaying the image specified in *dataset* on the frame determined by the following formula: frame=modulus(*time/inc,numfra*)+*bfra* see the Remarks (*inc* default=1:00, a 1-hour increment; no default for *bfra* and *efra*)
	SEQ=	*bfra efra*	updates the range of frames *bfra-efra* by displaying the image specified in *dataset* in the frame following the frame with the most recent image; the selected frame overrides the *frame* parameter
Miscellaneous Keywords	**CAL=**	**QTIR**	uses POES quick calibration for faster image loads of POES data
	SF=	**YES**	automatically shows the frame prior to displaying the image
		NO	does not show the frame (default)

Remarks

By default, the upper-left corner of the image is positioned at the upper left corner of the frame. Use the keywords LATLON, LINELE, STATION and PLACE to specify a different image or frame position. Use the keyword MAG to blow up or blow down the image.

The keywords TIME and RTIME select an image to display. They allow you to limit image selection to a specific time range. This is useful for choosing an image when new images are received frequently, such as GOES images during a Rapid Scan schedule. These keywords also allow you to spread out the scheduled image displays so scheduler activity is more evenly distributed throughout the hour.

The keyword CYCLE is most useful when used with the time scheduler to display the most recent image in a loop of frames. The image is displayed on the frame determined by the following formula.

frame=modulus(*time/inc,numfra*)+*bfra*

Time is the image time of the selected image, *inc* is the increment specified in the CYCLE keyword, *numfra=efra-bfra*+1, and *bfra* and define the range of frames specified in the CYCLE keyword. The frame determined with this keyword overrides the *frame* parameter

For example, if the command:

IMGDISP SAT/GOES-IR4K STATION=DCA CYCLE=1:00 1 5

is scheduled to run once an hour, the 13:00 UTC image in SAT/GOES-IR4K is displayed on frame 4, since *time*=13.0, *inc*=1.0, *numfra*=5 and *bfra*=1 (13.0/1.0=13; 13/5=2 with a remainder of 3; 3+1=4). The 14:00 UTC image is displayed on frame 5; the 15:00 UTC image is displayed on frame 1, etc.

If a similar IMGDISP command is scheduled to run every half-hour, but CYCLE=00:30 11 16, the 20:00 UTC image is displayed on frame 15, since *time*=20.0, *inc*=0.5, *numfra*=6 and *bfra*=11 (20.0/.5=40; 40/6=6 with a remainder of 4; 4+11=15). The 20:30 UTC image is displayed on frame 16; the 21:00 UTC image is displayed on frame 11, etc.

The REFRESH keyword runs the specified McIDAS commands after IMGDISP displays the image. You can use the notations (IMA) and (GRA) as parameters or keyword options in the commands. (IMA) is the number of the frame where the image is displayed. (GRA) is the number of the frame to display graphics produced by the commands. (GRA) is the same as (IMA) unless you specify a different beginning graphics frame number with the *gframe* parameter.

For example, to display new images in frames 1 through 5 but draw the corresponding maps and current surface temperature plots on frames 6 through 10, specify the following keywords:

SEQ=1 5 REFRESH='SF (IMA);EG (GRA);MAP GRA=(GRA) IMA=(IMA);SFCPLOT T NAV=C GRA=(GRA)' 6

If IMGDISP displays a new image in frame 1, the surface temperature plot and map are drawn on frame 6 because (IMA) is set to 1 and (GRA) is set to 6. If the new image is displayed on frame 2, the temperature plot and map are drawn on frame 7.

Examples

IMGDISP G8/VIS-CONUS

This entry displays the most recent image in dataset G8/VIS-CONUS on the current frame. The upper-left corner of the image is placed in the upper-left corner of the frame.

IMGDISP G8/VIS-CONUS.-1 STATION=STL TEXT='GOES-8 Visible Centered on St. Louis' 200 10

This entry displays the second most recent image in dataset G8/VIS-CONUS on the current frame, with St. Louis placed at the center of the frame. The default annotation at the bottom of the frame is replaced with the text *GOES-8 Visible Centered on St. Louis* in foreground brightness level 200 and background brightness level 10.

IMGDISP WV.1 STATION=STL

This entry displays the image in position 1 in the dataset with the alias name WV. The image is displayed on the current frame with St. Louis placed at the center.

IMGDISP G8/VIS-CONUS.5 10 LATLON=35.5 100.2 PLACE=ULEFT MAG=2 GRAY=YES

This entry displays the image in position 5 in dataset G8/VIS-CONUS on frame 10, with earth coordinate 35.5° N, 100.2° W placed at the upper-left corner of the frame. The image is blown up by a factor of 2 from its original resolution and has the default grayscale bar at the bottom.

IMGDISP G8/VIS-GLOBE MAG=-7 LINELE=1400 2400 F PLACE=CENTER

This entry displays the most recent image in dataset G8/VIS-GLOBE on the current frame, with file (area) coordinate 1400, 2400 placed at the center of the frame. The displayed image is blown down by a factor of 7.

IMGDISP N14/GAC 1 DAY=#Y TIME=11:45 12:15 BAND=2 EU=POESVIS

This entry displays band 2 of the image in dataset N14/GAC with today's date and an image time between 11:45 and 12:15 UTC on frame 1. The enhancement table POESVIS is applied as the image is loaded. If more than one image in the dataset meets the specified time and date criteria, the most recent of those images is loaded. If none of the dataset's images meets the specified time and date criteria, no image is loaded.

IMGDISP STORM/IR.1 10 STATION=PIT REPEAT=4

This entry displays four consecutive images in dataset STORM/IR, with Pittsburgh placed at the center of each frame. The images in positions 1, 2, 3 and 4 are displayed on frames 10, 11, 12 and 13 respectively.

IMGDISP STORM/IR.1 20 STATION=PIT REPEAT=4 2 1

This entry displays four images in dataset STORM/IR, with Pittsburgh placed at the center of each frame. Because the position increment is 2 in the REPEAT keyword, the images in positions 1, 3, 5 and 7 are displayed on frames 20, 21, 22 and 23 respectively.

IMGDISP STORM/IR STATION=PIT PLACE=ULEFT ALL=1 10
This entry displays up to 10 images in dataset STORM/IR, with Pittsburgh placed at the upper-left corner of each frame. If STORM/IR contains more than 10 images, the ten most recent images are displayed in time order on frames 1 through 10. If STORM/IR contains 10 or less images, all images in STORM/IR are displayed in time order with the oldest image on frame 1.

NOTE: You can run either of the two commands below once an hour from the time scheduler (see commands SKE, SKL and SKU) to display the current hour's image in a loop of 6 frames. The only difference between them is that they use different methods of choosing the frame to display the new image. In the first example, the image is always displayed on the frame following the frame with the most recent image. In the second example, the image is displayed on the frame determined by the following formula:

frame=modulus(*time/inc,numfra*)+*bfra*

IMGDISP RT/GOES-IR LATLON=40 100 RTIME=0 5 SEQ=1 6
This entry displays the image in dataset RT/GOES-IR with an image time between 0 and 5 minutes after the current hour. The image is displayed with earth coordinate 40° N, 100° W placed at the center on the frame following the frame within the range 1 through 6 displaying the most recent image.

IMGDISP RT/GOES-IR LATLON=40 100 RTIME=0 5 CYCLE=1:00 1 6
This entry displays the image in dataset RT/GOES-IR with an image time between 0 and 5 minutes after the current hour. The image is displayed with earth coordinate 40° N, 100° W placed at the center on the frame determined by the following formula:

frame=modulus(*time*/1,6)+1

For example, the 17:00 UTC image is displayed in frame 6, the 18:00 UTC image is displayed in frame 1, etc. See the Remarks for additional details and examples.

IMGDISP RT/GOES-IR LATLON=40 100 RTIME=0 5 CYCLE=1:00 1 6 REFRESH='SF (IMA);EG (GRA); MAP GRA=(GRA) IMA=(IMA);SP T SAT GRA=(GRA)' 11
This entry is the same as the one above, except that a surface temperature plot and map are drawn after the image is displayed. The image is displayed on a frame between 1 and 6. The temperature plot and map are drawn on the corresponding frame between 11 and 16 because the *gframe* parameter in the REFRESH keyword is set to 11. For example, if the image is displayed on frame 1, the temperature plot and map are drawn on frame 11; if the image is displayed on frame 2, the temperature plot and map are drawn on frame 12.

IMGFILT

Applies filters to image data.

Formats

IMGFILT *sdataset ddataset [keywords] "comment*
IMGFILT *sdataset1 sdataset2 ddataset [keywords] "comment*

Parameters

sdataset source ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

a position greater than zero represents an absolute position in the dataset; a position less than or equal to zero represents a relative position in the dataset based on image time, for example, 0 is the most recent and -1 is the next most recent; to use the default position, do not specify *.position* (no default for *group/descriptor* or *alias*; default=0 for *position*)

ddataset destination ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers for *position*

"comment description placed in the image file directory's memo field; 32 characters maximum (default=no comment)

Image Positioning Keywords

LATlon= *lat lon* latitude and longitude of the *sdataset* image to place at the *ddataset* image location specified in the PLACE keyword

LINele= *line ele sys*

line line number of the *sdataset* image to place at the *ddataset* image location specified in the PLACE keyword (default=0)

ele element number of the *sdataset* image to place at the *ddataset* image location specified in the PLACE keyword (default=*line*)

sys coordinate system of the *sdataset* image

F file (area) coordinate system (default)

I image coordinate system

PLAce= location in the *ddataset* image to place the point specified in the LATLON, STATION or LINELE keyword

ULEFT upper-left corner of the image (default when the LINELE keyword is used)

CENTER center of the image (default when the LATLON or STATION keyword is used)

STAtion= station ID, for example, **MSN**, **YSSY**, **72201**; placed at the *ddataset* image location specified in the PLACE keyword

Output Keywords

BANd= *b1 b2* bands in the source image to filter; specify *b2* only for the CLOUD, CORE, or DIS filters (*b1* default=existing band for single-band images; no *b1* default for multiband images; *b2* default=*b1*)

MAG= *lmag emag* line and element magnification of the data; use a positive integer for blowup and a negative integer for blowdown (default=1 *lmag*)

PROd= product name for destination image, up to four characters (default=**PRD**)

SCAle= *prodlo prodhi britlo brithi*
minimum and maximum product and brightness values for the calibration (*prodlo prodhi* defaults=dataset minimum dataset maximum; *britlo brithi* defaults=0 255)

SIZe= *line ele* number of lines and elements of the *sdataset* image to copy (default=480 640)

ALL copies the entire *sdataset* image including all bands and the documentation section

TAIl= *lo hi* tail percentage after filtering (default=0 0)

UNIt= calibration units for output (default=**BRIT**)

Filter and Stretch Keywords

FILter= filter used to generate the destination image; see the Remarks for more details

CLEAN	*replace bline eline pdiff ldiff*
CLOUD	*replace constant*
CORE	*brkpnt1 brkpnt2 replace1 replace2*
DIS	*brkpnt1 brkpnt2 brkpnt3 brkpnt4 replace*
GRAD	
HIGH1	*distance efficiency*
HIGH2	
HOLE	*brkpnt1 brkpnt2*
LOW1	*distance efficiency*
LOW2	*lcoef ecoef*
REPLACE	*replace bline eline belem eelem*
SHOT	*bline eline pdiff*

STRetch= applies a stretch to *sdataset*'s brightness values

CONT		contrast stretch (default)
HIST	*bin*	histogram stretch; increment, or bin width (default=16)

Remarks

IMGFILT generates a new image by applying a filter to data from a source image or images. The CLOUD, CORE and DIS filters use two source datasets; all other filters use only one.

All filters are applied to each element of an image line. The CLEAN filter is also applied to each line in the image. The HIGH2 and LOW2 filters are applied to each element, but use surrounding lines and elements in their calculations.

The IMGFILT command automatically applies a contrast stretch to images after the filter process. The range of the stretch is specified with the SCALE keyword. Product values outside the range are set to zero. If no values are supplied, the minimum to maximum product values are stretched from 0 to 255. The tail percentages specified with the TAIL keyword clip the *ddataset* minimum and maximum data values before the stretch. Use this option to sharpen an image.

The *ddataset* has a generated product source type, PRD, and a 1-byte data calibration type, BRIT. Elements of the *ddataset* are in brightness units. The image file's calibration allows you display native product values by specifying the native units in the IMGPROBE command.

Use IMGOPER to perform arithmetic operations on individual image elements.

In McIDAS-X only, you can use IMGFILT to create a netCDF image file. To do so, the destination dataset must be NCDF-format and IMAGE-type. See the Remarks section in the DSSERVE command for more information.

Each option for the FILTER keyword is described below. Positional parameters and the equation used by the filter to generate the destination image are listed. Defaults for the filters are based on brightness (UNIT=BRIT).

CLEAN

This option cleans an image by first applying a shot noise filter to each element in the source image, and then locating and replacing bad lines. Each element is compared to the elements on either side and replaced if the values are significantly different. The average value of each line is then compared to the lines above and below and replaced if it is significantly different.

Positional parameters:

replace	**AVE**	average of surrounding values (default)
	MIN	*sdataset* minimum value
	MAX	*sdataset* maximum value
bline	beginning line in the source image to clean (default=first line)	
eline	ending line in the source image to clean (default=last line)	
pdiff	absolute difference between an element's value and the value of the element on either side (default=15)	
ldiff	percentage difference between a line's average value and the average value of the line above and below (default=15)	

Equation for each *ddataset* element:

if (the difference between the *sdataset* and the surrounding elements is < *pdiff*)
then *ddataset* = *sdataset*
else *ddatset* = *replace*

Equation for each *ddataset* line:

if (the difference between *sdataset* line average and the surrounding lines is < *ldiff*) and (deviation of element values on the *sdataset* line is > 0)
then *ddataset* = *sdataset*
else *ddataset* = *replace*

CLOUD

This option applies a cloud filter to an image by comparing each element to the elements of another image. Use this filter to mask off a portion of the first source image.

Positional parameters:

replace replacement value (default=minimum value in either *sdataset*)

constant additive constant (default=0)

Equation for each *ddataset* element:

if (*sdataset1* > *sdataset2* + *constant*)
then *ddataset* = *sdataset1*
else *ddataset* = *replace*

CORE

This option applies a core filter to two images by comparing elements to breakpoints. The resulting image has only two values.

Positional parameters:

brkpnt1 *sdataset1* breakpoint value (default=minimum value in either *sdataset*)

brkpnt2 *sdataset2* breakpoint value (default=maximum value in either *sdataset*)

replace1 success condition replacement value (default=maximum value in either *sdataset*)

replace2 failure condition replacement value (default=minimum value in either *sdataset*)

Equation for each *ddataset* element:

if (*sdataset1* > *brkpnt1*) and (*sdataset2* > *brkpnt2*)
then *ddataset* = *replace1*
else *ddataset* = *replace2*

DIS

This option applies a discriminate filter to two images by comparing elements in each image to different high and low breakpoints. Use this filter to mask off a portion of the first source image.

Positional parameters:

brkpnt1 low end breakpoint value for *sdataset1* (default=minimum value in either *sdataset*)

brkpnt2 high end breakpoint value for *sdataset1* (default=maximum value in either *sdataset*)

brkpnt3 low end breakpoint value for *sdataset2* (default=minimum value in either *sdataset*)

brkpnt4 high end breakpoint value for *sdataset2* (default=maximum value in either *sdataset*)

replace failure condition replacement value (default=minimum value in either *sdataset*)

Equation for each *ddataset* element:

if (*brkpnt1* < *sdataset1* < *brkpnt2*) and
(*brkpnt3* < *sdataset2* < *brkpnt4*)
then *ddataset* = *sdataset1*
else *ddataset* = *replace*

GRAD

This option applies a gradient filter to the source image.

Equation for each *ddataset* element:

$$ddataset = \text{ABSOLUTE}(sdataset_n - (sdataset_{n+1}))$$

HIGH1

This option applies a one-dimensional high-pass filter to each element in the source image. It eliminates low-frequency deviations by clustering them around the distribution's midpoint. A sample average is determined using values on either side of the source element and the percentage of filter efficiency.

Positional parameters:

distance sample length surrounding the source element; used for sample average (default=50)

efficiency filter efficiency (default=100)

Equation for each *ddataset* element:

ddataset = (*sdataset* - (sample average) + (sample midpoint))

HIGH2

This option applies a two-dimensional high-pass filter to each element in the source image. It eliminates low-frequency deviations by clustering them around the distribution's midpoint. A sample average is calculated by the program using values in a two-dimensional region around the source element.

Equation for each *ddatset* element:

ddataset = (*sdataset* - (sample average) + (sample midpoint))

HOLE

This option searches for missing data and fills the holes in the image using the average of the surrounding element values.

Positional parameters:

brkpnt1 low end breakpoint value (default=minimum *sdataset* value)

brkpnt2 high end breakpoint value (default=maximum *sdataset* value)

Equation for each *ddataset* element:

if (*brkpnt1* < *sdataset* < *brkpnt2*)
then *ddataset* = (average of the surrounding *sdataset* element values)
else *ddataset* = *sdataset*

LOW1

This option applies a one-dimensional low-pass filter to each element of the source image. It eliminates high-frequency deviations by replacing the source image data values with the average of the values on either side of the source element. The sample average is determined using the percentage of filter efficiency.

Positional parameters:

distance sample length in pixels surrounding the source element; used for sample average (default=50)

efficiency filter efficiency (default=100)

Equation for each *ddataset* element:

ddataset = (sample average)

LOW2

This option applies a two-dimensional low-pass filter to each element in the source image. It eliminates high-frequency deviations by replacing the source image data values with the average of the values in the sample defined with the line and element coefficients.

Positional parameters:

lcoef line coefficient; 0.0 < *lcoef* < 1.0 (default=0.5)

ecoef element coefficient; 0.0 < *ecoef* < 1.0 (default=*lcoef*)

Equation for each *ddataset* element:

ddataset = (sample average)

REPLACE

This option replaces all the elements in the defined region of the source image with the specified replacement value.

Positional parameters:

replace replacement value

bline beginning line in the source image to replace (default=first line)

eline ending line to replace (default=last line)

belem beginning element in the source image to replace (default=first element)

eelem ending element to replace (default=last element)

Equation for each *ddataset* element:

if *sdataset* lies outside the region defined by the line and element ranges
then *ddataset* = *sdataset*
else *ddataset* = *replace*

SHOT

This option cleans an image by applying a shot noise filter to each element in the source image. Each element is compared to the elements on either side and replaced if the values are significantly different.

Positional parameters:

bline beginning line in the source image to clean (default=first line)

eline ending line in the source image to clean (default=last line)

pdiff absolute difference between an element's value and the value of the element on either side (default=15)

Equation for each *ddataset* element:

if the difference between *sdataset* and the surrounding elements is < *pdiff*
then *ddataset* = *sdataset*
else *ddatset* = (average of the surrounding *sdataset* element values)

Examples

IMGFILT GOES7/VIS.1 LOCAL/AREA.1
This entry applies a contrast stretch to the brightness data in the image in position 1 of dataset GOES7/VIS. The resulting image is placed in position 1 of dataset LOCAL/AREA.

IMGFILT BLIZZARD/G7-IR-4K.2 BLIZZARD/CLEAN.2 FILTER=CLEAN STATION=DCA
This entry applies clean and shot noise filters and contrast stretch to the image in position 2 of dataset BLIZZARD/G7-IR-4K. The resulting image is placed in position 2 of dataset BLIZZARD/CLEAN. The destination image is 480 lines by 640 elements and centered over Washington, DC.

IMGFILT COMPOSITE/MOSAIC LOCAL/MOSAIC.1 FILTER=HOLE 0 1 LATLON=-90 0
This entry applies a hole filter to the most recent image in dataset COMPOSITE/MOSAIC. The resulting image is placed in position 1 of dataset LOCAL/MOSAIC. The filter averages elements that have brightness values between 0 and 1 (inclusive) to fill holes and gaps in the data. The destination image is 480 lines by 640 elements and centered over the South Pole.

IMGFILT A/A.8101 A/A.4000 FILTER=REPLACE 119 2001 2209 3362 3726
This entry replaces the brightness values in a region of the image in position 8101 of dataset A/A. The brightness values between image lines 2001 and 2209 and elements 3362 and 3726 are replaced with a new brightness value of 119. The resulting image is 480 lines by 640 elements. It is placed in position 4000 of dataset A/A.

IMGFILT GOES9/IR A/A.4001 BAND=3 FILTER=LOW2 STRETCH=HIST STATION=IRK SIZE=600 600 PROD=LO-2 UNIT=TEMP
This entry applies a two-dimensional low pass filter and histogram stretch to the band 3 temperature data in the most recent image in dataset GOES9/IR. The resulting 600 line by 600 element image is placed in position 4001 of dataset A/A, has the product name LO-2, and is centered over Kirksville, MO.

IMGLIST

Lists images in a dataset.

Format

IMGLIST *dataset epos [keywords]*

Parameters

dataset ADDE dataset name and position; specify one of the following formats:

group/descriptor.position

alias.position

a *position* greater than zero represents an absolute position in the dataset; a *position* less than or equal to zero represents a relative position in the dataset based on image time, for example, 0 is the most recent and -1 is the next most recent; the *position* **ALL** represents all positions in the dataset; to use the default position, do not specify *.position* (no default for *group/descriptor* or *alias*; default=0 for *position*)

epos ending position number of the data on the server; must be greater than 0; valid only if the *position* specified in *dataset* is greater than 0

Keywords

BANd= *bband eband* lists information only for the specified range of bands; uses BAND as the FORM keyword default

ALL lists all bands (default)

DAY= *bday eday* lists images in the range of dates specified (no default for *bday*; *eday* default=*bday*)

FORm= image information to list (default=standard one-line image summary)

AUDIT lists the one-line image summary plus the audit trail

BAND lists the one-line image summary plus the band information

EXP lists the expanded image directory plus the band information

MEMO list OPS output plus memo field and creation information

OPS list image directory information in LA command format

SS= lists images with the specified sensor source number

TIMe= *btime etime* lists images in the time range specified (no default for *btime*; *etime* default=*btime*)

Remarks

If a negative *position* is specified in *dataset*, all images from that position to the most recent are listed. For example, if you specify position -5, the six most recent images (positions 0, -1, -2, -3, -4, -5) are listed.

When using the FORM=BAND or FORM=EXP, the latitude and longitude resolution values listed for each band are calculated by multiplying the data's base resolution by the image blowdown factor, or dividing the base resolution by the image blowup factor. For example, resolution values of 2.0 for GOES visible data (with a 1.0-km base resolution) indicate that the data was blown down by a factor of 2; resolution values of 2.0 for GOES infrared data (with a 4.0-km base resolution) indicate that the data was blown up by a factor of 2. The resolution at the center point of the image is listed in the last line of the FORM=EXP output.

Examples

IMGLIST STORM/GOES-IR
This entry lists the most recent image in the dataset STORM/GOES-IR.

IMGLIST STORM/GOES-IR.1
This entry lists the image in position 1 in the dataset STORM/GOES-IR.

IMGLIST STORM/GOES-IR.-3
This entry lists the four most recent images (positions 0, -1, -2, -3) in the dataset STORM/GOES-IR.

IMGLIST STORM/GOES-IR.-4 BAND=3
This entry lists the five most recent images in the dataset STORM/GOES-IR that contain band 3.

IMGLIST STORM/GOES-IR.1 20 BAND=3
This entry lists the images in positions 1 through 20 in the dataset STORM/GOES-IR that contain band 3.

IMGLIST STORM/GOES-IR.5 10 FORM=BAND
This entry lists the images in positions 5 through 10 in the dataset STORM/GOES-IR. The listing includes information about the bands in each image.

IMGLIST STORM/GOES-IR.ALL DAY=95100 95110
This entry lists all the images with dates 95100 through 95110 in the dataset STORM/GOES-IR.

IMGLIST STORM/GOES-IR.ALL DAY=95100 95110 TIME=0 12
This entry lists all the images in the dataset STORM/GOES-IR with times 0 through 12 UTC on each day 95100 through 95110.

IMGMAG

Changes the magnification of a displayed image.

Format

IMGMAG *frame [keywords]*

Parameter

frame	frame to display the magnified image (default=current)

Keywords

MAG=	*lmag emag*	line and element magnification factors; see the Remarks (default=1 *lmag*)
REPeat=	number of consecutive frames to load (default=1)	
SF=	**YES**	shows the destination frame after the image is loaded
	NO	does not show the destination frame (default)
SFRame=	frame displaying the image to magnify (default=current)	

Remarks

IMGMAG redisplays an image using factors specified with the MAG keyword by running an IMGDISP command. Because it runs an IMGDISP command, the following conditions must be met for IMGMAG to work.

- The original image must have been displayed using the IMGDISP command.
- The image file must be present on disk (as opposed to workstation memory).

If you use the REPEAT keyword, it is appended to the IMGDISP command run by IMGMAG. Subsequent images from the dataset are displayed on additional frames using the same geographic coverage, center point, and blowup factors.

The magnification factors specified with the MAG keyword are relative to the displayed image's resolution, not the image file's resolution. Values greater than 1 produce a blowup of the displayed image, and values less than 0 produce a blowdown.

If you specify MAG values greater than 1, the cursor changes to a box showing the geographic coverage of the magnified image to be displayed. Move the box to the area of the image you want to blow up and click the right mouse button or press **Alt G**. The cursor returns to its original size and shape after the command runs.

If you specify MAG keyword values less than 0, the cursor changes to a crosshair. Select the center point of the destination image by moving the cursor and clicking the right mouse button or pressing **Alt G**. The cursor returns to its original size and shape after the command runs.

To display the image with the same resolution but a different center point, specify MAG=1 and select the new center point.

Examples

IMGMAG
This entry redisplays the image in the current frame with a new center point. This point is chosen by moving the cursor and clicking the right mouse button or pressing **Alt G**. The magnification factor is not changed.

IMGMAG 2 MAG=2 3
This entry redisplays the image in the current frame on frame 2 using a line blowup factor of two and an element blowup factor of three. The geographic coverage of the output image is selected by moving the cursor and clicking the right mouse button or pressing **Alt G**.

IMGMAG 2 MAG=2 3 REPEAT=4
This entry is the same as the one above, but it also displays the next three images from the dataset on frames 3, 4, and 5. All four images have the same geographic coverage because IMGMAG runs a single IMGDISP command with the same center point and blowup factors for all the images.

IMGMAG 11 SFRAME=10 MAG=-3
This entry displays the image in frame 10 on frame 11 using a line and element blowdown factor of three. The output image is centered at the point chosen with the crosshair cursor.

IMGOPER

Applies mathematical functions to image data.

Format

IMGOPER *sdataset1 . . sdatasetn ddataset [keywords] "comment*

Parameters

sdataset1 . . n source ADDE dataset names and positions; specify one of the following formats:

group/descriptor.position
alias.position

a *position* greater than zero represents an absolute position in the dataset; a *position* less than or equal to zero represents a relative position in the dataset based on image time; for example, 0 is the most recent and -1 is the next most recent; to use default position, do not specify *.position* (no default for *group/descriptor* or *alias*; default=0 for *position*)

ddataset destination ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers *position*

"comment description placed in the image file directory's memo field; 32 characters maximum (default=no comment)

Image Positioning Keywords

LATlon= *lat lon* latitude and longitude of *sdataset* images to place at *ddataset* image location specified in the PLACE keyword

LINele= *line ele sys*

line line number of the *sdataset* image to place at the *ddataset* image location specified in the PLACE keyword (default=0)

ele element number of the *sdataset* image to place at the *ddataset* image location specified in the PLACE keyword (default=*line*)

sys coordinate system of the *sdataset* image

F file (area) coordinate system (default)

I image coordinate system

PLAce= location in the *ddataset* image to place the point specified in the LATLON, STATION or LINELE keyword; use one of the following:

ULEFT upper-left corner of the image (default when the LINELE keyword is used)

CENTER center of the image (default when the LATLON or STATION keyword is used)

STAtion= station ID, for example, MSN, YSSY, 72201; placed at the *ddataset* image location specified in the PLACE keyword

Image Selection Keywords

DAY= selects the most recent *sdataset* image from the specified day (default=most recent image)

RTIme= *bmin emin* selects the most recent *sdataset* image in the specified range of minutes in the current hour; overrides the TIME keyword (default=most recent image)

TIMe= *btime etime* selects the most recent *sdataset* image in the specified time range (default=most recent image)

Image Sampling Keywords

BANd= *b1 . . bn* applies the function to the specified image bands (default=existing band for single-band images; no default for multiband images)

MAG= *lmag emag* line and element magnification of the data; use a positive integer for blowup and a negative integer for blowdown (default=1 *lmag*)

SIZe= *line ele* applies the function to the specified number of *sdataset* lines and elements (default=480 640)

ALL applies the function to the entire *sdataset* image; all image positioning keywords are invalid with SIZE=ALL

UNIt= calibration type for the data, for example, BRIT, RAD, TEMP (default=BRIT)

Input Keywords

LLMt= *l1 . . ln* lower limit thresholds for each input data value in the equation; if one input data value is less than the specified limit, the output data value is zero

ULMt= *u1 . . un* upper limit thresholds for each input data value in the equation; if one input data value is greater than the specified limit, the output data value is zero

Equation Format Keywords

ACOn= additive constant for the equation (default=0.0)

COEf= *c1 . . cn* coefficients for each term in the equation (default=1.0)

FORm= **ADD** addition; adds each term in the equation; to subtract terms, specify COEF=-1 or SIGN=M (default)

CMAX *max new* conditional maximum; uses only the term in the equation with the highest value less than the specified maximum; if all terms are greater than *max*, the *new* value is used (default=255 255)

CMIN *min new* conditional minimum; uses only the term in the equation with the lowest value greater than the specified minimum; if all terms are less than *min*, the *new* value is used (default=0 0)

MAX maximum; uses only the term in the equation with the maximum value

MIN minimum; uses only the term in the equation with the minimum value

MULT multiplication; multiplies each term in the equation; to divide terms, specify POW=-1

FUNc= transcendental function used in the equation; use one of the following:

ALOG	antilogarithm
EXP	exponential function
LN	natural log
LOG	logarithm
SQRT	square root

MCOn= multiplicative constant for the equation (default=1.0)

OFF= *o1 . . on* offsets for each term in the equation (default= 0.0)

POW= *p1 . . pn* powers for each term in the equation (default=1.0)

SIGn= *s1 . . sn* multiplies the data values by 1 or -1

P	plus; multiplies by 1 (default)
M	minus; multiplies by -1

Output Keywords

PROd= user-defined product name for the destination image, up to four characters (default=PROD)

SCAle= *prodlo prodhi britlo brithi*
minimum and maximum product and brightness values for the calibration (default=0 255 0 255)

ZERo=

DATA	interprets zero input data values as valid data and includes them in the analysis
MISS	interprets zero input data values as missing data and does not include them (default)

Remarks

IMGOPER generates a new image by applying mathematical functions to data from one or more source images. The following equation computes the data value for each line/element pair in the destination image. This operation is performed repeatedly using data from source image line/element pairs as input values (*input*) until the entire image is completed.

output data value=

FUNC[ACON+(MCON*(FORM((COEF1*(OFF1+((SIGN1)**input1*)**POW1))

(COEF2*(OFF2+((SIGN2)**input2*)**POW2)) . .

(COEF*n*(OFF*n*+((SIGN*n*)**inputn*)**POW*n*))))]

The part of the equation operating on a single input data value, (COEF*n*(OFF*n*+((SIGN*n*)**inputn*)**POW*n*)), is referred to as a *term*. *n* represents the number of *sdataset* images. It may not be larger than 100. *input1* . . *n* represents the individual data values from each of the source images. The FORM determines how the terms are combined. For example, if you specify FORM=MULT, the terms are multiplied.

Before the input data values are used in the equation, they are checked against the lower and upper limit thresholds set with the keywords LLMT and ULMT. If you do not specify limit thresholds, all data is used.

To use data from more than one band in a single multibanded image, you must specify that image with the *sdataset* parameter for each band used. For example, the following entry subtracts data values for band 10 from band 8, both in image A/A.1, and places the resulting image in A/A.5.

IMGOPER A/A.1 A/A.1 A/A.5 FORM=ADD BAND=8 10
COEF=1 -1

All source images must have the same projection, resolution and navigation. If they do not, use the ADDE command IMGCOPY, or the command REMAP, AAMAP or AA before using IMGOPER. The source image can have unlimited number of lines and no more than 10,000 elements.

The destination image receives the directory information from the last source image. To change the image directory information, use the IMGCHA command.

To get better precision for operations that result in small values, use the keywords MCON and SCALE.

When using multiple source images, you must specify keyword values in the same order as the source images: *value1* applies to the data in *sdataset1*. If a keyword allows for multiple values, the last entered value is the default for all subsequent values. The default listed for the keyword only applies if the keyword is not used. In the following command, for example, because an offset was specified only for images A/A.1 and A/A.2, image A/A.3 receives an offset of 10, the last entered value.

IMGOPER A/A.1 A/A.2 A/A.3 D/D.5 FORM=ADD OFF=1 10

Currently each data value in the output image, *ddataset*, can contain only 1-byte data. If the range of output data values is greater than 256, the output data loses accuracy.

In McIDAS-X only, you can use IMGOPER to create a netCDF image file. To do so, the destination dataset must be NCDF-format and IMAGE-type. See the Remarks section in the DSSERVE command for more information.

Examples

IMGOPER A/A.1 A/A.1 A/A.5 FORM=ADD BAND=8 10 SIGN=P M
This entry subtracts data values of band 10 from band 8, both in the image in position 1 in dataset A/A, and places the resulting image in position 5 in dataset A/A.

IMGOPER A/A.1 A/A.4 A/A.5 FORM=ADD BAND=2 3 COEF=1 -2
This entry multiplies the data values of band 3 of the image in position 4 in dataset A/A by 2 and subtracts them from band 2 of the image in position 1 in dataset A/A and places the resulting image in position 5 in dataset A/A.

IMGOPER OLD/DATA.1 OLD/DATA.1 OLD/PROD BAND=8 10 COEF=1 -1 SCALE=-10 10 PROD=DIFF UNIT=TEMP
This entry subtracts band 10 temperature data from band 8 temperature data of the image in position 1 in dataset OLD/DATA and places the resulting image in dataset OLD/PROD in the position following the most recent image. The output values are given the product name DIFF. The difference values between -10 and 10 are scaled from 0 to 255.

IMGOPER MSI.4 MSI.4 RATIO.1 FORM=MULT BAND=7 8 POW=1 -1 PROD=RATI SCALE=50 150 50 200 UNIT=BRIT MCON=100
This entry divides the brightness values from band 7 by the brightness values from band 8 of the image in position 4 in the dataset with the alias name MSI. The resulting image is placed in position 1 in the dataset with the alias name RATIO. The output values are given the product name RATI and multiplied by 100. The product values from 50 to 150 are scaled from brightness 50 to 200.

IMGOPER GOES/IR.1 GOESIR.2 PROD.4 BAND=8 8 COEF=-1 1 SCALE=-10000 10000 UNIT=RAD PROD=TEST MCON=1000

This entry subtracts band 8 radiance data in the image in position 1 in dataset GOES/IR from band 8 radiance data in the image in position 2 in dataset GOES/IR and places the resulting image in position 4 in dataset PROD. The output values are given the product name TEST and multiplied by 1000. The product values from -10000 to 10000 are scaled from brightness 0 to 255.

IMGOPER I/TEST.8 I/PROD.4 FUNC=LOG SCALE=0 20 0 255 UNIT=RAD MCON=1000

This entry multiplies the data values in the image in position 8 in dataset I/TEST by 1000 and then takes the logarithm. The results from 0 to 20 are scaled from brightness 0 to 255 and placed in position 4 in dataset I/PROD.

IMGOPER A/ALL.8344 A/ALL.4004 ZERO=MISS FUNC=LN PROD=NTLN SCALE=0 6 UNIT=BRIT

This entry takes the natural logarithm of the brightness image data in the image in position 8344 in dataset A/ALL and places the resulting image in position 4004 in the same dataset. The output values are given the product name NTLN. The product values from 0 to 6 are scaled from brightness 0 to 255.

IMGOPER G-7.1 MET3.1 A.1 SCALE=0 130050 0 255 PROD=PRMS POW=2 FORM=ADD "Intermediate RMS
IMGOPER A.1 A.2 PROD=RMS FUNC=SQRT MCON=0.5 UNIT=PRMS "Actual RMS

These entries compute the Root Mean Square (RMS) difference between the data in the images in position 1 in the datasets with the alias names G-7 and MET3. The first entry computes the sum of the squares of the data. The second entry computes the average square root of the results of the first command. Before running IMGOPER, the two source images must be remapped so that they have identical navigation.

IMGOPER GOES7/IR.30 METEOSAT/IR.3 COMPOSITE.1 FORM=CMIN SIZE=ALL

This entry takes the entire image in position 30 in dataset GOES7/IR and the entire image in position 3 in dataset METEOSAT/IR and combines the two images using the CMIN option. Before running IMGOPER, the two source images must be remapped so that they have identical navigation.

IMGPLOT

Displays a scatter plot of data values from two images.

Format

IMGPLOT *ximage yimage [keywords]*

Parameters

ximage image to use for x-axis of plot; specify a frame number or an ADDE dataset name and position (default=current frame)

yimage image to use for y-axis of plot; specify a frame number or an ADDE dataset name and position (default=frame opposite *ximage*)

Keywords

BANd= *xband yband* image band numbers to plot (default=displayed band or default band from dataset image)

COLor= graphics color level of the plot (default=3)

GRA= graphics frame to display the scatter plot (default=current)

LATlon= *lat lon* center latitude and longitude of the image region to plot; not valid with the STATION keyword (default=location of cursor on frame)

LSTAT= **YES** includes statistics for the image region (default)

NO does not include statistics

SIZe= *line ele* number of lines and elements defining the image region to plot (default=cursor size)

STAtion= station ID at the center of the image region to plot; not valid with the LATLON keyword

UNIt= *xunit yunit* calibration units to plot, for example, **RAW**, **RAD**, **TEMP**, **BRIT**, **ALB**; list the valid units for an image using the IMGPROBE command (default=**BRIT** *xunit*)

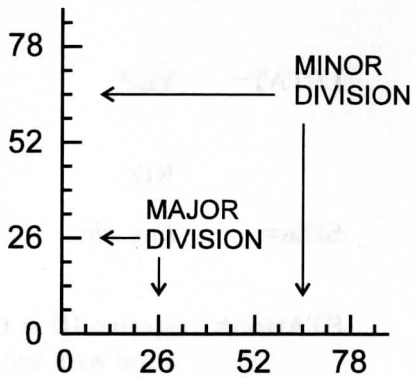
XDIv=	*major minor*	number of major and minor divisions for the x-axis (default=10 4)
XRAnge=	*min max*	range of data values for the x-axis of the plot (default=calculated)
YDIv=	*major minor*	number of major and minor divisions for the y-axis (default=10 4)
YRAnge=	*min max*	range of data values for the y-axis of the plot (default=calculated)

Remarks

IMGPLOT displays a scatter plot of data values from two images. Specify the images in *ximage* and *yimage* with frame numbers or with ADDE dataset names and positions. If you specify frame numbers, you must display the images using the IMGDISP command, and the image files must be present on disk (as opposed to workstation memory).

The location and size of the image region to be plotted are determined by the STATION or LATLON, and SIZE keywords. If you do not specify STATION or LATLON, you must select the region to be plotted. Move the cursor to the desired location on one of the frames and click the right mouse button or press **Alt G**.

The XDIV and YDIV keywords define the number of major and minor divisions in the plot. *Minor* defines the number of subdivisions for each major segment. Labels are placed at each *major* division. See the diagram below.



Examples

IMGPLOT

This entry draws a scatter plot of brightness data in the images displayed in the current and opposite frames. The scatter plot is drawn on the current frame in graphics color level 3 and uses the brightness data inside the cursor.

IMGPLOT 1 2 STATION=KSLC SIZE=480 640 UNIT=TEMP GRA=3

This entry draws a scatter plot of temperature data in the images displayed in frames 1 and 2. The scatter plot is drawn on frame 3 and uses the temperature data inside a 480 by 640 pixel region centered at Salt Lake City.

IMGPLOT 10 10 LATLON=35 90 BAND=4 4 UNIT=BRIT TEMP XRANGE=120 220 GRA=11

This entry draws a scatter plot of band 4 brightness and temperature data in the image displayed in frame 10. The scatter plot is drawn on frame 11 and uses the brightness and temperature data inside the cursor. The plot's x-axis ranges from 120 to 220 brightness levels.

IMGPLOT EAST/FDIR.1 EAST/FDV.1 BAND=3 1 STATION=KMIA SIZE=100 100

This entry draws a scatter plot of band 3 brightness data in the image EAST/FDIR.1, and band 1 brightness data in the image EAST/FDV.1. The scatter plot is drawn on the current frame and uses the brightness data inside a 100 by 100 pixel region centered at Miami.

IMGPROBE

Lists or plots image data for a region of the displayed image.

Format

IMGPROBE *option region unit [keywords]*

Parameters

option	**LIST**	lists the values for the data points in the specified region (default)
	STAT	lists the statistical parameters for the data points in the specified region
	CONT	contours the values of the data points in the specified region
	HIST	displays a histogram of the data points in the specified region
	PLOT	plots the values of the data points in the specified region; if the *region* is BOX or LINE, a line plot is drawn; if the *region* is POINT, the value of the data point is plotted see the Remarks for valid combinations of *option* and *region*
region	**BOX**	data points in a rectangle defined by the cursor limits or with the SIZE keyword
	LINE	data points along a line defined with the mouse
	POINT	data point at the center of the cursor's current position (default) see the Remarks for valid combinations of *option* and *region*
unit	output calibration units (default=units displayed on the frame; all units are listed when LIST is used with POINT)	

Keywords

BANd=	image band number (default=band displayed on the frame)
IMA=	image frame displaying the data to examine (default=current)

OUTline=	**NO**	does not draw an outline of the region (default)
	YES *color*	draws an outline on the current graphics frame in the specified graphics color level (*color* default=3)
SIZe=	*line ele*	number of lines and elements defining a region centered at the cursor position; use this keyword only with a BOX *region*; see the Remarks regarding even number values for *line* and *ele* (default=cursor size)
SU=		stretch table name; use this keyword to examine modified brightness values that would be present if the image was displayed using the specified stretch table (default=stretch table currently applied to the displayed image)

Keywords valid with CONT option

CINt=		contour interval (default=computed)
CLImit=	*min max*	contour interval limits (default=computed)
COLor=		graphics color level of the contours (default=3)
DASh=	**YES**	use dashed lines for contours
	NO	use solid lines for contours (default)
GRA=		graphics frame to display the contours (default=current)
LHGt=		height of the contour labels, in pixels; specify zero for no contour labels (default=6)
LINt=		contour label interval (default=2, label every other contour)
SMOoth=		contour smoothing; the range is 0 to 50; larger numbers produce smoother contours (default=20)

Keywords valid with HIST and PLOT options

COLor=	graphics color level of the histogram or plot (default=3)
GRA=	graphics frame to display the histogram or plot (default=current)
LENgth=	length of each class interval; valid with the HIST option only (default=1.0)

PTYpe=	**DOT**	plots data as points
	SOLID	plots data with connecting line segments (default)
XRange=	*min max*	range of values for the x-axis
YRange=	*min max*	range of values for the y-axis

Remarks

IMGPROBE lists or plots data for a region of the image displayed on the current frame. You must display the image using the IMGDISP command. The image file must be present on disk (as opposed to workstation memory) because IMGPROBE uses data directly from the image file.

The following combinations of *option* and *region* parameters are valid:

option	*region*
CONT	**BOX**
LIST	**BOX**, **LINE** and **POINT**
HIST	**BOX** and **LINE**
PLOT	**BOX**, **LINE** and **POINT**
STAT	**BOX** and **LINE**

When you use the PLOT option with the BOX region, the x-axis of the line plot lists the pixel numbers in the box from left to right and top to bottom. Pixel number 1 is the upper-left data point, and the largest pixel number is the bottom-right data point.

When you use the LIST option with the BOX or LINE region, the output is listed in Output Blocks. There is no limit to the number of lines in an Output Block, so the output is divided into multiple Output Blocks only if it's too wide to fit in the text frame. The number of Output Blocks depends on the number of data points in each line of output and the calibration unit selected. For example, you can fit more brightness values across the text frame than IR radiance values. In the output for the BOX region, each successive Output Block is located to the right of the previous Output Block.

If you specify an even number for the *line* or *ele* parameter of the SIZE keyword, it is not possible to place an equal number of lines or elements on each side of the cursor center. The bottom line or right column of elements is omitted. For example, if the cursor is positioned at line 100 and element 200 and you specify SIZE=50 50, the data points used are those in a box covering lines 75 to 124 and elements 175 to 224.

When using a BOX region with any option, there must be less than 65,536 data points in the region. To calculate this number, you must know the image blowup or blowdown factor. If the image is displayed:

- at the image's resolution (blowup or blowdown factor of 1), use the formula: *region height* x *region width*
- with a blowup factor of *M*, use the formula: (*region height* / *M*) x (*region width* / *M*)
- with a blowdown factor of *N*, use the formula: (*region height* x *N*) x (*region width* x *N*)

For example, a 10 by 100 region size over a 1 km resolution image displayed with a blowup/blowdown factor of 1 contains 1000 data points. If the image is displayed at 2 km resolution, the region contains 4000 data points. If it is displayed at 0.5 km resolution, the region contains 250 data points.

If the cursor position does not change for more than two minutes when using the BOX or LINE option to choose a region, IMGPROBE automatically ends.

Use the **IMGPROBE LIST POINT** command to determine valid options for the *unit* parameter.

Examples

IMGPROBE
This entry lists information for the data point at the center of the cursor, including all calibration units for the image.

IMGPROBE LIST LINE
This entry lists information for the data points along a line. You are prompted to define the line's beginning and ending points using the mouse. The line is not drawn on the frame.

IMGPROBE LIST LINE OUTLINE=YES 2
This entry lists information for the data points along a line. You are prompted to define the line's beginning and ending points using the mouse. The line is drawn on the frame in graphics color level 2.

IMGPROBE STAT BOX OUTLINE=YES BAND=4
This entry draws an outline around the data points in the region defined by the cursor limits and lists the statistical values for band 4 of those data points.

IMGPROBE CONT BOX BRIT SIZE=200 300 CINT=10
This entry contours brightness values of the data points in a 200 by 300 pixel region centered at the cursor position. Contours are drawn at an interval of every 10 brightness values.

IMGPROBE HIST BOX SU=WARM COLOR=2

This entry draws a histogram of the values of the data points in the region defined by the cursor limits. The histogram is drawn in graphics color level 2. The values for the histogram are those that would be present if the image was displayed using the stretch table WARM.

IMGPROBE HIST BOX TEMP XRANGE=200 300 YRANGE=0 100 LENGTH=.1

This entry draws a histogram of the temperatures of the region's data points. The region is defined by the cursor limits. The histogram's x-axis range is 200 to 300 degrees Kelvin, and the y-axis range is 0 to 100 occurrences. The length of the class interval is 0.1 degrees Kelvin.

IMGPROBE PLOT LINE OUTLINE=YES 5 COLOR=4

This entry draws a line plot of the data point values along a line. You are prompted to define the line's beginning and ending points using the mouse. The plot is drawn in graphics color level 4. The line is drawn in graphics color level 5.

IMGREMAP

Remaps images into different projections.

Format

IMGREMAP *sdataset ddataset [keywords]*

Parameters

sdataset source ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

a *position* greater than zero represents an absolute position in the dataset; a *position* less than or equal to zero represents a relative position in the dataset based on image time; for example, 0 is the most recent and -1 is the next most recent; to use default position, do not specify *.position* (no default for *group/descriptor* or *alias*; default=0 for *position*)

ddataset destination ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers for *position*

Keywords

BANd= image band number to remap (default=existing band for single-band images; no default for multiband images)

DSIze= *line ele* number of lines and elements in *ddataset*; the *ele* value must be a multiple of 4; DSIZE is not valid with PRO=DEST (default=480 640)

ALL creates an image large enough to include geographical coverage of *sdataset*

LATlon= *clat clon* center latitude and longitude for *ddataset* (default=center latitude and longitude of *sdataset*)

MERge= **NO** *sdataset* data overwrites the entire *ddataset* (default)

YES *sdataset* data overwrites *ddataset* only where images overlap; valid only with PRO=DEST

PRO= **DEST** use the navigation of *ddataset* (default)

LAMB *slat1 slat2 slon*
Lambert conformal projection

- *slat1* standard latitude (default=30)
- *slat2* standard latitude (default=50)
- *slon* standard longitude (default=center longitude)

MERC *slat* Mercator projection; specify standard latitude (default=0)

MOLL *slon* Mollweide projection; specify standard longitude (default=0)

PS *slat slon*
polar stereographic projection

- *slat* standard latitude (default=60)
- *slon* standard longitude (default=center longitude)

RADAR *rot* radar projection; specify rotation angle (default=0)

RECT rectilinear projection

SIN sinusoidal equal area projection

TANC *slat slon*
tangent cone projection

- *slat* standard latitude (default=30 if the center latitude is in the northern hemisphere; -30 if the center latitude is in the southern hemisphere)
- *slon* standard longitude (default=center longitude)

RES= resolution of *ddataset* in km; not valid with PRO=DEST (default=1)

SMOoth= *limb data*
provides limb or data smoothing

limb	**NO**	no limb smoothing (default)
	YES	provides limb smoothing
data	**NO**	no data smoothing (default)
	YES	provides data smoothing

SPLine= spline size in image pixels; the range is from at least 1 to 100; the range minimum may be computed based on source data (default=20)

SSIze= *line ele* number of lines and elements in the source image to remap; centered at the location specified with the LATLON or STATION keyword

ALL remaps the entire source image, even if only a small subset of the data is actually saved in the destination image with the DSIZE keyword (default)

STAtion= station ID, for example, MSN, YSSY, 72201; placed at the center of the remapped image

Remarks

To remap only a small subset of an image's data, specify only the needed region by using the SSIZE and LATLON or STATION keywords. If you don't specify a line and element size with the SSIZE keyword, the default value (ALL) is selected and the entire source image is remapped. This can be costly and time consuming if the source image is large or stored on a remote server.

If the destination image has regions without data, the source image may not have data in those regions, or the size specified with the SSIZE keyword may not be large enough to provide data for the entire destination image.

The radar projection is identical to the sinusoidal equal area projection, except that it allows you to rotate the destination image.

Display destination images with the IMGDISP command.

To create a destination dataset with a line prefix length and validity code of zero, use the IMGCOPY command with the keyword STYPE=VISR and SIZE=*line ele*; do not use SIZE=SAME.

For IMGREMAP to be successful using the PRO=DEST option, the following requirements must be met:

- both the *sdataset* and *ddataset* must contain navigation
- the *ddataset* must be a single band of 1-byte data (ZRES=1 and ZSIZ=1)
- the *sdataset* may be 2- or 1-byte data
- the *ddataset*'s calibration type must be VISR
- the *ddataset*'s source type must be BRIT
- the *ddataset* must have a line prefix length of zero
- the *ddataset* must have a validity code of zero

In McIDAS-X only, you can use IMGREMAP to create a netCDF image file. To do so, the destination dataset must be NCDF-format and IMAGE-type. See the Remarks section in the DSSERVE command for more information.

Examples

IMGREMAP LOCAL/IMAGE.16 LOCAL/REMAP.4000
This entry remaps the image data in position 16 of dataset LOCAL/IMAGE into position 4000 of dataset LOCAL/REMAP. The source image replaces the destination image but uses its projection information.

IMGREMAP NOAA-12/HRPT NO-GOES/DATA.10 MERGE=YES PRO=DEST
This entry remaps the most recent image in dataset NOAA-12/HRPT into position 10 of dataset NO-GOES/DATA. The source image uses projection information from the destination image and replaces data only where the images overlap.

IMGREMAP G8/FDV G8/REMAP.1 RES=24 PRO=SIN
This entry remaps the most recent image in the G8/FDV dataset into the position 1 of dataset G8/REMAP. The destination image is remapped with a resolution of 24 kilometers in a sinusoidal equal area projection.

IMGREMAP G8/CONUSV G8/RADAR.2 RES=4 STATION=BOS PRO=RADAR 45
This entry remaps the most recent image in the G8/CONUSV dataset into position 2 of dataset G8/RADAR. The destination image is remapped in a radar projection, rotated 45 degrees. The image is centered at Boston, MA and has a resolution of four kilometers.

IMGREMAP WV.4 REMAP.4 PRO=LAMB 30 60 70 LATLON=34 78 RES=4
This entry remaps the image in position 4 of the dataset with the alias WV into position 4 of the dataset with the alias REMAP. The destination image is centered at 34° N and 78° W and has a resolution of 4 kilometers. The image is remapped in a Lambert conformal projection using standard latitudes of 30° and 60° N and a standard longitude of 70° W.

IMGREMAP GOES.1 A.2 PRO=PS 45 71 RES=4 SPLINE=40
This entry remaps the image in position 1 of the dataset with the alias GOES into position 2 of the dataset with the alias A. The destination image is remapped in a polar stereographic projection, with a standard latitude of 45° N and a standard longitude of 71° W. The resolution of the remapped data is four kilometers, and the spline value is 40.

IMGREMAP A/A.8016 A/A.4000 PRO=MERC 50 RES=2 SSIZE=600 600 DSIZE=ALL
This entry remaps 600 lines and elements of the image data in position 8016 of dataset A/A into position 4000 of dataset A/A. The destination image is as large as necessary to contain the remapped image: a Mercator projection, with a standard latitude of 50° N and a resolution of two kilometers.

ISENT

Calculates theta surface levels for upper air data.

Format

ISENT *sfile dfile day time btha etha inctha [keyword]*

Parameters

sfile	MD file number of the mandatory level data (default=last digit of the current Julian day plus 10)
dfile	destination MD file; must not exist before running ISENT (no default)
day	year and day of the upper air data, YYDDD (default=current)
time	time of the upper air data observation, HHMM (default=0 UTC if the current time is less than 13:30 UTC, else 12 UTC)
btha	beginning theta value (default=280 K)
etha	ending theta value (default=350 K)
inctha	increment of the theta value (default=10 K)

Keywords

SIG=	MD file number of the significant level data (default=depends on *sfile*; see the Remarks)

Remarks

The ISEN schema must be registered on your workstation before you can use this command. See commands LSCHE and SCHE for more information.

A maximum of 18 theta levels can be calculated. Theta levels contain pressure, mixing ratio, u- and v-components, delta pressure, Montgomery stream function, and the theta value.

The *sfile* parameter and the SIG keyword specify the mandatory and significant level MD file numbers respectively. If *sfile* is in the default range of 11 to 20, the default for SIG is the value of *sfile* plus ten. If *sfile* is outside the range of 11 to 20, the default for SIG is the value of *sfile* plus one. For example, if *sfile* is 14, the default for SIG is 24; if *sfile* is 2500, the default for SIG is 2501.

To view data from the created MD file, use command MDX with a sort condition like the following: SORT=TIME 12 THA 300. This sort condition is for data at 12 UTC; the isentropic surface is 300 K. See command MDX for more information.

Examples

ISENT 14 150
This entry calculates the theta surface levels for all data in MD file 14 and stores the results in MD file 150.

ISENT X 1000 X 0 290 340
This entry calculates the theta surface levels between 290 and 340 for 0 UTC on the current day, and stores this information in MD file 1000.

J (McIDAS-X only)

Toggles graphics frames to and from the loop control system.

Remarks

To toggle graphics frames to and from the loop control system,

Press: **Alt J**

or

Type: **J**

Press: **Enter**

Use command J only on McIDAS-X sessions with independent graphics. See the TERM command for more information.

The loop control system consists of the A, B, L, J, O, Y, LB, and LS commands.

You can connect or disconnect graphics frames from the loop control keys independently of the image frames.

K

Toggles image frames on and off.

Remarks

To toggle image frames on and off,

Press: **Alt K**

or

Type: **K**

Press: **Enter**

This command allows you to toggle image frames on and off to provide a better view of the graphics.

See Also

Command W toggles the graphics frame on and off.

KILL

Terminates McIDAS commands.

Format

KILL *pid1 . . pidn*

Parameter

pid1 . . pidn PID numbers of the commands to terminate

Remarks

If you don't know the PID number, use the question mark (?) command.

See Also

The slash (/) command performs the same function as KILL.

Examples

KILL 273
This entry terminates the command running under PID number 273.

KILL 27347 27348 34272
This entry terminates the commands running under PID numbers 27347, 27348, and 24272.

L

Toggles frame looping on and off.

Remarks

To start automatic frame looping,

Press: **Alt L**

or

Type: **L**

Press: **Enter**

Pressing L a second time stops the looping at the first frame of the loop.

The L command works only if the loop control system is connected to the frame system.

See Also

The Y and J commands connect (and disconnect) the image and graphics frames to the loop control system. The LS or LB commands set the frame sequence for the loop.

Refer to the *Introduction* of this manual for more information about the McIDAS-X and -OS2 loop control systems.

LB

Sets image or graphics frame loop bounds.

Formats

LB *bframe eframe*
LB G *bframe eframe* (McIDAS-X only)

Parameters

bframe beginning frame of the loop (default=previous *bframe*)

eframe ending frame of the loop; must be larger than *bframe* (default=half the highest frame number for image frames; the highest frame number for graphics frames)

MAX highest frame number on the workstation

G sets the graphics frame loop bounds; valid only in McIDAS-X sessions with independent graphics

Remarks

When you start McIDAS, the loop bounds are set to 1 through the highest frame number.

See Also

Use commands A, B, and L to advance, back up, and loop through the frames. Use the LS command to create random loop sequences. See the *Introduction* section of this manual for more information on the McIDAS-X and -OS2 Loop Control Systems.

Examples

LB
This entry lists the current loop bounds.

LB 1 6
This entry sets the loop bounds to frames 1 through 6.

LB 6 MAX
This entry sets the loop bounds to frames 6 through the highest frame number.

LB G 8 11
For a McIDAS-X session with independent graphics, this entry sets the graphics loop bounds to frames 8 through 11.

LOGOFF

Logs you off the workstation.

Remarks

This command logs you off the workstation, but McIDAS remains active.

See Also

The EXIT command exits the McIDAS-OS2 application and returns to the OS/2 operating system for McIDAS-OS2 workstations; it shuts down the McIDAS-X session and associated windows on a McIDAS-X workstation.

LOGON

Logs you on to the McIDAS session.

Format

LOGON *user project init* **WS**

Parameters

user your user name; see the Remarks

project your 4-digit project number; see the Remarks

init initialization state to set; specify one of the following:

- **X** logs you on and runs the GD INI command to set graphics parameters to initialized values; no other actions are performed
- **I** logs you on and initializes your McIDAS session; see the second example below for a complete list of initialization processes
- **.** logs you on, runs the GD INI command , restores the string table with the name *user*, and runs all strings in that table with names that begin with *user*
- *string* logs you on, runs the GD INI command, restores the string table named *string*, and runs all strings in that table with names that begin with *string*

WS logs you on to the workstation McIDAS session only; WS is suppressed with two dashes (--) as it is typed; always specify this parameter because LOGON attempts to establish a TCP/IP connection to a McIDAS-MVS host if WS is not specified

Remarks

Your user name and project number are recorded with scheduler entries (SKE command), string tables (TU command), and some data types, for example, grid, and MD files. The user name and project number are also checked when a scheduler entry is run and when you request data from a remote server. At startup or after running the LOGOFF command, the user name is set to USER and the project number is set to 0. If you fail to log on with a valid name and project number, you may be prevented from accessing data on some remote servers.

Examples

LOGON TOM 1234 X WS
This entry logs you on to the McIDAS session as user TOM with project number 1234. It also runs GD INI to set the graphics parameters (width, dash and gap) to their initialized values. Otherwise the McIDAS session is left in its present state.

LOGON TOM 1234 I WS
This entry logs you on to the McIDAS session as user TOM with project number 1234, and initializes the McIDAS session as follows:

- clears the string table
- sets image frame loop bounds from 1 to 1/2 the highest frame number
- runs DR INI to set the dwell rates to nine units for the first frame and six units for all subsequent frames
- runs GD INI to set the graphics parameters to their initialized values
- runs GU REST X on all frames to restore the default graphics color levels
- runs EU REST X on all frames to restore the default image enhancement
- runs CUR to restore the default 31 x 31 pixel red crosshair cursor

LOGON TOM 1234 . WS
This entry logs you on to the McIDAS session as user TOM with project number 1234. It also runs GD INI to set the graphics parameters to their initialized values. It runs TU REST TOM to restore the string table TOM, and runs all strings in that table with names that begin with TOM, for example, TOM, TOMSDATA, TOMLIST.

LOGON TOM 1234 PLOT WS
This entry logs you on to the McIDAS session as user TOM with project number 1234. It also runs GD INI to set the graphics parameters to their initialized values, runs TU REST PLOT to restore the string table PLOT, and runs all strings in that table with names that begin with PLOT for example, PLOT, PLOTWX, PLOTTEMP.

LS

Creates random loop sequences for image and graphics frames.

Formats

LS *frame1 frame2 frame3 . . framen [keyword]*
LS G *frame1 frame2 frame3 . . framen [keyword]* (McIDAS-X only)
LS O *frame1 frame2 frame3 . . framen [keyword]*

Parameters

frame1 . . n	frame numbers to include in the loop; see the Remarks
G	sets the graphics frame loop sequence; valid only in McIDAS-X sessions with independent graphics
O	sets the opposite frame loop sequence

Keyword

Update=	**Y**	automatically rotates the loop's frame sequence each time a new image is displayed with the IMGDISP command, moving the new image to position one of the loop
	N	does not rotate the frame sequence (default)

Remarks

For a sequential range of frames, use the format *frame-frame*B*inc. frame-frame* specifies the beginning and ending frames, and *inc* is the increment (the dash means "to" and the B means "by"). The default increment is 1. For example, LS 1-5 sets the loop sequence to 1, 2, 3, 4, 5; LS 1-5B2 sets the loop sequence to 1, 3, 5; LS 5-1B-2 sets the loop sequence to 5, 3, 1. You can also mix formats; LS 1 3 7-19B3 25 sets the loop sequence to 1, 3, 7, 10, 13, 16, 19, 25.

When you set the frame loop, the opposite frame loop is automatically set in the following manner. If frame *n* is less than or equal to (*max frames*/2), it corresponds to the opposite frame *n*+(*max frames*/2). If frame *n* is greater than (*max frames*/2), it corresponds to the opposite frame *n*-(*max frames*/2).

To override the opposite frame loop default, use the LS O command.

See Also

Use commands A, B, and L to advance, back up, and loop through the frame sequence. See Chapter 2, *Introduction*, for more information about the McIDAS-X and -OS2 Loop Control Systems.

Examples

LS
This entry lists the current loop sequences.

LS 1 4 2 5
This entry sets the loop sequence in the order 1, 4, 2, 5.

LS 1-16
This entry sets the loop sequence to frames 1 through 16.

LS 1 16
This entry sets the loop sequence to frames 1 and 16 only.

LS 1 3 7-19B2 23
This entry sets the loop sequence to frames 1, 3, 7, 9, 11, 13, 15, 17, 19, 23.

LS O 1-4 8 9 3-1
This entry sets the opposite loop sequence to frames 1, 2, 3, 4, 8, 9, 3, 2, 1.

LS G 1-5 5-1
For a McIDAS-X session with independent graphics, this entry sets the graphics frame loop sequence to frames 1 to 5, then 5 to 1.

LSCHE

Lists an MD file schema.

Formats

LSCHE *schema version* **HED**
LSCHE FIND *key*

Parameters

schema name of an MD file schema to list; the name is system dependent (no default)

ALL lists all file schemas

version schema version number to list (default=latest version)

ALL lists all schema version numbers

key name of a schema key; a schema entry point descriptor

HED lists the file header only (default=lists header and keys)

FIND lists the schemas containing the specified key

See Also

Use command SCHE to register new MD file schemas.

Examples

LSCHE IRAB
This entry lists the IRAB file schema.

LSCHE ISFC ALL
This entry lists all versions of the ISFC file schema.

LSCHE ISHP X HED
This entry lists the file header only for the ISHP file schema.

LSCHE FIND IDN
This entry lists all schemas that contain the key IDN (station ID number).

LVF (McIDAS-X only)

Lists virtual frame files.

Formats

LVF *string*
LVF *file [keyword]*

Parameters

string	lists only the virtual frame files beginning with this character string (default=lists all files)
file	name of the file to list; if no extension is specified, .PIX is automatically appended

Keywords

FORM=	**ALL**	lists all attributes and directory information for the virtual frame file

Examples

LVF
This entry lists all workstation virtual frame files with the extension .PIX.

LVF RAD
This entry lists the virtual frame files beginning with RAD.

LVF STORM FORM=ALL
This entry lists all attributes and directory information for the file `STORM.PIX`.

LWCON (McIDAS-X only)

Converts a McIDAS-OS2 LW file to a McIDAS-X LW file.

Format

LWCON *sfile dfile*

Parameters

sfile	source LW file in McIDAS-OS2 format
dfile	destination LW file name

Remarks

Use LWCON to convert LW files from the OS/2 format to the Unix format. The file must consist of 4-byte integers and/or character data. This program will fail if the file contains integers representing valid 4-byte ASCII characters.

Examples

Suppose you transfer a file named **OUTLUSA** from a PS/2 to a Unix workstation and change the file name to **TEMPFILE**. To convert this file to a McIDAS-X format, enter this command:

LWCON TEMPFILE OUTLUSA

This entry converts the file **TEMPFILE**, which is in the McIDAS-OS2 format, to a McIDAS-X format and renames it **OUTLUSA** (its original name on the PS/2).

LWTODOS

Converts LW format files to ASCII text format files.

Format

LWTODOS *sfile dfile* **R**

Parameters

sfile	source LW file name
dfile	destination ASCII text file name; must be different than *sfile*
R	replaces the destination file if it already exists

Remarks

The LW file format is an 80-character card image, blank padded as needed, with no carriage returns or linefeeds. The ASCII text file format contains variable-length lines of ASCII text with a carriage return at the end of each line.

Examples

LWTODOS SFCPLT SFCPLT.TXT
This entry converts the LW file named **SFCPLT** to an ASCII text file named **SFCPLT.TXT**.

LWU

LW file utility.

Formats

LWU COPY *sfile dfile*
LWU DEL *file*
LWU INFO *file*
LWU LIST *file bword eword*
LWU MAKE *file*
LWU POKE *file value word* **ASCII=**

Parameters

COPY	copies a file
DEL	deletes a file
INFO	lists the file and its size, in bytes
LIST	lists the words in a file
MAKE	creates a file
POKE	pokes a value into a file
sfile	source file name
dfile	destination file name
file	name of the file
bword	beginning word number to list, the range is 0 to 8,000,000 (default=0)
eword	ending word number to list, the range is 0 to 8,000,000 (default=39)
value	value to poke into the word (default=0)
word	number of the word to change (default=0)

Keywords

ASCII=	**YES**	pokes the specified *value* as ASCII characters; see the Remarks (default for all non-numeric *values*)

Remarks

Use command DMAP or LWU INFO to determine the size of the file.

By default, if the value specified with the POKE option is numeric (one or more digits, possibly prefaced with a + or a -), it is poked into the word as an integer; otherwise, it is poked into the word as ASCII characters. Use the ASCII=YES keyword to override the default when you need to poke a numeric value into the word as ASCII characters.

> ***Caution !***
> ***Be very careful when using the POKE option; misuse can permanently damage the file.***

Examples

LWU MAKE CLOUDS
This entry creates an LW file named **CLOUDS**.

LWU COPY CLOUDS NEWONE
This entry copies the LW file CLOUDS into file **NEWONE**.

LWU DEL CLOUDS
This entry deletes the LW file **CLOUDS**.

LWU INFO NEWONE
This entry lists the size of the LW file **NEWONE**.

LWU LIST LWTXT 10 20
This entry lists words 10 to 20 of the LW file **LWTXT**.

LWU POKE LWTXT 92067 64
This entry changes the value of word 64 in the LW file **LWTXT** to the integer value 92067.

LWU POKE LWTXT 92067 64 ASCII=YES
This entry changes the value of word 64 in the LW file **LWTXT** to the ASCII string 92067.

MAKFRM (McIDAS-X only)

Adds new frames to a McIDAS-X session.

Format

MAKFRM *nframe line ele*

Parameters

nframe	number of frames to add; the range is 1 to 500
line	number of lines; the range is 1 to 100,000 (default=number of lines in current frame)
ele	number of elements; the range is 1 to 100,000 (default=number of elements in current frame)

Remarks

You can add new frames to a session only if you allocate memory for additional frames by specifying the **-e** flag at startup or in your **.mcidasrc** file.

If you run MAKFRM without any parameters, it lists the amount of memory available for adding new frames.

The amount of memory required to add a new frame is slightly more than the number of lines times the number of elements. The figure is slightly higher because additional memory is required for enhancements, stretch tables, graphics tables, etc.

When you add new frames, they are appended to the end of the current frame list. They are not added to the current loop bounds. Use the LS command to add them to the current loop. If the new frames are a different size and you display them using SF, A, or B, use the R command to resize the Image Window to the size of the frames.

Examples

MAKFRM
This entry lists the amount of memory available for adding new frames.

MAKFRM 1 300 400
This entry creates a single frame that is 300 lines by 400 elements.

MAKMNU (McIDAS-OS2 only)

Starts the F Key Menu System.

Format

MAKMNU *file [keywords]*

Parameter

file menu file

Keywords

INIt=	**YES**	initializes the menu file before adding a specified menu; does not merge menus (default)
	NO	does not initialize the menu file; use to merge menus
LISt=	**YES**	lists the input file text as it is processed
	NO	does not list input file text (default)

Remarks

The menu file must reside in `\mcidas\data` or a REDIRECT directory. See the *F Key Menu System* chapter in this manual for more information.

If you do not specify an extension for the file name, the system assumes the .MNU extension.

To delete a menu on your system,

Type: **LWU DEL MENU**

No menu will come up automatically when you start McIDAS-OS2 or press the Esc key.

Example

MAKMNU SFCTR
This entry reads the menu file `SFCTR.MNU` and starts the McIDAS-OS2 F Key Menu System. Press the Esc key to select from the defined menu items.

MAKNAV

Creates a navigation entry for an area.

Format

MAKNAV *area [keywords]*

Parameter

area area number to navigate (default=0)

Keywords

MERC= *eql eqe slat qlon size*
Mercator projection

- *eql* equator image line
- *eqe* equator image element
- *slat* standard latitude (default=0)
- *qlon* normal or center longitude
- *size* size of one pixel, in km, at standard latitude

MOLL= *eql eqe qlon size*
Mollweide projection

- *eql* equator image line
- *eqe* equator image element
- *qlon* normal or center longitude
- *size* size of one pixel, in km, at standard latitude

PLANET= planet to navigate (default=earth)

PS= *npl npe slat qlon size pole*
polar stereographic projection

- *npl* pole image line
- *npe* pole image element
- *slat* standard latitude (default=60)
- *qlon* normal or center longitude
- *size* size of one pixel, in km, at standard latitude
- *pole* **N** North Pole (default)
  S South Pole

RADR= *cenl cene clat clon size rot*
radar projection

- *cenl* radar site center line
- *cene* radar site center element
- *clat* radar site latitude
- *clon* radar site longitude
- *rot* image rotation (default=0)

RECT= *lin lat ele lon deglin degele*
rectilinear projection

- *lin* image line number
- *lat* image line latitude
- *ele* image element number
- *lon* image element longitude
- *deglin* degrees latitude per image line
- *degele* degrees longitude per image element

SIN= *cenl cene clat clon size*
sinusoidal equal area projection

- *cenl* radar site center line
- *cene* radar site center element
- *clat* radar site latitude
- *clon* radar site longitude
- *size* size of one pixel, in km, at standard latitude

TANC= *npl npe slat glon size*
tangent cone projection

- *npl* pole image line
- *npe* pole image element
- *slat* standard latitude (default=60)
- *glon* normal or center longitude
- *size* size of one pixel, in km, at standard latitude

See Also

Use the REMAP command to remap into the map projection created by MAKNAV.

Example

The example below copies a GOES satellite image and remaps it into a Mercator projection in local area 6000.

IMGCOPY GOES/VIS.5 LOCAL/AREA.6000 STA=KLAX SIZE=480 640 STYPE=VISR BAND=1
This entry copies the image in position 5 in the dataset GOES/VIS to position 6000 in dataset LOCAL/AREA. The STYPE=VISR keyword converts the image to 1-byte data with source type VISR and calibration type BRIT.

IMGCHA LOCAL/AREA.6000 ELE=1 LIN=1 RES=8 8
This entry sets the appropriate line and element resolutions and coordinates for the desired projection.

MAKNAV 6000 MERC=2000 2000 0 90 1
This entry generates a Mercator projection codicil entry for local area 6000.

IMGREMAP GOES/VIS.5 LOCAL/AREA.6000 PRO=DEST
This entry remaps the image in position 5 in the dataset GOES/VIS into position 6000 in dataset LOCAL/AREA.

MAP

Displays a map and latitude/longitude lines on a graphics frame.

Formats

MAP *map color1 [keywords]*
MAP *map color1* **LALO** *color2 [keywords]*

Parameters

map

DEF	draws a map of the domain defined with the LAT and LON keywords using the projection specified with the PRO keyword; uses the **US*.MAP** files if the STATE, COUNTY, or ZONE keyword is specified, otherwise uses the **OUTLUSAM** map file for North America, and **OUTLSUPW** for all other areas
EURB	Europe's political boundaries; latitude=20 80, longitude= -60 30; map file **OUTLHPOL**
EURO	Europe; latitude=20 80, longitude= -60 30; map file **OUTLSUPW**
H	North America; medium resolution; map file **OUTLUSAM**
L	world coastal outlines; used with satellite projection; map file **OUTLSUPW**
LALO	no map; latitude/longitude lines only
MID	Midwest; latitude=34 50, longitude=83 104; map file **OUTLUSAM**
NA	North America; latitude=5 80, longitude=55 179; map file **OUTLSUPW**
OUTLAUST	Australian region with states; high resolution
OUTLEURO	European region coastal and political outlines; high resolution
OUTLHPOL	world political outlines; medium resolution
OUTLHRES	world coastal outlines; high resolution
OUTLSUPU	continental USA with states and major waterways; high resolution
OUTLSUPW	world coastal outlines; medium resolution

OUTLUSAM North America with states and provinces; medium resolution

PO Abbrev state post office abbreviation; map file **OUTLUSAM**

POLI world political boundaries; map file **OUTLHPOL**

PRC Asia; latitude=15 55, longitude=-145 -65; map file **OUTLSUPW**

PRCB Asia's political boundaries; latitude=15 55, longitude=-145 -65; map file **OUTLHPOL**

SAT draws a map using the frame's current navigation; uses the **US*.MAP** files if the STATE, COUNTY, or ZONE keyword is specified, otherwise uses the **OUTLUSAM** map file for North America, and **OUTLSUPW** for all other areas (default)

USA continental USA; latitude=23 56, longitude=66 126; map file **OUTLUSAM**

VH continental USA; high resolution; map file **OUTLSUPU**

WIS Wisconsin; latitude=41 48, longitude=85 95; map file **OUTLUSAM**

WORL world coastal outlines; used with the pseudo-Mercator projection; map file **OUTLSUPW**

color1 graphics color level for the map; use positive numbers for solid lines, negative numbers for dashed lines, or zero (0) to suppress map drawing (default=1)

LALO draws latitude/longitude lines with a map (default=does not draw lines)

color2 graphics color level for latitude/longitude lines; use positive numbers for solid lines and negative numbers for dashed lines (default=2)

Keywords

ACC= accuracy for the latitude/longitude lines; the range is 1 to 10 (default=4)

BOX= **YES** *color* draws a box around the map in the specified graphics color level (default for all except SAT, L, H, VH and X; default color=1)

NO does not draw a box

COUnty= *c1 . . cn* list of counties to draw; use the STATE keyword to limit counties to a specified state; the county name must be in single quotes if it contains spaces, do not include punctuation, for example, specify 'ST LUCIES' for St. Lucie's county; you cannot use both the COUNTY and ZONE keywords; see the Remarks

ALL draw all counties

NONE draw no counties (default)

DAShset= *dlength gcolor glength*
sets dashed line characteristics when a negative number is specified for *color1* or *color2*

dlength length of dashes (default=current GD command setting)

gcolor graphics color level of gaps in dashed lines; specify 255 for transparent (default=current GD command setting)

glength length of gaps (default=current GD command setting)

ELE= *min max* TV element extents (default depends on frame size)

GRA= *f1 . . fn* graphics frame number(s) to display the output; see the Remarks (default=current)

IMA= image frame number to use for navigation (default=current)

INT= *lat lon* intervals for latitude/longitude lines (default=computed)

LABEL=	**NO**	does not add labels to latitude/longitude lines
	YES *clat clon*	adds latitude/longitude line labels (default); specify the graphics color levels for latitude and longitude labels with *clat* and *clon*; see the Labels information; use this keyword when LALO is specified
LAT=	*lat1 lat2*	latitudes of the points at the lower-right and upper-left corners of the map (default=-90 90 for DEF maps with mercator projection)
LIN=	*min max*	TV line extents (default depends on frame size)
LON=	*lon1 lon2*	longitudes of the points at the lower-right and upper-left corners of the map; if you choose a CONF projection and specify SCALE, the map is centered at the specified coordinates if only *lat1* and *lon1* are entered; otherwise, the point with coordinate *lat2 lon2* is placed in the upper-left corner; the other point is shifted or removed to create a map with a given scale; defaults for SAT projections are the range taken from the image or map geographical limits; for CONF and MERC projections, defaults are latitude -90 to +90, longitude -180 to +180
LSIze=	height of latitude and longitude labels in pixels (default=7)	
NAMe=	map file name; it overrides the default map file	
PRO=	**CONF**	conformal projection; see the Projections information below
	MERC	pseudo-Mercator projection (default for all maps except H, VH, L or LALO, and SAT)
	SAT	satellite projection (default if *map* and projection are not specified, or *map* is H, VH, L or LALO and the projection is not specified)
SCAle=	map scale for a CONF projection; scale values in the range up to 1000 are multiplied by 1,000,000 (default=no scale)	

SLAt=	*lat1 lat2*	standard latitudes for a CONF projection only; one value for a polar stereographic projection (default=60°) two values for a general Lambert conformal projection
SLOn=	standard longitude for a CONF projection only (default is computed)	
STate=	*s1 . . sn*	list of states to draw, or used to limit the COUNTY or ZONE keyword; use the 2-letter state post office abbreviation; see the Remarks
	ALL	use all states (default if the COUNTY or ZONE keyword is specified)
	NONE	draw no states (default if the COUNTY or ZONE keyword is not specified, use **OUTL*** map files)
WIDth=	graphics line width (default=current GD command setting)	
ZONe=	*z1 . . zn*	list of National Weather Service state zone numbers to draw; use the STATE keyword to limit zones to a specified state; you cannot use both the ZONE and COUNTY keywords; see the Remarks
	ALL	draw all NWS zones
	NONE	draw no NWS zones (default)

Remarks

The MAP command uses two sets of map files. The **US*.MAP** files (for example, **USCOUNTY.MAP**) are used only when the STATE, COUNTY, or ZONE keyword is specified. The **OUTL*** files (for example, **OUTLSUPU**) are used in all other cases. The **US*.MAP** files include all counties and National Weather Service zones in the United States, and slightly different state boundaries than the **OUTL*** files.

If you want to draw a map using the frame's current navigation, specify L, H, VH or SAT (or X, since SAT is the default) for the *map* parameter. For example, running MAP with no parameters or keywords draws a map using the frame's navigation. MAP SAT STATE=KS draws the state of Kansas if it's present in the frame's navigation.

If you want to draw a map that defines new navigation for the frame, specify one of the predefined maps (for example, MID, USA, WORL) or DEF for the *map* parameter. The LAT and LON keywords define the domain for the DEF map. If you also include the STATE, COUNTY, or ZONE keyword, only the specified states, counties, or zones are drawn, if they're in the domain.

The STATE, COUNTY, and ZONE keywords are used to draw only the specified states, counties, and zones using the **US*.MAP** files. These keywords do NOT define the map's domain. Domain is defined with the positional parameter *map*, using a predefined map, SAT, MID, USA, for example, or using DEF with the LAT and LON keywords. For example, MAP MID STATE=IA defines a domain consisting of the Midwest, but only draws the state of Iowa. If you then run MAP SAT STATE=ALL, all states in the domain are drawn using the **USSTATE.MAP** file.

When you use the COUNTY or ZONE keyword, you must ALL (the default) or a single state for the STATE keyword. The STATE keyword limits counties or zones drawn to the specified state. When you use the COUNTY or ZONE keyword, no states are drawn.

You can specify a single frame or multiple frames in the GRA keyword using the list format (*frame1 frame2 frame3* . .) and the range format (*bframe-eframe*). For example, a map is displayed on frames 1 through 5 with any of the following: GRA=1 2 3 4 5, GRA=1-5, GRA=1 2-4 5.

In McIDAS-OS2, if you specify the IMA keyword, multiple frames in the GRA keyword, and a frame-oriented map (H, L, LALO, SAT, or VH in the *map* parameter), the maps are identical because they all use the navigation of the frame specified in the IMA keyword. If you do not specify the IMA keyword, the maps may be different because each map uses the navigation of its image frame. For example, MAP H GRA=1-6 draws a map on graphics frame 1 using the navigation for image frame 1, draws a map on graphics frame 2 using the navigation for image frame 2. In contrast, MAP H IMA=3 GRA=1-6 draws the map corresponding to the navigation in image frame 3 on graphics frames 1 through 6.

In McIDAS-X, frame-oriented maps (H, L, LALO, SAT, or VH in the *map* parameter) always uses the navigation for the single frame specified in the IMA keyword, even if multiple frames are specified in the GRA keyword.

Labels

In some cases, labels overlap. You can usually adjust this by changing the latitude/longitude line intervals and/or the accuracy.

Projections

The pseudo-Mercator projection has equidistant latitude lines; otherwise it is the same as a true Mercator projection. The Lambert conformal projection includes polar stereographic projection as a special case. If you enter only one positive SLAT value or if you accept the default of 60°, the projection is polar stereographic with the North Pole as the origin of projection. If you enter only one negative value for SLAT, the origin of the polar stereographic projection is the South Pole. You must enter two SLAT values to obtain a general Lambert conformal projection. If SLAT1 + SLAT2 > 0, the North Pole is the origin of projection. If SLAT1 + SLAT2 < 0, the South Pole is the origin of projection.

For some values of keywords LAT, LON, SLON and SLAT, the area defined cannot be found. If this happens, an error message is displayed and the program stops. Use SLON for CONF projections only. The default value is computed by assuming that the standard meridian is located in the middle of a box set by two points and is parallel to the left and right edges of the TV screen. If a map is centered, the default SLON is equal to LON.

Examples

The examples below are divided into four groups that include satellite, pseudo-Mercator, polar stereographic and general Lambert conformal projections. Command lines that won't fit on one line are continued on a second, indented line.

Satellite Projection

MAP VH -7 DASHSET=2 255 8
This entry draws a high-resolution map in graphics color level 7 with dashed lines. The dashes are each two pixels in length with gaps of eight pixels between the dashes.

MAP VH GRA=1-12
This entry draws a high resolution map on graphics frames 1 through 12. In McIDAS-X, the map is identical in all 12 frames because it uses the navigation for the current image frame. In McIDAS-OS2, the map for each graphics frame is drawn using the navigation of the corresponding image frame. That is, the map on graphics frame 1 is drawn using the navigation on image frame 1; the map on graphics frame 2 is drawn using the navigation on image frame 2, etc.

MAP VH IMA=1 GRA=1-12
This entry draws a high resolution map on graphics frames 1 through 12. The map is identical in all 12 frames because it uses the navigation for image frame 1.

MAP X 5 LALO 6 INT=5 10
This entry draws a map on a satellite image in graphics color level 5. It draws latitude/longitude lines in graphics color level 6 and labels them. The interval for latitude lines is 5°. The interval for longitude lines is 10°.

MAP VH X LALO LABEL=NO
This entry draws a high resolution USA map and latitude/longitude lines without labels.

MAP STATE=OH IN
This entry draws the states of Ohio and Indiana, if they're present in the current frame navigation.

MAP COUNTY=DANE 'ST CROIX' COLUMBIA STATE=WI
This entry draws Wisconsin's Dane, St. Croix, and Columbia counties, if they're present in the current frame navigation. Note that St. Croix must be specified without a period and must be enclosed in quotes because of the space in the county name.

Pseudo-Mercator Projection

MAP AK X LALO
This entry draws a map of Alaska and latitude/longitude lines with labels.

MAP EURO 2; MAP EURB X LALO
This entry draws a map of Europe with coastal and political boundaries.

MAP MN 3 STATE=ALL WIDTH=2
MAP X -3 COUNTY=ALL DASHSET=1 255 4
The first entry defines a map domain of Minnesota and its surrounding states, then draws the states in graphics color level 3 with a line width of two pixels. The second entry draws all counties (in all states) present in the current frame navigation (defined by the first entry) in graphics color level 3 with dotted lines.

MAP MID 3 STATE=IA ZONE=6 19 34
This entry defines a map domain of the Midwest, but only draws Iowa's National Weather Service zones 6, 19, and 34 in graphics color level 3.

MAP AR COUNTY=FAULKNER WHITE CRAWFORD MADISON 'VAN BUREN' CARROLL NEWTON BOONE STATE=AR
This entry defines a map domain of Arkansas and its surrounding states, but only draws the eight Arkansas counties listed with the COUNTY keyword. Note that Van Buren is enclosed in single quotes because of the space in the county name.

MAP DEF STATE=AZ COUNTY=MARICOPA GILA LAT=31 37 LON=107 117
MAP VH 2
The first entry defines a map domain of the specified latitude and longitude range, but only draws Arizona's Maricopa and Gila counties. The second entry draws all states in the map domain in graphics color level 2.

Polar Stereographic Projection

MAP WI PRO=CONF
This entry draws a map of Wisconsin in conformal projection.

MAP LALO PRO=CONF LAT=0 70 LON=90 -90
This entry draws latitude/longitude lines and labels for the specified North American region.

MAP OUTLSUPU X LALO PRO=CONF LAT=30 45 LON=90 110 SLON=100
This entry draws a map and latitude/longitude lines for a region with the specified latitude/longitude range and standard longitude. The map is taken from the OUTLSUPU high resolution map file. In this case, the map file name can be abbreviated as VH.

MAP X X LALO PRO=CONF LAT=-20 -20 LON=0 180
This entry draws a map of the northern hemisphere with the North Pole as the origin of projection.

MAP X X LALO PRO=CONF LAT=20 20 LON=0 180 SLAT=-60
This entry draws a map of the southern hemisphere with the South Pole as the origin of projection.

MAP X X LALO PRO=CONF LAT=-10 60 LON=-10 20 SCALE=20
This entry draws a map of the latitude/longitude range specified in 1:20000000 scale. The point with latitude 60 and longitude 20 is located in the upper-left corner of the TV screen.

MAP PRO=CONF LAT=-90 LON=0 SLAT=-60 SCALE=35
This entry draws a map centered at the South Pole, with the origin of the projection at the South Pole and a standard latitude of 60°. The point with latitude -90 and longitude 0 is in the middle of the TV screen. The standard longitude is 0° and the scale is 1:35000000.

MAP X X LALO PRO=CONF LAT=-5 -35 LON=-115 -170 SLAT=-60
This entry draws a map of Australia with latitude/longitude lines and labels in the projection centered at the South Pole.

MAP X X LALO PRO=CONF LAT=-60 0 LON=-70 -145 SLAT=-60 SLON=140
This entry produces the same map of Australia but rotates it by 90° so that the South Pole is located at the right of the frame.

Lambert Conformal Projection

MAP PRO=CONF LAT=20 60 LON=70 165 SLAT=40 60
This entry draws a Lambert conformal map of the United States.

MAP X X LALO PRO=CONF LAT=40 70 LON=150 -150 SLAT=40 60
This entry draws a map of the Alaska region. In the Lambert conformal projection, the map splits but the information is complete.

MAP X X LALO PRO=CONF LAT=-15 LON=-135 SLON=180 SCALE=25 SLAT=-60 -40
This entry draws a map of Australia with latitude and longitude lines.

MAP X X LALO PRO=CONF LAT=-80 LON=15 SLON=10 SLAT=-70 -10 SCALE=40
This entry draws a map of Antarctica.

MCEVAL

Runs a McIDAS command substituting McIDAS string values.

Format

MCEVAL *command*

Parameter

command complete McIDAS command to run, including parameters and keywords

Remarks

MCEVAL substitutes the correct values for McIDAS strings specified in *command*, then runs the command. Use MCEVAL if you need to update a McIDAS string and use it's new value in a concatenated command (separated by a semicolon). See the examples below. Also use MCEVAL if you run McIDAS-X commands with McIDAS string substitutions from the Unix shell. See Appendix H, *Running Commands Outside a McIDAS Session*, for more information.

McIDAS-X Examples

ASK1 LL {Center latitude and longitude:}; MCEVAL IMGDISP GOES/VIS LATLON=##LL

This entry runs an ASK1 command that prompts you for a value to enter for the string LL. After you type a value for string LL, the IMGDISP command uses it to center the image at that location.

te.k STATION \"KSEA; mceval.k SFCLIST \#STATION 3

This entry, when typed from the Unix shell, runs a TE command that sets the value of the string STATION to KSEA. It then runs the SFCLIST command, using the value of the string in a SFCLIST command. That is, it runs the command SFCLIST KSEA 3.

McIDAS-OS2 Example

ASK1 11 25 5 LL {Center latitude and longitude:}; MCEVAL IMGDISP GOES/VIS LATLON=##LL

This entry runs an ASK1 command that prompts you for a value to enter for the string LL. After you type a value for string LL, the IMGDISP command uses it to center the image at that location.

MCMENU (McIDAS-X only)

Starts the F Key Menu System.

Format

MCMENU *file*

Parameter

file	name of the menu file; this is case sensitive and can include the directory with the file name; see the Examples

Remarks

This command opens an F Key Menu window and loads the specified menu file. You must make the window active to use the menus.

See Also

For more information, see Chapter 5, *F Key Menu System*.

Examples

MCMENU demo.mnu
This entry opens an F Key Menu window and loads the menu file `demo.mnu`.

MCMENU /home/johndoe/mcidas/menus/IMAGE.MNU
This entry opens an F Key Menu window and loads the menu file `/home/johndoe/mcidas/menus/IMAGE.MNU`.

MDE

Edits MD files.

Formats

MDE *file* **KEYS=LIST**
MDE *file* **KEYS=DEL** *conditions*
MDE *file* **KEYS=REST** *conditions*
MDE *file* **KEYS=***schema keys* **UNIT= VALU=** *conditions=*

Parameter

file MD file number to edit (default is set by MDU SET or the previously run MDE command)

Keywords

KEYS= *schema keys* schema keys in the MD file to edit; you can edit more than one at a time only if they contain actual (non-missing) values

DEL deletes the records meeting the search conditions

LIST lists the keywords in the MD file schema by row and column headers and data

REST restores a deleted record; specify ROW and COL using the *conditions* below

UNIT= units in which to enter the new key values; specify the units if they are different from those native to the MD file

VALU= new value for the keys

MISS enters missing data values

conditions search conditions to meet when searching for a record to edit; use any or all of the options below

ROW= *min max* row number or range of numbers (default=1)

COL= *min max* *column* number or range of numbers (default=1)

schema keys= *low high units* range and units of the schema keyword to search for; *units* are necessary if the range is specified in units other than those native to the MD file

Remarks

Use command MDE to edit or restore MD files. If you delete a record accidentally, you can recover it with KEYS=REST provided you have not repacked the file.

Examples

MDE KEYS=DEL ROW=1 5 COL=15 20
This entry deletes columns 15 to 20 in rows 1 through 5.

MDE 6514 KEYS=LIST
This entry lists the keys for MD file 6514.

MDE KEYS=T TD VALU=MISS ID=KMSN TIME=12
This entry flags the temperature (T) and dew point (TD) as missing for Madison, Wisconsin, at 12 UTC.

Use the four commands below to edit a ship observation in MD file 6512.

MDU SET 6512
This entry sets the MD file pointer to 6512. All subsequent MD file commands are performed on this MD file.

MDE KEYS=T UNIT=C VALU=20 ID=KWPR TIME=12
This entry sets the search conditions ID=KWPR and TIME=12. MDE will locate ship ID KWPR at 12 UTC and change the temperature to 20° C.

MDE KEYS=DEL ROW=5 COL=10 15
This entry deletes the records at row 5 and columns 10 to 15.

MDE KEYS=REST ROW=5 COL=10
This entry restores the record at row 5 and column 10.

MDU

MD file utility.

Formats

MDU COPY *sfile dfile*
MDU DEL *bfile efile*
MDU DIR *file id "comments*
MDU LIST *bfile efile [keyword]*
MDU MAKE *file schema version nrows ncols id "comments*
MDU SET *file*

Parameters

COPY	copies the contents of the MD file
DEL	deletes an MD file
DIR	changes a file identification number and comments
LIST	lists the file directory headers
MAKE	makes a new MD file
SET	sets the current MD file number
sfile	source MD file number
dfile	destination MD file number
bfile	beginning MD file number
efile	ending MD file number (default=*bfile*)
file	MD file number
id	identification number, YYDDD (default=0 if used with the MAKE option; default=current ID if used with the DIR option)
"comments	comments added to the file; the double quote is mandatory
schema	MD file schema name, for example, IRAB, ISFC
version	schema version number; use X for schema defaults
nrows	number of rows; use X for schema defaults
ncols	number of columns; use X for schema defaults

Keyword

DAY=	Julian day to list, YYDDD

Remarks

Before using the MAKE option, be sure the schema type is registered on your workstation. See commands LSCHE and SCHE for more information. Also see the section about registering MD file schemas in the *Installation* chapter.

You can use the ADDE command PTLIST in place of MDU LIST, and the ADDE command PTCOPY in place of MDU COPY.

Examples

MDU COPY 1 10
This entry copies MD file 1 into MD file 10.

MDU DEL 2 6
This entry deletes MD files 2 through 6.

MDU DIR 1 97290 "SHIP AND BUOY DATA
This entry changes the directory of MD file 1 so the ID is 97290 and the comment is *SHIP AND BUOY DATA*.

MDU LIST 1 40
This entry lists the MD file directory headers from MD files 1 to 40.

MDU MAKE 1 ISHP 3 X X 97300 "SHIP DATA
This entry creates MD file 1 of schema ISHP, version 3. It uses row and column defaults. The ID is 97300, labeled *SHIP DATA*.

MDU SET 5
This entry sets the current MD file number to 5. All subsequent MD file commands are performed on MD file 5.

MDX

Plots or grids data from MD files or grids.

Formats

MDX CLE PREFIX=
MDX LIST PREFIX=
MDX PLT *[keywords]*
MDX PLT *ugrid vgrid [keywords]*
MDX *grid [keywords]*
MDX *parm [keywords]*

Parameters

CLE	restores strings with the specified prefix to their default values
LIST	lists the values of the strings with the specified prefix
PLT	plots one or more parameters as defined in the prefixed strings
ugrid	grid number containing the u-component of the wind
vgrid	grid number containing the v-component of the wind
grid	one or more grid numbers of the parameters to plot or contour
parm	one or more MD file keys or derived parameters; see the Remarks

Keywords

MDX has many keywords for fetching and displaying data. They are divided into five groups for discussion.

- Parameter keywords control the display characteristics for individual parameters, e.g., color, size, units, and scaling.
- Output device keywords control the size of the display and set the output device.
- Grid/contour keywords change the grid size, smoothing and contour interval.
- Map keywords specify maps and projections.
- Miscellaneous keywords perform various functions.

Parameter Keywords

COLOR=	graphics color level of the plotted data graphics; use keyword GCOLOR for contours (default=3)
DIVIDE=	divides the data values before plotting; to multiply, use a number from 0 to 1 (default=1)

FORMAT= FORTRAN format specification for the output (default=I12; character data default=A4)

LSIZE= label height in pixels; if LSIZE=5, all data is plotted; the numbers can overwrite each other (default=8)

u v if the parameter WNV is specified, a negative LSIZE plots vectors of constant length; if the parameter WIN is specified, a positive LSIZE defines a relative length of the wind barb; specify *u* and *v* lengths with the same value

MISS= missing data code (default=Z80808080)

OFFSET= operates on the data before output; data value=(data - OFFSET)/DIVIDE; the UNIT keyword uses the DIVIDE and OFFSET keywords (default=0)

PLACE= place to plot the data relative to the station location; the station is located at 41 in a 9 x 9 matrix starting at 1 in the upper-left corner, increasing along a row; use when plotting more than one parameter (default=41)

UNIT= units to plot the parameter; possible conversions are: K to C, F; MB to INHG; MPS, MPH, KT (any); KM, M, CM, MM, MI, NMI, YD, FT, IN (any) (default=the MD file original units)

SYMB plots weather symbols (default=**CHAR**)

Output Keywords

GELE= *beg end* graphics element extents (default=depends on the frame size)

GLINe= *beg end* graphics line extents (default=depends on the frame size)

GRA= graphics frame number (default=current)

IMA= image frame number (default=current)

OUT= **PLO** plot (default)

CON grid and contour

PELE= *beg end* CRT/printer element extents (default=1 60 for the CRT; 1 120 for the printer)

PLIN= *beg end* CRT/printer line extents (default=1 19 for the CRT; 1 60 for the printer)

Grid/Contour Keywords

CINT= grid contour interval (default=2)

DER= **WNV** plots wind vectors from the grid file data

DRAW= **YES** draws contours after gridding (default)

NO does not draw contours

GCOLor= graphics color level (default=2)

GRIDF= destination grid file to store grids (default from IGU SET)

GUESS= grid to use as first guess (default=none)

INC= grid increment in degrees (default=1.0)

SMOOTH= smoothing parameter (default=40)

Map Keywords

LAT= *min max* minimum and maximum latitude extents

LON= *min max* minimum and maximum longitude extents

MAP= **NA** North America

USA USA

MID Midwest USA

State Post Office Abbreviation

MCHAR= map character for the CRT/printer output (default= . . .)

MCOLOR= graphics map color level (default=1)

0 for no map

PRO= **CONF** conformal projection for polar stereographic or Lambert conformal

MERC pseudo-Mercator projection (default)

SAT satellite projection

SCALE= map scale ratio for PRO=CONF (default=not true to scale)

SLAT= *lat1 lat2* standard latitudes; for polar stereographic, specify *lat1*; for Lambert conformal, specify *lat1 lat2*; used with keyword PRO=CONF (default=60, polar projection)

SLON= specifies the normal longitude for polar stereographic or Lambert conformal; used with the keyword PRO=CONF (default=centers longitude of the map limits)

Miscellaneous Keywords

DERIVE= *temp dewpoint pressure (elevation)*
if THAE, THA or MIX is displayed when the parameter does not appear in the MD file (it will be calculated); use elevation with sea level pressure
for an SVCA or ISFC file, use: **DERIVE=T TD PSL ZS**
for a RAOB or IRAB file, use: **DERIVE=T TD P**

GRIDF= grid file number to read (default=from IGU SET)

MDf= MD file number to read; you can combine up to six MD files using the PREFIX keyword (default=from MDU SET)

PREFIX= MDX stores options and defaults in the string table with a prefix at the beginning of the string name; the prefix can be any printable character except a numeric or the pound sign (#) (default=$)

You can set up two prefixed string tables using keyword PREFIX to run these arithmetic operations: - (subtract), * (multiply), + (add), / (divide), : (catenate).

For all operations except catenate, the MD file must have the same schema; if LAT/LON is not contained in the column header, only one row can be operated on, for example: PREFIX=$ - !

SORT= *keyword1 loval1 [hival] keyword2 . .*
selects data from the MD file that meets its conditions; in the SORT keyword list, do not use an equals sign (=) between keywords and *loval, hival; hival* is optional if *loval* is numeric; do not specify *hival* if *loval* is alphabetic; *keyword* is any parameter from an MD file or a ROW and COL number, for example: SORT=TIME 12 13 ST WI

SOU= **MDF** data source is an MD file (default)

GRID data source is a grid file

Remarks

MDX is a flexible routine that plots or contours from any schema MD file or grid. When plotting or contouring ISFC, SVCA, IRAB or RAOB schema MD file data, it is easier to use commands SP, SC, UP and UC. When contouring grid data, it's easier to use command IGTV.

MDX is the general MD file plotter/gridder. It is intended for use in macros, not entered directly.

With each MDX command entry, the information (i.e., parm, time, date, map boundaries, display colors) is stored in strings with a special character prefix. The default prefix is a dollar sign ($), but you can define a prefix using keyword PREFIX with any single character except a pound sign (#) or alphanumeric character.

The *parm* parameter may be any key name in the MD file (use command MDL to list the keys), or one of these derived parameters: ABV, ADV, DVG, MIX, SPD, STR, THA, THAE, VOR, WIN, WNV.

When you use the plus sign (+) as the last positional parameter, the command information is stored in the string table but not plotted. This allows you to run arithmetic operations on the data using the PLT option with the keyword PREFIX.

The most basic command to display data is MDX *parm*, where *parm* is any parameter found in an MD file. The command plots all of this parameter from the current MD file (from MDU SET) on the current graphics frame on a map as determined by the limits of the data. To do anything more with MDX, you must know something about the type of data in the MD file. For example, if you want to plot 500 mb heights for day 97250 at 12 UTC over the Midwest, you must know that the height, pressure, day and time are referenced through parameters Z, P, DAY and TIME in the MD file.

The command to enter (with IRAB schema data in MD file 5000) is:

```
MDX Z MAP=MID MDF=5000 SORT=P 500 DAY 97250
    TIME 12
```

Keyword SORT provides a way of limiting the data to a specific subset of interest. This is probably the most used keyword along with a map specification keyword (MAP or LAT, LON). When using history data, the contour plot does not indicate a day unless you indicate that day as a SORT condition. Do NOT use an equals sign (=) between the keys and values in the SORT list.

Keywords LAT and LON default to limits that guarantee complete coverage of the data distribution, rounded to the nearest whole degree.

When MDX creates and interpolates data to a grid, the amount of extrapolation into data void regions is controlled via SYSKEY word 897. It has a range of 2 to 20 and a default of 10. Use command SYSVAL to list or change its value. Grid points beyond its value are assigned missing value codes, and are not contoured. Note that data density, grid spacing and smoothing can affect a data value's results.

You can use the ADDE command GRDDISP in place of MDX SOU=GRID, and the ADDE command PTDISP in place of MDX SOU=MDF OUT=PLO.

Examples

Before using this example, enter MDX CLE to clear and initialize the string entries that MDX uses.

1. Plot the weather data from MD file 4000 at 18 UTC.

```
MDX WX1 MDF=4000 SORT=TIME 1
```

2. Contour the temperature advection from MD file 3020 over the Midwest at 15 UTC.

```
MDX T ADV MDF=3020 MAP=MID OUT=CON
    SORT=TIME 15
```

3. Plot T in degrees Fahrenheit for MD file 4050, for Wisconsin.

```
MDX T + MDF=4050 UNIT=F MAP=WI
```

This command will not plot because + is the last positional parameter. Now plot in graphics color level 2 (MDF, UNIT and MAP are the same).

```
MDX T COLOR=2
```

4. Plot the temperature from the current surface data for 15 UTC for a lat/lon box. The MD file is the last digit of the Julian day (if zero, MD=10); today is 97322 so use MD file 2.

```
MDX T MDF=2 LAT=30 50 LON=90 105 SORT=TIME 15
```

We forgot to specify hourlies (no specials) and degrees C. So, when MDX is done plotting, enter the command below.

```
EG; MDX T SORT=TIME 15 TYPE 0 UNIT=C
```

5. Plot 1000-500 mb thickness over the USA, 12 UTC, MD file 1030, by entering the following command sequence.

```
MDX CLEAR
MDX Z + SORT=P 500 TIME 12 MAP=USA MDF=1030
    PREFIX=$
MDX CLEAR PREFIX=!
MDX Z + SORT=P 1000 TIME 12 MAP=USA MDF=1030
    PREFIX=!
MDX PREFIX=$ - !
```

6. Grid the winds from MD files 2020 and 2045 for streamlines.

```
MDX STR + MDF=2020 PREFIX=$
MDX STR + MDF=2045 PREFIX=!
MDX PREFIX=$ : !
```

7. Use THAE, THA and MIX. It is easier to use the macros (SP, UP, etc.) to display these derived parameters. When using MDX, an extra keyword, DERIVE, is necessary.

```
MDX MIX MDF=3 MAP=MID DERIVE=T TD PSL ZS
    SORT=TIME 17 DAY 92003 TYPE 0
```

   This entry plots a mixing ratio from the surface data for day 92003.

8. Plot the grid points on the graphics for grid 10, grid file 6512, which contains temperature data.

```
MDX 10 SOU=GRID GRIDF=6512 MAP=MID UNIT=C
```

9. Plot the wind flags at the grid points for *u* grid 1 and *v* grid 2. When plotting wind flags, you cannot change the units.

```
MDX PLT 1 2 SOU=GRID PRO=SAT SORT=TIME 12
```

10. Plot parameters T and TD from MD file 4000 at 12 UTC over Wisconsin. Position the temperature above the dew points with the PLACE keyword. First, set it up with no plot.

```
MDX T TD + MDF=4000 SORT=TIME 12 MAP=WI
    PLACE=41 50
```

    Now plot the data.

```
MDX PLT
```

11. Plot the u- and v-component vectors on the graphics from grids 1 and 2. When plotting wind vectors, you cannot change the units.

```
MDX PLT 1 2 SOU=GRID DER=WNV MAP=MID
```

12. Plot the weather symbols for 18 UTC on day 97301.

```
MDX WX1 UNIT=SYMB MDF=1 MAP=MID SORT=TIME
    18 TYPE 0 DAY 97301
```

MFPLOT

Plots a frequency distribution of MD file data.

Format

MFPLOT *parm file [keywords] "label*

Parameters

parm	MD file data key to plot; see the Remarks
file	MD file number (default=current)
"label	text label for the distribution plot; the double quote is mandatory (default=DISTRIBUTION)

Keywords

conditions	conditions to meet when searching for a record to plot; use any or all of the options below	
	ROW= *min max*	range of row numbers (default=all rows)
	COL= *min max*	range of column numbers (default=all columns)
	schema key= *min max units*	range and units of other schema keys used to limit the search
COLOR=	graphics color level of the plotted data (default=3)	
LENGTH=	length of each class interval, in *parm*'s units; see the Remarks	
NUMBER=	number of class intervals; see the Remarks (default=10)	
XDIVIDE=	*majr minr*	number of major and minor divisions for the x-axis (default=10 5)
XRANGE=	*min max*	range of *parm's* values for the x-axis; see the Remarks (default=from search *conditions*)
YDIVIDE=	*majr minr*	number of major and minor divisions for the y-axis (default=10 5)
YRANGE=	*min max*	range of occurrences of *parm's* values for the y-axis (default=computed based on the number of matches in the MD file)

Remarks

MFPLOT plots a frequency distribution of any key in the file. Use the MDL KEYS=LIST command to list the valid keys.

Specify the program keywords COLOR, LENGTH, NUMBER, XDIVIDE, XRANGE, YDIVIDE and YRANGE using the entire keyword name to avoid confusing them with keywords entered as schema search conditions.

If *parm* is used as a search condition keyword, the data is plotted in its specified units, and its minimum and maximum values are the defaults for keyword XRANGE. Otherwise, the units for the plot are the schema's default for *parm*, and the defaults for keyword XRANGE are *parm's* low and high values among all matching records.

Do not specify both the NUMBER and LENGTH keywords. If one is specified, the other is automatically calculated using these formulas:

NUMBER=(*max-min*)/LENGTH

LENGTH=(*max-min*)/NUMBER

Max and *min* are from the keyword XRANGE. For example, if the x-axis range is from 250 K to 300 K and NUMBER=10, then LENGTH=5 (each class interval includes 5 K). If LENGTH=2, then NUMBER=25.

Keywords XDIVIDE and YDIVIDE define the number of major and minor divisions on the graph. Minor defines the number of subdivisions for each major segment. Labels are placed at each major division.

Examples

MFPLOT T 5 TIME=12 "World Temperatures at 12 UTC
This entry plots a frequency distribution of 12 UTC temperatures in MD file 5. The data is plotted in the default units with the minimum and maximum values along the x-axis set to the low and high values among all matching records. The title *World Temperatures at 12 UTC* appears at the top of the plot.

MFPLOT SPD 2131 LENGTH=1 YDIVIDE=30 2 SPD=10 60 KT
This entry plots a frequency distribution of wind speeds between 10 and 60 knots in MD file 2131. The length of each class interval is 1 knot; the y-axis has 30 major divisions, each with 2 minor divisions.

MFPLOT P 19 XRANGE=100 300 MB LEV=TRO1 TIME=0 NUMBER=20 "Tropopause Heights
This entry plots a frequency distribution of 0 UTC tropopause heights between 100 and 300 mb in MD file 19. The length of each class interval is 10 mb.

MFPLOT TD 7 ROW=1 12 COL=1100 1600 COLOR=6
This entry plots a frequency distribution of dew point temperatures in graphics color level 6 using the data in rows 1 through 12 and columns 1100 through 1600 in MD file 7.

MOVIE

Displays a sequence of loops.

Format

MOVIE *l1 d1 l2 d2 . . ln dn [keywords]*

Parameters

l1 . . ln	the loop to display; the range for the Image Window is 1 to 99; the range is 1 to 9 when using the WIN keyword
d1 . . dn	number of minutes to display the loop (default=.1)

Keywords

WIN=	briefing window to display the loop; the range is 0 to 9 (default=Image Window)

Remarks

Define loops using the DEFLOOP command. Create briefing windows using the BRIEF command.

Use the appropriate procedure listed in the table below to cancel the active movie process. When you cancel the active movie process, the current loop continues running until you manually stop the loop. Use **Alt A** to advance a frame and **Alt B** to back up a frame in the loop.

Display	Cancel Procedure
Image Window	Run MOVIE with no parameters to cancel the active movie. Press **Alt L** to manually stop or start looping
Briefing Window	Run MOVIE WIN= to cancel the active movie in the specified briefing window. Make the window active, then press **L** to manually stop or start looping.

Examples

MOVIE
This entry cancels the active movie on the main display.

MOVIE 2 0.5 1 1 3 2 WIN=1
This entry displays loop 2 for one-half minute, loop 1 for one minute, loop 3 for two minutes on briefing window 1, and then repeats the sequence. This movie sequence runs until you run the command MOVIE WIN=1 to cancel it.

MSL

Lists the international master weather station list.

Formats

MSL *station [keywords]*
MSL *[keywords] "matchstring*

Parameters

station	3- or 4-character station ID 5- or 6-digit station ID
"matchstring	alphanumeric string to match; maximum of 20 characters

Keywords

CO=	2-letter country code	
LAT=	*min max*	latitude bounds to search
LON=	*min max*	longitude bounds to search
ST=	2-letter state (Post Office abbreviation) or international regional code	
TYPE=	**RADAR**	lists radar stations
	RAOB	lists RAOB stations
	SURF	lists surface hourly stations
	SYNOP	lists synoptic stations

Remarks

The codes under DATA TYPES in the output from MSL are defined below.

Code	Meaning
A	TAF forecast
B	coastal/SMARS
C	short range terminal forecast
D	radar
F	ASOS/AWOS
I	3-hourly synoptic
L	PLATF forecast
M	6-hourly synoptic

Code	Meaning
N	off-hour synoptic
O	AERO
P	PIBAL
R	RAOB
T	METAR
W	service airways (surface hourly)

The MSL command searches the international master weather station list for station identifications, latitude, longitude, station elevation, type of station and regional areas. Station and runway elevations are given in meters.

See Also

Command CCODE lists the country codes.

Examples

MSL EIDW
This entry lists the location information for Dublin, Ireland.

MSL ST=WI
This entry lists all stations in Wisconsin.

MSL ST=WI TYPE=RADAR
This entry lists all radar stations in Wisconsin.

MSL CO=US "AFB
This entry lists all Air Force bases in the United States.

MSL LAT=-40 -10 LON=-160 -110 TYPE=RAOB
This entry lists all RAOB stations between 40° S and 10° S latitude, and 160° E and 110° E longitude, i.e. the Australian continent.

MSL CO=SP "AIRPORT
This entry lists all airport stations in Spain.

NAVCALC

Calculates satellite subpoints and orbit times.

Formats

NAVCALC *navdataset option [keywords]*
NAVCALC *imgdataset option [keywords]*

Parameters

navdataset name of the ADDE dataset containing the system navigation files for a satellite; specify as *group/descriptor* or *alias*

imgdataset name and position of the ADDE dataset containing the image to use as a navigation source; specify as *group/descriptor.position* or *alias.position*; when specifying an image dataset, you must also use the TYPE=I keyword (*position* default=0)

option

FWD	computes the earth coordinates of a surface point based on image coordinates
HGT	estimates the height of a feature based on earth coordinates and image coordinates
INV	computes the image coordinates of a surface point based on earth coordinates
LOS	computes the time ranges when a polar orbiting satellite is visible (in the line of sight) from a surface point
SP	computes a geostationary satellite subpoint for a specific time; or computes polar orbiting satellite subpoints for a range of times
VIEW	computes the times that a polar orbiting satellite and sensor view a surface point

Keywords

ANTenna=	*angle*	minimum angle, in degrees, above the horizon at which a satellite signal is readable; valid only with the LOS option (default=5)
DAY=	*bday eday*	range of days for calculations; see the Remarks (default=current, or from *imgdataset*)

ELEInc= *inc num* increment between elements and the number of element values for multiple calculations using the FWD option

HEight= height, in kilometers, of the surface point; valid only with the FWD, INV, LOS, and VIEW options (default=0 if the LATLON keyword is used to specify surface point; station height if the STATION keyword is used)

HTol= height tolerance, in kilometers, for HGT option (default=0.5)

LATInc= *inc num* increment between latitudes and the number of latitude values for multiple calculations using the INV option

LATlon= *lat lon* earth coordinates of the surface point; valid only with the HGT, INV, LOS, and VIEW options

LINEle= *lin ele* image coordinates of the surface point; valid only with the FWD and HGT options

LINInc= *inc num* increment between lines and the number of line values for multiple calculations using the FWD option

LONInc= *inc num* increment between longitudes and the number of longitude values for multiple calculations using the INV option

SENsor= *type*

POES options: **AVHRR** (default), **HIRS**, **MSU**

DMSP options: **OLS** (default), **SSM/I**, **SSM/T**, or **SSM/T2**

GOES and GVAR options: **IMAGER** (default) and **SOUNDER**

this keyword is not valid with the SP option

STAtion= station ID of the surface point; valid only with the HGT, INV, LOS, and VIEW options

TIMe= *btime etime inc* time range for calculations and interval between subpoint calculations; see the Remarks (default=0 23:59:59, or from *imgdataset*; *inc* default=*etime* minus *btime*)

TYPE=	**S**	uses the system navigation files specified with *navdataset* (default)
	I	uses the navigation of the image specified with *imgdataset*; overrides the SENSOR keyword

Remarks

Use both the DAY and TIME keywords to specify the time period for navigation calculations. For example, DAY=182 183 TIME=21 3 specifies a range from 21:00 UTC on day 182 through 03:00 UTC on day 183.

Specify *inc* with TIME keyword only when using the SP option with polar orbiting satellites. The SP option does not list day or time ranges for geostationary satellite navigation.

When selecting a portion of an image using the TIME keyword, specified earth or image coordinates must be present in that portion. When selecting a portion of a navigation file, specified or computed image coordinates are redefined based on that portion and not the entire file. For example, if a navigation file starts at 0 UTC but you specify TIME=6, the image coordinates 1,1 refer to the line starting at 6 UTC.

The LOS and VIEW options may not list the same number of entries: a satellite may be visible from the surface point, but not able to view the point.

The FWD option computes the earth coordinates of the northwest corner of a pixel. The INV option computes the image coordinates of a pixel containing the specified earth coordinates. Therefore, a NAVCALC INV command followed by a NAVCALC FWD command may not return the initial earth coordinates.

When working with GVAR system navigation files, navigation may not be from the time specified. NAVCALC requests navigation at the time specified with the TIME keyword. If navigation exists for that time or for earlier on that day, it is used. If not, NAVCALC requests navigation for six hours later, or 23:59:59, whichever is earlier. This request is repeated, advancing by six hours each time, until navigation is found or the end of the day is reached, meaning no navigation exists for that day.

The table below shows the meanings of column labels that appear in NAVCALC output for the FWD, HGT, and INV options.

Column Label	Description
HGT	Height of point of view.
SAT	Zenith angle of the satellite from the point of view.
SOLAR	Zenith angle of the sun from the point of view.

Column Label	Description
RELAZ	Relative azimuth angle between the sun and the satellite, as seen from the point of view. If the sun is behind the satellite, the relative azimuth is zero. If the sun is to the right, the relative azimuth is positive.

Examples

NAVCALC NAV/GOES8 SP DAY=96300
This entry lists the subpoint of the GOES-8 satellite on day 96300.

NAVCALC NAV/NOAA14 SP DAY=96300 96301 TIME=23:45 6 :05
This entry lists the subpoints of the NOAA-14 satellite every five minutes between 23:45 UTC day 96300 and 06:00 UTC day 96301.

NAVCALC NAV/NOAA12 VIEW LATLON=49 100.5
DAY=97001 97005
This entry lists the dates and times between 0:00 UTC on day 97001 and 23:59:59 UTC on day 97005 that the location 49° N, 100.5° W is in the view of the NOAA-12 satellite's AVHRR sensor.

NAVCALC A/A.8016 LOS TYPE=I STATION=KIRK
TIME=18 12 DAY=93216 93219 ANTENNA=3
This entry lists the dates and times between 18 UTC on day 93216 and 12 UTC on day 93219 that the polar orbiting satellite with image data in position 8016 of dataset A/A is visible from an antenna in Kirksville, MO tracking at an angle of three degrees or greater above the horizon.

NAVCALC WALLOPS/N12HRPT.10 INV TYPE=I
LATLON=43:08 89:21 HEIGHT=1
This entry computes the image line and element based on the specified latitude, longitude and height information, and the navigation of the image in position 10 of dataset WALLOPS/N12HRPT.

NAVCALC WALLOPS/N12HRPT.10 FWD TYPE=I
LINELE=1223 1758 HEIGHT=1
This entry computes the latitude and longitude based on the specified line, element and height information, and the navigation of the image in position 10 of dataset WALLOPS/N12HRPT.

NAVCALC EAST/CONUSV.-2 HGT LINELE=3916 13436
LATLON=43:07:18 89:20:42 TYPE=I
This entry estimates the height of a feature based on its line, element, latitude and longitude information, and the navigation of the image in relative position -2 of dataset EAST/CONUSV.

NAVDISP

Displays polar orbital tracks and coverage.

Format

NAVDISP *navdataset frame [keywords]*
NAVDISP *imgdataset frame [keywords]*

Parameters

navdataset name of the ADDE dataset containing the system navigation files for a satellite; specify as *group/descriptor* or *alias*

imgdataset name and position of the ADDE dataset containing the image to use as a navigation source; specify as *group/descriptor.position* or *alias.position*; when specifying an image dataset, you must also use the TYPE=I keyword (*position* default=0)

frame frame number for display (default=current)

Keywords

AColor= *c1 . . cn* graphics color level of the range circle for each antenna site specified with the STATION and LATLON keywords; use positive numbers for solid lines and negative numbers for dashed lines; see the Remarks (default=-4)

ALabel= *'name1' . . 'namen'*
label for each antenna site specified with the STATION and LATLON keywords; see the Remarks (defaults=A, B, etc. for locations specified with LATLON; station names or IDs for locations specified with STATION)

CColor= graphics color level of the lines displaying the geographical coverage of the satellite sensor or the boundaries of the image specified in *imgdataset*; use positive numbers for solid lines and negative numbers for dashed lines; see the Remarks (default=0, do not plot coverage)

DAY= *bday eday* range of days for display; see the Remarks (default=current, or from *imgdataset*)

HEight= *hgt1 . . hgtn* height, in kilometers, of each antenna site specified with the LATLON keyword; see the Remarks (default=0)

HORizon=	*ang1 . . angn*	minimum angle above the horizon at which a satellite signal is readable for each antenna site specified with the STATION and LATLON keyword; see the Remarks (default=5)
INT=	interval, in seconds, between the time marks on the orbital track (default=computed)	
LABel=	*'text' loc col*	display label, location, and color
	'text'	label or description of the display (default=from *navdataset* or *imgdataset*)
	loc	location for the label at the bottom of the frame; specify a number 1 through 5; see the Remarks (default=1)
	col	graphics color level for the label (default=from the CCOLOR keyword if used; otherwise from the TRCOLOR keyword)
LATlon=	*lat1 lon1 . . latn lonn* antenna locations; see the Remarks	
NAV=	*num*	frame to use for navigating the output (default=display *frame*)
	C	use the current frame's navigation
SENsor=	*type*	
	POES options:	**AVHRR** (default), **HIRS**, **MSU**
	DMSP options:	**OLS** (default), **SSM/I**, **SSM/T**, or **SSM/T2**
STAtion=	*sta1 . . stan*	antenna locations; see the Remarks
TIMe=	*btime etime*	time range to plot; see the Remarks (default=0 23:59:59, or from *imgdataset*)
TMColor=	graphics color level of the time marks on the orbital track (default=3)	
TRColor=	graphics color level of the orbital track; use positive numbers for solid lines and negative numbers for dashed lines (default=2)	

TYPE=	**S**	uses the system navigation files specified with *navdataset* (default)
	I	uses the navigation of the image specified with *imgdataset*; overrides the SENSOR keyword

Remarks

NAVDISP displays orbital tracks, coverage edges, and antenna range circles on a navigated frame. Because there are no map drawing keywords, you must display an image or map on the frame before using NAVDISP.

Use the STATION and LATLON keywords to specify antenna locations. Colors, labels, and effective horizons specified with the ACOLOR, ALABEL, and HORIZON keywords are applied to antenna locations in the order entered, beginning with those specified with the STATION keyword.

The HEIGHT keyword is not valid with the STATION keyword. Use it with the LATLON keyword to specify the height of an antenna location. The STATION keyword uses the height defined in the IDMSL station list table.

Use both the DAY and TIME keywords to specify the time period for plotting orbital tracks and coverage. For example, DAY=182 183 TIME=21 3 specifies a range from 21:00 UTC on day 182 through 03:00 UTC on day 183.

If you use the CCOLOR keyword and TYPE=I without the DAY or TIME keyword, the displayed geographical coverage is limited to the image specified in *imgdataset*. Otherwise, the entire geographical coverage of the sensor is displayed.

Labels are displayed at the bottom left corner of the frame. A default label is constructed using information from the system navigation file or the image used for navigation. The label includes the dataset name, the satellite, sensor, and day or range of days displayed. Use the LABEL keyword and the '*text*' parameter if you want to choose a different label.

Use the *loc* parameter with the LABEL keyword to place additional labels on different lines at the bottom of the frame. Location 1 is the top line; additional labels are below. The maximum number of lines depends on the frame size: five for a 480 by 640 frame.

See Also

Use the PACORB command to display orbital tracks and coverage for the Pacific Test Range. Use the USAORB command to display orbital tracks and coverage for North America.

Examples

MAP WORL
NAVDISP NAV/NOAA14 DAY=96300
These entries draw the NOAA-14 satellite orbital tracks for day 96300 over a map of the world.

MAP MID
NAVDISP A/A.8016 TYPE=I
These entries draw the orbital track for the polar orbiting satellite with image data in position 8016 of dataset A/A. The track is displayed over a map of the Midwest.

MAP DEF LAT=-40 -40 LON=-90 90 SLAT=-40 PRO=CONF
NAVDISP NAV/NOAA12 TMCOLOR=5 DAY=96300 TIME=12 18 LATLON=-77:51 -166:40 HORIZON=10 ALABEL='McMurdo' INT=300
These entries draw the NOAA-12 satellite orbital tracks between 12:00 UTC and 18:00 UTC on day 96300 over a map of Antarctica. A range circle is drawn for an antenna located at 77:51° S, 166:40° E. The antenna tracks at an angle of 10 degrees or greater above the horizon. The label *McMurdo* is plotted in the center of the range circle.

MAP NA
NAVDISP WALLOPS/N14GAC TYPE=I STATION=KTTS KE28 KEDW
These entries draw the orbital track for the polar orbiting satellite with data in the most recent image in the WALLOPS/N14GAC dataset. Antenna circles are drawn for the NASA Shuttle Landing Facility, Kennedy Space Center, FL; Northrup Landing Strip, White Sands Space Harbor, NM; and Edwards Air Force Base, CA.

NAVLIST

Lists system navigation entries.

Format

NAVLIST *dataset [keywords]*

Parameter

dataset	name of the ADDE dataset containing the system navigation files for a satellite; specify as *group/descriptor* or *alias*

Keywords

DAY=	*bday eday*	lists system navigation entries for a range of days (*bday* default=current; *eday* default=*bday*)
	ALL	lists all system navigation entries for the satellite or specified sensor source numbers
SENsor=	*type*	lists system navigation entries for the specified sensor; ignored if the SS keyword is used (default=first sensor listed for the satellite in the **CORE.SAT** file)
SS=	*bss ess*	lists system navigation entries for a range of sensor source numbers (*bss* default=number of satellite; *ess* default=*bss*)
	ALL	lists system navigation entries for all sensor sources with the day range specified in the DAY keyword

Remarks

Run the command SEE CORE.SAT to list the valid sensor source numbers and sensor types.

Examples

NAVLIST NAV/NOAA12
This entry lists today's navigation entries for the NOAA-12 satellite in the dataset NAV/NOAA12.

NAVLIST NAV/NOAA12 DAY=97070 97080 SS=62 64
This entry lists the navigation entries for sensor source numbers 62, 63 and 64 from days 97070 through 97080 in the dataset NAV/NOAA12.

NAVLIST NAV/GOES9 DAY=97080 97090 SENSOR=SOUNDER
This entry lists the navigation entries for the GOES-9 sounder from days 97080 through 97090 in the dataset NAV/GOES9.

O

Switches the image frame position to the opposite frame.

Remarks

To switch to the opposite image frame,

Press: **Alt O**

or

Type: **O**

Press: **Enter**

Since graphics frames have no opposites, their frame numbers do not change.

See Also

Use command LS to assign opposite frame numbers.

OBSRPT

Lists the observational text reports.

Format

OBSRPT *dataset [keywords]*

Parameter

dataset	ADDE dataset name; specify as *group/descriptor* or *alias*; the dataset must reside on a workstation running McIDAS-XCD

Keywords

CO=	*co1 . . con*	lists observations for all stations in these countries; use the CCODE command to list valid country codes
FORm=	*tab bcol ecol*	changes the output format (default=raw observation text if FORM is not specified, defaults below if FORM is specified)
	tab	number of spaces to indent the second and subsequent lines of an observation (default=0)
	bcol	beginning column number of the text frame to list observations (default=1)
	ecol	ending column number of the text frame to list observations (default=80)
ID=	*id1 . . idn*	lists observations from stations with these IDs; see the Remarks
NEWest=	*day hour*	most recent day and hour to list; you must specify both *day* and *hour*

NHOurs=		number of hours of data to search; you must also specify the NEWEST keyword; you cannot specify both NHOURS and NPERIOD
NPEriod=		number of time periods to search; you cannot use NPERIOD with NHOURS or NUM; see the Remarks (default=1)
NUM=		number of observations per station to list; you cannot specify both NUM and NPERIOD
OLDest=	*day hour*	oldest day and hour to list; you must specify both *day* and *hour*
REG=	*reg1 . . regn*	list observations from these states; use two-letter P.O. abbreviations
TYPe=	*type1 . . typen*	subtypes of observations to list; must be an integer; valid entries vary with report types; see the Remarks (default=all types)

Remarks

OBSRPT lists station-based observational text data. Other commands are easier to use with specific data types. For example, use SFCRPT to list surface hourly reports; use SYNRPT to list synoptic reports; use RAOBRPT to list upper air reports; and use TAFRPT to list terminal aerodrome forecasts.

You must specify at least one of the following keywords: ID, REG, or CO. If you specify the ID keyword, you must use the station ID format consistent with the type of observational report being listed. When listing RAOB or synoptic data, you must use the 5-digit station ID format, for example, 72645. When listing surface hourly and TAF data, you must use the 4-character station ID format, for example, KGRB.

Use the NPERIOD keyword to specify how many reporting periods, as opposed to the number of hours, to search for each station. For surface hourly reports and terminal forecasts, the reporting interval is one hour. For synoptic and RAOB data, the interval may be three, six, or twelve hours.

Use the TYPE keyword to specify subtypes of data in a single observational report. McIDAS-XCD decoders assign unique integer values to the various types of data. The table below lists the valid integer entries for the **TYPE** keyword.

TYPE= ***type***	**Surface Hourly Reports**	**Upper Air Reports**	**Terminal Forecasts**	**Synoptic Reports**
0	Hourly	TTAA - mandatory temperature and wind data	—	All reports
1	Special	TTBB - significant level temperature data between the surface and 100 mb	Long term forecast	—
2	—	TTDD - significant level temperature data above 100 mb	Short term forecast	—
3	—	PPBB - significant level wind data between the surface and 100 mb	—	—
4	—	PPAA - significant level wind data above 100 mb	—	—

Examples

OBSRPT RTWXTEXT/SYNOPTIC ID=72450
This entry lists the latest synoptic report for Wichita, Kansas.

OBSRPT RTWXTEXT/SFCHOURLY CO=AU REG=WI RI ID=KLAX
This entry lists all surface hourly reports for Los Angeles and all stations in Australia, Wisconsin, and Rhode Island from the past hour.

OBSRPT RTWXTEXT/UPPERAIR ID=72201 REG=TX TYPE=0 1
This entry lists the most recent TTAA and TTBB RAOB reports for Key West, Florida, and all stations in Texas.

OBSRPT RTWXTEXT/SYNOPTIC ID=03772 72641 FORM=6 1 60 NEWEST=#Y 12 NPERIOD=2
This entry lists the last two periods of synoptic reports ending at 12:00 UTC of the current day for London, England, and Madison, Wisconsin. The first line of each report starts at column 1 and all subsequent lines start at column 6; all lines end at or before column 60. Because the interval between synoptic reports is three hours, this command lists reports from 9:00 UTC and 12:00 UTC.

OBSRPT RTWXTEXT/TERMFCST REG=DE OLDEST=1996285 10 NUM=7

This entry lists up to seven terminal aerodrome forecasts for all stations in Delaware with the oldest report no older than 10:00 UTC on day 1996285.

OBSRPT RTWXTEXT/SFCHOURLY ID=KMTW KABQ KSEA NEWEST=96300 18 NUM=5

This entry lists five reports each for Manitowoc, Wisconsin; Albuquerque, New Mexico; and Seattle, Washington, for a total of 15 reports. The most recent report is from 18:00 UTC on day 1996300.

OBSRPT RTWXTEXT/UPPERAIR REG=NV NEWEST=1996288 20 NHOURS=10 TYPE=0 NUM=5

This entry lists up to five TTAA RAOB reports for all stations in Nevada from the ten hours prior to 20:00 UTC on day 1996288.

OS

Runs an operating system command.

Format

OS *"command*

Parameter

"command operating system command to run

Remarks

The OS command lets you run an operating system command from the McIDAS Text and Command Window. You can run a Unix command if you're using McIDAS-X or an OS/2 command if you're using McIDAS-OS2.

The command should include the correct path, if needed. Do not run a command that expects user input while running, for example, Telnet.

See Also

In McIDAS-X, you can use the ! (Exclamation Point) (McIDAS-X only) command to send a command to run a Unix command.

McIDAS-X Examples

OS "ls -l /data/AREA*
This entry runs the Unix `ls` command to list all file names beginning with AREA in the `/data` directory.

OS "echo $MCPATH
This command runs the Unix `echo` command to list the current setting of the `MCPATH` environment variable.

McIDAS-OS2 Examples

OS "COPY A:STUFF.DAT C:\MCIDAS\DATA
This entry copies the file `STUFF.DAT` from the A drive to the `\mcidas\data` subdirectory.

P (McIDAS-OS2 only)

Locks and unlocks the cursor in its present position.

Remarks

The P command engages and disengages mouse control of the cursor position.

Press: **Alt P**

or

Type: **P**

Press: **Enter**

Some commands, like PC, move the cursor and lock its position. When the cursor is locked, the letter P appears on the status line.

PACORB

Displays polar orbital tracks and coverage for the Pacific Test Range.

Format

PACORB *navdataset frame [keywords]*
PACORB *imgdataset frame [keywords]*

Parameters

navdataset — name of the ADDE dataset containing the system navigation files for a satellite; specify as *group/descriptor* or *alias*

imgdataset — name and position of the ADDE dataset containing the image to use as a navigation source; specify as *group/descriptor.position* or *alias.position*; when specifying an image dataset, you must also use the TYPE=I keyword (*position* default=0)

frame — frame number for display (default=current)

Keywords

CColor= graphics color level of the lines displaying the geographical coverage of the satellite sensor or the boundaries of the image specified in *imgdataset*; use positive numbers for solid lines and negative numbers for dashed lines; see the Remarks (default=0, do not plot coverage)

DAY= *bday eday* range of days for display; see the Remarks (default=current, or from *imgdataset*)

HORizon= *kwj vbg*
minimum angle, in degrees, above the horizon at which a satellite signal is readable

- *kwj* angle at Kwajalein atoll (default=5)
- *vbg* angle at Vandenberg AFB (default=5)

INT= interval, in seconds, between the time marks on the orbital track (default=computed)

LABel=	*'text' loc col*	display label, location, and color
	'text'	label or description of the display (default=from *navdataset* or *imgdataset*)
	loc	location for the label at the bottom of the frame; specify a number 1 through 5; see the Remarks (default=1)
	col	graphics color level for the label (default=from the CCOLOR keyword if used; otherwise from the TRCOLOR keyword)
NAV=	**C**	use existing frame navigation; use this keyword to overlay additional orbital tracks on the same frame (default=erase frame and redraw map)
SENsor=	*type*	
	POES options:	**AVHRR** (default), **HIRS**, **MSU**
	DMSP options:	**OLS** (default), **SSM/I**, **SSM/T**, or **SSM/T2**
TIME=	*btime etime*	time range to plot; see the Remarks (default=0 23:59:59, or from *imgdataset*)
TMColor=	graphics color level of the time marks on the orbital track (default=3)	
TRColor=	graphics color level of the orbital track; use positive numbers for solid lines and negative numbers for dashed lines (default=2)	
TYPE=	**S**	uses the system navigation files specified with *navdataset* (default)
	I	uses the navigation of the image specified with *imgdataset*; overrides the SENSOR keyword

Remarks

Use both the DAY and TIME keywords to specify the time period for plotting orbital tracks and coverage. For example, DAY=182 183 TIME=21 3 specifies a range from 21:00 UTC on day 182 through 03:00 UTC on day 183.

If you use the CCOLOR keyword and TYPE=I without the DAY or TIME keyword, the displayed geographical coverage is limited to the image specified in *imgdataset*. Otherwise, the entire geographical coverage of the sensor is displayed.

Labels are displayed at the bottom left corner of the frame. A default label is constructed using information from the system navigation file or the image used for navigation. The label includes the dataset name, the satellite, sensor, and day or range of days displayed. Use the LABEL keyword and the *'text'* parameter if you want to choose a different label.

Specify NAV=C to overlay additional orbital tracks on the same frame. Use the *loc* parameter with the LABEL keyword to place additional labels on different lines at the bottom of the frame. Location 1 is the top line; additional labels are below. The maximum number of lines depends on the frame size: five for a 480 by 640 frame.

See Also

Use the USAORB command to display orbital tracks and coverage for North America. Use the NAVDISP command to display orbital tracks and coverage for a user-defined map.

Examples

PACORB NAV/NOAA14 DAY=96300
PACORB NAV/NOAA12 DAY=96300 NAV=C TRCOLOR=7 LABEL=X 2

The first entry draws the NOAA-14 satellite orbital tracks for day 96300 over a map of the Pacific Test Range. The second entry draws the NOAA-12 satellite orbital tracks on the same frame without erasing the NOAA-14 tracks. The NOAA-12 tracks are drawn in graphics color level 7. The label, is positioned on the text line below the first entry's label.

PACORB POESNAV/NOAA14 TIME=13:00 15:00 SENSOR=MSU CCOLOR=-7

This entry draws the NOAA-14 satellite orbital tracks from the current day between 13 and 15 UTC and displays the geographical coverage of the MSU sensor in dashed color level 7. The track data is drawn over a map of the Pacific Test Range.

PACORB VANDENBERG/N12GAC TYPE=I

This entry draws the orbital track for the polar orbiting satellite with data in most recent image in the dataset VANDENBERG/N12GAC over a map of the Pacific Test Range.

PACORB VANDENBERG/N12HRPT TYPE=I CCOLOR=10
This entry draws the orbital track and the AVHRR geographic coverage for the satellite with data in the most recent image in the dataset VANDENBERG/N12HRPT over a map of the Pacific Test Range. The geographic coverage is drawn in color level 10.

PACORB VANDENBERG/N12HRPT TYPE=I DAY=97097
This entry draws the orbital tracks for the satellite with data in the most recent image in the VANDENBERG/N12HRPT dataset. The tracks for the entire day 97097 are plotted.

PACORB KWAJ/N14GAC TYPE=I NAV=C LABEL='ORBITAL TRACK FOR NOAA-14 #Y' INT=300
This entry draws the orbital track for the satellite with data in the most recent image in the KWAJ/N14GAC dataset using the current frame's navigation. A custom label is displayed, and the time marks are drawn every five minutes along the orbital track.

PANEL

Configures frames with multiple panels.

Format

PANEL *nrow ncol bframe eframe*

Parameters

nrow	number of rows of panels (default=1)
ncol	number of columns of panels (default=*nrow*)
bframe	beginning frame to configure (default=current frame)
eframe	ending frame to configure (default=*bframe*)

Remarks

When you run PANEL, all images and graphics in the frame are erased and the frame is configured with the panel setup specified with the *nrow* and *ncol* parameters. The frame's panel configuration remains until another PANEL command is run to reconfigure the frame.

PANEL 1 1 configures a frame so that a single panel occupies the entire frame. Specify numbers greater than 1 for *nrow* or *ncol* to create multiple panels. You cannot make panels of different sizes on the same frame; all panels on the frame are the same size. If the frame has multiple panels, they are numbered from left to right and from top to bottom. For example, PANEL 2 2 configures a frame with panel 1 in the upper-left quadrant, panel 2 in the upper-right quadrant, panel 3 in the lower-left quadrant, and panel 4 in the lower-right quadrant.

By default, output from image and graphic commands is written to the panel where the cursor is located. Use the global keyword PANEL with commands to override the default and display the output in a different panel.

On multipanel frames, commands that use the cursor interactively may produce unexpected results if you move the cursor to a different panel while the command is running. Leave the cursor in the same panel until the command is finished.

The maximum number of panels for a frame depends on the frame's size. The panel size must be at least 32 lines by 32 elements.

Examples

PANEL
This entry configures the current frame with a single panel that consists of the entire frame. All images or graphics in the frame are erased.

PANEL 2 2
This entry configures the current frame with two rows of panels, and two panels in each row. Panels 1 and 2 are in the top row; panels 3 and 4 are in the bottom row. All images and graphics in the frame are erased.

PANEL 2 3 1 10
This entry configures frames 1 through 10 with two rows of panels, and three panels in each row. Panels 1, 2, and 3 are in the top row; panels 4, 5, and 6 are in the bottom row. All images and graphics in the frames are erased.

PC

Positions the cursor at a desired point on the frame.

Formats

PC C
PC L *station*
PC E *lat lon*
PC I *line ele*
PC T *raster pictel*

Parameters

C	positions the cursor at the center of the frame
L	positions the cursor at the station ID or synoptic ID location
E	positions the cursor at the latitude and longitude earth coordinates
I	positions the cursor at the line and element image coordinates
T	positions the cursor at the raster and pictel TV coordinates
station	3- or 4-character station ID 5- or 6-digit station ID
lat	latitude of the location
lon	longitude of the location
line	image or graphics line of the location
ele	image or graphics element of the location
raster	TV raster (line) of the location
pictel	TV pictel (element) of the location

Remarks

In McIDAS-OS2, when you run command PC, it disconnects the mouse from the cursor control. Use command P to regain cursor control.

Examples

PC E 36 -98
This entry positions the cursor at 36° North and 98° East.

PC I 3300 1200
This entry positions the cursor at image coordinate line 3300 and element 1200.

PC L KMSN
This entry positions the cursor over station KMSN (Madison, Wisconsin).

PC L 72250
This entry positions the cursor over station 72250 (Brownsville, Texas).

PC T 100 356
This entry positions the cursor at TV raster 100, pictel 356.

PCMW

Computes a velocity vector.

Format

PCMW *[keywords]*

Keywords

Color=	graphics color level of the plotted wind flags (default=3)	
GLOck=	**YES**	locks the current graphics frame
	NO	does not lock the frame (default)
Size=	relative size of the plotted wind flags (default=12)	

Remarks

PCMW calculates velocity vectors by making point-to-point measurements as opposed to correlation tracking. Use the LB or LS command to properly set the loop bounds before running the PCMW command. The maximum number of frames in the loop is 10. Use keyword GLOCK to lock the current graphics frame for PCMW output.

The cursor expands and the color changes as a visual queue indicating that half of a vector measurement was made.

Units of u, v and SPD are in meters per second on the text frame and knots on the graphics frame.

On McIDAS-OS2, wait for the cursor to flash a second time before using the mouse to continue advancing frames or taking measurements.

Examples

PCMW
This entry computes velocity vectors using the cursor center for locations.

PCMW COLOR=2
This entry starts the local mode of PCMW and plots wind flags in graphics color level 2.

PCMW COLOR=1 GLOCK=YES SIZE=15
This entry plots 15-pixel wind flags in graphics color level 1. All wind flags are plotted on the current graphics frame.

PLAX

Calculates parallax at cursor position.

Format

PLAX *height direction [keywords]*

Parameters

height cloud height in kilometers

direction direction for computed parallax; specify one of the following:

CG cloud-to-ground parallax (default)

GC ground-to-cloud parallax

Keywords

LATlon= *lat lon* moves the cursor to the specified latitude and longitude and calculates parallax (default=current cursor position)

STAtion= moves the cursor to the specified station and calculates parallax; use station ID, for example, **KMSN**, **YSSY**, **72201** (default=current cursor position)

Remarks

If you don't specify *height* or *direction*, PLAX calculates the change in parallax at the cursor location as height increases. The information is listed as the change in latitude and longitude per kilometer of height.

If you specify *height*, and CG for *direction*, you define a point in the clouds at the specified height. PLAX calculates and plots the ground location under the given cloud point. The ground location is shown as a 7x7-pixel cross in graphics color level 3. The text output lists the latitude and longitude for the cursor point on the cloud and for the calculated ground point.

If you specify *height*, and GC for *direction*, you define a point on the ground. PLAX calculates and plots the cloud location at the specified height over the given ground point. The cloud location is shown as a 7x7-pixel cross in graphics color level 3. The text output lists the latitude and longitude for the cursor point on the ground and for the calculated cloud point.

PLAX does not work with most polar-orbiting satellite data because the navigation does not include the information needed by PLAX to do its computations.

Examples

PLAX
This entry lists the change in parallax at the cursor location as height increases. The information is given as the change in latitude and longitude per kilometer of height.

PLAX 10 LATLON=45 120
This entry moves the cursor to 45°N, 120°W and calculates the cloud-to-ground parallax at 10 kilometers above the earth. The command also plots the ground point that corresponds with the specified cloud point.

PRDUTIL

Calibration utility for 1-byte PRD image files.

Format

PRDUTIL ADD *file num type prodlo prodhi britlo brithi unit scale miss*
PRDUTIL DEL *file num type*
PRDUTIL LIST *file*

Parameters:

ADD	adds or changes a calibration block segment
DEL	deletes a calibration block segment by number and type
LIST	lists calibration block segments
file	ADDE image dataset name or area number; the dataset or area must be local (i.e., it cannot be on a remote server) and the dataset must be specified as *group/descriptor.position* or *alias.position*
num	calibration block segment number (1-12) to add, change or delete
type	1- to 4-character name of the product defined by the segment, e.g., P, RH, TEMP (default=PROD)
prodlo	minimum output product value (default=0)
prodhi	maximum output product value (default=255)
britlo	input brightness value assigned to *prodlo* (default=0)
brithi	input brightness value assigned to *prodhi* (default=255)
unit	1-4 characters name of units for the product value defined by the segment, e.g., F, MB, %
scale	divisor to apply to the product values when they are accessed by another application, e.g., D or IMGPROBE; thus output_value=product_value/scale (default=0, meaning no scaling)
miss	missing value code to assign to the product when a brightness value is outside the range defined with *britlo* and *brithi*; use decimal value -2139062144 for HEX80 (default=0)

Remarks:

Use PRDUTIL to list, add, and delete calibration block segments for a 1-byte PRD image (e.g., an image created with GRDIMG, IMGFILT or IMGOPER commands). Up to 12 segments can be defined using PRDUTIL. Multiple segments can be used to define a single product (*type*). For example, segments 2 through 6 can define the product values, corresponding brightness values, product units, scale factors and missing value codes for a product named RH while segment 7 can define the settings for a product named MIX.

Examples:

PRDUTIL LIST LOCAL/AREA.4205
This entry lists the calibration block segments for the image in position 4205 in the dataset LOCAL/AREA.

PRDUTIL DEL LOCAL/AREA.2 1 RH
This entry deletes calibration block segment number 1 from the image in position 2 in the dataset LOCAL/AREA. The segment type must be RH; otherwise, the segment is not deleted.

PRDUTIL ADD 4205 6 RH 0 100 0 255 %
This entry adds or changes (if previously defined) calibration segment number 6 for area number 4205. The product value is named RH with units %, and has a range of 0 through 100 that maps to image brightness values 0 through 255.

PRDUTIL ADD LOCAL/RAIN.20 1 PCP 0 200 194 255 IN 100
This entry adds or changes (if previously defined) calibration segment number 1 for the image in position 20 in the dataset LOCAL/RAIN. The product value is named PCP with units IN, and has a range of 0 through 200 that maps to image brightness values 194 through 255. The scale value of 100 means that the product values will be divided by 100 when accessed by another application, such as IMGPROBE.

PROMPT (McIDAS-OS2 only)

Displays command text for editing and then runs the command.

Format

PROMPT "*command*

Parameter

"*command* command text to edit and run; the double quote is mandatory

Remarks

Use normal command line keyboard characters for editing. The PROMPT command is commonly used in string tables.

Examples

TE A "PROMPT "SFCLIST KSTL TIME=
This entry places PROMPT "SFLIST KSTL TIME= in the string table named A. If you run the command #A, the text *SFLIST KSTL TIME=* appears in the command line so you can edit and run it.

PSB (McIDAS-OS2 only)

Displays a PLEASE STAND BY message on the text frame.

Format

PSB *frame*

Parameter

frame text frame number to display the message; the range is 5 to 9 (default=8)

Remarks

Command PSB is useful when the system invokes a McIDAS command that takes a long time to run and does not give any apparent feedback.

Examples

PSB
This entry displays a PLEASE STAND BY message on text frame 8.

PSB 5
This entry displays a PLEASE STAND BY message on text frame 5.

PTCON

Converts point data to grids; displays contours and plots.

Format

PTCON *dataset1 . . datasetn [keywords]*

Parameters

dataset1 . . n ADDE dataset names and positions; specify one of the following formats for each dataset:

group/descriptor.position
alias.position

a *position* greater than zero represents an absolute position in the dataset; a *position* less than or equal to zero represents a relative position in the dataset based on date and time, for example, 0 is the most recent and -1 is the next most recent; the *position* **ALL** represents all positions in the dataset (no default for *group/descriptor* or *alias*; *position* default=**ALL** if DAY is specified with the SELECT keyword, otherwise default=0)

Keywords

OUT=	**CON**	contours the gridded data (default)
	PLOT	plots grid points
	SAVE *ddataset*	saves the created grid to a destination dataset
	SCON *ddataset*	contours the gridded data and saves the created grid to a destination dataset
	SPLOT *ddataset*	plots grid points and saves the created grid to a destination dataset; see the Remarks

PARam= *param*[*units*] parameter from point data to contour or plot and the associated output units; *units* are optional but must be in square brackets if specified; the parameter's values must be stored as numbers, not characters (no default for *param*; *units* default=from *dataset*)

MOVIE draws streamlines with colored line segments that can be animated using the CM command

STREAML draws streamlines using u- and v-component grids

WINDB plots wind barbs using u- and v-component grids

WINDV plots wind vectors using u- and v-component grids

SELect= '*clause1* ; *clause2* ; . . ; *clausen*'
finds only the data matching the values in the select clauses; single quotes are mandatory; separate select clauses with semicolons; specify *clause* as a range or a list using one of the following formats:

range:	*parameter*[*unit*] *bval eval*
list:	*parameter*[*unit*] *val1,val2, . . ,valn*

parameter point file parameter

[*unit*] units for the parameter values; units are optional but must be in square brackets if specified; see the Remarks (default=from *dataset*)

bval eval range of parameter values; see the Remarks

val1, . . ,valn list of parameter values

Navigation Keywords

LAT= *lat1 lat2* latitudes of the points at the lower-right and upper-left corners of the map; you cannot use LAT with the NAV or MAP keyword

LON= *lon1 lon2* longitudes of the points at the lower-right and upper-left corners of the map; you cannot use LON with the NAV or MAP keyword

MAP= map for the contour or plot; see the MAP command for a list of valid predefined maps, for example, MID, USA, WORL; you cannot use MAP with the NAV, LAT or LON keyword

MCOlor= graphics color level of the map (default=1)

NAV= *num* frame to use for navigation

C use the current frame's navigation

the plot is drawn using the navigation of the specified frame; no map is drawn; you cannot use NAV with the MAP, LAT or LON keyword

PRO= **CONF** polar stereographic or Lambert conformal projection

MERC Mercator projection (default)

SLAt= *lat1 lat2* standard latitudes for a CONF projection; two values for a general Lambert conformal projection; one value for a polar stereographic projection (default=60 60 for northern hemisphere maps defined with the LAT and LON, or MAP keywords; -60 -60 for southern hemisphere maps defined with the LAT and LON, or MAP keywords)

SLOn= standard longitude for a CONF projection (default=computed)

Contour and Plot Keywords

COLor= graphics color level (default=2 for contour, 3 for plot)

ELE= *bele eele* beginning and ending frame elements for output; specify **MAX** for maximum element number (default=1 MAX when using the NAV keyword; default=20 MAX-20 when using the MAP keyword)

FORMAT= *designator 'text'*
output format for the grid point values or contour labels, and associated text; valid formats are **I**, **F**, or **E**; see the Remarks (*designator* default=from *dataset*; no *text* default)

GRA= graphics frame for the display (default=current)

LABel= *'text' col line ele size*
text, color, location and size for the contour or plot title

- *'text'* 72 characters maximum; specify **X** without quotes for the default title (default=computed)
- *col* graphics color level of the title (default=1 if PARAM=MOVIE, otherwise default=value from the COLOR keyword)
- *line* beginning TV line to write the title (default=below contour or plot)
- *ele* beginning TV element to write the title (default=below contour or plot)
- *size* height of the title text in pixels (default=8)

LINE= *blin elin* beginning and ending frame lines for output; specify **MAX** for maximum line number (default=1 MAX-57 when using the NAV keyword; default=20 MAX-57 when using the MAP keyword)

LSIze= height of the plot characters or contour labels, in pixels; specify zero for no contour labels (default=8)

POWer= power of 10 to multiply the grid point values by for display (default=0)

TDAy=
- **CAL** display calendar day on the default title; not valid if the ELE, LINE or PAN keyword is used
- **JUL** display the Julian day on the default title (default)

Contour-Specific Keywords

CINt=
- *num* contour interval; specify 0 to let PTCON compute a reasonable interval; specify your own interval as an integer or decimal value greater than zero
- *string* contour values; specify a string name that contains up to 64 values see the Remarks for the default value

DASh=
- **ALL** dash all contours
- **NEG** dash negative contours only
- **POS** dash positive contours only (default=solid contours)

LINT= contour label interval (default=1, meaning label every contour)

MOVie= *bcol ecol bspd espd blen elen*
change the defaults for the PARAM=MOVIE output

- *bcol* beginning graphics color level for line segments (default=2)
- *ecol* ending graphics color level for line segments (default=maximum color level)
- *bspd* beginning wind speed represented by *blen*, units are from the created grid (default=computed)
- *espd* ending wind speed represented by *elen*, units are from the created grid (default=computed)
- *blen* beginning length of line segments (default=2)
- *elen* ending length of line segments (default=40)

SMOoth= contour smoothing factor; the range is 0 through 50; not valid with PARAM=MOVIE or PARAM=STREAML; larger numbers produce smoother contours (default=20)

Plot-Specific Keyword

PINt= *row col* row and column intervals of grid points to plot with OUT=PLOT, PARAM=WINDB or PARAM=WINDV; for example, PINT=4 3 plots every fourth grid point in the row direction and every third grid point in the column direction (*row* default=1; *col* default=*row*)

Grid Conversion Keywords

BPAr= smoothing factor for the conversion of point data to grids; a larger number results in a data point influencing a greater number of grid points, and the generation of a smoother grid; BPAR is related to the Barnes parameter used in the grid analysis; the suggested range is 5 to 500 (default=40)

DISt= distance in grid points to extrapolate into areas without data (default=10)

LLInc= *latinc loninc* increment between grid points in the latitudinal and longitudinal directions (*latinc* default=1°, *loninc* default=*latinc*)

Grid Output Keywords

DEL=	**YES**	delete the destination grid file before copying
	NO	do not delete the destination grid file (default)
DGRid=		beginning grid number in the destination grid file to place the copied grids; this keyword may overwrite existing grids; see the Remarks (default=append after the last grid in the grid file)
GLEV=	*level unit*	grid level to use in the grid header and on the display (default=value entered for LEV, THA, or P in the SELECT keyword *clause*; otherwise, no default)
MAXgrd=		maximum number of grids the newly created destination grid file can store; see the Remarks (default=1000)
TITLE=	*'text'*	title of the newly created destination grid file; 32 characters maximum

Text Output Keyword

BYTecount=	**YES**	lists the number of bytes received from the server
	NO	does not list the number of bytes (default)

Remarks

PTCON gathers data from one or more point files in one or more datasets. The SELECT keyword defines which records to match and the PARAM keyword defines which parameters in the matching records to use. The selected point data is used to produce grid data.

The grid data may be saved, displayed, or both. The grid is saved in a mercator projection with the native units or in the units specified with the PARAM keyword.

You must specify a parameter using the PARAM keyword, and a type of navigation using the NAV, MAP, or LAT and LON keywords. If the point file contains multiple times and/or days, you should also specify the TIME and/or DAY parameter in a SELECT keyword clause. Otherwise, all times and/or days will be used.

To file the correct day information in the output grid header, you must specify the DAY parameter in a SELECT keyword *clause*. If you don't specify a day, the value stored in the grid header is zero.

If you specify MOVIE, STREAML, WINDB, or WINDV with the PARAM keyword, grids of both the u- and v-component of the wind are saved or contoured.

The default contour interval for a grid is taken from the text file **CONTOUR.DEF**. If no file entry matches the grid's parameter, units and level, the default is calculated to produce a reasonable number of contours, usually between 10 and 20. To change, add or delete entries in **CONTOUR.DEF**, first back up the current version, then modify it using the format described near the top of the file.

If you specify DEL=YES or a position number of a nonexistent grid file in the *ddataset* parameter, the grids are copied into a newly created grid file with the attributes specified in keywords MAXGRD and TITLE.

Using the DGRID keyword may result in grids being overwritten in the destination grid file. For example, if the destination grid file has 50 grids (in grids 1 to 50) and you specify NUM=10 DGRID=25, the new grids will overwrite grids 25 to 34 in the destination grid file.

Use the FORMAT keyword options below to format output of the grid point values or contour labels based on FORTRAN designators for data output. To add text to the labels, follow the designator with a text in single quotes.

Designator	Description
I	integer
F	floating point
E	exponential

To specify a parameter's output format, use a designator followed by a number. For example, I4 specifies an integer of up to four digits; F10.1 specifies a floating point decimal of up to 10 digits (including the decimal point) with one digit to the right of the decimal; E10.3 specifies an exponential number of up to 10 characters (including the decimal point and the four-character exponential flag) with three digits to the right of the decimal. Specify an X to use the parameter's default format. If the specified integer or floating point format is too small for the parameter's values, a series of asterisks (***) is plotted.

When using the SELECT and PARAM keywords, you can use the following units:

Unit type	UNIT=	Definition
Distance	**CM**	centimeters
	DM	decameters
	FT	feet
	GPM	geopotential meters
	IN	inches
	KM	kilometers
	M	meters
	MI	miles
	MM	millimeters
	NMI	nautical miles
	YD	yards
Pressure	**HPA**	hectopascals
	INHG	inches of mercury
	MB	millibars
Speed	**KT or KTS**	knots
	MPH	miles per hour
	MPS	meters per second
Temperature	**C**	Celsius
	F	Fahrenheit
	K	Kelvin

As of version 7.5, ADDE point commands PTCON, PTCOPY, PTDISP, and PTLIST are year 2000 capable. When using point/MD files with CYD (ccyyddd) date units (e.g., FO14, IRAB, ISEN, ISFC, ISHP, PIRP and SYN schema MD files created with McIDAS-XCD 7.5 and later), these commands default to the current year if you don't specify a four-digit year and the nearest century if you specify only the last two digits of the year. For example, if the file uses CYD units for the DAY parameter and its value is 1998260, then you can specify the DAY in the SELECT keyword as 1998260 or 98260. If the current year is 1998, you can also specify it as 260. Use the PTLIST command with FORM=PARAM to list the file's parameters and units.

The PTCON, PTCOPY, PTDISP and PTLIST commands continue to work with point/MD files using the old SYD (*ssyyddd*) date units (e.g., FO14, IRAB, ISEN, ISFC, ISHP, PIRP and SYN schema MD files created with versions of McIDAS-XCD prior to 7.5), with the following exception: If you want to specify DAY in the SELECT keyword and the *ss* portion of the MD file's DAY value is nonzero, then you must specify the units with DAY in the SELECT keyword. For example, if the MD file uses SYD units for DAY and its value is 7197240, then it must appear as SELECT='DAY[SYD] 7197240'. If the MD file uses SYD units for DAY but has a zero (blank) *ss* value, you don't have to specify the units in the SELECT keyword. For example, if the MD file uses SYD units for DAY and its value is 97240 then it can appear as either SELECT='DAY 97240' or SELECT='DAY[SYD] 97240'.

Examples

PTCON SURFACE/HOURLY PARAM=T[F] SELECT='TIME 6' MAP=USA

This entry draws a contour of today's 6:00 UTC surface temperature data (in degrees Fahrenheit) over the United States. The data is taken from the most recent point file in dataset SURFACE/HOURLY. The grid points used to draw the contour are not saved.

PTCON RTPTSRC/SFCHOURLY RTPTSRC/SYNOPTIC RTPTSRC/SHIP PARAM=TD[C] SELECT='TIME 6; DAY 96311' LAT=0 70 LON=-20 120 PRO=CONF GRA=3 LABEL='DEW POINT TEMPS' FORMAT=F6.1 'degrees C' DASH=NEG

This entry draws a contour of the 6:00 UTC dew point temperature data (in degrees Celsius) for day 96311. All data in datasets RTPTSRC/SFCHOURLY, RTPTSRC/SYNOPTIC, and RTPTSRC/SHIP is searched. The contours are drawn on graphics frame 3 using a map with a latitude range of 0° to 70° North and a longitude range of 20° East to 120° West. The label on the image window is *DEW POINT TEMPS*. The contour values are labeled with a floating point format with *degrees C* after each value. Contours with negative values are dashed. The grid points used to draw the contour are not saved.

PTCON SURFACE/SYNOPTIC.7 PARAM=PCP[IN] POW=2 BPAR=20 OUT=SCON TEST/GRIDS.2 MAP=MID SELECT='TIME 18; DAY 96317' DGRID=21 CINT=10 LINT=2

This entry draws contours for the 18:00 UTC six-hour cumulative precipitation (in inches) for day 96317. The data is taken from the point file in position 7 of the dataset SURFACE/SYNOPTIC. The contour is drawn on a map of the Midwest. The values are multiplied by one hundred times their original value. A contour interval of 0.10" is used with labels on every other contour. The grid point conversion is filtered using a smoothing factor of 20. The gridded analysis is saved as grid number 21 of the grid file in position 2 of the dataset TEST/GRIDS.

```
PTCON SURFACE/HOURLY.5 SURFACE/SYNOPTIC.5
   SURFACE/SHIP.5 PARAM=T[C] SELECT='TIME 00;
   DAY 96315' LAT=-84 -68 LON=20 -171 SLAT=-75 SLON=160
   PRO=CONF OUT=SPLOT MYGRIDS.51 DGRID=13 COLOR=3
   LLINC=1 4 DIST=6 PINT=2 5
```

This entry plots surface temperature (in degrees Celsius) from 0:00 UTC for day 96315 using data from the point file in position 5 of datasets SURFACE/HOURLY, SURFACE/SYNOPTIC, and SURFACE/SHIP. Grid point values are plotted on a map of West Antarctica in graphics color level 3 with data from every second row and fifth column displayed. The grid point increment is one degree of latitude and four degrees of longitude. Data is extrapolated up to a distance of six grid points into data void regions. The gridded analysis is saved in grid number 13 of the grid file in position 51 of the dataset with the alias name MYGRIDS.

```
PTCON SURFACE/HOURLY SELECT='TIME 0; DAY #Y'
   PARAM=MOVIE MAP=USA MOVIE=2 8
TE MOVIECOLORS "GU MAKE !1 0 !2 0
REPEAT MOVIECOLORS 2 TO 8 BY 1 0 BY 40
CM 2 8 GO=YES
```

The PTCON entry draws today's 00 UTC surface streamlines with colored line segments on a map of the United States. The TE and REPEAT entries set graphics color levels 2 to 8 to increase linearly from black (level 2) to bright green (level 8). The CM entry then circulates the graphics color levels to animate the wind flow.

PTCOPY

Copies point data from one dataset to another.

Format

PTCOPY *sdataset ddataset [keywords]*

Parameters

sdataset source ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

a position greater than zero represents an absolute position in the dataset; a position less than or equal to zero represents a relative position in the dataset based on date and time, for example, 0 is the most recent and -1 is the next most recent (no default for *group/descriptor* or *alias*; default=0 for *position*)

ddataset destination ADDE dataset name and absolute position; specify one of the following formats:

group/descriptor.position
alias.position

use only positive integers for *position*

Keywords

BYTecount=	**YES**	lists the number of bytes received from the server
	NO	does not list the number of bytes (default)
DEL=	**YES**	deletes the destination file before copying; see the Remarks
	NO	does not delete the destination file (default)

DROw= beginning row number in the destination file to write data; this keyword may overwrite existing rows; see the Remarks (default=append after the last row with data)

SELect= *'clause1 ; clause2 ; . . ; clausen'*
finds only the data matching the values in the select clauses; single quotes are mandatory; separate select clauses with semicolons; specify *clause* as a range or a list using one of the following formats:

range:	*parameter*[*unit*] *bval eval*
list:	*parameter*[*unit*] *val1,val2, . . ,valn*

parameter	point file parameter
[*unit*]	units for the parameter values; units are optional but must be in square brackets if specified; see the Remarks (default=from *sdataset*)
bval eval	range of parameter values; see the Remarks
val1, . . , valn	list of parameter values

TITLE= *'text'* title of the destination point file; 32 characters maximum (default=current title if the file already exists; default=title of the source file if the file is new)

Remarks

PTCOPY copies records from the source point data file to the destination point data file. Use the SELECT keyword to define a subset of records to copy. If you don't specify SELECT, all records in the source file are copied.

If you use the range format for the SELECT keyword and *bval* is less than *eval*, all values between and including *bval* and *eval* are selected. For example, if you specify SELECT='LON -177 177', the longitude values -177, -176, . . , 176, 177 are selected. If *bval* is greater than *eval*, all values greater than *bval* or less than *eval*, including *bval* and *eval*, are selected. For example, if you specify SELECT='LON 177 -177', the longitude values 177, 178, 179, 180, -179, -178 and -177 are selected. This feature also allows you to select only wind directions from northwest to northeast with SELECT='DIR 315 45'.

If you specify the DROW keyword, the values of the row header parameters (for example, DAY, TIME and TYPE in ISFC schema MD files) are checked. If the values of the copied data's row header parameters are the same as the values in the destination row, the data is added to the row. Otherwise, the destination row's data is overwritten with the new data. If DROW is not specified, the data is copied to the rows following the last row containing data in the destination file.

If you specify DEL=YES or a position number of a nonexistent point data file in the *ddataset* parameter, the records are copied into a newly created MD file; change the title with the TITLE keyword.

When using the SELECT keyword, you can specify the following units:

Unit type	UNIT=	Definition
Distance	**CM**	centimeters
	DM	decameters
	FT	feet
	GPM	geopotential meters
	IN	inches
	KM	kilometers
	M	meters
	MI	miles
	MM	millimeters
	NMI	nautical miles
	YD	yards
Pressure	**HPA**	hectopascals
	INHG	inches of mercury
	MB	millibars
Speed	**KT or KTS**	knots
	MPH	miles per hour
	MPS	meters per second
Temperature	**C**	Celsius
	F	Fahrenheit
	K	Kelvin

As of version 7.5, ADDE point commands PTCON, PTCOPY, PTDISP, and PTLIST are year 2000 capable. When using point/MD files with CYD (ccyyddd) date units (e.g., FO14, IRAB, ISEN, ISFC, ISHP, PIRP and SYN schema MD files created with McIDAS-XCD 7.5 and later), these commands default to the current year if you don't specify a four-digit year and the nearest century if you specify only the last two digits of the year. For example, if the file uses CYD units for the DAY parameter and its value is 1998260, then you can specify the DAY in the SELECT keyword as 1998260 or 98260. If the current year is 1998, you can also specify it as 260. Use the PTLIST command with FORM=PARAM to list the file's parameters and units.

The PTCON, PTCOPY, PTDISP and PTLIST commands continue to work with point/MD files using the old SYD (ssyyddd) date units (e.g., FO14, IRAB, ISEN, ISFC, ISHP, PIRP and SYN schema MD files created with versions of McIDAS-XCD prior to 7.5), with the following exception: If you want to specify DAY in the SELECT keyword and the *ss* portion of the MD file's DAY value is nonzero, then you must specify the units with DAY in the SELECT keyword. For example, if the MD file uses SYD units for DAY and its value is 7197240, then it must appear as SELECT='DAY[SYD] 7197240'. If the MD file uses SYD units for DAY but has a zero (blank) *ss* value, you don't have to specify the units in the SELECT keyword. For example, if the MD file uses SYD units for DAY and its value is 97240 then it can appear as either SELECT='DAY 97240' or SELECT='DAY[SYD] 97240'.

Examples

PTCOPY RAOB/MANDATORY LOCAL/PT.1 DEL=YES

This entry copies the entire contents of the most recent point file in dataset RAOB/MANDATORY to position 1 of dataset LOCAL/PT. The DEL=YES keyword deletes the existing destination point file and creates a new one with the same title as the source file. Because point files may be very large, copying an entire point file may take a long time. Use the SELECT keyword to copy only the data you need, as shown in the following examples.

PTCOPY SURFACE/ISFC.5 LOCAL/PT.2 SELECT='CO US,CN ; TIME 0 2 ; TYPE 0' DEL=YES TITLE='15 May 96 US and Canada Sfc Data'

This entry copies the 00 through 02 UTC surface hourly (type 0) data for all stations in the United States and Canada in position 5 of dataset SURFACE/ISFC to position 2 of dataset LOCAL/PT. The DEL=YES and TITLE keywords delete the existing destination point file and create a new one with the title *15 May 96 US and Canada Sfc Data*. Because each hour's data in ISFC schema point files is assigned to a separate row, the 00 UTC data is copied to row 1, the 01 UTC data is copied to row 2, and the 02 UTC data is copied to row 3 in the new destination file.

PTCOPY SURFACE/ISFC.5 LOCAL/PT.2 SELECT='CO US,CN ; TIME 6,12 ; TYPE 0' DROW=2

If this entry follows the previous example, it replaces the destination point file's 01 UTC data in row 2 with 06 UTC data, and replaces the 02 UTC data in row 3 with 12 UTC data.

PTCOPY SURFACE/ISFC.5 LOCAL/PT.2 SELECT='CO US,CN ; TIME 18 ; TYPE 0' TITLE='15 May 96 0,6,12,18 UTC Sfc Data'

If this entry follows the previous two examples, it copies the 18 UTC data to row 4 of the destination point file (position 2 of dataset LOCAL/PT) and changes its title to *15 May 96 0,6,12,18 UTC Sfc Data*. The data is placed in row 4 because without DROW being specified, the data is copied to the row after the last row containing data. The destination point file now has the 00, 06, 12 and 18 UTC data in rows 1, 2, 3 and 4.

PTDISP

Displays point data.

Format

PTDISP *dataset frame [keywords]*

Parameters

dataset ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

a *position* greater than zero represents an absolute position in the dataset; a *position* less than or equal to zero represents a relative position in the dataset based on date and time, for example, 0 is the most recent and -1 is the next most recent; the *position* **ALL** represents all positions in the dataset (no default for *group/descriptor* or *alias*; *position* default=**ALL** if DAY is specified with the SELECT keyword, otherwise default=0)

frame frame number to display the output; specify **OPP** to display the output on the frame opposite the current frame (default=current)

Search Keyword

SELect= *'clause1 ; clause2 ; . . ; clausen'*
finds only the data matching the values in the select clauses; single quotes are mandatory; separate select clauses with semicolons; specify *clause* as a range or a list using one of the following formats:

range: *parameter*[*unit*] *bval eval*

list: *parameter*[*unit*] *val1,val2, . . ,valn*

parameter point file parameter

[*unit*] units for the parameter values; units are optional but must be in square brackets if specified; see the Remarks (default=from *dataset*)

bval eval range of parameter values; see the Remarks

val1, . . ,valn list of parameter values

Navigation Keywords

LAT=	*lat1 lat2*	latitudes of the points at the lower-right and upper-left corners of the map; you cannot use LAT with the NAV or MAP keyword
LON=	*lon1 lon2*	longitudes of the points at the lower-right and upper-left corners of the map; you cannot use LON with the NAV or MAP keyword
MAP=		map for the plot; see the MAP command for a list of valid predefined maps, for example, **MID**, **USA**, **WORL**; you cannot use MAP with the NAV, LAT or LON keyword
MCOlor=		graphics color level of the map (default=1)
NAV=	*num*	frame to use for navigation
	C	use the current frame's navigation; the plot is drawn using the navigation of the specified frame; no map is drawn unless you use the MCOLOR keyword; you cannot use NAV with the MAP, LAT or LON keyword
PRO=	**CONF**	polar stereographic or Lambert conformal projection
	MERC	Mercator projection (default)
SLAt=	*lat1 lat2*	standard latitudes for a CONF projection; two values for a general Lambert conformal projection; one value for a polar stereographic projection (default=60 60 for northern hemisphere maps defined with the LAT and LON, or MAP keywords; -60 -60 for southern hemisphere maps defined with the LAT and LON, or MAP keywords)
SLOn=		standard longitude for a CONF projection (default=computed)

Plot Keywords

COLor=	*c1 . . cn*	graphics color level for each parameter specified with the PARAM keyword (default=3)

DEClut=	**YES**	declutters the plot; does not plot overlapping values (default)
	NO	does not declutter the plot
ELE=	*bele eele*	beginning and ending frame elements for output; specify **MAX** for maximum element number (default=1 MAX when using the NAV keyword; default=20 MAX-20 when using the MAP keyword)
FORMAT=	*f1 . . fn*	output format for each parameter specified with the PARAM keyword; valid formats are **A**, **I**, **F**, **E**, **K**, **VECT**, **FLAG** and **SYMB**; see the Remarks (default=from *dataset*)
LINe=	*blin elin*	beginning and ending frame lines for output; specify **MAX** for maximum line number (default=1 MAX-57 when using the NAV keyword; default=20 MAX-57 when using the MAP keyword)
LSIze=	*l1 . . ln*	plotted height, in pixels, of each parameter specified with the PARAM keyword (default=8)
MULtiply=	*m1 . . mn*	multipliers for each parameter specified with the PARAM keyword; each parameter is multiplied by the specified number before plotting; use a number between 0 and 1 to divide (default=1)
OFFset=	*l1 e1 . . ln en*	frame line and element offset from the center plot position; specify the offset for each parameter using minus (-) for up and left and plus (+) for down and right; see the Remarks (default=0 0)

PARam= *p1*[*u1*] . . *pn*[*un*]
parameters to display with their associated output units; units are optional but must be in square brackets if specified (no default for parameter; unit default=from *dataset*)

TDAy= **CAL** displays the calendar day on the default title; not valid if the ELE, LINE or PAN keyword is used

JUL displays the Julian day on the default title (default)

TITLE= *'text' col line ele size*
text, color, location and size for the title

'text' 72 characters maximum; specify **X** without quotes for the default title (default=computed)

col graphics color level of the title (default=value from the COLOR keyword)

line beginning TV line to write the title (default=lower-left corner of frame; exact line number depends on frame size and the value specified with the COLOR keyword)

ele beginning TV element to write the title (default=20)

size height of the title text in pixels (default=8)

Output Keyword

BYTecount= **YES** lists the number of bytes received from the server

NO does not list the number of bytes (default)

Remarks

PTDISP displays data from records in a point data file. The SELECT keyword defines which records to match and the PARAM keyword defines which parameters in the matching records to display.

If you use the range format for the SELECT keyword and *bval* is less than *eval*, all values between and including *bval* and *eval* are selected. For example, if you specify SELECT='LON -177 177', the longitude values -177, -176, . . , 176, 177 are selected. If *bval* is greater than *eval*, all values greater than *bval* or less than *eval*, including *bval* and *eval*, are selected. For example, if you specify SELECT='LON 177 -177', the longitude values 177, 178, 179, 180, -179, -178 and -177 are selected. This feature also allows you to select only wind directions from northwest to northeast with SELECT='DIR 315 45'.

Use the FORMAT keyword options below to format output based on FORTRAN designators for data output:

Designator	Description
A	character
I	integer
F	floating point
E	exponential

To specify a parameter's output format, use a designator followed by a number. For example, I4 specifies an integer of up to four digits; A4 specifies up to four characters, which is the maximum; F10.1 specifies a floating point decimal of up to 10 digits (including the decimal point) with one digit to the right of the decimal; E10.3 specifies an exponential number of up to 10 characters (including the decimal point and the four-character exponential flag) with three digits to the right of the decimal. Specify an X to use the parameter's default format. If the specified integer or floating point format is too small for the parameter's values, a series of asterisks (***) is plotted.

Use the K format to "clip" leading integer digits and drop the decimal portion of an integer or floating point value. Follow the K with a number to specify the number of integer digits to display. For example, if a pressure value is 1016.26 and you specify FORMAT=K3, *016* is plotted. If you also specify MULTIPLY=10, *163* is plotted.

Specify FORMAT=SYMB to translate weather report types (R-, S+, for example) into equivalent weather symbols. Only the first type in the report is plotted.

If you specify FORMAT=VECT or FLAG, you must also specify PARAM=WIND, which requests wind speed (SPD) and direction (DIR) from the point file. The VECT format produces a wind vector display. The FLAG format produces a wind flag display. The vector or flag is placed at the center plot position; using the OFFSET keyword has no effect.

Wind flag symbols use triangular flags, and long and short lines, or barbs, to represent wind speed. For example, the wind flag shown here represents a wind speed of 75 knots or 37.5 meters/second.



- a flag represents 50 knots or 25 meters/second
- a long barb represents 10 knots or 5 meters/second
- a short barb represents 5 knots or 2.5 meters/second.

Use the OFFSET keyword when plotting multiple parameters so that they are not displayed on top of each other. If the offset is 0 0 (the default), the center of the text or symbol is plotted at the center position. If you specify a different offset, the upper-left corner of the text or symbol is plotted at the specified offset position.

If PTDISP has started to plot data, you can stop it by pressing **Alt Q**.

A default title is constructed using the information specified with the PARAM and SELECT keywords. For example, if your command contains the keywords PARAM=T[F] TD[C] SELECT='DAY 96325; TIME 12; TYPE 0', the default title is: *T[F] TD[C] DAY=96325 TIME=12 TYPE=0.* Use the TITLE keyword if you want to choose a different title.

When using the SELECT and PARAM keywords, you can use the following units:

Unit type	UNIT=	Definition
Distance	**CM**	centimeters
	DM	decameters
	FT	feet
	GPM	geopotential meters
	IN	inches
	KM	kilometers
	M	meters
	MI	miles
	MM	millimeters
	NMI	nautical miles
	YD	yards
Pressure	**HPA**	hectopascals
	INHG	inches of mercury
	MB	millibars
Speed	**KT or KTS**	knots
	MPH	miles per hour
	MPS	meters per second
Temperature	**C**	Celsius
	F	Fahrenheit
	K	Kelvin

As of version 7.5, ADDE point commands PTCON, PTCOPY, PTDISP, and PTLIST are year 2000 capable. When using point/MD files with CYD (ccyyddd) date units (e.g., FO14, IRAB, ISEN, ISFC, ISHP, PIRP and SYN schema MD files created with McIDAS-XCD 7.5 and later), these commands default to the current year if you don't specify a four-digit year and the nearest century if you specify only the last two digits of the year. For example, if the file uses CYD units for the DAY parameter and its value is 1998260, then you can specify the DAY in the SELECT keyword as 1998260 or 98260. If the current year is 1998, you can also specify it as 260. Use the PTLIST command with FORM=PARAM to list the file's parameters and units.

The PTCON, PTCOPY, PTDISP and PTLIST commands continue to work with point/MD files using the old SYD (ssyyddd) date units (e.g., FO14, IRAB, ISEN, ISFC, ISHP, PIRP and SYN schema MD files created with versions of McIDAS-XCD prior to 7.5), with the following exception: If you want to specify DAY in the SELECT keyword and the *ss* portion of the MD file's DAY value is nonzero, then you must specify the units with DAY in the SELECT keyword. For example, if the MD file uses SYD units for DAY and its value is 7197240, then it must appear as SELECT='DAY[SYD] 7197240'. If the MD file uses SYD units for DAY but has a zero (blank) *ss* value, you don't have to specify the units in the SELECT keyword. For example, if the MD file uses SYD units for DAY and its value is 97240 then it can appear as either SELECT='DAY 97240' or SELECT='DAY[SYD] 97240'.

Examples

PTDISP SURFACE/ISFC SELECT='TIME 12' PARAM=T

This entry plots 12 UTC temperatures from the most recent point file in dataset SURFACE/ISFC. The temperatures are plotted using the navigation of the current frame and are in the units and format that the file uses for storing temperature.

PTDISP SURFACE/SYNOPTIC SELECT='TIME 18 ; DAY 96001' PARAM=T[C] FORMAT=I3 DECLUT=NO LAT=-40 -40 LON=-90 90 SLAT=-40 PRO=CONF TITLE='Antarctic Temperatures (deg C) at 18 UTC on 1 Jan 1996'

This entry plots 18 UTC temperatures in degrees Celsius from the point file storing the data for day 96001 in dataset SURFACE/SYNOPTIC. The temperatures are plotted as integers of up to three digits over a southern hemisphere map centered near the South Pole. All matching temperatures are plotted since DECLUT=NO is specified. The default title below the plot is replaced with the text *Antarctic Temperatures (deg C) at 18 UTC on 1 Jan 1996*.

```
PTDISP SURFACE/ISFC.5 OPP SELECT='TIME 12 ; T[F] 20 29'
   PARAM=T[F] FORMAT=I3 MAP=USA
```

This entry plots 12 UTC temperatures between 20 and 29 degrees Fahrenheit from the point file in position 5 of dataset SURFACE/ISFC. The temperatures are plotted on the frame opposite the current frame and are in degrees Fahrenheit over a map of the United States. The specified FORMAT keyword plots the temperatures as integers of up to three digits.

```
PTDISP SURFACE/ISFC.10 SELECT='TIME 17'
   PARAM=WIND T[F] TD[F] PSL[MB] ID
   FORMAT=FLAG I3 I3 K3 MULTIPLY=X X X 10
   LSIZE=11 6 6 6 5 COLOR=7 5 4 3 2
   OFFSET=0 0 -8 -13 3 -13 -8 3 3 3 MAP=MID
   TITLE='US Station Plot, 1700Z'
```

This entry displays a station plot of 17 UTC data from the point file in position 10 of dataset SURFACE/ISFC. The station plot includes wind flags, temperatures (in degrees Fahrenheit), dew point temperatures (in degrees Fahrenheit), altimeter settings (in millibars) and station IDs over a map of the Midwest. The LSIZE, COLOR and OFFSET keywords determine the plot size, graphics color level and offset from the center plot position of each of the five parameters. The altimeter settings are displayed in the standard meteorological format by using the K format to "clip" all but the last three integer digits after the observed values are multiplied by 10 with the MULTIPLY keyword. For example, an observed value of 1002.71 is displayed as 027; an observed value of 999.33 is displayed as 993.

```
PTDISP RAOB/MANDATORY.8 SELECT='LEV 850 ; TIME 0'
   PARAM=WIND T[C] TD[C] FORMAT=VECT I3 I3
   LSIZE=12 7 7 COLOR=7 5 4 OFFSET=0 0 -12 2 4 2
   MAP=OK PAN=1
PTDISP RAOB/MANDATORY.8 SELECT='LEV 500 ; TIME 0'
   PARAM=WIND T[C] TD[C] FORMAT=VECT I3 I3
   LSIZE=12 7 7 COLOR=7 5 4 OFFSET=0 0 -12 2 4 2
   MAP=OK PAN=2
PTDISP SURFACE/ISFC.8 SELECT='TIME 0'
   PARAM=WIND T[C] TD[C] FORMAT=VECT I3 I3
   LSIZE=12 7 7 COLOR=7 5 4 OFFSET=0 0 -12 2 4 2
   MAP=OK PAN=2 2 1
```

These entries create a three-panel display of 00 UTC wind vectors, temperatures and dew point temperatures from the point files in position 8 of datasets RAOB/MANDATORY and SURFACE/ISFC. The first entry displays the 850 millibar data in the upper-left quarter of the frame. The second entry displays the 500 millibar data in the upper-right quarter of the frame. The third entry displays the surface data in the bottom half of the frame. The FORMAT, LSIZE, COLOR and OFFSET keywords determine the format, plot size, graphics color level and offset from the center plot position of each of the three parameters.

PTLIST

Lists point data in a dataset.

Format

PTLIST *dataset [keywords]*

Parameter

dataset ADDE dataset name and position; specify one of the following formats:

group/descriptor.position
alias.position

a *position* greater than zero represents an absolute position in the dataset; a *position* less than or equal to zero represents a relative position in the dataset based on date and time, for example, 0 is the most recent and -1 is the next most recent; the *position* **ALL** represents all positions in the dataset (no default for *group/descriptor* or *alias*; *position* default=**ALL** if DAY is specified with the SELECT keyword, otherwise default=0)

Search Keyword

SELect= *'clause1 ; clause2 ; . . ; clausen'*
finds only the data matching the values in the select clauses; single quotes are mandatory; separate select clauses with semicolons; specify *clause* as a range or a list using one of the following formats:

range:	*parameter[unit] bval eval*
list:	*parameter[unit] val1,val2, . . ,valn*
parameter	point file parameter
[*unit***]**	units for the parameter values; units are optional but must be in square brackets if specified; see the Remarks (default=from *dataset*)
bval eval	range of parameter values; see the Remarks
val1, . . ,valn	list of parameter values

Output Keywords

BYTecount= **YES** lists the number of bytes received from the server

NO does not list the number of bytes (default)

FORM= **DATA** lists parameter values in the point file (default)

FILE *bpos epos*

lists only the point file directories; all other keywords are ignored; *bpos* is the beginning position number or ALL; *epos* is the ending position number or LAST; *bpos* and *epos* override the position specified in the *dataset* parameter (*bpos* default=position specified in the *dataset* parameter, *epos* default=*bpos*)

ALL lists all point file directories

PARAM lists the parameter names, units and default formats in the point file; this option is useful for determining parameters valid with the SELECT and PARAM keywords

FORMAT= *f1 . . fn* output format for each parameter specified with the PARAM keyword; valid formats are **A**, **I**, **F**, **E**; see the Remarks (default=from *dataset*)

HEAder= *'textline1' . . 'textlinen'*
header lines at the top of the data output; replaces the default header, which consists of a line of parameter names followed by a line of dashes

NUM= number of records matching the criteria defined with the SELECT keyword to list; if you specify NUM=50, the first 50 records matching the SELECT keyword are listed (default=1)

ALL list all records matching the SELECT keyword; you may get thousands of lines of output with this option; see the Remarks

PARam= *p1*[*u1*] . . *pn*[*un*]
parameters to list with their associated output units; units are optional but must be in square brackets if specified (no default for parameter; unit default=from *dataset*)

SUPpress= *s1 . . sn* suppress text from the default output; specify one or more of the following options:

DASH	suppress the line of dashes from the header
HEADER	suppress the entire header: parameter names and dashes
MISS	suppress printing "missing" as a record value; applies only when the PARAM keyword is not specified
NUMMATCH	suppress the "Number of matches found" line

Remarks

PTLIST lists data from records in one or more point data files in a dataset. The SELECT keyword defines which records to match and the PARAM keyword defines which parameters in the matching records to list. The NUM keyword defines how many matching records to list. Since each file may contain thousands of records, you may get thousands of lines of output if you specify NUM=ALL but don't narrow the search criteria enough with the SELECT keyword.

If you use the range format for the SELECT keyword and *bval* is less than *eval*, all values between and including *bval* and *eval* are selected. For example, if you specify SELECT='LON -177 177', the longitude values -177, -176, . . , 176, 177 are selected. If *bval* is greater than *eval*, all values greater than *bval* or less than *eval*, including *bval* and *eval*, are selected. For example, if you specify SELECT='LON 177 -177', the longitude values 177, 178, 179, 180, -179, -178 and -177 are selected. This feature also allows you to select only wind directions from northwest to northeast with SELECT='DIR 315 45'.

If you do not specify the PARAM keyword, PTLIST lists all the parameters in each matching record in two columns. If you use the default listing (FORM=DATA), PTLIST reorders the output so the data is listed chronologically.

Use the FORMAT keyword options below to format output based on FORTRAN designators for data output:

Designator	Description
A	character
I	integer
F	floating point
E	exponential

To specify a parameter's output format, use a designator followed by a number. For example, I4 specifies an integer of up to four digits; A4 specifies up to four characters; F10.1 specifies a floating point decimal of up to 10 digits (including the decimal point) with one digit to the right of the decimal; E10.3 specifies an exponential number of up to 10 characters (including the decimal point and the four-character exponential flag) with three digits to the right of the decimal. Specify an X to use the parameter's default format. Use a number preceding an X (e.g., 0X, 1X, 4X) to specify spaces between parameters in the output. The default is one space (1X) between each parameter. If the specified integer or floating point format is too small for the parameter's values, a series of asterisks (***) is listed.

When using the SELECT and PARAM keywords,use the following units:

Unit type	UNIT=	Definition
Distance	**CM**	centimeters
	DM	decameters
	FT	feet
	GPM	geopotential meters
	IN	inches
	KM	kilometers
	M	meters
	MI	miles
	MM	millimeters
	NMI	nautical miles
	YD	yards
Pressure	**HPA**	hectopascals
	INHG	inches of mercury
	MB	millibars
Speed	**KT** or **KTS**	knots
	MPH	miles per hour
	MPS	meters per second
Temperature	**C**	Celsius
	F	Fahrenheit
	K	Kelvin

As of version 7.5, ADDE point commands PTCON, PTCOPY, PTDISP, and PTLIST are year 2000 capable. When using point/MD files with CYD (ccyyddd) date units (e.g., FO14, IRAB, ISEN, ISFC, ISHP, PIRP and SYN schema MD files created with McIDAS-XCD 7.5 and later), these commands default to the current year if you don't specify a four-digit year and the nearest century if you specify only the last two digits of the year. For example, if the file uses CYD units for the DAY parameter and its value is 1998260, then you can specify the DAY in the SELECT keyword as 1998260 or 98260. If the current year is 1998, you can also specify it as 260. Use the PTLIST command with FORM=PARAM to list the file's parameters and units.

The PTCON, PTCOPY, PTDISP and PTLIST commands continue to work with point/MD files using the old SYD (ssyyddd) date units (e.g., FO14, IRAB, ISEN, ISFC, ISHP, PIRP and SYN schema MD files created with versions of McIDAS-XCD prior to 7.5), with the following exception: If you want to specify DAY in the SELECT keyword and the *ss* portion of the MD file's DAY value is nonzero, then you must specify the units with DAY in the SELECT keyword. For example, if the MD file uses SYD units for DAY and its value is 7197240, then it must appear as SELECT='DAY[SYD] 7197240'. If the MD file uses SYD units for DAY but has a zero (blank) *ss* value, you don't have to specify the units in the SELECT keyword. For example, if the MD file uses SYD units for DAY and its value is 97240 then it can appear as either SELECT='DAY 97240' or SELECT='DAY[SYD] 97240'.

Examples

PTLIST SURFACE/ISFC FORM=FILE ALL
This entry lists the directories for all point files in dataset SURFACE/ISFC.

PTLIST SURFACE/SHIP.1 FORM=PARAM
This entry lists the names, units and default formats for all parameters in the point file in position 1 of dataset SURFACE/SHIP. Use this information to determine the valid parameters for the SELECT and PARAM keywords.

PTLIST SURFACE/ISFC
This entry lists all the parameters and their values in the first record of the most recent point file in dataset SURFACE/ISFC.

PTLIST SURFACE/ISFC SELECT='ID SAN ; TIME 0,6,12,18' PARAM=ID ST DAY TIME HMS T TD DIR SPD WX NUM=ALL
This entry lists San Diego's 0, 6, 12 and 18 UTC data from the most recent point file in dataset SURFACE/ISFC. The station ID, state, day, time, observation time, temperature, dew point temperature, wind direction, wind speed and weather type are listed from all matching records.

PTLIST SURFACE/ISFC.5 SELECT='ID SAN ; TIME 0,6,12,18' PARAM=ID ST DAY TIME HMS T TD DIR SPD WX1 NUM=ALL

This entry requests the same information as the previous entry, but searches for data in the point file in position 5 of dataset SURFACE/ISFC.

PTLIST SURFACE/ISFC.ALL SELECT='ID SAN ; TIME 0,6,12,18' PARAM=ID ST DAY TIME HMS T TD DIR SPD WX1 NUM=ALL

This entry requests the same information as the previous two entries, but searches for data in all the point files in dataset SURFACE/ISFC.

PTLIST SURFACE/ISFC SELECT='ID SAN ; TIME 0,6,12,18 ; DAY 96120 96122' PARAM=ID ST DAY TIME HMS T TD DIR SPD WX1 NUM=ALL

This entry lists San Diego's 0, 6, 12 and 18 UTC data from days 96120 through 96122; it searches for data in all the point files in the dataset SURFACE/ISFC. You do not need to specify .ALL as the dataset position because you specified DAY in the SELECT keyword.

PTLIST SURFACE/ISFC SELECT='TIME 10 13 ; CO US,CN,MX ; T[F] -100 32' PARAM=CO ID DAY HMS T[F] T[C] WX1 FORMAT=X 2X X 2X X 2X X 2X F5.1 2X F5.1 2X NUM=ALL

This entry lists data for all stations in the United States, Canada and Mexico reporting a temperature below 32 degrees Fahrenheit between 10 and 13 UTC; it searches for data in the most recent point file in dataset SURFACE/ISFC. The country, station ID, day, observation time, temperature and weather type are listed. Temperature is listed twice: in degrees Fahrenheit and Celsius. The values specified in the FORMAT keyword result in two spaces between each parameter and both temperatures being listed to the nearest tenth degree.

R (McIDAS-X only)

Resizes the Image Window to the size of the current frame.

Remarks

To resize the Image Window,

Press: **Alt R**

or

Type: **R**

Press: **Enter**

The R command resizes the Image Window to show the entire displayed frame. This command is most useful if you manually changed the size of the Image Window, switched to a different-sized frame, or used the Z command to zoom in on the frame.

If you specified the **`-autoResize`** flag at startup or in your **`.mcidasrc`** file, the Image Window is automatically resized to show the entire frame when you switch to a different-sized frame or zoom frames.

RAOBCON

Contours upper-air data from IRAB-schema point files.

Format

RAOBCON *param level map time day [keywords]*

Parameters

param parameter to contour; see the Remarks for a complete list and descriptions of the valid options (default=**T**)

level level of the data; valid options are the mandatory levels: **SFC**, **TRO1**, **TRO2**, **MAXW**, **1000**, **925**, **850**, **700**, **500**, **400**, **300**, **250**, **200**, **150**, **100** (default=**500**)

map map for the contour; see the MAP command for a list of valid predefined maps, for example, **FL**, **MID**, **USA**, **WORL** (default=do not draw a map; use the navigation of the frame specified with NAV keyword)

time observation time (default=0 if current time is between 0 UTC and 11:59 UTC; otherwise default=12)

day observation date; valid formats include YYYYDDD, YYYY/MM/DD, and DD/MON/YYYY where YYYY, DDD, MM, and DD are integers and MON is three or more letters, for example, JAN or JANUARY (default=current)

Keywords

CINt= *num* contour interval; specify 0 to let RAOBCON compute a reasonable interval; specify your own interval as an integer or decimal value greater than zero (default=from the `CONTOUR.DEF` text file; if no file entry matches the parameter, level, and units, default=0)

string contour values; specify the name of a string that contains up to 64 values

COLor= graphics color level for the display (default=2)

DASh= **ALL** dash all contours

NEG dash negative contours only

POS dash positive contours only

DATaset= ADDE point dataset name; specify as *group/descriptor* or *alias* (default=**RTPTSRC/UPPERMAND**)

GRA= graphic frame number for the display (default=current)

LSIze= contour label height, in pixels (default=8)

NAV= *num* frame to use for navigation

C use the current frame's navigation (default)

you cannot use the NAV keyword if you specify a map with the *map* parameter

UNIt= units for the specified parameter; see the Remarks for defaults

Remarks

RAOBCON builds and runs a PTCON command to display mandatory-level upper-air data from IRAB-schema point files. RAOBCON accepts all the keywords in the PTCON command except LAT, LON, MAP, PRO, SLAT, SLON and PARAM because they may conflict with RAOBCON's parameters or keywords. You can use the PTCON SELECT keyword to limit the analysis to a specified list or range of values, but you cannot specify a different parameter, level, time, day or unit than those defined by the RAOBCON parameters or keywords.

Valid *param* options are most of the IRAB-schema point file parameters that can be contoured, plus **STREAML** for streamlines. Run the CU LIST command to list valid units and abbreviations for parameters. The table below lists the valid *param* options, their default units, and a description of the parameter. Default units in parentheses cannot be changed.

param	Default Units	Description
ELEV	M	station elevation
P	MB	pressure
Z	M	height from surface
T	C	temperature
TD	C	dew point temperature
DIR	(degrees)	wind direction
SPD	KTS	wind speed
STREAML		streamlines

Examples

RAOBCON
This entry contours 500-mb temperatures for the current day and time using the navigation of the current frame.

RAOBCON P SFC USA 12 UNIT=INHG COLOR=7
LABEL='Surface Pressure, in inches of mercury' 7 420 150
This entry contours surface pressure in inches of mercury at 12 UTC over a map of the United States. The contours are drawn in graphics color level 7. The default label below the plot is replaced with the text *Surface Pressure, in inches of mercury* near the center of the frame in graphics color level 7. Label is a PTCON keyword

TE DEWPOINTS "-20 -10 0 10 20 25 30 32 35
RAOBCON TD 700 CINT=DEWPOINTS DASH=NEG UNIT=F
The TE command creates a string called DEWPOINTS containing contour values for the RAOBCON entry. The RAOBCON entry draws the 700-mb 20, -10, 0, 10, 20, 25, 30, 32, and 35° Fahrenheit dewpoint temperature contours for the current day and time using the navigation of the current frame. The -20° and -10° contours are dashed; the others are solid. Do not specify a pound sign (#) before the string name in the CINT keyword.

RAOBCON Z 500 USA 12 17/JAN/1996 DATASET=CLIMATE/1996
This entry plots 500-mb temperatures over a map of the United States. The data is from 12 UTC on 17 January 1996 in dataset CLIMATE/1996.

RAOBPLOT

Plots upper-air data from IRAB-schema point files.

Format

RAOBPLOT *param level map time day [keywords]*

Parameters

param parameter to plot; see the Remarks for a complete list and descriptions of the valid options (default=**PLOT**)

level level of the data; valid options are the mandatory levels: **SFC**, **TRO1**, **TRO2**, **MAXW**, **1000**, **925**, **850**, **700**, **500**, **400**, **300**, **250**, **200**, **150**, **100** (default=**500**)

map map for the contour; see the MAP command for a list of valid predefined maps, for example, **FL**, **MID**, **USA**, **WORL** (default=do not draw a map; use the navigation of the frame specified with NAV keyword)

time observation time (default=0 if current time is between 0 UTC and 11:59 UTC; otherwise default=12)

day observation date; valid formats include YYYYDDD, YYYY/MM/DD, and DD/MON/YYYY where YYYY, DDD, MM, and DD are integers and MON is three or more letters, for example, JAN or JANUARY (default=current)

Keywords

COLor= graphics color level for the display (default=3)

DATaset= ADDE point dataset name; specify as *group/descriptor* or *alias* (default=**RTPTSRC/UPPERMAND**)

DEClut=
- **YES** declutter the plot, meaning do not plot overlapping values (default)
- **NO** do not declutter the plot

GRA= graphic frame number for the display (default=current)

LSIze= height of the plot characters, in pixels (default=8)

NAV=
- *num* frame to use for navigation
- **C** use the current frame's navigation (default)

you cannot use the NAV keyword if you specify a map with the *map* parameter

UNIt= units for the specified parameter; see the Remarks for defaults

Remarks

RAOBPLOT builds and runs a PTDISP command to display mandatory-level upper-air data from IRAB-schema point files. RAOBPLOT accepts all the keywords in the PTDISP command except LAT, LON, MAP, PRO, SLAT, SLON and PARAM because they may conflict with RAOBPLOT's parameters or keywords. You can use the PTDISP SELECT keyword to limit the plot to a specified list or range of values, but you cannot specify a different parameter, time, day or unit than those defined by the RAOBPLOT parameters or keywords.

Valid *param* options are most of the IRAB-schema point file parameters plus **PLOT**, **WIND**, **WINDB**, and **WINDV**. Run the CU LIST command to list valid units and abbreviations for all parameters except PLOT. The table below lists the valid *param* options, their default units, and a description of the parameter. Default units in parentheses cannot be changed.

param	Default Units	Description
IDN	(number)	five-digit station ID
ELEV	M	station elevation
OBTIME	(HMS)	actual time of observation
PLOT	M	station plot of the IDN, T, TD, Z, and WINDB parameters; units are M, for metric, or A, for American (default)
P	MB	pressure
Z	M	height from surface
T	C	temperature
TD	C	dew point temperature
DIR	(degrees)	wind direction
SPD	KTS	wind speed
WIND	(deg) KTS	two-digit wind direction and two- or three-digit speed, in the form DDSSS
WINDB	(barb)	wind barb (DIR and SPD); flag=25 mps (~50 kts), long barb=5 mps (~10 kts), short barb=2.5 mps (~5 kts) kts
WINDV	(vector)	wind vector (DIR and SPD)

Examples

RAOBPLOT
This entry plots 500-mb station model data for the current day and time using the navigation of the current frame.

RAOBPLOT IDN SFC USA LSIZE=6
This entry plots station ID numbers over a map of the United States with a plot size of six pixels.

RAOBPLOT T 850 NA DECLUT=NO UNIT=K LSIZE=6
This entry plots 850-mb temperatures in degrees Kelvin over a map of North America for the current day and time. The data is drawn with a plot size of six pixels. It is not decluttered, so all values are plotted and some may overlap.

RAOBPLOT WINDB 200 WORL 0
SELECT='SPD[KTS] 80 300' COLOR=5 LSIZE=10
TITLE='0 UTC 200 mb winds of at least 80 knots' 7 420 150
This entry plots wind barbs for all 0 UTC 200-mb winds with speeds of 80 knots or greater over a map of the world. The barbs are drawn in graphics color level 5 with a plot size of 10 pixels. The default title below the plot is replaced with the text *0 UTC 200 mb winds of at least 80 knots* near the center of the frame in graphics color level 7. SELECT and TITLE are PTDISP keywords.

RAOBPLOT TD 700 USA 12 17/JAN/1996
DATASET=CLIMATE/1996
This entry plots 700-mb dew point temperatures over a map of North America. The data is from 12 UTC on 17 January 1996 in dataset CLIMATE/1996.

RAOBRPT

Lists upper air (RAOB) observations.

Format

RAOBRPT *id1 . . idn nhours [keywords]*

Parameters

id1 . . idn station IDs or states to list; use the two-character state P.O. abbreviation for states

nhours number of hours to search for observations starting from DAY and TIME (default=12)

Keywords

CO= *co1 . . con* lists observations for all stations in these countries; use the CCODE command to list valid country codes

DATaset= ADDE dataset name; specify as *group/descriptor* or *alias* (default=**RTWXTEXT/UPPERAIR**)

DAY= Julian date to start search; use either the 5- or 7-digit format, for example, 96300 or 1996300 (default=current)

TIMe= UTC time to start search; valid times are 0, 3, 6, 9, 12, 15, 18 and 21 (default=current)

TYPe= *type1 . . typen*
list the upper air data by type

- **ALL** all types of upper air data (default)
- **PPAA** significant level wind data above 100 mb
- **PPBB** significant level wind data between the surface and 100 mb
- **TTAA** mandatory temperature and wind data
- **TTBB** significant level temperature data between the surface and 100 mb
- **TTDD** significant level temperature data above 100 mb

Remarks

You must specify at least one station ID, state, or country.

If you use the DAY keyword to specify a day other than the current day, you must also use the TIME keyword.

Examples

RAOBRPT 72435
This entry lists the latest upper air observations of all types for Paducah, Kentucky, from the past 12 hours.

RAOBRPT SC 18 CO=FR TYPE=TTAA
This entry lists all TTAA upper air observations for South Carolina and France from the past 18 hours.

RAOBRPT 72645 72201 LA 12 DAY=96300 TIME=12 TYPE=TTAA TTBB
This entry lists all TTAA and TTBB upper air observations for Green Bay, Wisconsin; Key West, Florida; and Louisiana from 12 hours prior to 12:00 UTC on day 96300.

READ

Lists the contents of an ADDE text dataset.

Format

READ *dataset*

Parameter

dataset ADDE dataset name; specify one of the following formats:

group/descriptor
alias

Remarks

The READ command lists the contents of a text dataset. A text dataset points to a single text file. If the dataset is on a remote server, use the DATALOC command to map the group name to the remote server workstation.

Example

READ ADMIN/GOES9
This entry lists the contents of the text dataset ADMIN/GOES9.

REDIRECT

Writes the LW file path redirection memory block.

Formats

REDIRECT ADD *file "path*
REDIRECT CLEAR *type*
REDIRECT DELETE *file*
REDIRECT LIST *type*
REDIRECT MAKE
REDIRECT REST *rfile*
REDIRECT SAVE *rfile*

Parameters

ADD adds a redirection entry to the file **LWPATH.NAM** and dynamic memory

CLEAR clears the redirection entries

DELETE deletes a redirection entry from dynamic memory and the file **LWPATH.NAM**

LIST lists the file redirection entries

MAKE writes the redirection entries from **LWPATH.NAM** into dynamic memory (default)

REST restores a saved redirection file into file **LWPATH.NAM** and dynamic memory

SAVE saves the redirection entries to a file

file file name, e.g., **MDXX3074**, **AREA011***; 12 characters maximum including the extension

"path desired directory path, 59 characters maximum; the double quote is mandatory

type

- **FILE** the file **LWPATH.NAM**
- **MEM** dynamic memory (default for the LIST option)
- **ALL** both **LWPATH.NAM** and dynamic memory; use with the CLEAR option only (default for CLEAR)

rfile redirection file name; if an extension is not specified, .NAM is automatically appended

Remarks

File redirection is used to define which directories McIDAS commands search when looking for specified data and help files. When a command requests data from a file (for example, when IMGLIST displays image data from the file AREA0001), the active redirect table is checked to see if one of its entries has a matching file name. If so, the command searches for the file in the directory specified in the entry.

The active redirect table resides in memory. You can create multiple redirect files, which can be individually restored to the active redirect table. Redirect files are created with a text editor or with the command REDIRECT ADD. Redirect files consist of one or more entries, each containing a file name and a directory or path. The entry's file name can contain wild card characters (for example, A*, AREA*, MDXX05*, *.GIF). Lines beginning with a double quote (") are comments (for example, "This is a comment). Comments can only be added with a text editor; not with REDIRECT ADD.

The maximum length of an entry is 72 characters, 12 for the file name and 60 for the directory; the 60th character can only be a slash (/) in McIDAS-X, or a backslash (\) in McIDAS-OS2.

If your workstation is hung and you suspect file redirection is causing it, first exit McIDAS, then delete the file **LWPATH.NAM** and boot the system. For McIDAS-OS2, this file is located in **c:\mcidas\data**; for McIDAS-X, this file is located in the **$HOME/mcidas/data** or another **MCPATH** directory.

Caution!
It is safest to redirect only data files, for example, areas and MD files. Do not redirect the source file specified with the DOSTOLW command or the destination file specified with the LWTODOS command. Redirecting McIDAS system files may cause problems. Some of the systems files you should NOT redirect are listed below.

ALLOC.WWW	**FRNVEXP.***nnn*	**STRTABLE**
CONTEXT.SLT	**LWPATH.NAM**	**SYSIMAGE.PM**
EXPORT.*nnn*	**MCRGB.TXT**	**TERMCHAR.nnn**
FRAMED.*nnn*	**MENU**	**UCTERM.***nnn*
FRAMENH.*nnn*	**NUM.FRM**	**VERSION.TXT**
FRNV.*nnn*	**SKEDFILE**	**WINQUFIL**
FRNVDIR.001	**STARTUP.SYS**	

Examples

REDIRECT
This entry places the redirected files and paths from the active redirection file (**LWPATH.NAM**) into dynamic memory.

REDIRECT LIST FILE
This entry lists the redirection entries in the file **LWPATH.NAM**.

REDIRECT CLEAR
This entry clears the file **LWPATH.NAM** and dynamic memory.

REDIRECT ADD AREA137* "A:\VOLUME\AREAS
This McIDAS-OS2 example adds redirection path **a:\volume\areas\area137*** to the file **LWPATH.NAM** and dynamic memory.

REDIRECT ADD AREA137* "/u/smith/volume/mcidas/AREAS
This McIDAS-X example adds the redirection path **/u/smith/volume/mcidas/AREAS/AREA137*** to dynamic memory and the file **LWPATH.NAM**.

REDIRECT REST TSTVL1
This entry brings the file **TSTVL1.NAM** into dynamic memory and the redirection file **LWPATH.NAM**.

REDIRECT ADD AREA* "/u/johndoe/mcidas/areas
REDIRECT ADD GRID8* "/u/johndoe/mcidas/gridfiles
REDIRECT ADD MDXX1000 "/u/johndoe/mcidas/mdfiles
REDIRECT ADD *.ET "/u/johndoe/mcidas/enhancements
REDIRECT SAVE DATA.NAM
REDIRECT REST DATA.NAM
These McIDAS-X entries create redirect entries in the active redirect table and then saves the table as the file **DATA.NAM**. The last entry makes the file the active redirect table so it can be used.

To create the same **DATA.NAM** redirect file using a text editor, enter the lines below in **DATA.NAM** and save the file.

```
AREA*  /u/johndoe/mcidas/areas
GRID8*  /u/johndoe/mcidas/gridfiles
MDXX1000  /u/johndoe/mcidas/mdfiles
*.ET  /u/johndoe/mcidas/enhancements
```

To use the file once it has been created, restore it to the active redirect table by running the command REDIRECT REST DATA.NAM.

REMAP

Remaps an area into a different projection.

Format

REMAP *sarea darea spline [keywords]*

Parameters

sarea source area number to remap

darea destination area number for the remapped image; *darea* contains the projection that *sarea* is remapped into

spline spline function (default=20 pixels)

Keywords

BAND= band number (default=lowest band number)

MERge= **YES** merges the data in *sarea* with the data in *darea*

NO overwrites the data in *darea* (default)

SMOoth= *limb data*
provides limb and data smoothing

limb **NO** no limb smoothing (default)

YES provides limb smoothing

data **NO** no data smoothing (default)

YES provides data smoothing

Remarks

The *sarea* and *darea* must contain navigation before you can remap images. Display the new image with command IMGDISP.

The default for REMAP zeros out the destination area before remapping the source area into the new projection. The MERGE=YES keyword does not zero out the destination area. In this case, the source area data overwrites the destination area data.

For REMAP to be successful, the destination area must meet the requirements below.

- The destination area must be a single band (no specific one) and 1-byte data (ZRES=1 and ZSIZ=1). The source area can be 2-byte or 1-byte data.
- The calibration type must be VISR; the source type BRIT.
- Both the area PREFIX and VALCOD must be zero.

See Also

Use command IMGREMAP or AAMAP to remap an area into a Mercator or polar stereographic projection.

Examples

REMAP 1 2
This entry remaps area 1 into area 2 where area 1 is a GOES East image and area 2 is a GOES West image. When done, area 2 contains the remapped GOES East image.

REMAP 710 6000 MERGE=Y BAND=4
This entry remaps the POES data in area 710, band 4, into area 6000, overwriting the area coverage that overlaps.

REMAP 50 51 SMOOTH=YES NO
This entry remaps area 50 into area 51, providing a smooth edge on the image in area 51. The remap applies only to the navigable points in area 50. The data is not smoothed.

REPEAT

Repeats a McIDAS command.

Format

REPEAT *string start* **TO** *end* **BY** *inc start* **BY** *inc*
. . start **BY** *inc [keyword]*

Parameters

string	string name containing the commands to run; 1 to 12 characters; any string beginning with these characters is run
start	starting parameter value (default=0)
end	ending parameter value (default=0)
inc	value to increment the parameter with each repetition (default=1)
TO	mandatory parameter indicating the range between *start* and *end*
BY	mandatory parameter indicating the increment between *start* and *end*

Keyword

MAXN=	maximum number of commands to run (default=200)

Remarks

Before running REPEAT, set up your *string* using ! *number* for each parameter to be incremented; *number* must begin at 1 and increment by 1. An exclamation point (!) followed by an integer in a string will increment the parameter on each run. Parameters may be decremented using a minus sign (-).

Examples

If the string named LOAD contains the entry "IMGDISP A.!1 !2", then entering the following command, displays image A.1 in frame 3, A.2 in frame 5, A.3 in frame 7, and A.4 in frame 9.

```
REPEAT LOAD 1 TO 4 BY 1 3 BY 2
```

RUN

Runs a McBASI program.

Formats

RUN *p1 . . pn* **FILE=** *[keywords]*
' *filename p1 . . pn [keywords]*
RUN *"statement*
' *"statement*

Parameters

p1 . . pn	positional parameters read by the INPUT statement
filename	name of the McBASI program to run; the extension defaults to .MCB
"statement	McBASI statement to run immediately; 256 characters maximum

Keywords

Clear=	**YES**	resets the values of the variables to zero or null before starting the program (default when running a program with the FILE keyword)
	NO	variables retain the values from the previous RUN (default when running the statement immediately)
File=		name of the McBASI program to run; the extension defaults to .MCB; this keyword is required when using RUN, but is invalid when using the single quote format (')
Var=		name of the LW file to store the variable values in after running a program; the file contents are used to initialize the variables unless CLEAR=YES is specified (default=BASICVV1)
	SHARE	shares variables when one McBASI program runs another

Remarks

RUN will run a tiny BASIC language program prepared using an ASCII editor. The BASIC reserved words are: KEYIN, PRINT, INPUT, LET, GOTO, GOSUB, RETURN, SLEEP, STOP, IF, OPEN, CLOSE, REM, PLOT, PTABLE and POKE. In addition, the word LOCATE is reserved in McIDAS-OS2. (See Chapter 4, *McBASI Interpreter,* for more information.)

The arithmetic operators are: **+ - * / ****

These are the available functions and pseudofunctions: CHR$, SIN, COS, TAN, ASIN, ACOS, ATAN, EXP, LOG, LN, ABS, BIN, BIN$, INDEX, LEN, VAL, STR$, MID$, TIME$, DATE$, DAY$, EOF$, TFILE$, TFILD$, TFILC$, TFILB$, TFILA$, MOD, NINT, INT, SQRT, PEEK, PEEK$, KSYS$, KSYS and TABLE$.

See Also

See Chapter 4 for more information on McBASI interpreter commands, functions and sample programs.

Examples

RUN "?SQRT (5.7)
This entry calculates and prints the value of the square root of 5.7. The question mark is a substitute for PRINT.

'MYPROG 27 #H
This entry runs the program **MYPROG.MCB** and passes the value 27 and the current time (the string #H) to the INPUT statements in the program.

RUN 27 #H FILE=MYPROG
This entry performs the same function as the previous one. Use this format for programs started from the system scheduler.

'MYPROG CLEAR=NO VAR=MYVARS.VAR
This entry runs the program **MYPROG.MCB** but recovers the values for all variables from the file **MYVARS.VAR**. The values are written back to this file when the program ends.

RUN VAR=MYVARS.VAR FILE=MYPROG
This entry runs the program **MYPROG.MCB**, initializes all variables to zero, and writes the values of the variables into the file **MYVARS.VAR** when the program ends.

RUN "PTABLE MID$(TIME$,1,2),"HR":KEYIN "TL HR
This entry sets the value of the string HR to the current hour, then lists the value of the string. It can be run once an hour from the scheduler (SKE command) to keep the string's value current for use in commands like PTLIST and PTDISP.

RUN "T=VAL(MID$(TIME$,1,2)):M=T+100:KEYIN"PTCOPY SFC/HOURLY LOCAL/MD.";M" SEL,'CO US;TIME ";T"' DEL,YES
This entry sets the value of T to the current hour and the value of M to the current hour plus 100. It then copies the data for TIME=T for the United States from the most recent point file in the dataset SFC/HOURLY to the dataset LOCAL/MD in the position number equal to the value of M.

For example, if the current time is 12:50 UTC, this entry copies the 12 UTC data for the United States to position 112 of dataset LOCAL/MD. If this entry is run hourly throughout the day, each hour's data is copied to the corresponding position between 100 and 123 in dataset LOCAL/MD.

RVF (McIDAS-X only)

Restores virtual frames saved with command SVF.

Format

RVF *bframe eframe name*

Parameters

bframe	beginning frame number to load (default=1)
eframe	ending frame number to load (default=*bframe*)
name	file name used to save the frames with the SVF (McIDAS-X only) command; if no extension is specified, .PIX is automatically appended

Remarks

RVF restores the image, graphic, frame directory, navigation, image enhancement, and graphics table that were present on each of the frames when they were saved with command SVF (McIDAS-X only). Once restored, graphics are embedded in the images. This means that you cannot erase the graphics with the EG command, turn the graphics color levels on and off with the GU command, or toggle the graphics on and off with the W command.

Virtual frames can only be restored to single-panel frames of the same size as the original, and only if the current McIDAS session has the same number of image and graphics levels present as when the frames were saved with SVF.

Examples

RVF 1 5 PICTURE
This entry reloads frames 1 through 5 from the file **PICTURE.PIX**.

SC

Grids and contours surface data.

Formats

SC *parm map time [keywords]*
SC *p1-p2 map t1-t2 [keywords]*

Parameters

parm	**ABV**	absolute vorticity (10^{-5} sec^{-1})
	CIGH	height of the ceiling (100 feet); for ISFC only
	DVG	divergence (10^{-6} sec^{-1})
	GUS	wind gust (meters/second)
	MIX	mixing ratio (g/kg)
	PCP	precipitation (inches)
	PRE	sea level pressure in millibars; for ISFC only
	PSL	altimeter setting in millibars
	SNO	snow cover (inches)
	SPD	wind speed (meters/second)
	STR	streamline
	T	temperature (°C or F)
	TD	dew point (°C or F)
	THA	theta (K)
	THAE	theta E (K)
	VIS	visibility (miles)
	VOR	vorticity (10^{-6} sec^{-1})
	ZCH	height of the ceiling (100 feet); for SVCA only
	ZCL	height of the first non-ceiling cloud deck (100 feet); for SVCA only
	ZCL1	height of the first non-ceiling cloud deck (100 feet); for ISFC only
	ZCL2	height of the second non-ceiling cloud deck (100 feet); for ISFC only
	ZCM	height of the second non-ceiling cloud deck (100 feet); for SVCA only
	ZS	station elevation (meters)
map	**DEF**	define the map using LAT and LON keywords (default)

	MID	Midwest USA
	NA	North America
	SAT	satellite projection
	USA	USA
	state post office abbreviation	
time	observation time, HH or HH:MM:SS; defaults to the previous hour if the current time is less than 10 minutes past the hour (default=current)	
p1-p2	parameter difference used in contouring; subtract *p2* from *p1*	
t1-t2	time difference used in contouring; subtract *t2* from *t1*	

Keywords

CINT=	contour interval (default is parameter dependent)	
COLOR=	graphics color level; use positive numbers for solid lines and negative numbers for dashed lines (default=2)	
DAY=	*d1-d2*	year and day; use two values when contouring differences, YYDDD (default=current)
GRA=	graphics frame number (default=current)	
GRIDF=	destination grid file number (default=from IGU SET)	
LAT=	*min max*	latitude bounds; use when specifying DEF as the *map* parameter
LON=	*min max*	longitude bounds; use when specifying DEF as the *map* parameter
MDF=	*f1-f2*	ISFC or SVCA schema MD file number; use two values when contouring differences (default=last digit of the current Julian day)
UNIT=	**A**	contours data in American units (default)
	M	contours data in metric units
	valid only for temperature and dew point	

Remarks

If you do not specify keywords CINT, COLOR, DAY, GRA, GRIDF, LAT, LON, MDF or UNIT in the command, the string table is searched for strings with the same names. If those strings exist, SC uses their values. If the keyword or string MDF is used, its value is stored and accessed in the string named SVCA. If the results of this command are unexpected, use command TL to list the string table or TD ALL to delete it. The grid file is generated and the pointer set the same as the terminal number.

Parameter advection (in units/day) or divergence is done by appending ADV or DVG to *parm*, for example, TADV, SPDDVG.

The day and time default to the current day and time, not the last available data on the workstation.

Specify the keyword DAY when using history data.

When SC creates and interpolates data to a grid, the amount of extrapolation into data void regions is controlled by SYSKEY word 897. It has a range of 2 to 20 and a default of 10. Use command SYSVAL to list or change its value, which represents the distance in grid points to extrapolate data. Grid points beyond its value are assigned missing value codes and are not contoured. The results will vary for a given value depending on data density, grid spacing and smoothing.

The SC, SP, UC, UL, UP, and XSECT commands were not modified with year 2000 changes because they have or will have ADDE replacements that are year 2000 capable. The SC, SP, UC, UL, UP, and XSECT commands, however, continue to work with dates before and after year 2000, but only if the date specified in the DAY keyword exactly matches the value stored in the point/MD file. For example, if using an MD file with the new ccyyddd date format (e.g., ISFC or IRAB schema MD files created with McIDAS-XCD 7.5 and later), then the value for the DAY keyword must include the century (e.g., 1999240). If using an ISFC or IRAB schema MD file created using a version of McIDAS-XCD prior to 7.5, you must continue to specify the date in the yyddd format (e.g., DAY=97240).

Examples

SC STR SAT 12 MDF=1000
This entry contours streamlines at 12 UTC from history file 1000 in a satellite projection.

SC T MID
This entry contours the temperature over the Midwest for the current day and time.

SC PCP GRA=5 COLOR=4 LAT=20 40 LON=85 105
This entry contours precipitation in graphics color level 4 on graphics frame 5. It uses a map with latitudes of 20° and 40° N and longitudes of 85° and 105° W.

SC PSL MID 18-18 MDF=7500-7501 DAY=97010-97009
This entry contours the 24-hour sea level pressure change from 18 UTC, day 009, to 18 UTC, day 010, 1997.

SC VOR USA
IGG MAKE *u-grid* **ADV** *vor-grid*
The first entry creates a vorticity grid. The second entry generates the derived parameter vorticity advection (VORADV). Watch the text frame for the location of the U and VOR grids and enter the IGG command substituting the correct grid numbers for *u-grid* and *vor-grid*.

SCHE

Adds a schema to the schema file.

Format

SCHE *name*

Parameter

name member name of the schema LW file

Remarks

You can create schemas using a text editor and place them in the `\mcidas\data` subdirectory (McIDAS-OS2), or the `mcidas/data` subdirectory (McIDAS-X).

Before registering a newly created schema, use command DOSTOLW to create an LW file containing the schema text. Then use command SCHE to register the new schema in the workstation schema file. Do not use DOSTOLW on schema files supported in McIDAS; these files are prefixed with DC and are already in the LW file format.

See Also

See *Registering MD File Schemas* in the *Installation* chapter for more information.

Examples

SCHE DCISFC
This entry adds schema ISFC, which is the schema named in LW file DCISFC, to the workstation schema file. The current version of this schema is included with each upgrade.

SCHE MYSC
This entry adds the schema named in the LW file MYSC to the workstation schema file.

SEE

Lists the text in an LW file.

Format

SEE *file nchars [keywords]*

Parameters

file name of the LW file to list

nchars number of characters per line (default=80)

Keywords

BEGin= first line number to list; if negative, the number of the first byte to list (default=0)

LASt= number of lines from the end of the file to list

NLInes= number of lines to list (default=500)

ALL lists all lines

STEp= number of lines skipped between the lines listed; if negative, it steps backwards; this keyword only works on 80-character ASCII LW files (default=1)

Remarks

Command SEE attempts to list both LW files (80-character records with no linefeeds) and text files (up to 80 characters with imbedded linefeeds). However, the keywords may not work properly with text files.

You can use the ADDE command READ in place of SEE.

Examples

SEE LOGON
This entry lists file LOGON starting at line zero (the beginning) stepping forward one line until it reaches the end of the file.

SEE MYFILE BEGIN=25
This entry lists the text in LW file MYFILE beginning with line 25.

SEE SCHEMA BEGIN=99 NLINES=15 STEP=-1
This entry lists file SCHEMA starting at line 99, stepping backwards by one line for 15 lines.

SF

Displays a frame.

Format

SF *frame*

Parameter

frame frame number to display (default=1)

Remarks

On McIDAS-X sessions with independent graphics, SF displays the specified image frame. Use the SG command to display a graphic frame. See the TERM command for more information.

See Also

Use the F command to list the current frame number.

Examples

SF
This entry displays frame 1.

SF 12
This entry displays frame 12.

SFCCON

Contours surface hourly data from ISFC-schema point files.

Format

SFCCON *param map time day [keywords]*

Parameters

param parameter to contour; see the Remarks for a complete list and descriptions of the valid options (default=**T**)

map map for the contour; see the MAP command for a list of valid predefined maps, for example, **FL**, **MID**, **USA**, **WORL** (default=do not draw a map; use the navigation of the frame specified with NAV keyword)

time observation time; see the Remarks (default=current or most recent reporting hour)

day observation date; valid formats include YYYYDDD, YYYY/MM/DD, and DD/MON/YYYY where YYYY, DDD, MM, and DD are integers and MON is three or more letters, for example, JAN or JANUARY (default=current)

Keywords

CINt= *num* contour interval; specify 0 to let SFCCON compute a reasonable interval; specify your own interval as an integer or decimal value greater than zero (default=from the `CONTOUR.DEF` text file; if no file entry matches the parameter and units, default=0)

string contour values; specify the name of a string that contains up to 64 values

COLor= graphics color level for the display (default=2)

DASh= **ALL** dash all contours

NEG dash negative contours only

POS dash positive contours only

DATaset= ADDE point dataset name; specify as *group/descriptor* or *alias* (default=**RTPTSRC/SFCHOURLY**)

GRA= graphic frame number for the display (default=current)

LSIze= contour label height, in pixels (default=8)

NAV= *num* frame to use for navigation

C use the current frame's navigation (default)

you cannot use the NAV keyword if you specify a map with the *map* parameter

UNIt= units for the specified parameter; see the Remarks for defaults

Remarks

SFCCON builds and runs a PTCON command to display surface hourly data from ISFC-schema point files. SFCCON accepts all the keywords in the PTCON command except LAT, LON, MAP, PRO, SLAT, SLON and PARAM because they may conflict with SFCCON's parameters or keywords. You can use the PTCON SELECT keyword to limit the analysis to a specified list or range of values, but you cannot specify a different parameter, time, day or unit than those defined by the SFCCON parameters or keywords.

Valid *param* options are most of the ISFC-schema point file parameters that can be contoured, plus **STREAML** for streamlines. Run the CU LIST command to list valid units and abbreviations for parameters. The table below lists the valid *param* options, their default units, and a description of the parameter. Default units in parentheses cannot be changed.

param	Default Units	Description
ELEV	FT	station elevation
T	F	temperature
TD	F	dew point temperature
DIR	(degrees)	wind direction
SPD	KTS	wind speed
GUS	KTS	wind gusts
STREAML		streamlines
ALTIM	MB	altimeter setting
PMSL	MB	sea-level pressure
VIS	MI	visibility
PCP	IN	three- or six-hour precipitation total; three-hour total reported only at 3, 9, 15, 21 UTC; six-hour total reported only at 0, 6, 12, 18 UTC; see the Remarks

param	Default Units	Description
PCP3	IN	three-hour PCP total; reported only at 3, 9, 15, 21 UTC; see the Remarks
PCP6	IN	six-hour PCP total; reported only at 0, 6, 12, 18 UTC; see the Remarks
PCP24	IN	24-hour precipitation total; reported at 12 UTC; see the Remarks
SNO	IN	snow depth; reported only at 0, 6, 12, 18 UTC; see the Remarks
CAC	(code)	ceiling cloud amount; 0=clear, 1=scattered, 2=broken, 3=overcast
CA1	(code)	first non-ceiling cloud amount; 0=clear, 1=scattered, 2=broken, 3=overcast
CA2	(code)	second non-ceiling cloud amount; 0=clear, 1=scattered, 2=broken, 3=overcast
CZC	FT	height of cloud ceiling
CZ1	FT	height of first non-ceiling cloud layer
CZ2	FT	height of second non-ceiling cloud layer

The *time* default is the current hour for all parameters except PCP, PCP3, PCP6, PCP24 and SNO. Because PCP and SNO are not reported every hour in METAR reports, the default for these parameters is the most recent hour storing the data. PCP is reported every three hours starting at 0 UTC. PCP3 represents the three-hour totals in PCP; it is reported at 3, 9, 15, and 21 UTC. PCP6 represents the six-hour totals in PCP; it is reported at 0, 6, 12, and 18 UTC. PCP24 represents the 24-hour precipitation totals and is reported at 12 UTC only. SNO is reported every six hours at 0, 6, 12, and 18 UTC.

This means, for example, that the *time* default for PCP is 0 if the current time is between 0:00 and 2:59 UTC; the *time* default for PCP3 is 3 if the current time is between 3:00 and 8:59 UTC; the *time* default for SNO and PCP6 is 6 if the current time is between 6:00 and 11:59 UTC. The time default for PCP24 is 12 UTC today if the current time is between 12:00 and 23:59 UTC, and is 12 UTC yesterday if the current time is between 0:00 and 11:59 UTC.

Examples

SFCCON
This entry contours the temperature for the current day and time using the navigation of the current frame.

SFCCON PCP3 UNIT=MM
This entry contours the most recent three-hour precipitation totals in millimeters using the navigation of the current frame. For example, if the current time is 19 UTC, the 15 UTC data is plotted since three-hour precipitation totals are reported only at 3, 9, 15 and 21 UTC.

SFCCON SNO MID 12 UNIT=CM COLOR=7
LABEL='12 UTC Midwest snow depth, in centimeters' 7 420 150
This entry contours snow depth in centimeters at 12 UTC over a map of the Midwest. The contours are drawn in graphics color level 7. The default label below the plot is replaced with the text *12 UTC Midwest snow depth, in centimeters* near the center of the frame in graphics color level 7. LABEL is a PTCON keyword.

TE COLD "-20 -10 0 10 20 25 30 32 35
SFCCON T CINT=COLD DASH=NEG
The TE command creates a string called COLD containing contour values for the SFCCON entry. The SFCCON entry draws the -20, -10, 0, 10, 20, 25, 30, 32 and 35° Fahrenheit temperature contours for the current day and time using the navigation of the current frame. The -20° and -10° contours are dashed; the others are solid. Do not specify a pound sign (#) before the string name in the CINT keyword.

SFCCON PMSL NA 6 12/JAN/1996 DATASET=CLIMATE/1996
This entry contours sea-level pressure over a map of North America at 6 UTC on 12 January 1996 using the data in the dataset CLIMATE/1996.

SFCLIST

Lists surface hourly data from point files.

Format

SFCLIST *id1 . . idn nhours [keywords]*

Parameters

id1 . . idn	station IDs or states to list; use the two-character state P.O. abbreviations for states; specify either IDs or states, but not a combination; see the Remarks
nhours	number of hours to search for observations starting from the current time and going backwards; use the TIME keyword to specify a range of times; see the Remarks (default=1)

Search Keywords

CO=	*co1 . . con*	lists observations for all stations in these countries; use CCODE command to list valid country codes; see the Remarks
DATaset=	ADDE point dataset name; specify as *group/descriptor* or *alias* (default=**RTPTSRC/SFCHOURLY**)	
DAY=	*bday eday*	range of days to list; uses the TIME keyword, not *nhours* parameter to list times (default=current *bday*)

SELect= *'clause1 ; clause2 ; . . ; clausen'*
finds only the data matching the values in the select clauses; single quotes are mandatory; separate select clauses with semicolons; specify *clause* as a range or a list using one of the following formats:

range:	*parameter*[*unit*] *bval eval*
list:	*parameter*[*unit*] *val1,val2, . . ,valn*

parameter	point file parameter; you cannot use ID, ST, CO, TIME or DAY in a clause
[*unit*]	units for the parameter values; units are optional but must be in square brackets if specified (default=from point dataset)
bval eval	range of parameter values
val1, . . , valn	list of parameter values

SPAn=	**TIME**	lists all data in the TIME keyword range, *btime* to *etime*, for each day of the DAY keyword range, *bday* to *eday* (default)
	DAY	lists all data from *btime* on *bday* through *etime* on *eday*
TIMe=	*btime etime*	range of times to list; overrides *nhours* parameter (default=current *btime*)

Output Keywords

OPTion= *o1 . . on*

optional output fields to display; choose from the following options; in McIDAS-OS2 only one additional field may be added before wrapping occurs

NONE	doesn't display any optional fields (default)
ALL	displays all optional fields listed below
CHILL	displays the derived wind chill index, WCI
CLOUD	displays the first and second non-ceiling cloud parameters, Cld1 and Cld2
HEAT	displays the derived heat index, HI
HUMID	displays the relative humidity, RH, and mixing ratio, MIX
PRECIP	displays liquid precipitation, Pcp, and snow depth, Sno
SLP	displays the sea level pressure, SLP
STP	displays derived station pressure, STP
THETA	displays derived potential temperature, Th, equivalent potential temperature, ThE, and wetbulb potential temperature, ThW; displayed in Kelvin regardless of value specified with the UNIT keyword
VAPOR	displays derived vapor pressure, e, and saturation vapor pressure, es
VIRTUAL	displays derived virtual temperature, Tv
WETBULB	displays derived lifted condensation level, LCL, and wet bulb temperature, Tw

SORt=	**TIME**	sorts output by nominal hour, HH; for each hour, stations are listed alphabetically, regardless of the actual reporting time (default)
	OBTIME	sorts output by the exact time of observation, HHMM; for each time, stations are listed alphabetically
	STN	sorts output alphabetically by station; for each station, observations are listed chronologically
UNIt=	**A**	lists output in American units: temperatures in Fahrenheit, wind speed and gusts in knots, visibility in miles, cloud heights in 100s of feet, precipitation and snow depth in inches (default)
	M	lists output in metric units: temperatures in Celsius, wind speed and gusts in meters/second, visibility in kilometers, cloud heights in hectometers, precipitation and snow depth in millimeters

Remarks

SFCLIST displays point file data in an easy-to-read format that includes columns for temperature, dewpoint temperature, wind direction and speeds, pressure, visibility, current weather, and cloud ceiling. This data is obtained from the same raw observational text reports displayed by the command SFCRPT, but formatted in columns.

The cloud ceiling (Ceil) field on the right side of the output is displayed as *coverage/height*. Coverage is listed in eighths; height is listed in hundreds of feet if UNIT=A, or in hectometers if UNIT=M. For example, 3/111 represents 3/8ths cloud coverage at a height of 11,100 feet if UNIT=A, or 11,100 meters if UNIT=M. If OPTION=CLOUD or ALL is specified, the coverage and height values for the first and second non-ceiling levels (Cld1 and Cld2) are also listed.

You must specify at least one station ID, state, or country. Normally, you should not specify a combination of station IDs, states or countries. Because SFCLIST uses a logical AND between different search conditions, only data that satisfies all of the specified conditions is listed. For example, the command SFCLIST KBOS FL will not find any data because Boston (KBOS) is not in the state of Florida; SFCLIST NY CO=AU will not find any data because there is no Australian state with the abbreviation NY. If you specify multiple values for a single search condition however, SFCLIST uses a logical OR to list all data. For example, the command SFCLIST KBOS KMIA lists all data for both Boston and Miami.

When using the *nhours* parameter, the current time determines which data is listed. For example, if you run the command SFCLIST KMSN 1 between 11:00 and 11:59 UTC, Madison's 11 UTC data is listed. If you run it between 12:00 and 12:59 UTC, the 12 UTC data is listed. If the current time is before 13 UTC (12:55, for example) but the 13 UTC data is available, you cannot list it using *nhours*; you must specify TIME=13.

See Also

See the PTLIST command for additional information about select clauses.

Examples

SFCLIST TX
This entry lists all surface data for Texas from the past hour.

SFCLIST TX OK KS 2
This entry lists all surface data for Texas, Oklahoma, and Kansas from the past two hours.

SFCLIST KMIA KLAX TIME=6 12
This entry lists all surface data for Miami and Los Angeles from 6 to 12 UTC today.

SFCLIST KMSN TIME=0 12 DAY=96100 96105 SPAN=DAY DATASET=CLIMATE/1996
This entry lists all archived surface data for Madison from 0 UTC on day 96100 to 12 UTC on day 96105.

SFCLIST KMSN TIME=0 12 DAY=96100 96105 DATASET=CLIMATE/1996
This entry lists all archived surface data for Madison from 0 UTC to 12 UTC on each day in the range 96100 through 96105.

SFCLIST X 6 CO=IY SP FR
This entry lists all surface data for Italy, Spain, and France from the past six hours.

SFCLIST MS 3 CO=US
This entry is an exception to the rule stated in the Remarks above. It lists all surface data for Mississippi from the past three hours. The CO=US keyword eliminates data from stations in other countries that use MS as the state/province/territory abbreviation. It is rarely necessary to specify the CO keyword when listing data for a U.S. state because very few stations outside the United States use an abbreviation that matches a U.S. state abbreviation.

SFCLIST CO=US SELECT='T[F] -100 -5 ; SPD[KTS] 20 40' OPTION=CHILL
This entry lists surface data, including the wind chill index, for all stations in the United States reporting a temperature below -5°F and wind speed between 20 and 40 knots from the past hour.

SFCMG

Displays a surface meteorogram.

Format

SFCMG *id nhours [keywords]*

Parameters

id	station ID
nhours	number of hours to include in meteorogram; specify the ending time with the TIME keyword (default=24)

Keywords

COLor= *t td p cld win wx pcp vis bg*
graphics color levels for each meteorogram component: temperature (*t*), dew point (*td*), pressure (*p*), clouds (*cld*), wind (*win*), current weather (*wx*), precipitation (*pcp*), visibility (*vis*), background grid (*bg*)
(default=5 4 2 7 3 3 4 3 8)

CRAnge= *min max unit* minimum and maximum cloud levels, and units (*min* default=0; *max* default=maximum cloud height; *unit* default=**FT**)

DATaset= ADDE point dataset name; specify as *group/descriptor* or *alias* (default=**RTPTSRC/SFCHOURLY**)

DAY= ending day to plot (default=current)

EG=

NO	does not erase graphics frame before plotting
YES	automatically erases graphis frame before plotting (default)

GRA= graphic frame number to display meteorogram (default=current)

INT= hour interval for plotting data; see the Remarks (default=1)

LATest=

LEFT	plot the most recent data on the left side of the meteorogram
RIGHT	plot the most recent data on the right side of the meteorogram (default)

PRAnge=	*min max unit*	minimum and maximum pressure, and units (*min* and *max* default=calculated; *unit* default=**MB**)
PTYpe=	**ALTM**	use altimeter setting for pressure values (default)
	SLP	use sea level pressure for pressure values
TDAy=	**CAL**	display the calendar day in the title and day labels (default)
	JUL	display the Julian day in the title and day labels
TIMe=	ending hour to plot (default=current for current day; default=23 if another day is specified with the DAY keyword)	
TRAnge=	*min max unit*	minimum and maximum temperature, and units (*min* and *max* default= calculated; *unit* default=**F**)
UNIt=	**A**	plot in American units: visibility in miles, precipitation in inches, and wind speed in knots (default)
	M	plot in metric units: visibility in kilometers, precipitation in millimeters, and wind speed in meters/second

Remarks

SFCMG displays a meteorogram (time-series plot) of surface hourly data. The meteorogram displays temperature, dew point and pressure traces. It also plots cloud coverage and heights; wind direction, speed, and gusts; current weather; precipitation; and visibility.

To avoid plotting data that overlaps the meteorogram's borders and legends, SFCMG displays an x-axis longer than the plotted data. The fact that the data's starting and ending times fall inside the diagram's borders does not mean data is missing.

SFCMG plots the first weather reported in the weather group. For example, if the weather group consists of heavy snow and blowing snow (+SN, BLSN), only the heavy snow symbol is plotted.

Use the INT keyword to declutter the plotted data. For example, the command below plots every sixth hour of data from 00 UTC on day 97097 through 00 UTC on day 97100.

SFCMG KDCA 72 DAY=97100 TIME=18 INT=6

Without INT=6, every hour's data would be displayed and the wind flags and gusts, weather symbols, precipitation totals, and visibility values would overlap.

Examples

SFCMG KMSN
This entry displays a meteorogram showing the surface data for Madison from the past 24 hours.

SFCMG EGLL 48 UNIT=M TRANGE=0 20 C
This entry displays a meteorogram showing the surface data for London from the past 48 hours. The grid containing the temperature trace ranges from 0° C to 20° C. Visibility, precipitation, and wind speed are plotted in metric units (kilometers, millimeters and meters per second).

SFCMG KMIA 36 TIME=12 DAY=96105 DATASET=CLIMATE/1996
This entry displays a meteorogram showing 36 hours of surface data for Miami from 00 UTC on day 96104 through 12 UTC on day 96105.

SFCPLOT

Plots surface hourly data from ISFC-schema point files.

Format

SFCPLOT *param map time day [keywords]*

Parameters

param parameter to plot; see the Remarks for a complete list and descriptions of the valid options (default=**PLOT**)

map map for the plot; see the MAP command for a list of valid predefined maps, for example, **FL**, **MID**, **USA**, **WORL** (default=do not draw a map; use the navigation of the frame specified with NAV keyword)

time observation time; see the Remarks (default=current or most recent reporting hour)

day observation date; valid formats include YYYYDDD, YYYY/MM/DD, and DD/MON/YYYY where YYYY, DDD, MM, and DD are integers and MON is three or more letters, for example, JAN or JANUARY (default=current)

Keywords

COLor= graphics color level for the display (default=3)

DATaset= ADDE point dataset name; specify as *group/descriptor* or *alias* (default=**RTPTSRC/SFCHOURLY**)

DEClut=
- **YES** declutter the plot, meaning do not plot overlapping values (default)
- **NO** do not declutter the plot

GRA= graphic frame number for the display (default=current)

LSIze= height of the plot characters, in pixels (default=8)

NAV=
- *num* frame to use for navigation
- **C** use the current frame's navigation (default)

you cannot use the NAV keyword if you specify a map with the *map* parameter

PTYpe=
- **ALTM** use altimeter setting for pressure values in the PLOT option (default)
- **PMSL** use sea-level pressure for pressure values in the PLOT option

UNIt= units for the specified parameter; see the Remarks for defaults

Remarks

SFCPLOT builds and runs a PTDISP command to display surface hourly data from ISFC-schema point files. SFCPLOT accepts all the keywords in the PTDISP command except LAT, LON, MAP, PRO, SLAT, SLON and PARAM because they may conflict with SFCPLOT's parameters or keywords. You can use the PTDISP SELECT keyword to limit the plot to a specified list or range of values, but you cannot specify a different parameter, time, day or unit than those defined by the SFCPLOT parameters or keywords.

Valid *param* options are most of the ISFC-schema point file parameters plus **PLOT**, **WIND**, **WINDB**, **WINDV**, **WX**, and **WXS**. Run the CU LIST command to list valid units and abbreviations for all parameters except PLOT. The table below lists the valid *param* options, their default units, and a description of the parameter. Default units in parentheses cannot be changed.

param	**Default Units**	**Description**
ID	(text)	three- or four-character ICAO station ID
ELEV	FT	station elevation
OBTIME	(HMS)	actual time of observation
PLOT	A	station plot of the T, ALTIM or PMSL (set with the PTYPE keyword), CAC, ID, TD, WX1, WINDB parameters, in clockwise order from top left of plot; units are A, for American, or M, for metric (default)
WX1	(text)	weather type (first four characters)
WX2	(text)	weather type (next four characters)
WX	(text)	weather type (combined WX1, WX2)
WXS	(symbols)	weather type (combined WX1, WX2)
T	F	temperature
TD	F	dew point temperature
DIR	(degrees)	wind direction
SPD	KTS	wind speed
GUS	KTS	wind gusts
WIND	(deg) KTS	two-digit wind direction and two- or three-digit speed, in the form DDSSS

param	Default Units	Description
WINDB	(barb)	wind barb (DIR and SPD); flag=25 mps (~50 kts), long barb=5 mps (~10 kts), short barb=2.5 mps (~5 kts)
WINDV	(vector)	wind vector (DIR and SPD)
ALTIM	MB	altimeter setting
PMSL	MB	sea-level pressure
VIS	MI	visibility
PCP	IN	three- or six-hour precipitation total; three-hour total reported only at 3, 9, 15, 21 UTC; six-hour total reported only at 0, 6, 12, 18 UTC; see the Remarks
PCP3	IN	three-hour PCP total; reported only at 3, 9, 15, 21 UTC; see the Remarks
PCP6	IN	six-hour PCP total; reported only at 0, 6, 12, 18 UTC; see the Remarks
PCP24	IN	24-hour precipitation total; reported at 12 UTC; see the Remarks
SNO	IN	snow depth; reported only at 0, 6, 12, 18 UTC; see the Remarks
CAC	(code)	ceiling cloud amount; 0=clear, 1=scattered, 2=broken, 3=overcast
CA1	(code)	first non-ceiling cloud amount; 0=clear, 1=scattered, 2=broken, 3=overcast
CA2	(code)	second non-ceiling cloud amount; 0=clear, 1=scattered, 2=broken, 3=overcast
CZC	FT	height of cloud ceiling
CZ1	FT	height of first non-ceiling cloud layer
CZ2	FT	height of second non-ceiling cloud layer

The *time* default is the current hour for all parameters except PCP, PCP3, PCP6, PCP24 and SNO. Because PCP and SNO are not reported every hour in METAR reports, the default for these parameters is the most recent hour storing the data. PCP is reported every three hours starting at 0 UTC. PCP3 represents the three-hour totals in PCP; it is reported at 3, 9, 15, and 21 UTC. PCP6 represents the six-hour totals in PCP; it is reported at 0, 6, 12, and 18 UTC. PCP24 represents the 24-hour precipitation totals and is reported at 12 UTC only. SNO is reported every six hours at 0, 6, 12, and 18 UTC.

This means, for example, that the *time* default for PCP is 0 if the current time is between 0:00 and 2:59 UTC; the *time* default for PCP3 is 3 if the current time is between 3:00 and 8:59 UTC; the *time* default for SNO and PCP6 is 6 if the current time is between 6:00 and 11:59 UTC. The time default for PCP24 is 12 UTC today if the current time is between 12:00 and 23:59 UTC, and is 12 UTC yesterday if the current time is between 0:00 and 11:59 UTC.

Examples

SFCPLOT
This entry plots station model data for the current day and time using the navigation of the current frame.

SFCPLOT T MID DECLUT=NO
This entry plots temperature over a map of the Midwest for the current day and time. The data is not decluttered, so all data is plotted and some values may overlap.

SFCPLOT PCP6 UNIT=MM
This entry plots the most recent six-hour precipitation totals in millimeters using the navigation of the current frame. For example, if the current time is 17 UTC, the 12 UTC data is plotted since six-hour precipitation totals are reported only at 0, 6, 12 and 18 UTC.

SFCPLOT WINDB USA 22 COLOR=7 LSIZE=12
SELECT='SPD[KTS] 25 200' DECLUT=NO
TITLE='22 UTC winds of at least 25 knots' 7 420 150
This entry plots wind barbs for all 22 UTC wind speeds of 25 knots or greater over the United States. The barbs are drawn in graphics color level 7 with a plot size of 12 pixels. The default title below the plot is replaced with the text *22 UTC winds of at least 25 knots* near the center of the frame in graphics color level 7. SELECT and TITLE are PTDISP keywords.

SFCPLOT SNO NA 12 17/JAN/1996 DATASET=CLIMATE/1996
DECLUT=NO
This entry plots all snow depth reports over a map of North America at 12 UTC on 17 January 1996 using the data in the dataset CLIMATE/1996. The data is not decluttered, so all data is plotted and some values may overlap.

SFCRPT

Lists surface hourly observations.

Format

SFCRPT *id1 . . idn nhours [keywords]*

Parameters

id1 . . idn	station IDs or states to list; use the two-character state P.O. abbreviation for states
nhours	number of hours to search for observations starting from DAY and TIME (default=1)

Keywords

CO=	*co1 . . con*	lists observations for all stations in these countries; use the CCODE command to list valid country codes
DATaset=	ADDE dataset name; specify as *group/descriptor* or *alias* (default=**RTWXTEXT/SFCHOURLY**)	
DAY=	Julian date to start search; use either the 5- or 7-digit format, for example, 96300 or 1996300 (default=current)	
TIMe=	UTC time to start search (default=current)	
TYPe=	**ALL**	lists both hourly and special reports (default)
	H	lists only hourly reports
	S	lists only special reports

Remarks

You must specify at least one station ID, state, or country.

If you use the DAY keyword to specify a day other than the current day and do not use the TIME keyword, the search begins at the current hour on the specified day and works backwards.

Examples

SFCRPT KSTL
This entry lists all surface observations for St. Louis from the past hour.

SFCRPT KMIA KBTV VT 2
This entry lists all surface observations for Miami; Burlington, Vermont; and all stations in Vermont from the past two hours. Burlington's observations are listed only once.

SFCRPT KGRB 4 CO=BE BH
This entry lists all surface observations for Green Bay, Wisconsin; Bermuda and Belize from the past four hours.

SFCRPT KZZV 13 TIME=4 TYPE=S
This entry lists only special surface observations for Zanesville, Ohio. SFCRPT lists observations starting with 4:00 UTC of the current day and ending with 16:00 UTC of the previous day.

SFCRPT NZCH 24 TIME=23 DAY=96300
This entry lists all surface observations for Christchurch, New Zealand, on day 96300.

SG (McIDAS-X only)

Displays a graphics frame.

Format

SG *frame*

Parameter

frame graphics frame number to display (default=1)

Remarks

Use the SG command only on McIDAS-X sessions with independent graphics. See the TERM command for more information.

See Also

Use the F command to list the current image and graphic frame numbers.

Examples

SG
This entry displays graphics frame 1.

SG 4
This entry displays graphics frame 4.

SHOMNU (McIDAS-OS2 only)

A debugging tool for the F Key Menu System.

Format

SHOMNU *menu*

Parameter

menu menu number to debug (default=0)

Remarks

Text frame 9 displays the user menu. Text frame 8 displays the command strings. Text frames 7, 6 and 5 (in this sequence) display the command strings if extra space is needed.

See Also

See the *F Key Menu System* chapter in this manual.

Examples

SHOMNU 1
This entry displays the interface screen for menu 1 on text frame 9. Text frame 8 displays the command string.

SHOWVG

Displays virtual graphics.

Format

SHOWVG *virt bframe eframe [keywords]*

Parameters

virt	virtual graphics number; the range is 1 to 9999
bframe	beginning graphics frame number (default=current)
eframe	ending graphics frame number (default=*bframe*)

Keywords

ELE=	offsets the graphic by the specified number of elements (default=0)
LINe=	offsets the graphic by the specified number of lines (default=0)

Remarks

The SHOWVG command restores a virtual graphic saved on the workstation. You create virtual graphics by using the global keyword VIRT with any program that creates graphical output. See *Appendix A, Global Keywords*, for more information.

Use the command DMAP VIRT to list all virtual graphics files saved on the workstation. Virtual graphics files are named VIRT*nnnn* where *nnnn* is the virtual graphics number.

Use the keywords to reposition the graphic. The specified values are constants added to the line and element coordinates when displaying the graphic.

Examples

SHOWVG 1000
This entry displays virtual graphic 1000 on the current frame.

SHOWVG 1000 1 2
This entry displays virtual graphic 1000 on frames 1 and 2.

SHOWVG 1000 1 2 LINE=80 ELE=100
This entry is the same as the one above except it displays the virtual graphic 80 lines lower and 100 elements to the right of the original position.

SKE

Enters a McIDAS command in the system command scheduler.

Format

SKE *day time repeat interval [keywords] "command*

Parameters

day	day to initiate the command, YYDDD (default=current)
time	time to initiate the command, HH:MM:SS; use colons when specifying the time (default=00:00:00)
repeat	number of times to run the command; if you enter 999999, the word MANY replaces it in the header and the command is run until you suspend or delete it from the scheduler using the SKU command (default=1)
interval	time interval between commands, DDDHH:MM:SS; use colons when specifying the time; for one day, enter 24:00:00 or 100:00:00 (default=1 hour)
"command	command to run; the command length may be up to 160 characters (including spaces)

Keywords

FILE=	(McIDAS-X only) scheduler file name; see the Remarks (default=**SKEDFILE**)
ID=	4-digit number to identify the command in the scheduler (default=system assigned number)
NAME=	user name assigned to the scheduler entry (default=name specified at logon)
PROJ=	project number charged when you run the command (default=project number specified at logon)
TOL=	late tolerance, HH:MM:SS; if the workstation is down or too busy for the command to run, the late tolerance determines how much time can pass before the command is skipped; if 10 to 24 hours are specified, the word BIG appears in the header; three seconds (:00:03) is the minimum acceptable time (default=1 hour)

Remarks

The first line of output from this command indicates if the scheduler is on or off. Scheduled commands will run only if the scheduler is on. Use the SKU command to turn the scheduler on or off.

In McIDAS-X, you can run multiple scheduler processes. Use the FILE keyword to identify the file name for the scheduler process. See the SKED command for more information.

The keyword ID must be a 4-digit number (or omitted). Use it to refer to a schedule entry for listing, suspension and deletion.

To run a command stored in the workstation string table, precede the string name with two pound (##) signs. That is, enter "*##string* in place of "*command*. For example:

```
TE MAP "MAP MID

SKE 97300 12 "##MAP
```

Examples

SKE 97240 13:30 2 24:00 ID=3003 "IMGLIST GOES/VIS.ALL
This entry runs the command IMGLIST GOES/VIS.ALL at 13:30 UTC on each of two consecutive days (97240, 97241). The assigned ID for reference is 3003.

SKE #Y 09:05 999999 3 PROJ=7777 "SFCLIST KSTL OPTION=PRECIP
This entry runs command SFCLIST KSTL OPTION=PRECIP every three hours every day beginning with the current day at 09:05 UTC.

SKE 98001 0 999999 1 "RUN "PTABLE MID$(TIME$,1,2), "HOUR"
This entry runs the specified RUN command every hour, on the hour, beginning with day 98001 at 00:00 UTC. The RUN command sets the value of the string HOUR to the current hour for use in commands like PTDISP and PTLIST.

SKED (McIDAS-X only)

Starts a scheduler process.

Format

SKED *filename [keyword]*

Parameter

filename scheduler file name (default=**SKEDFILE**)

Keywords

MAXent= maximum number of scheduler entries that can be run simultaneously (default=4)

Remarks

SKED begins a scheduler process that runs until you exit the McIDAS-X session. Use the question mark (?) command to list all running processes.

At start up, the default **.mcidasrc** file starts a scheduler process using the default scheduler file, SKEDFILE. If you run multiple McIDAS-X sessions under the same account or using the same **MCPATH** setting, each session should run a scheduler process using a different file name. Otherwise, you might have scheduler entries from one session running on the other sessions.

If you start a scheduler process using a file other than SKEDFILE, you must use the keyword FILE with commands SKE, SKL and SKU since those commands also use SKEDFILE as their default scheduler file.

If you do not want the scheduler to automatically start, comment out the command **-c 'SKED SKEDFILE'** in your **.mcidasrc** file, or use the question mark (?) command to list the processes, then use the KILL command to stop the SKED process.

Examples

SKED
This entry starts a scheduler process using the default file SKEDFILE.

SKED MYSKED
This entry starts a scheduler process using the file MYSKED.

SKEWT

Plots a sounding on a skew T thermodynamic diagram.

Formats

SKEWT *station time [keywords]*
SKEWT OUTL *[keywords]*

Parameters

station	5-digit station ID (for example, 72645 is Green Bay), or a sequence number in a satellite retrieval file
time	observation time, HH (default=nearest RAOB, 0 or 12)
OUTL	displays a skew T diagram without sounding

Keywords

COLor= graphics color level of the sounding data (default=3)

DAY= year and Julian day, YYDDD (default=current)

GRA= graphics frame number (default=current)

INIt=
- **YES** initializes the graphics colors (default)
- **NO** does not initialize graphics colors

MDF= MD file number of the mandatory level data (default=last digit of the current Julian day plus 10)

MIX=
- **YES** draws mixing ratio lines (default)
- **NO** omits mixing ratio lines

OLAy=
- **YES 1** overlays the existing plot; draws a new sounding in graphics color level 3
- **YES 2** overlays the existing plot; draws a new sounding in graphics color level 2
- **NO** does not overlay the existing plot; erases the graphics first (default)

PTOp= top pressure level on the diagram rounded to multiples of 50 mb (default=100)

RANge= *min max* Celsius temperature range on the diagram (default=-90 40)

ROW= row number of the data in the RAWI schema (default=first occurrence of the data)

SIG=	MD file number of the significant level data (default=depends on the mandatory level MD file number; see the Remarks)	
TYPe=	**RAWI**	uses rawinsonde schema
	VAS	uses VAS created data
UNIt=	**FT**	plots height in feet on the left axis
	M	plots height in meters on the left axis
	MB	plots pressure in millibars on left axis (default)
VDEv=	**YES**	displays an error message if the sounding is unavailable
	NO	does not display an error message (default)

Remarks

Graphics are automatically erased before each plot. Heights are recomputed for hydrostatic consistency.

Any number of overlays may be plotted, but successive wind barbs and headers will overwrite the previous overlay's wind barbs and headers due to space limitations.

Dew point temperature is not plotted when dew point depression (temperature minus dew point temperature) rounds to a whole number that exceeds 30.

The MDF and SIG keywords specify the mandatory and significant level MD file numbers, respectively. If MDF is in the default range of 11 to 20, the default for SIG is the value of MDF plus 10. If MDF is outside the range 11 to 20, the default for SIG is the value of MDF plus one. For example, if MDF=14, the default for SIG is 24; if MDF=2500, the default for SIG is 2501.

See Also

See *Appendix E* for the stability parameter definitions.

Examples

SKEWT OUTL RANGE=-40 25
This entry plots a skew T diagram without the station plot, from -40° to 25° Celsius.

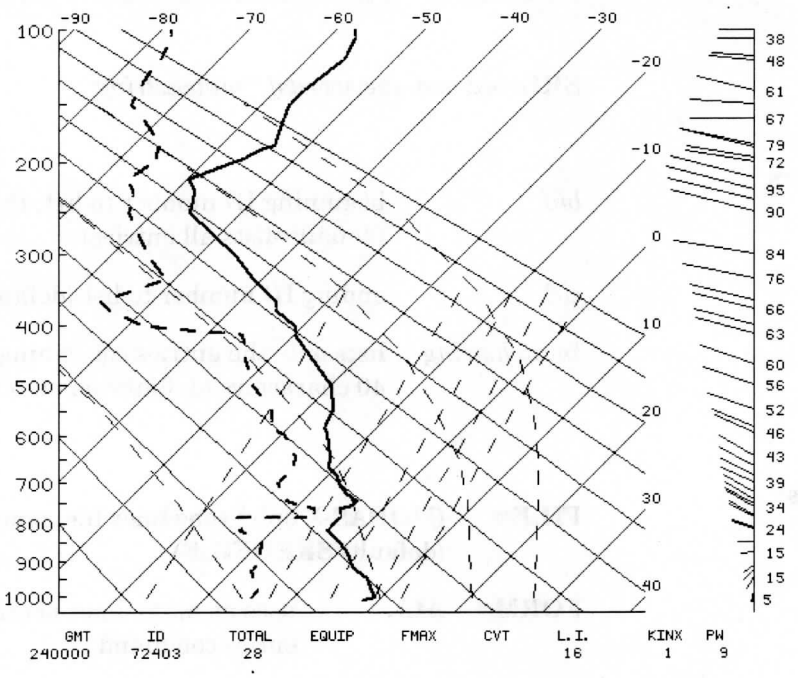
To plot two soundings on one diagram, enter the following two commands:

SKEWT 72655
This entry plots a skew T diagram for station 72655 at the current time.

SKEWT 72655 3 OLAY=Y COLOR=4
This entry plots a skew T diagram for station 72655 at 3 UTC on the same diagram in graphics color level 4.

SKEWT 72403 0

This entry plots a skew T diagram for station 72403 (Washington/Dulles) at 0 UTC. A sample output is shown below.



The number below the GMT label is the day and time of the sounding, in UTC. ID is the WMO station identifier.

The parcel used in calculating the stability parameters is derived from the average thermodynamic properties (temperature and moisture) found in the lowest 100 mb, ground-based boundary layer. This parcel is used in determining parameters EQUIP, FMAX, CVT and LI. At 12 UTC, the parcel's temperature is warmed 2° K to account for daytime heating. This modified parcel, in turn, determines the above parameters. See *Appendix E* for the stability parameter definitions.

SKL

Lists command scheduler entries.

Format

SKL *bid eid [keywords] "matchstring*

Parameters

bid	beginning ID number to list; the range is 1 to 9999 (default=lists all entries)
eid	ending ID number to list (default=*bid*)
"matchstring	lists only the entries containing this string; maximum of 40 characters (default=no match performed)

Keywords

FILE=	(McIDAS-X only) scheduler file name; see the Remarks (default=**SKEDFILE**)	
FORM=	**ALL**	uses as many lines of output as needed to list the entire command
PROJ=	*min max*	lists entries with a specified project number or range of numbers (default=1000 9999)
SORT=	**ID**	sorts entries by ID number (default)
	PROJ	sorts entries by project number
	RAW	lists in the order of occurrence in the schedule (unsorted)
	TIME	sorts entries in ascending time order

Remarks

In McIDAS-X, you can run multiple scheduler processes. Use the FILE keyword to identify the file name for the scheduler process. See the SKED command for more information.

All entries are listed if the beginning and ending ID numbers are omitted. The output is defined below.

Column	Output	Definition
1	T	terminal number
2	ID	command identification number
3	X/S	S suspends the scheduled command; X disables the terminal's schedule
4	Next Executn	next day and time to run a command
5	#REM	number of remaining commands; if SKE repetitions is a 6-digit number, this will say MANY
6	Interval	day and time interval between executions; the format is DDHH:MM:SS, entered by SKE *interval* where *interval* is one hour; if *interval* is 24, this output is listed as 1000000 (1 day)
7	TOL	late tolerance time, HH:MM:SS; any entry over nine hours is listed as BIG
8	NAME:	user name
9	PROJ:	project number
10	Command:	command string to run

Examples

SKL
This entry lists all the scheduler entries for your terminal.

SKL 420 430 PROJ=7000
This entry lists the scheduler entries between 420 and 430 with project number 7000.

SKU

Command scheduler utility.

Formats

SKU *option bid eid [keywords]*
SKU MSG *device* **FILE=**
SKU CHA *bid eid [keywords] "command*
SKU DOIT *bid eid* **FILE=**
SKU ON FILE=
SKU OFF FILE=

Parameters

option	**DEL**	deletes the entry from the scheduler
	REL	releases the entry so the command runs at the next scheduled time
	SUS	suspends the entry so the command will not run, but does not delete the entry from the scheduler
MSG		device specified for the scheduler text output
CHA		changes the entry
DOIT		runs a schedule entry without decrementing the counters
ON		turns the scheduler on
OFF		turns the scheduler off
bid		beginning ID number
eid		ending ID number (default=*bid*)
device	**C**	sends output to the text frame
	N	does not list the output
"command		new command to replace the current command; the new command may contain up to 160 characters including spaces

Keywords

FILE=		(McIDAS-X only) scheduler file name; see the Remarks (default=**SKEDFILE)**
NAME=	*old new*	changes the old user ID to the new user ID
PROJ=	*old new*	replaces the old project number with the new project number

Remarks

In McIDAS-X, you can run multiple scheduler processes. Use the FILE keyword to identify the file name for the scheduler process. See the SKED command for more information.

To change a scheduler entry, you must be logged on to the project number listed in the entry.

Use the DOIT parameter to test scheduler entries.

Examples

SKU DEL 6
This entry deletes the scheduler entry with ID number 6.

SKU SUS 1001 1009
This entry suspends scheduler entries 1001 through 1009.

SKU CHA 1001 1009 PROJ=7000 5630
This entry changes the project number for scheduler entries 1001 through 1009 from 7000 to 5630.

SKU DOIT 5
This entry runs the command in scheduler entry 5. It doesn't change the run time or decrease the counter.

SP

Plots surface data.

Formats

SP *parm map time [keywords]*
SP *p1-p2 map t1-t2 [keywords]*

Parameters

parm

CIGH ceiling height (feet); ISFC only

CLD cloud cover; the range is 0 (clear) to 3 (overcast)

GUS wind gust (meters/second)

ID station identification

MIX mixing ratio (g/kg)

PCP precipitation (inches)

PLOT plots station model in the format:

```
      T      PSL
WX    *   (wind flag)
      TD     CLD
          ID
```

PRE sea level pressure (millibars); ISFC only

PSL altimeter setting (millibars)

SNO snow cover (inches)

SPD wind speed (meters/second)

T temperature (°C or F)

TD dew point temperature (°C or F)

THA theta (K)

THAE theta E (K)

VIS visibility (miles)

WIN wind, DDFF, FF (meters/second) meteorological flags; barb = 5 ms^{-1} (~ 10 kts); flag = 25 ms^{-1} (~ 50 kts)

WX weather text

	WXS	weather symbols
	ZCH	ceiling height (feet); SVCA only
	ZCL	first non-ceiling cloud deck height (feet); SVCA only
	ZCL1	first non-ceiling cloud deck height; ISFC only
	ZCL2	second non-ceiling cloud deck height; ISFC only
	ZCM	second non-ceiling cloud deck height; SVCA only
	ZS	station elevation (meters)
map	**DEF**	define map using keywords LAT and LON (default)
	MID	Midwest USA
	NA	North America
	SAT	satellite projection
	USA	USA
	state post office abbreviation	
time	observation time, HH or HH:MM:SS; defaults to the previous hour if the current time is less than 10 minutes past the hour (default=current)	
p1-p2	parameter difference used in plotting; subtract *p2* from *p1*	
t1-t2	time difference used in plotting; subtract *t2* from *t1*	

Keywords

COLOR=	graphics color level for the display (default=3)	
DAY=	*d1-d2*	year and day, YYDDD; use two values when plotting differences (default=current)
GRA=	graphics frame number for the display (default=current)	
LAT=	*min max*	latitude bounds; use when specifying DEF as the *map* parameter
LON=	*min max*	longitude bounds; use when specifying DEF as the *map* parameter
MDF=	*f1-f2*	ISFC or SVCA MD file number; use two values when plotting differences (default=last digit of the current Julian day)

UNIT=	A	plots values in American units (default)
	M	plots values in metric units

This keyword is valid for temperature and dew point only.

Remarks

If you do not specify keywords COLOR, DAY, GRA, LAT, LON and MDF, the string table is searched for strings of the same name. If they exist, SP uses their values. If the keyword or string MDF is used, its value is stored and accessed in the string named SVCA. If the command's results are unexpected, use TL to list the string table or TD ALL to delete it. Day and time default to the current day and time, not the last available data on the workstation.

The SC, SP, UC, UL, UP, and XSECT commands were not modified with year 2000 changes because they have or will have ADDE replacements that are year 2000 capable. The SC, SP, UC, UL, UP, and XSECT commands, however, continue to work with dates before and after year 2000, but only if the date specified in the DAY keyword exactly matches the value stored in the point/MD file. For example, if using an MD file with the new ccyyddd date format (e.g., ISFC or IRAB schema MD files created with McIDAS-XCD 7.5 and later), then the value for the DAY keyword must include the century (e.g., 1999240). If using an ISFC or IRAB schema MD file created using a version of McIDAS-XCD prior to 7.5, you must continue to specify the date in the yyddd format (e.g., DAY=97240).

Examples

SP T MID
This entry plots temperatures over the Midwest for the current day and time in graphics color level 3. Specify *time* if you didn't just download the current data.

SP WIN LAT=20 40 LON=80 100 COLOR=1
This entry plots winds in graphics color level 1 with latitudes 20° to 40° N and longitudes 80° to 100° W for the current day and time.

SP PLOT SAT 18 DAY=97250
This entry plots a station model over a satellite projection at 18 UTC, day 97250.

SP T-TD WI
This entry plots the current dew point depression for Wisconsin.

SP T WI 12-12 MDF=2-1 DAY=98010-98009 UNIT=A
This entry plots the 24-hour temperature change in degrees Fahrenheit from 12 UTC, day 98009, to 12 UTC, day 98010.

SU

Image data stretching utility.

Formats

SU INI *name type unit [keywords]*
SU MAKE *name inlo inhi blo bhi*
SU LIST *string*
SU TABLE *name*

Parameters

INI initializes the stretch table defining the type of calibration, calibration units and initial breakpoint settings; must be used when making a new stretch table

MAKE enters breakpoints in the table using brightness levels

LIST lists the saved stretch tables (default=lists all stretch tables on the workstation)

TABLE lists the breakpoints stored in a stretch table

name name of the stretch table; eight alphanumeric characters maximum

string lists the stretch tables beginning with this character string

type

AAA uses 2-byte GOES data calibration for the input table

GMS uses GMS data calibration

GVAR uses 2-byte GVAR calibration

MSAT uses METEOSAT data calibration

QTIR uses POES data quick calibration

TIRO uses POES data calibration

VAS uses 2-byte GOES data calibration (for pre-1987 data only)

VISR uses 1-byte GOES data calibration

WSI uses WSI radar data calibration

(default=use on any calibration type)

unit	**RAW**	raw data calibration units of the input data
	BRIT	brightness (default)
	RAD	radiance
	ALB	albedo
	TEMP	temperature
	user-defined	user-defined units; use IMGPROBE to list the available units for an image
inlo		low value of the breakpoint for input values; specify in units input with the *unit* parameter (no default)
inhi		high value of the breakpoint for input values; specify in units input with the *unit* parameter (no default)
blo		low value of the breakpoint for output brightness values; the range is 0 to 255 (no default)
bhi		high value of the breakpoint for output brightness values; the range is 0 to 255 (no default)

Keywords

BAND=		band number for the input data calibration type (default=ALL)
RANGE=	*min max*	minimum and maximum values of the input data; these values define the boundary of input values that can later be stretched; the range is 0 to 255

Remarks

Use command SU to make the tables specified with keyword SU in the IMGDISP command. SU sets the tables to stretch raw, radiance, temperature, albedo or brightness values (depending on calibration) to a user-defined brightness value. Then you can use command EU to color the brightness ranges corresponding to the new values.

If you specify keyword RANGE, all input values less than or equal to *min* are assigned an output value of zero; all input values greater than or equal to *max* are assigned an output value of 255.

Any additional breakpoints specified with the MAKE option that fall outside of *min* and *max* are assigned 0 or 255, accordingly. If you don't specify RANGE, the stretches' slope previous to the first breakpoint is a continuation of the line formed by the first two breakpoints. Likewise, the slope following the last breakpoint is a continuation of the line formed by the last two breakpoints.

When an area is displayed on a McIDAS-OS2 workstation, the image's brightness values 0 through 15 are assigned to the display's brightness value 15. The display's brightness values 0 through 14 are reserved for graphics and cursor colors. For some images, this will affect the results and may affect enhancements made to the data. To avoid having these image brightness values mapped to the display's brightness value 15, use the SU command with the IMGDISP command to stretch or map these brightnesses to different values.

Examples

SU LIST
This entry lists all stretch tables saved on the workstation.

SU INI TIRORAD3 TIRO RAD BAND=3
This entry initializes table TIRORAD3 for use on the radiance values of TIROS band 3 images. Each new stretch table must be initialized.

SU MAKE TIRORAD3 0 1.2 20 220
This entry sets the breakpoint values in the above table TIRORAD3. Input 0 corresponds to output 20; input 1.2 corresponds to output 220.

SU TABLE TIRORAD3
This entry lists the breakpoints in table TIRORAD3 and information on BAND, calibration type and units.

SU INI MSATEMP1 MSAT TEMP BAND=1
This entry initializes the table MSATEMP1 to contain breakpoints in temperature for Meteosat band 1 data.

SU MAKE MSATEMP1 240 260 20 240
This entry stretches the temperature values from 240 to 260 in table MSATEMP1, over brightness values 20 to 240.

SU INI GENBRIT X BRIT RANGE=100 200
This entry initializes the table GENBRIT to be used on any calibration type with brightness units. The brightness values from 100 to 200 are stretched to brightness values 0 to 255. Brightness values entered with SU MAKE that are less than 100 or over 200 are assigned 0 or 255, respectively.

SU LIST GEN
This entry lists all the saved stretch tables that begin with GEN.

SUNLIT

Lists the sunrise and sunset times for a specified location.

Formats

SUNLIT *date station*
SUNLIT *date lat lon*

Parameters

date date of the sunrise/sunset; valid formats include: YYYYDDD, YYYY/MM/DD and DD/MON/YYYY, where YYYY, DDD, MM and DD are integers and MON is three or four letters, such as JAN or JANU

YES yesterday

TOD today (default)

TOM tomorrow

station station identifier, such as KMSN or YSSY

lat latitude for sunrise and sunset

lon longitude for sunrise and sunset

Remarks

You must specify either a station identifier or latitude/longitude coordinates. The local noon time is an approximate calculated by finding the midpoint of the sunrise and sunset times.

Examples

SUNLIT X KPIT
This entry lists today's sunrise and sunset times for Pittsburgh.

SUNLIT TOM KPIT
This entry lists tomorrow's sunrise and sunset times for Pittsburgh.

SUNLIT 1997264 KMIA
This entry lists the sunrise and sunset times on 21 September 1997 for Miami.

SUNLIT 31/DEC/1999 32.9 97.1
This entry lists the sunrise and sunset times on 31 December 1999 at 32.9° North and 97.1° West.

SUNLIT 2005/05/23 -33:57 -151:11
This entry lists the sunrise and sunset times on 23 May 2005 at 33:57° South and 151:11° East.

SVF (McIDAS-X only)

Saves frames to a virtual frame file.

Format

SVF *bframe eframe file [keyword]*

Parameters

bframe	beginning image frame number to save (default=1)
eframe	ending image frame number to save (default=*bframe*)
file	file name in which to save the frames; if you don't specify an extension, .PIX is automatically appended (no default)

Keyword

GRA=	*bgf egf*	graphics frame range to save with the image frame range specified in *bframe* and *eframe*; see the Remarks (default=numbers specified in *bframe* and *eframe* if the session does not have independent graphics; default=last-associated graphics frame for each of the image frames if the session has independent graphics)

Remarks

SVF saves the image, graphic, frame directory, navigation, image enhancement, and graphics table for each of the specified frames. Once the frames are restored with the RVF command, the graphics are embedded in the images. This means that you cannot erase the graphics with the EG command, turn the graphics color levels on and off with the GU command, or toggle the graphics on and off with the W command.

If you specify the GRA keyword, you must enter either a single graphics frame number, or a range with the number of frames equal to the number of image frames specified in the *bframe* and *eframe* parameters.

When running McIDAS-X in the independent graphics mode (see the TERM command), image frames and graphics frames are "associated" once they have been viewed together. For example, if you loop through image frames 1-10 while displaying graphics frame 1, all 10 of the image frames are associated with graphics frame 1. The GRA keyword defaults are the last-associated graphics frame for each of the image frames in the range *bframe* to *eframe*. In this case, command SVF 1 10 LOOP saves graphics frame 1 with each of the 10 image frames in the file `LOOP.PIX`.

SVF can be used only with single-panel frames that are all the same size.

See Also

Use the RVF (McIDAS-X only) command to restore these files to frames.
Use the LVF (McIDAS-X only) command to list virtual frame files.

Examples

SVF 1 5 PICTURE
This entry saves image and graphics frames 1 through 5 into the file **PICTURE.PIX** if the session does not have independent graphics. If the session has independent graphics, the entry saves image frames 1 through 5 and their last-associated graphics frames into the file **PICTURE.PIX**.

SVF 11 20 GOESLOOP GRA=1
This entry saves image frames 11 through 20, each overlaid with the graphics displayed on graphics frame 1 into the file **GOESLOOP.PIX**.

SVF 11 20 GOESLOOP GRA=1 10
This entry saves image frames 11 through 20, each overlaid with the graphics displayed on the corresponding graphics frame between 1 and 10 into the file **GOESLOOP.PIX**.

SVGIF

Saves a McIDAS frame to the GIF format.

Format

SVGIF *frame name [keyword]*

Parameters

frame	image frame number to save (default=current)
name	name of the file in which to save the frame; if you don't specify an extension, .GIF is automatically appended (no default)

Keyword

GRA=	graphic frame to save with the image; valid in McIDAS-X only; see the Remarks (default=number specified in *frame* if the session does not have independent graphics; default=last-associated graphics frame if the session has independent graphics)

Remarks

You can view the GIF files created with SVGIF with a Unix viewer program like **xloadimage** or **xv**. You can also use **xv**, **pbmplus** or other Unix programs to convert the GIF file to a PostScript file, which can be printed on a PostScript printer.

SVGIF can be used with single-panel or multipanel frames, but it always saves the entire frame (all panels) even if you use the global keyword PAN.

When running McIDAS-X in the independent graphics mode (see the TERM command), image frames and graphics frames are "associated" once they have been viewed together. For example, if you loop through image frames 1-10 while displaying graphics frame 1, all 10 of the image frames are associated with graphics frame 1. The GRA keyword defaults are the last-associated graphics frame for the image frame specified in the *frame* parameter. In this case, the command SVGIF 7 GOESIR saves graphics frame 1 with image frame 7 in the file **GOESIR.GIF**.

Examples

SVGIF 5 PICTURE
This entry saves image frame 1 and graphics frame 1 into the file **PICTURE.GIF** in McIDAS-OS2 sessions, and McIDAS-X sessions without independent graphics. In a McIDAS-X session with independent graphics, the entry saves image frame 1 and its last-associated graphics frame into the file **PICTURE.GIF**.

SVGIF 11 GOESVIS GRA=1
This McIDAS-X entry saves image frame 11 and graphics frame 1 into the file **GOESVIS.GIF**.

SYNC

Synchronizes loops running in multiple briefing windows.

Format

SYNC *syncfile*

Parameters

syncfile file containing synchronization configuration

Remarks

Use the SYNC command to create briefing windows displaying synchronized frame loops. To run the command, you must first create a text file containing the synchronization configuration. The first line in the configuration file defines the dwell rate for each frame. Subsequent lines define the frame sequence for each briefing window, one line of frame numbers for each window. A maximum of nine briefing windows (windows 0-8) is allowed in the file.

The sample file shown below sets up two briefing windows, 0 and 1. Window 0 displays frames 1-4. Window 1 displays frames 5-8. The frames loop as fast as possible with a delay on the first frame.

```
4 1 1 1
1 2 3 4
5 6 7 8
```

If you want briefing window 1 to loop at half the speed of window 0, you could create a file like the one below. Frames 1-4 will loop twice as fast as frames 5-8.

```
1 1 1 1 1 1 1 1
1 2 3 4 1 2 3 4
5 5 6 6 7 7 8 8
```

You can include comments in the configuration file by starting a line with the pound sign (#). Comments may appear anywhere in the file but must be on a separate line. Blank lines are not allowed in the configuration file.

Because the SYNC command creates briefing windows, you should close any existing briefing windows before running the command. If any briefing windows are present, duplicate windows may be created causing faulty synchronization or other conflicts.

You may run out of memory trying to run SYNC. If this happens, try making your frames smaller, or use fewer briefing windows. If your McIDAS-X briefing windows appear with private color maps, they may not all be displayed with the correct colors when they are looping. If this happens, restart your McIDAS-X session with fewer image and graphics colors.

Example

SYNC SYNC1.TXT

This entry creates briefing windows and synchronously displays frames in them using the dwell rates and frame sequences specified in the file **SYNC1.TXT**.

SYNRPT

Lists synoptic observations.

Format

SYNRPT *id1 . . idn nhours [keywords]*

Parameters

id1 . . idn	station IDs or states to list; use the two-character state P.O. abbreviation for states
nhours	number of hours to search for observations starting from DAY and TIME (default=3)

Keywords

CO=	*co1 . . con*	lists observations for all stations in these countries; use the CCODE command to list valid country codes
DATaset=		ADDE dataset name; specify as *group/descriptor* or *alias* (default=**RTWXTEXT/SYNOPTIC**)
DAY=		Julian date to start search; use either the 5- or 7-digit format, for example, 96300 or 1996300 (default=current)
TIMe=		UTC time to start search; valid times are 0, 3, 6, 9, 12, 15, 18 and 21 (default=current)

Remarks

You must specify at least one station ID, state, or country.

If you use the DAY keyword to specify a day other than the current day, you must also use the TIME keyword.

Examples

SYNRPT 03772
This entry lists all synoptic reports for London, England, from the past three hours.

SYNRPT MS 72793 8 CO=OS
This entry lists all synoptic reports for Austria, Mississippi, and Seattle, Washington, from the past eight hours.

SYNRPT MB 9 DAY=96300 TIME=12
This entry list all synoptic reports for Manitoba, Canada, from nine hours prior to 12:00 UTC on day 96300.

SYSKEY

Sets system values for local McIDAS workstation networks.

Format

SYSKEY *name*

Parameter

name name of the text file containing the values used to create the SYSKEY.TAB file (default=**SYSKEY.DOC**)

Remarks

> ***Caution !***
> ***Creating or changing SYSKEY.TAB impacts the entire McIDAS workstation network. SYSKEY should be used by the network administrator only.***

This command reads the values from text file **SYSKEY.DOC** into the LW file **SYSKEY.TAB**. The parameters defined for local McIDAS workstation networks are stored in **SYSKEY.TAB**. These parameters contain alphanumeric and integer values needed by workstations in the network. Words 2100 to 2499 and 5000 to 5999 are reserved for parameters unique to your network.

The **SYSKEY.DOC** file must be in text format (lines must end with a linefeed). To change **SYSKEY.DOC**, use a text editor. Alphanumeric values are limited to four characters; integer values are limited to 10 digits.

Use command SYSVAL to list values directly from **SYSKEY.TAB**. **SYSKEY.TAB** values can be placed directly into local command entries using #SYS(*word*) to replace a parameter or keyword value. For example, IMGLIST GOES/VIS.1 #SYS(2100) lists images from position 1 to the value stored in word 2100.

Examples

SYSKEY
This entry sets the system values to the defaults in **SYSKEY.DOC**.

SYSVAL

SYSKEY utility.

Formats

SYSVAL LIST *bword eword*
SYSVAL CHANGE *word value*

Parameters

LIST	lists the values stored in the McIDAS system configuration file SYSKEY.TAB
CHANGE	changes the value of a SYSKEY word
bword	beginning word number to list (default=1)
eword	ending word number to list (default=*bword*)
word	SYSKEY word number
value	new value to place in SYSKEY; see the Remarks

Remarks

Caution !
Creating or changing SYSKEY.TAB impacts the entire McIDAS workstation network. The SYSVAL CHANGE option should be used by the network administrator only.

If you use the CHANGE option and designate the first character as a letter (A-Z), the value is stored in **SYSKEY.TAB** as a character string; otherwise, it is assumed to be an integer value and is converted to binary format and stored in **SYSKEY.TAB**.

The parameters defined for local McIDAS workstation networks are stored in **SYSKEY.TAB**. These parameters contain alphanumeric and integer values needed by workstations in the network. Words 2000 to 2499 and 5000 to 5999 are reserved for parameters unique to your network. For a description of **SYSKEY.TAB**, see the file **SYSKEY.DOC**. This file should be updated by the network administrator only.

SYSKEY.TAB values can be placed directly into local command entries using #SYS(*word*) to replace a parameter or keyword value. For example, IMGLIST GOES/VIS.1 #SYS(2100) lists images from position 1 to the value stored in word 2100.

Examples

SYSVAL LIST 2000 2010
This entry lists the contents of **SYSKEY.TAB** words 2000 to 2010.

SYSVAL CHANGE 5021 RA27
This entry places the string of ASCII characters RA27 into **SYSKEY.TAB** word 5021.

TAFRPT

Lists terminal aerodrome forecasts.

Format

TAFRPT *id1 . . idn nfcst [keywords]*

Parameters

id1 . . idn	station IDs or states to list; use the two-character state P.O. abbreviation for states
nfcst	number of forecasts to list (default=1)

Keywords

CO=	*co1 . . con*	lists observations for all stations in these countries; use the CCODE command to list valid country codes
DATaset=	ADDE dataset name; specify as *group/descriptor* or *alias* (default=**RTWXTEXT/TERMFCST**)	
TYPe=	type of forecast to list:	
	LONG (default)	
	SHORT	
	ALL	

Remarks

You must specify at least one station ID, state, or country.

Examples

TAFRPT KMSP
This entry lists the latest terminal aerodrome forecast for Minneapolis, Minnesota.

TAFRPT 2 CO=EQ
This entry lists the last two terminal aerodrome forecasts for all stations in Ecuador.

TAFRPT YK PAFA
This entry lists the latest terminal aerodrome forecasts for Fairbanks, Alaska, and all stations in Yukon Territory, Canada.

TD

Deletes one or more strings from the current string table.

Formats

TD *name*
TD PREFIX *prefix*
TD ALL
TD ALL GLOB

Parameters

name	a single string name to delete
prefix	deletes all strings beginning with this prefix
PREFIX	searches for the string *prefix*
ALL	deletes the system table, except for global strings
GLOB	deletes all strings, including global strings

Remarks

A string name whose first character is a question mark (?) is defined as global. Global strings remain in the table unless you delete them by entering: TD ALL GLOB.

See Also

Command TL lists strings. Command TE edits strings. Command TU is the string utility that saves the current string table.

Examples

TD 9
This entry deletes the string named 9.

TD PREFIX CH
This entry deletes all strings that begin with CH.

TD ALL
This entry deletes all strings except those preceded by a question mark.

TD ALL GLOB
This entry deletes all strings, including those preceded by a question mark.

TE

Enters a string in the string table.

Format

TE *string "text*

Parameters

string	alphanumeric string name, 1 to 12 characters
"text	value, command, or text defining the string; the total length may be up to 160 characters including spaces; the text may include a pound sign (#) so another string's value is immediately substituted; use ## to substitute the value when *string* is run; the double quote is mandatory

Remarks

When *#string* appears in a command, it is replaced by its definition from the string table. When #SYS*(word)* or #UC*(word)* appears in a command, it is replaced by the value stored in the specified **SYSKEY.TAB** or User Common word, respectively. See the SYSVAL and UCU commands for more information.

If *string*'s *text* includes another string name preceded by a single pound sign (#), its value is immediately substituted. If the included string is preceded by two pound signs (##), the value is filled when *string* is run by typing *#string*.

Strings with the names KEYF, KEYAF, KEYCF, and KEYSF followed by a number between 1 and 12 (for example, KEYF1, KEYAF2) can be run using the function keys. See the section on string tables and function keys in the *Introduction* of this manual for more information.

A string name whose first character is a question mark (?) is defined as global. Global strings remain in the table unless you delete them with TD ALL GLOB.

If the *string* name is a single letter (A-Z), you can run it by typing *#string* or by pressing **Ctrl** *string*.

Note

Do not use X as a string name; McIDAS interprets it as a place holder for default values. Likewise, if a series of strings begins with X (for example, XMAP), you cannot delete them with TD PREFIX X nor run them with REPEAT X 1 TO 1.

See Also

Command TL lists string tables; command TD deletes them; command TU is the string table utility.

Examples

TE LOAD
This entry assigns blanks to the string LOAD.

TE LOAD "IMGDISP GOES/VIS STATION=KMSN
This entry places an IMGDISP command in the string LOAD. To run the command, type: #LOAD.

TE KEYF2 "MAP H
To run the MAP H command, press the F2 key.

TE NOTE "MAP OF NORTH AMERICA IN SATELLITE PROJECTION
This entry stores the text *MAP OF NORTH AMERICA IN SATELLITE PROJECTION* in the string NOTE.

TE AAA "TERM L ON
This entry stores the command TERM L ON in the string AAA.

In the compound string example below, remember to define the string replacing the # value before defining the string that uses it.

TE STN "KABQ
The replacement string is #STN.

TE WEATHER "SFCLIST #STN
The actual string stored in WEATHER is SFCLIST KABQ.

TE WEATHER "SFCLIST ##STN
To vary the value in #STN, insert two #s in the string WEATHER. The actual string stored in WEATHER is SFCLIST #STN.

If you change string STN now, the new value is used when WEATHER is run.

TE STN "KMIA
If you enter this change, the system uses SFCLIST KMIA the next time #WEATHER is run.

TEDIT (McIDAS-OS2 only)

Edits a string in the string table.

Format

TEDIT *string*

Parameter

string name of the string to edit

Remarks

The specified string is displayed on the command line at the bottom of the text frame. Edit the string with the standard command line keys, such as the arrows, Insert, or Delete key. When you finish editing, press the Enter key to run the new TE command.

Examples

TEDIT LIST
This entry echoes the current value for the string LIST on the command line. For example, if LIST is currently set to SFCLIST KMSN OPTION=PRECIP, the following appears on the command line.

```
SFCLIST KMSN OPTION=PRECIP
```

If you change KMSN to KDSM, the value of LIST is changed to SFCLIST KDSM OPTION=PRECIP.

TERM

Sets the state of a McIDAS toggle command.

Format

TERM *toggle state*

Parameters

toggle toggle command to set; see the Remarks

state **ON** switches the toggle state to on (default)

OFF switches the toggle state to off

Remarks

Use TERM when your workstation is not in a known state. TERM is commonly used in string tables and macros. The valid commands and their toggles are shown below. For more information, see the individual commands in this section of the manual.

toggle	Function	ON	OFF
J (-X only)	toggles graphics frames to the loop control system	connect	disconnect
K	toggles image frames on and off	visible	blank
L	toggles frame looping on and off	start	stop
O	displays the opposite image frame	opposite	base
P (-OS2 only)	toggles the mouse locking control on and off	locked	unlocked
W	toggles graphics frames on and off	visible	blank
Y (-X only)	toggles image frames to the loop control system	connect	disconnect
Z (-X only)	toggles the zoom on and off	on	off
IG (-X only)	toggles the independent graphics mode on and off; see the McIDAS-X Remarks	on	off
SCALE	toggles the image display mode; see the explanations in the McIDAS-X and McIDAS-OS2 Remarks sections	scale	preserve

McIDAS-X Remarks

Use the TERM IG command to toggle McIDAS-X independent graphics on and off. Independent graphics are off by default when you start a McIDAS-X session; frames display both images and graphics. There are no separate image and graphics frames. Therefore, you cannot display or loop images or graphics independently, and commands like J, Y, LB G, LS G and SG are not valid.

The command TERM IG ON creates separate image and graphics frames, so you can display or loop them independently. This mode is most beneficial for users who create loops of colocated images because they don't have to draw the same map on every frame. Instead, they can draw the map on a single graphics frame and display only that graphics frame while looping through their series of image frames. Commands J, Y, LB G, LS G and SG are all valid in this mode.

You can specify `-c 'TERM IG OFF'` or `-c 'TERM IG ON'` in your `.mcidasrc` file to have McIDAS-X automatically start in the desired mode. If a TERM IG command is not set in your `.mcidasrc` and you want to change independent graphics mode, you should run the appropriate TERM command when you first start McIDAS-X (before displaying images or graphics). Changing modes later may not work correctly. Problems are more likely to arise if you switch from ON to OFF than from OFF to ON. If problems do arise, it's best to exit and restart McIDAS-X.

Use the SCALE ON and SCALE OFF options to preserve image levels in the range 0 to 255. Each preserved image level is assigned a different display level when enhanced with the EU command. Image level scaling is on by default when you start a McIDAS-X session.

SCALE OFF preserves all image levels greater than the number of graphics color levels. Image levels less than or equal to the number of graphics color levels are not preserved; they are converted to the image level equal to the number of graphics color levels plus one. For example, if McIDAS-X is started with 16 graphics color levels, SCALE OFF converts image levels 0 to 16 to image level 17. Therefore, you cannot use the EU command to enhance any image level less than 17. Image levels 17 to 255 are preserved so they can be individually enhanced with the EU command. The SCALE OFF option is useful if the image you want to display contains little or no information in the lower end of the 0 to 255 range of image levels. It is also lets you know which image levels are preserved and which are not.

SCALE ON preserves the same number of image levels as SCALE OFF; however, SCALE ON spreads the non-preserved image levels evenly over the entire 0 to 255 range. SCALE ON is most useful if the image you want to display contains important information in the lower end of the 0 to 255 range.

McIDAS-OS2 Remarks

Use the SCALE ON and SCALE OFF options to preserve image levels in the range 0 to 255. Each preserved image level is assigned a different display level when enhanced with the EU command. Image level scaling is off by default when you start a McIDAS-OS2 session.

SCALE OFF preserves image levels 15 through 255. Image levels 0 through 14 are not preserved; they are converted to image level 15. The SCALE OFF option is useful if the image you want to display contains little or no information in image levels 0 through 14. It also lets you know exactly which image levels are preserved and which are not.

Like the SCALE OFF option, SCALE ON preserves all but 15 image levels. However, it spreads these 15 unpreserved image levels evenly over the entire range of image levels 0 to 255. The SCALE ON option is useful if the image you want to display contains important information in image levels 0 through 14.

See Also

You can also use the SU command to preserve a specific set of image levels.

Examples

TERM L ON
This entry starts frame looping.

TERM L OFF
This entry stops frame looping.

TFILE

Sends text output to a disk file.

Format

TFILE *mode frame "file*

Parameters

mode	**OPEN**	opens the file for saving text
	CLOSE	closes the file (default)
	DUMP	dumps the contents of the text frame to the file
	DO	dumps the contents of the text frame and then opens the file
frame		text frame number; the range is 0 to 4 for McIDAS-OS2 and 0 to 9 for McIDAS-X (default=current)
"file		file name to write into; the double quote is mandatory

Remarks

The specified file name cannot be in use by another task, such as a word processor. It may be fully qualified up to 40 characters.

When you activate a text frame for text capture, the right end of the status line displays a yellow or white number on a blue background.

Examples

TFILE
This entry closes the file that is capturing all text output written to the current text frame.

TFILE OPEN X "SURFACE.OBS
This entry opens the file **SURFACE.OBS** and places any further output directed to the current text frame into that file.

TFIND (McIDAS-X only)

Searches the current text frame.

Formats

TFIND U *"expression*
TFIND UC *"expression*
TFIND D *"expression*
TFIND DC *"expression*
TFIND T

Parameters

U	searches upward in the text frame for the first match of the specified expression; the search is not case-sensitive; it matches uppercase, lowercase and mixed-case text
UC	searches upward in the text frame for the first match of the specified expression; the search is case-sensitive; it only displays text that exactly matches the expression
D	searches downward in the text frame for the first match of the specified expression; the search is not case-sensitive; it matches uppercase, lowercase or mixed-case text
DC	searches downward in the text frame for the first match of the specified expression; the search is case-sensitive; it only displays text that exactly matches the expression
T	displays the first line of the text frame
"expression	expression to find in the text frame; must be entirely uppercase if using the U or D option; can be uppercase, lowercase or mixed-case if using the UC or UD option (default=last specified expression)

Remarks

Each of the ten text frames (numbered 0-9) can contain thousands of lines of text. You can set the number of lines for each text frame by specifying the **-oh** flag at startup or in your **.mcidasrc** file.

The Text and Command Window displays text frames. You can only view one text frame at a time and only a few lines of text. The TFIND command displays the line that matches a specified expression at the bottom of the Text and Command Window.

The far right side of the status line in the Text and Command Window displays the offset number if you are viewing a location other than the bottom of the text frame, which has an offset of zero. For example, if 5[14] appears below the T on the status line, it indicates that the 14th line from the end of text frame 5 is displayed.

If you enter TFIND with no parameters, it repeats the previous TFIND command. Thus, you can run one TFIND command with the direction and expression specified, then continue searching for the same expression by entering TFIND as many times as needed. If you want to change the direction of the search without changing the expression, enter TFIND U or TFIND D. Use TFIND T to display the first line of text in the text frame. Press the Enter key to return to the bottom. You can also move up or down in the text frame using the up and down arrow keys and the Page Up and Page Down keys.

Examples

TFIND
Repeats the previous TFIND command.

TFIND U "DONE
This entry searches upward in the text frame for a line that contains the expression DONE. The expression can be any mix of uppercase and lowercase letters if the letters are in the correct order with no spaces between. If a match is found, that line is displayed at the bottom of the Text and Command Window.

TFIND D
If run after the previous example, this entry searches downward in the text frame for a line that contains the expression DONE. Like the previous example, the expression can be any mix of uppercase and lowercase letters if the letters are in the correct order with no spaces between. If a match is found, that line is displayed at the bottom of the Text and Command Window.

TFIND UC "abc DEF
This entry searches upward in the text frame for a line that contains the expression *abc DEF*. It must be an exact match, as the UC option is case-sensitive. There must be exactly one space between the *c* and the *D* since only one space was specified in the expression. If a match is found, that line is displayed at the bottom of the Text and Command Window.

TFIND T
This entry displays the top line of the text frame at the bottom of the Text and Command Window.

TIMEOUT

Runs a McIDAS command, stopping it after a waiting period.

Format

TIMEOUT *nseconds command*

Parameters

nseconds maximum number of seconds that the command is allowed to run before it's stopped (no default)

command complete McIDAS command to run, including parameters and keywords; see the Remarks

Remarks

TIMEOUT runs the specified McIDAS command and stops it if it hasn't completed within the specified waiting period. Use TIMEOUT when obtaining data from a remote server and the communications is slow or unreliable. For example, if you schedule multiple IMGDISP commands to run while the workstation is unattended, you can use the TIMEOUT command to avoid a large number of hung IMGDISP processes if communications problems arise.

If you use TIMEOUT to run a script, macro, BATCH file, or McBASI program that runs multiple McIDAS commands, the TIMEOUT waiting period begins with the first command and does NOT restart with each subsequent command. If you want to control the waiting period for each command, include each one in a separate TIMEOUT command. For example, if you run the following BATCH command:

```
BATCH CONTINUE=YES "IMGCOPY.BAT
```

and IMGCOPY.BAT consists of the commands below, the three IMGCOPY commands are run in order, each with a waiting period of 180 seconds.

```
TIMEOUT 180 IMGCOPY GOES/VISIBLE.0 MYDATA/VIS.1

TIMEOUT 180 IMGCOPY GOES/INFRARED.0 MYDATA/IR.1

TIMEOUT 180 IMGCOPY GOES/WATERVAPOR.0
   MYDATA/WV.1
```

The CONTINUE=YES keyword is used so that each IMGCOPY command is run even if the previous command times out or stops abnormally.

Examples

TIMEOUT 90 IMGDISP GVAR/CONUSV STA=KCLE ALL=1 4
This entry runs the IMGDISP command, allowing 90 seconds for it to complete. If IMGDISP takes longer than 90 seconds, it is stopped by the TIMEOUT command.

TIMEOUT 300 RUN FILE=GETDATA.MCB
This entry runs the McBASI program GETDATA.MCB, allowing 300 seconds for it to complete. If it doesn't complete within 300 seconds, the program is stopped at the command that is running.

TIRCAL (McIDAS-X only)

Calibrates POES (TIROS) areas.

Format

TIRCAL *area [keyword]*

Parameter

area POES area number

Keywords

CAL= **FULL** applies a complete calibration (default)

QUICK applies quick calibration

Remarks

> ***Caution!***
> ***Do not run TIRCAL on TIP data.***

The FULL option calibrates each group of five image lines throughout the entire area. The QUICK calibration uses the average calibration for the first five good lines and applies that calibration to the entire area; thus, it runs more quickly.

The quick calibrated data shows only slight differences visually. Do not rely on the quick calibration for scientific purposes. Temperature differences of 2° to 3° Kelvin with radiance differences have been observed at the end of GAC areas.

Examples

TIRCAL 4200
This entry applies a complete calibration to area 4200.

TIRCAL 4210 CAL=QUICK
This entry applies a quick calibration to area 4210.

TL

Lists the strings in a string table.

Formats

TL ALL
TL OUT
TL *[keyword]*
TL *prefix [keyword]*

Parameters

ALL	lists the strings that begin with 0 to 9 or A to Z; the maximum is 256
OUT	lists all strings, including global strings
prefix	lists the strings beginning with this prefix

Keywords

Num=	number of strings to list (default=20)

Remarks

Strings in the string table are stored alphabetically with numbers 0 to 9 at the beginning of the table. A string whose first character is a question mark (?) is called a global string. It is listed with TL OUT or TL ?. To list other strings that do not begin with 0 to 9 or A to Z, use TL OUT.

See Also

Use command TD to delete strings and TE to enter strings. Command TU is the string table utility.

Examples

TL
This entry lists the first 20 strings from the current string table.

TL CH
This entry lists the strings that begin with CH.

TL ALL
This entry lists all strings; the maximum is 256.

TL NUM=10
This entry lists the first 10 strings in the string table.

TL TEMP NUM=15
This entry lists up to 15 strings starting with TEMP.

TOWNS

Lists the U.S. towns closest to the cursor location.

Format

TOWNS *number*

Parameter

number number of towns to list (default=20)

Remarks

The TOWNS command lets you select multiple locations by moving the cursor and clicking the right mouse button at each desired location. To end the command,

Type: **Alt Q**

The towns are listed from closest (first) to furthest (last) from the cursor location.

The state, town, county, latitude, longitude, and elevation (if available) are listed on the text frame.

This command uses data files provided by the U. S. Geological Survey. For McIDAS-OS2 the files are `TOWNS.ND1`, `TOWNS.ND2` and `TOWNS.TXT`. For McIDAS-X, the files are `towns.nd1`, `towns.nd2` and `towns.txt`.

Examples

TOWNS
This entry lists the 20 towns closest to the cursor location when you click the right mouse button. You can select several locations by moving the cursor and clicking the right mouse button at each location.

TOWNS 50
This entry lists the 50 towns closest to the cursor location when you click the right mouse button. You can select several locations by moving the cursor and clicking the right mouse button at each location.

TU

String table utility.

Formats

TU SAVE *name [keyword]*
TU DEL *name [keyword]*
TU LIST *[keyword]*
TU REST *name [keyword]*

Parameters

SAVE	saves the string table
DEL	deletes the string table
LIST	lists the saved string tables (default)
REST	restores a string table and makes it the current string table
name	1- to 12-character name identifying the string table

Keywords

SAVEFILE=	LW file name to store the table in or restore it from (default=**SAVESTR**)

Remarks

The maximum number of tables you can save is 512.

A string name whose first character is a question mark (?) is global and remains after each restore.

Examples

TU
This entry lists all string tables on the workstation.

TU SAVE DEMO
This entry saves the current string table under the name DEMO.

TU REST DEMO
This entry restores string table DEMO to the current string table.

TXT2MD

Creates an MD file from an ASCII text data file.

Format

TXT2MD *sfile dfile schema [keywords]*

Parameters

sfile	source ASCII text file name and extension
dfile	destination MD file number
schema	MD file schema name, for example: IRAB, ISFC

Keywords

MISS=	value representing the missing data in *sfile*
ROW=	row to write the data (default=first available row)

Remarks

Use command TXT2MD to convert files containing lists of data to MD files.

The *sfile* must be an ASCII text file with an end-of-line indicator at the end of each line. The *sfile* format must be columnar. The first line contains the schema key names; subsequent lines contain the corresponding data values, as shown below. Extra spaces between the columns are ignored.

```
TIME  ID   LAT   LON    ZS  PSL  TD   T   DAY   TYPE NREC MOD ST CO
 12   MEI  32.33 88.75   94  1009 267 272 93072  0    9    0   MS US
 12   NMM  32.55 88.56   97  1009 268 270 93072  0    9    0   MS US
 12   JAN  32.31 90.08  101  1015 265 273 93072  0    9    0   MS US
 12   MCB  31.18 90.46  126  1015 272 272 93072  0    9    0   MS US
 12   GWO  33.50 90.08   47  1014 264 273 93072  0    9    0   MS US
 12   CBM  33.65 88.45   67  1009 268 270 93072  0    9    0   MS US
 12   TUP  34.26 88.76  110  1010 265 272 93072  0    9    0   MS US
 12   GPT  30.40 89.06    9  1011 268 274 93072  0    9    0   MS US
 12   BIX  30.41 88.91   10  1011 269 273 93072  0    9    0   MS US
```

Each data line in *sfile* is placed into one record in *dfile*. If repeat groups are defined in the schema, each data line must also include the data to be stored in the record's repeat groups.

If *dfile* does not exist, it will be created. If it already exists, the data is appended to the first available row or the row specified with keyword ROW. If you use keyword ROW, any column in the *dfile* row matching a column header from *sfile* will be replaced. If the column headers in *sfile* do not match the column headers in *dfile*, the data is appended to new columns at the end of the row.

The values for the row header keys in *dfile*, such as DAY and TIME, are set to the values found in the first data line of *sfile*. Values of the row header keys in subsequent data lines in *sfile* are ignored.

If the *dfile* schema has a key that represents time, such as HMS and TIME in the ISFC schema, it must be specified using the HH, HH:MM, or HH:MM:SS formats in *sfile*. For example, 12:00:00 UTC must be in the format 12, 12:00, or 12:00:00.

The *dfile* cannot have more than six column header keys or 3500 columns. Each record in *dfile*, including repeat groups in that record, cannot contain more than 64 keys.

See Also

See commands LSCHE and SCHE, and the section about registering MD file schemas in the *Introduction*.

Examples

TXT2MD UPPRDATA.TXT 15 IRAB
This entry reads the ASCII text file **UPPRDATA.TXT** and puts it into MD file 15 of schema IRAB.

TXT2MD SFCDATA.TXT 5 ISFC MISS=-999
This entry reads the ASCII text file **SFCDATA.TXT** and puts it into MD file 5 of schema ISFC. Any data value set to -999 in **SFCDATA.TXT** is treated as missing when it is read into the MD file.

TXT2MD TEMPDATA 100 TEMP ROW=5
This entry reads the ASCII text file **TEMPDATA** and puts it into row 5 of MD file 100. TEMP is an MD file schema created and registered by the user.

UALIST

Lists upper-air data.

Format

UALIST *station time day [keywords]*

Parameters

station	3- or 4-character station ID or 5-digit station ID number, e.g., KGRB or 72645
time	observation time (default=0 if current time is between 0 UTC and 11:59 UTC, otherwise default=12)
day	observation date; valid formats include YYYYDDD, YYYY/MM/DD and DD/MON/YYYY where YYYY, DDD, MM and DD are integers and MON is three or more letters, e.g., JAN or JANUARY (default=current)

Keywords

ANAlysis=	**YES**	include sounding/parcel analysis if OPT=ALL, ANL or MAN is specified; see the Remarks (default)
	NO	suppress sounding/parcel analysis in all cases
COuntry=	*c1..cN*	list data for soundings in these countries; use CCODE command to list valid country codes
DATaset=	*mand sig*	source ADDE point dataset names for mandatory- and significant-level data; specify as *group/descriptor* or *alias*; you must specify SIG=NO keyword to use only mandatory data, i.e., ignore the significant data (default=**RTPTSRC/UPPERMAND RTPTSRC/UPPERSIG**)
DEPth=		depth in mb from the surface to include in the parcel analysis; the range is 0 - 400 where 0 means use only surface data (default=100)
LAT=	*slat nlat*	list the data for soundings in this latitude range, where *slat* and *nlat* are the southern and northern latitude limits, respectively
LON=	*elon wlon*	list the data for soundings in this longitude range, where *elon* and *wlon* are the eastern and western longitude limits, respectively

OPTion= **ALL** list all mandatory and significant levels with computed potential temperature and mixing ratio at each level; temperatures are interpolated at each significant wind level, and winds are interpolated at each significant temperature level; include a sounding/parcel analysis below the sounding data unless ANA=NO is specified (default)

ANL list sounding/parcel analysis only; the data at each mandatory and significant level is not listed

MAN list only the mandatory levels with computed potential temperature and mixing ratio at each level; include a sounding/parcel analysis below the sounding data unless ANA=NO is specified

RAW list all mandatory and significant levels with computed potential temperature and mixing ratio at each mandatory and significant temperature level; do not include interpolated temperatures at significant wind levels or interpolated winds at significant temperature levels; do not include a sounding/parcel analysis

STate= *s1..sN* list data for soundings in these states

UNIt= *t spd z p*

units in which to list sounding parameters, where: *t*=temperatures; *spd*=wind speeds; *z*=heights; *p*=pressures; run CU LIST to list valid units and abbreviations (default=C KTS M MB)

Remarks:

A sounding/parcel analysis is listed with OPT=ALL, ANL and MAN. The analysis is performed using mandatory- and significant-level data for OPT=ALL and OPT=ANL. The analysis is performed using only mandatory-level data for OPT=MAN. Each parameter in the analysis includes a description, abbreviation, value and units. The UAPLOT and HODO commands use these abbreviations for the values along the bottom of their diagrams.

To obtain the sounding/parcel analysis values, the reported heights are recomputed for hydrostatic consistency, though the adjustments are generally less than 10 meters. Also, the computed parcel temperature of a 12 UTC sounding is warmed 2 K to account for daytime heating. No adjustment is made to the computed parcel temperature of a 0 UTC sounding.

Examples:

UALIST KEYW 0
This entry lists the mandatory and significant levels for Key West, Florida at 0 UTC of the current day. Wind direction and speed are interpolated at each significant temperature level, and temperature and dew point are interpolated at each significant wind level. Theta and mixing ratio are calculated at each level using the observed or interpolated values. A parcel/sounding analysis is listed below the sounding data. Note that you can also specify the station using Key West's 5-digit station ID number, 72201.

UALIST KEYW 0 OPT=RAW
This entry lists the mandatory and significant levels for Key West, Florida at 0 UTC of the current day. No interpolations are performed, so significant temperature levels do not include wind direction and speed, and significant wind levels do not include temperature, dew point, theta and mixing ratio. A sounding/parcel analysis is not listed.

UALIST KCHS 12 OPT=ANL DEPTH=50 UNIT=K
This entry lists a sounding/parcel analysis for Charleston, South Carolina at 12 UTC of the current day. Mandatory and significant levels are not listed. The sounding/parcel analysis values are computed using a boundary layer depth of 50 mb instead of the default value of 100 mb. The temperature values are listed in Kelvin instead of the default unit, Celsius.

UALIST X 12 1998310 OPT=MAN ANA=NO ST=FL
This entry lists the mandatory levels for all stations in the state of Florida at 12 UTC on day 1998310. Theta and mixing ratio are calculated at each level using the observed values. Significant levels and a parcel/sounding analysis are not listed.

UAPLOT

Plots a sounding on a thermodynamic diagram.

Format

UAPLOT *station time day [keywords]*

Parameters

station 3- or 4-character station ID or 5-digit station ID number, e.g., KGRB or 72645

time observation time (default=0 if current time is between 0 UTC and 11:59 UTC, otherwise default=12)

day observation date; valid formats include YYYYDDD, YYYY/MM/DD and DD/MON/YYYY where YYYY, DDD, MM and DD are integers and MON is three or more letters, e.g., JAN or JANUARY (default=current)

Keywords

ANAlysis= **YES** output all sounding/parcel analysis values in a text frame and selected values below the diagram in a graphics frame; see the Remarks

NO suppress sounding/parcel analysis values; output only the diagram in the graphics frame (default)

CENter= **YES** set the temperature range to place the profile near the center of the diagram; you cannot use CENTER with the TRANGE keyword

NO use the temperature range in the TRANGE keyword (default)

COLor= *t td win mix sat bg par*
graphics color level for each component
(default=3 3 3 4 1 8 1 if OLAY=NO [the default];
default=2 2 2 4 1 8 1 if OLAY=YES)

t temperature profile, sounding/parcel analysis values, plot title, and EL, LFC, LCL markers

td dew point profile

win wind barbs, or wind staffs and speeds (see WIND keyword)

mix constant mixing ratio lines

sat saturation adiabats

bg background grid (p, T, dry adiabats, and wind pole)

par sounding/parcel analysis labels and wind unit label

note: you can specify 0 to omit (not draw) any component

DATaset= *mand sig* source ADDE point dataset names for mandatory- and significant-level data; specify as *group/descriptor* or *alias*; you must specify the SIG=NO keyword to use only mandatory data, i.e., ignore the significant data (default=**RTPTSRC/UPPERMAND RTPTSRC/UPPERSIG**)

DEPth= depth in mb from the surface to include in the parcel analysis; the range is 0 - 400 where 0 means use only surface data (default=100)

FORM=

SKEwt display data on a skew T diagram, skewed 45 degrees in T vs. log P (default)

STUve display data on a Stuve diagram, linear in T vs. P**0.286 (R/CP)

LINear display data on a linear diagram, linear in T vs. P

EMAgram display data on an Emagram, linear in T vs. log P

GRA= graphic frame number to display diagram (default=current)

OLAy=

YES overlays the existing plot; the wind data is drawn to the right of the OLAY=NO wind data, and the plot title is written below the OLAY=NO plot title; use OLAY=YES to compare two soundings with different times or locations on a single plot

NO does not overlay the existing plot; erases the graphics then plots the entire diagram and sounding (default)

OUTLonly=

YES draws a diagram without any data

NO draws a diagram and plots the upper-air data for the specified station (default)

PRANge= *min max* pressure levels in mb at the top and bottom of the diagram, respectively (default=100 1050)

SIG= **YES** include data from the significant-level dataset specified in the DATASET keyword (default)

NO do not include the data from the significant-level dataset specified in the DATASET keyword; use only its mandatory-level dataset

TRANge= *min max* temperatures, in degrees Celsius, at the top-left and bottom-right of the diagram, respectively; you cannot use TRANGE with the CENTER keyword (default=calculated, based on the pressure range in the PRANGE keyword)

UNIT= **MB** plot the height in millibars along the left axis (default)

FT plot the height in feet along the left axis

M plot the height in meters along the left axis

WIND= *type units* settings for wind data (default=BARB KTS), where:

type wind symbol, either BARB or STAFF where:

BARB wind barbs, where:
flag=50kts (~25mps),
long barb=10kts (~5mps),
short barb=5kts (~2.5mps)

STAFF wind staffs with the numeric wind speed plotted next to each staff's origin

units units of numeric wind speed plotted next to origin of each wind staff; run CU LIST to list valid units and abbreviations; changing units does not affect wind barbs

Remarks:

UAPLOT automatically erases the graphics before each plot unless OLAY=YES is specified.

Use the ANA=YES keyword to list all available sounding/parcel analysis values in the text frame and plot selected values in the graphics frame below the diagram. To obtain the sounding/parcel analysis values, the reported heights are recomputed for hydrostatic consistency, though the adjustments are generally less than 10 meters. Also, the computed parcel temperature of a 12 UTC sounding is warmed 2 K to account for daytime heating. No adjustment is made to the computed parcel temperature of a 0 UTC sounding.

The following abbreviations are used for the sounding/parcel analysis values below the diagram: KI=K Index, LI=Lifted Index, SwI=Sweat Index, TTI=Total Totals Index, CVT=Convective Temperature in C, FMAX=Forecast Maximum Temperature in C, ThE=Equivalent Potential Temperature in K, EL=Equilibrium Level in mb, MIX=Mixing Ratio in g/kg, PW=Precipitable Water in mm, CAPE=Covective Available Potential Energy in J/kg, and HELI=Helicity in m**2/s**2.

Examples:

UAPLOT OUTL=YES
This entry plots a blank skew T diagram without data from a station.

UAPLOT KOUN 0
UAPLOT KCHS 0 OLAY=YES
The first entry plots a skew T diagram of mandatory- and significant-level data for Norman, Oklahoma at 0 UTC of the current day. The second entry overlays the existing plot with mandatory- and significant-level data for Charleston, South Carolina. The temperature profile, dew point profile, wind data, and EL (Equilibrium Level), LFC (Level of Free Convection), and LCL (Lifted Condensation Level) markers are drawn in graphics color level 3 for Norman, and graphics level 2 for Charleston.

UAPLOT KEYW 12 1998310 FORM=STUVE ANA=YES DEPTH=50
This entry plots a Stuve diagram of mandatory- and significant-level data for Key West, Florida at 12 UTC on day 1998310. The ANA=YES keyword outputs all parcel/sounding analysis values in the text frame and selected values below the Stuve diagram in the graphics frame. The sounding/parcel analysis values are computed using a boundary layer depth of 50 mb instead of the default value, 100 mb.

UAPLOT KOUN 0 PRANGE=500 850 CENTER=YES WIND=STAFF
This entry plots a skew T diagram of mandatory- and significant-level data for Norman, Oklahoma at 0 UTC of the current day. The diagram's pressure range is 500 to 850 mb instead of the default range, 100 to 1050 mb. The CENTER=YES keyword sets the diagram's temperature range so the temperature and dew point profiles are near the center. Winds are plotted as staffs with the numeric wind speed next to the origin of each staff.

UAPLOT KMFR 12 06/JUNE/1998 DATASET=LOCAL/MAND.1017 SIG=NO

This entry plots a skew T diagram of mandatory-level data for Medford, Oregon at 12 UTC on 6 June 1998. The data is obtained from the file in position 1017 of the dataset LOCAL/MAND. The SIG=NO keyword ensures that significant-level data will not be plotted.

UC

Grids and contours upper air data.

Formats

UC *parm level map time [keywords]*
UC *p1-p2 l1-l2 map t1-t2 [keywords]*

Parameters

parm	**ABV**	absolute vorticity (10^{-5} sec^{-1})
	DVG	divergence (10^{-6} sec^{-1})
	MIX	mixing ratio (g/kg)
	P	pressure (millibars)
	SPD	wind speed (meters/second)
	STR	streamline
	T	temperature (°C)
	TD	dew point temperature (°C)
	THA	theta (K)
	THAE	theta E (K)
	VOR	vorticity (10^{-6} sec^{-1})
	Z	height (meters)
	ZS	station elevation (meters); use only with SFC level
level	**MAXW**	maximum wind
	SFC	surface
	TRO1	tropopause 1
	TRO2	tropopause 2
	1000-100	mandatory levels (millibars)
map	**DEF**	define the area using keywords LAT and LON (default)
	MID	Midwest USA
	NA	North America
	SAT	satellite projection

USA USA

state post office abbreviation

time observation time, HH or HH:MM:SS (default=0 UTC if the current time is between 0 UTC and 13:15 UTC; otherwise, default=12 UTC)

p1-p2 parameter difference used in contouring; subtract *p2* from *p1*

l1-l2 level difference used in contouring; subtract *l2* from *l1*

t1-t2 time difference used in contouring; subtract *t2* from *t1*

Keywords

CINT= contour interval (default is parameter dependent)

COLOR= graphics color level; use negative numbers for dashed lines and positive numbers for solid lines (default=2)

DAY= *d1-d2* year and day, YYDDD; use two values to contour differences (default=current)

GRA= graphics frame number for the display (default=current)

GRIDF= destination grid file number (default=from IGU SET)

LAT= *min max* latitude bounds; use when specifying DEF as the *map* parameter

LON= *min max* longitude bounds; use when specifying DEF as the *map* parameter

MDF= *f1-f2* IRAB or RAOB schema file number; use two values to contour differences (default=last digit of the current Julian day plus 10)

Remarks

If you do not specify keywords CINT, COLOR, DAY, GRA, GRIDF, LAT, LON and MDF in the command, the string table is searched for strings of the same names. If those strings exist, UC uses their values. If the keyword or string MDF is used, its value is stored and accessed in the string named RAOB. If the command's results are unexpected, use command TL to list the string table or TD ALL to delete it.

Parameter advection (in units/day) or divergence is done by appending ADV or DVG to *parm*. For example, TADV or SPDDVG.

The day and time default to the current day and time, not the last available data on the workstation.

Specify the keyword DAY when using history data.

When UC creates and interpolates data to a grid, the amount of extrapolation into data void regions is controlled by SYSKEY word 897. It has a range of 2 to 20 and a default of 10. Use command SYSVAL to list or change its value, which represents the distance in grid points to extrapolate data. Grid points beyond its value are assigned missing value codes, and therefore, are not contoured. The results will vary for a given value depending on data density, grid spacing and smoothing.

The SC, SP, UC, UL, UP, and XSECT commands were not modified with year 2000 changes because they have or will have ADDE replacements that are year 2000 capable. The SC, SP, UC, UL, UP, and XSECT commands, however, continue to work with dates before and after year 2000, but only if the date specified in the DAY keyword exactly matches the value stored in the point/MD file. For example, if using an MD file with the new ccyyddd date format (e.g., ISFC or IRAB schema MD files created with McIDAS-XCD 7.5 and later), then the value for the DAY keyword must include the century (e.g., 1999240). If using an ISFC or IRAB schema MD file created using a version of McIDAS-XCD prior to 7.5, you must continue to specify the date in the yyddd format (e.g., DAY=97240).

Examples

UC STR 500 SAT 12 COLOR=1
This entry draws streamlines at 500 mb on a satellite projection at 12 UTC in graphics color level 1.

UC T 850 MID
This entry contours 850 mb temperatures over the Midwest for the current day and time.

UC T SFC USA 0-12 MDF=1285 DAY=93062
This entry contours the surface temperature difference between 0 and 12 UTC from history MD file 1285 dated March 3, 1993.

UC Z 500-850 USA 0 MDF=1287 DAY=93063 CINT=30
This entry contours the thickness of the 850 mb to 500 mb pressure surfaces in 30-meter intervals from history MD file 1287.

UC VOR 500 USA 12
This entry draws contours of relative vorticity at 500 mb on a USA map for the current day at 12 UTC. Three grids (U, V and VOR) are filed into the current grid file. Assume U is in grid 1 and VOR is in grid 3. Enter the following two commands to compute and display vorticity advection.

IGG MAKE 1 ADV 3
This entry creates a fourth grid containing vorticity advection.

IGTV 4 100 USA DASH=NEG
This entry draws vorticity advection contours on a USA map, with a contour interval of 100. Negative values are dashed.

UCU

Inspects the User Common (UC) memory block.

Formats

UCU PEEK *word*
UCU POKE *word value*

Parameters

PEEK	lists the current value in User Common
POKE	places a value in User Common
word	specific word number in User Common
value	new value to place in User Common

Remarks

User Common consists of workstation information that resides in memory. Programs access User Common to obtain current workstation configuration and state data. Each User Common word stores a separate piece of information, such as cursor line and element position, current image and graphics frame, current logon initials and project number.

User Common values can be placed directly into local command entries by using #UC(word) to replace a parameter or keyword value. For example, LB 1 #UC(13) sets the image loop bounds from 1 to the value stored in User Common word 13.

Caution !
Do not alter User Common. If you incorrectly modify a UC value, you may need to exit and restart McIDAS to reinitialize its state.

Examples

UCU PEEK 1
This entry lists the contents of User Common 1 (project number).

UL

Lists upper air data.

Formats

UL AVA *[keywords]*
UL ANL *station time [keywords]*
UL LIST *station time [keywords]*
UL MAND *station time [keywords]*

Parameters

AVA	lists upper air data availability (default)
ANL	lists stability indices for the station
LIST	lists mandatory and significant levels
MAND	lists mandatory levels
station	5-digit station ID
time	hour or HH:MM:SS (default=nearest 0 or 12 UTC)

Keywords

DAY=		year and day of the data, YYDDD (default=current)
MDF=		MD file number of the mandatory level data (default=last digit of the current Julian day plus 10)
OPT=	**0**	lists mandatory levels with parcel analysis; does not recompute heights or perform interpolations
	1	lists mandatory and significant temperature levels; does not interpolate winds at significant temperature levels or perform parcel analysis
	3	lists mandatory and significant temperature levels and significant wind levels; recomputes all heights and computes wind pressure; does not perform parcel analysis
	5	lists mandatory and significant temperature levels; interpolates winds at significant temperature levels; does not perform parcel analysis
	7	lists mandatory and significant temperature levels and significant wind levels; makes interpolations for missing data and recomputes heights; computes parcel analysis (default)
PTEMP=	**YES**	computes potential temperature and mixing ratio for each level
	NO	does not compute (default)

SIG= MD file number of the significant level data (default=depends on mandatory level MD file number; see the Remarks)

ZMAX= lists the data levels less than or equal to ZMAX; height is in meters (default=all levels)

Remarks

The units for precipitable water are in millimeters.

Significant level winds and temperatures are never reported for the same level. Keyword OPT defaults to a full vertical interpolation, meaning that when a significant level temperature is reported, the wind speed and direction at that level are interpreted. Conversely, when a significant level wind is reported, temperature and dew point at the wind level are interpolated. For no interpolation, use OPT=3.

P1, P2 and P3 are keys in the significant level MD file schema (IRSG) used for significant wind and temperature reports. If a significant wind is reported, P1 is the direction, P2 is the speed, and P3 is the height. If a significant temperature is reported, P1 is the temperature, P2 is the dew point, and P3 is the pressure.

Day and time default to the current day and time, not the last available data on the workstation. Specify keyword DAY when using history data.

The MDF and SIG keywords specify the mandatory and significant level MD file numbers, respectively. If MDF is in the default range of 11 to 20, the default for SIG is the value of MDF plus 10. If MDF is outside the range 11 to 20, the default for SIG is the value of MDF plus one. For example, if MDF=14, the default for SIG is 24; if MDF=2500, the default for SIG is 2501.

The UL command is not modified for Y2K capability because it will have a Y2K capable ADDE replacement. However, UL continues to work with dates before and after year 2000, but only if the date specified in the DAY keyword exactly matches the value stored in the point/MD file. For example, if using an MD file with the new ccyyddd date format (e.g., an IRAB schema MD file created with McIDAS-XCD 7.5 or later), then the value for the DAY keyword must include the century (e.g., 1999240). If using an IRAB schema MD file created using an older version of McIDAS-XCD, you must specify the date in the yyddd format (e.g., DAY=97240).

Examples

UL
This entry lists the available upper air data for the entire day.

UL LIST 72645 12 DAY=94010 OPT=3
This entry lists the mandatory and significant levels from day 94010 at 12 UTC, station 72645. Temperature, dew point and wind data are not interpolated; OPT=3 displays the raw data from the RAOB code.

UP

Plots upper air data.

Formats

UP *parm level map time [keywords]*
UP *p1-p2 l1-l2 map t1-t2 [keywords]*

Parameters

parm	**IDN**	5-digit station ID; the first two digits are dropped in the PLOT option; IDs are plotted only for the SFC level
	MIX	mixing ratio (g/kg)
	P	pressure (millibars)
	PLOT	plots station model in the format: T Z * (wind flag) IDN TD only the last three digits of the height and station ID are plotted
	SPD	wind speed (meters/second)
	T	temperature (°C)
	TD	dew point temperature (°C)
	THA	theta (K)
	THAE	theta E (K)
	WIN	wind, DDFF, FF (meters/seconds) meteorological flags; barb = 5 ms^{-1} (~ 10 kts); flag = 25 ms^{-1} (~ 50 kts)
	Z	surface height (meters)
	ZS	station elevation (meters)
level	**MAXW**	maximum wind
	SFC	surface
	TRO1	tropopause 1

	TRO2	tropopause 2
	1000-100	mandatory levels (millibars)
map	**DEF**	define the area using keywords LAT and LON (default)
	MID	Midwest USA
	NA	North America
	SAT	satellite projection
	USA	USA
	state post office abbreviation	
time	observation time, HH or HH:MM:SS (default=0 UTC if the current time is between 0 UTC and 13:15 UTC; otherwise, default=12 UTC)	
p1-p2	parameter difference used in contouring; subtract *p2* from *p1*	
l1-l2	level difference used in contouring; subtract *l2* from *l1*	
t1-t2	time difference used in contouring; subtract *t2* from *t1*	

Keywords

COLOR=	graphics color level for the display (default=3)	
DAY=	*d1-d2*	year and day, YYDDD; use two values to plot differences (default=current)
DECLUT=	**YES**	declutters the display by not plotting values that overwrite another (default)
	NO	plots values that overwrite each other
GRA=	graphics frame number for the display (default=current)	
LAT=	*min max*	latitude bounds; use when specifying DEF as the *map* parameter
LON=	*min max*	longitude bounds; use when specifying DEF as the *map* parameter
MDF=	*f1-f2*	IRAB or RAOB schema file number; use two values to plot differences (default=last digit of the current Julian day plus 10)

Remarks

If you do not specify keywords COLOR, DAY, GRA, LAT, LON or MDF in the command, the string table is searched for strings of the same names. If those strings exist, UP uses their values. If the keyword or string MDF is used, its value is stored and accessed in the string named RAOB. If the command's results are unexpected, use command TL to list the string table or TD ALL to delete it.

The day and time default to the current day and time, not the last data on the workstation. Specify keyword DAY when using history data.

The SC, SP, UC, UL, UP, and XSECT commands were not modified with year 2000 changes because they have or will have ADDE replacements that are year 2000 capable. The SC, SP, UC, UL, UP, and XSECT commands, however, continue to work with dates before and after year 2000, but only if the date specified in the DAY keyword exactly matches the value stored in the point/MD file. For example, if using an MD file with the new ccyyddd date format (e.g., ISFC or IRAB schema MD files created with McIDAS-XCD 7.5 and later), then the value for the DAY keyword must include the century (e.g., 1999240). If using an ISFC or IRAB schema MD file created using a version of McIDAS-XCD prior to 7.5, you must continue to specify the date in the yyddd format (e.g., DAY=97240).

Examples

UP T 850 MID
This entry plots current temperatures at 850 mb over the Midwest.

UP IDN SFC USA COLOR=4
This entry plots station numbers over the U.S. in graphics color level 4.

UP WIN 850 X 0 MDF=6512 LAT=30 45 LON=80 100
This entry plots winds at 850 mb, 0 UTC in MD file 6512. The latitude range is 30° to 45° N; the longitude range is 80° to 100° W.

UP Z 500-1000 USA
This entry plots the current 1000/500 mb thickness over the United States.

UP T-TD 850 USA
This entry plots the current dew point depression over the U.S.

UP Z 500 USA 12-12 MDF=15-14 DAY=92025-92024
This entry plots the 24-hour 500 mb height change from 12 UTC, day 92024 to 12 UTC day 92025.

USAORB

Displays polar orbital tracks and coverage for North America.

Formats

USAORB *navdataset frame [keywords]*
USAORB *imgdataset frame [keywords]*

Parameters

navdataset — name of the ADDE dataset containing the system navigation files for a satellite; specify as *group/descriptor* or *alias*

imgdataset — name and position of the ADDE dataset containing the image to use as a navigation source; specify as *group/descriptor.position* or *alias.position*; when specifying an image dataset, you must also use the TYPE=I keyword (*position* default=0)

frame — frame number for display (default=current)

Keywords

CColor= graphics color level of the lines displaying the geographical coverage of the satellite sensor or the boundaries of the image specified in *imgdataset*; use positive numbers for solid lines and negative numbers for dashed lines; see the Remarks (default=0, do not plot coverage)

DAY= *bday eday* — range of days for display; see the Remarks (default=current, or from *imgdataset*)

HORizon= *gil wal*
minimum angle, in degrees, above the horizon at which a satellite signal is readable

- *gil* — angle at Gilmore Creek, Alaska (default=5)
- *wal* — angle at Wallops Island, Virginia (default=5)

INT= interval, in seconds, between the time marks on the orbital track (default=computed)

LABel= *'text' loc col*
display label, location, and color

'text'	label or description of the display (default=from *navdataset* or *imgdataset*)
loc	location for the label at the bottom of the frame; specify a number 1 through 5; see the Remarks (default=1)
col	graphics color level for the label (default=from the CCOLOR keyword if used; otherwise from the TRCOLOR keyword)

NAV= **C** use existing frame navigation; use this keyword to overlay additional orbital tracks on the same frame (default=erase frame and redraw map)

SENsor= *type*

POES options: **AVHRR** (default), **HIRS**, **MSU**

DMSP options: **OLS** (default), **SSM/I**, **SSM/T**, or **SSM/T2**

TIME= *btime etime* time range to plot; see the Remarks (default=0 23:59:59, or from *imgdataset*)

TMColor= graphics color level of the time marks on the orbital track (default=3)

TRColor= graphics color level of the orbital track; use positive numbers for solid lines and negative numbers for dashed lines (default=2)

TYPE=

S	uses the system navigation files specified with *navdataset* (default)
I	uses the navigation of the image specified with *imgdataset*; overrides the SENSOR keyword

Remarks

Use both the DAY and TIME keywords to specify the time period for plotting orbital tracks and coverage. For example, DAY=182 183 TIME=21 3 specifies a range from 21:00 UTC on day 182 through 03:00 UTC on day 183.

If you use the CCOLOR keyword and TYPE=I without the DAY or TIME keyword, the displayed geographical coverage is limited to the image specified in *imgdataset*. Otherwise, the entire geographical coverage of the sensor is displayed.

Labels are displayed at the bottom left corner of the frame. A default label is constructed using information from the system navigation file or the image used for navigation. The label includes the dataset name, the satellite, sensor, and day or range of days displayed. Use the LABEL keyword and the *'text'* parameter if you want to choose a different label.

Specify NAV=C to overlay additional orbital tracks on the same frame. Use the *loc* parameter with the LABEL keyword to place additional labels on different lines at the bottom of the frame. Location 1 is the top line; additional labels are below. The maximum number of lines depends on the frame size: five for a 480 by 640 frame.

See Also

Use the PACORB command to display orbital tracks and coverage for the Pacific Test Range. Use the NAVDISP command to display orbital tracks and coverage for a user-defined map.

Examples

USAORB NAV/NOAA14 DAY=96300
USAORB NAV/NOAA12 DAY=96300 NAV=C TRCOLOR=5 LABEL=X 2
The first entry draws the NOAA-14 satellite orbital tracks for day 96300 over a map of North America. The second entry draws the NOAA-12 satellite orbital tracks on the same frame without erasing the NOAA-14 tracks. The NOAA-12 tracks and display label are drawn in graphics color level 5. The label is positioned on the text line below the first entry's label.

USAORB POESNAV/NOAA14 TIME=13:00 15:00 SENSOR=MSU CCOLOR=-7
This entry draws the NOAA-14 satellite orbital tracks from the current day between 13 and 15 UTC and displays the geographical coverage of the MSU sensor in dashed color level 7. The track data is drawn over a map of North America.

USAORB WALLOPS/N12HRPT TYPE=I
This entry draws the orbital track for the polar orbiting satellite with data in most recent image in the dataset WALLOPS/N12HRPT over a map of North America.

USAORB WALLOPS/N12HRPT TYPE=I CCOLOR=10
This entry draws the orbital track and the AVHRR geographic coverage for the satellite with data in the most recent image in the dataset WALLOPS/N12HRPT over a map of North America. The geographic coverage is drawn in color level 10.

USAORB WALLOPS/N12HRPT TYPE=I DAY=97097
This entry draws the orbital tracks for the satellite with data in the most recent image in the WALLOPS/N12HRPT dataset. The tracks for the entire day 97097 are plotted.

USAORB GILMORE/N14GAC TYPE=I NAV=C LABEL='ORBITAL TRACK FOR NOAA-14 #Y' INT=300

This entry draws the orbital track for the satellite with data in the most recent image in the GILMORE/N14GAC dataset using the current frame's navigation. A custom label is displayed, and the time marks are drawn every five minutes along the orbital track.

V (McIDAS-OS2 only)

Toggles the velocity cursor on and off when tracking cloud drift winds.

Remarks

The V key toggles the velocity cursor on and off. This establishes a fixed jump in the cursor for each frame in your loop bounds, which helps track cloud features. You must be in a cloud tracking session to use command V.

To turn the velocity cursor on,

Press: **Alt V**

The letter V is displayed on the text frame status line.

Set the velocity increment by aligning the cursor over a cloud target on the first frame of your loop. Advance to the second frame with the left mouse button (it functions like Alt A), then align the cursor over the similar cloud feature. Doing this on the first and second frames sets the increment for all frames in the loop.

If you don't use the velocity cursor, you will be manually selecting each target. Although this can be quite tedious, it is advisable when doing single pixel cloud tracking.

VASTBL

Creates calibration transforms for Mode AA VAS data.

Format

VASTBL

Remarks

Mode AA data was transmitted by GOES satellites between 22 September 1980 and 18 November 1986. This command creates a file of about 6.5 megabytes named VASTBLS that is used specifically for 2-byte Mode AA VAS data. If you use this data on your workstation, you must run this command once to create this file.

Example

VASTBL
This entry creates the file VASTBL, which is needed only if you use Mode AA VAS data on your workstation.

VIS5D (McIDAS-X only)

Starts a McIDAS-Vis5D session.

Remarks

The VIS5D command starts the McIDAS-Vis5D program and sets its path to the first directory enumerated in **MCPATH**. This is the default directory for the grid files that are to be imported, and for the Vis5D output files.

If you use REDIRECT or have grid files that are not in the first directory enumerated in **MCPATH**, you will have to change the directory in the Vis5D Data Importer/Resampler Window after Vis5D starts.

See the *McIDAS-Vis5D User's Guide* for additional information.

W

Toggles the graphics frame on and off.

Remarks

To turn the graphics overlay frame on and off,

Press: **Alt W**

or

Type: **W**

Press: **Enter**

This entry does not alter the contents of the graphics frame. It turns the graphics off to provide a better view of the image.

In McIDAS-OS2, this is simulated by setting the eight graphics levels (1 to 8) to a medium gray.

See Also

Command K toggles image frames on and off.

WWDISP

Displays active weather warnings, watches and advisories.

Format

WWDISP *map frame [keywords]*

Parameters

map map to display; use any predefined map in the MAP command, for example, **USA**, **MID**, **KS** (default=no map is drawn, use frame navigation)

frame frame number to display the output (default=current)

Keywords

COLor= *tor svr toroutl svroutl win winoutl snoadv bliz blizoutl* graphics color levels for output (default=2 3 5 4 14 10 11 7 8 for sessions with nine or more graphics color levels; 2 3 5 4 6 2 4 7 8 for sessions with eight or less graphics color levels)

- *tor* color of tornado watch outlines and warnings fill
- *svr* color of severe thunderstorm watch outlines and warnings fill
- *toroutl* color of county outlines drawn for tornado warnings
- *svroutl* color of county outlines drawn for severe thunderstorm warnings
- *win* color of winter storm watch outlines and warnings fill
- *winoutl* color of zone outlines drawn for winter storm warnings
- *snowadv* color of zone outlines drawn for snow advisories
- *bliz* color of zone fill drawn for blizzard warnings
- *blizoutl* color of zone outlines drawn for blizzard warnings

DAY= *bday eday* day range of active bulletins to plot (default=current *bday*)

FILl= type of shading for counties and National Weather Service zones under warnings; uses the colors specified for *svr*, *tor*, *win* and *bliz* with the COLOR keyword; use one of the following options

NONE	use no fill
SOLID	fill completely with a solid color (default)
TRAN *density*	fill partially to give a transparent effect; *density* range is 2-10; larger values give a greater transparent effect, for example, a value of 5 fills every fifth pixel (*density* default=4)

GROup= ADDE group to search; the group name must be mapped with the DATALOC command to a server with weather text data (default=**RTWXTEXT**)

NAV= frame to use for navigation; specify a frame number or **C** for current frame; cannot be used with the *map* parameter (default=**C**)

PLOt=

BOX	plot severe thunderstorm and tornado watches as box outlines
COUNTY	plot severe thunderstorm and tornado watches as county outlines
NBOX *height*	plot severe thunderstorm and tornado watches as box outlines with the watch number in center of each box using the specified pixel height (default=**NBOX 7**)

TIMe= *btime etime* time range of active bulletins to plot (default=current *btime*)

TYPe= *t1 . . tn* bulletin types to plot; you cannot use TYPE with the WATCH keyword

BLIZZARD	blizzard warnings
SEVWARN	severe thunderstorm warnings
SEVWATCH	severe thunderstorm watches
SNOWADV	snow advisories
TORWARN	tornado warnings
TORWATCH	tornado watches

		WINWARN	winter storm warnings
		WINWATCH	winter storm watches
		ALL (default)	
WATch=	*num1 . . numn*		severe thunderstorm and tornado watch numbers to plot; watches are plotted only if they are active during the time period specified with the DAY and TIME keywords; you cannot use WATCH with the TYPE keyword (default=all active watches during time period specified with DAY and TIME)
WIDth=	*width*		graphics line width for county outlines and watch boxes (default=current GD command setting)
WList=	**YES**		display the watch list in the upper-left corner of the frame; the list includes the watch number, the day of month, and the time it expires (default)
	NO		do not display the watch list

Remarks

If both watches and warnings are active, the watches are plotted before the warnings, regardless of which were issued first. The map is drawn after all the watches and warnings are plotted.

Severe thunderstorm and tornado watches are drawn as either a box or county outlines. If you use PLOT=NBOX (the default), the watch number is plotted in the center of each box. The number begins with a T, indicating tornado, or an S, indicating severe thunderstorm. Winter storm warnings are always plotted as zone outlines.

Watches are outlined in the *tor*, *svr* and *win* colors specified with the COLOR keyword. Counties and zones under a warning are filled with the *tor*, *svr* and *win* colors using the shading specified with the FILL keyword, and are outlined with the *toroutl*, *svroutl*, *winoutl* and *blizoutl* colors specified in the COLOR keyword. Snow advisories are filled with the *snoadv* color in a hatch pattern unless FILL=NONE is specified.

If you specify a range with the DAY and TIME keywords, any bulletins active during the range are plotted. For example, DAY=185 187 TIME=21 3 specifies a window from 21:00 UTC on day 185 through 03:00 UTC on day 187. If you specify a single day and time, bulletins active at that day and time are plotted. The default is the current day and time.

Canceled severe thunderstorm and tornado watches are considered expired and are not displayed. Canceled warnings and winter storm watches are displayed until the original expiration time has passed.

Examples

WWDISP
This entry plots all active severe thunderstorm watches and warnings, tornado watches and warnings, winter storm watches and warnings, blizzard warnings, and snow advisories on the current frame. No map is drawn, the current frame's navigation is used.

WWDISP USA 4 TYPE=TORWATCH TORWARN
This entry plots all active tornado watches and warnings on a map of the United States on frame 4.

WWDISP TX COLOR=5 4 6 6 TYPE=SEVWATCH SEVWARN TORWATCH TORWARN
This entry plots all active severe thunderstorm and tornado watches and warnings on a map of Texas on the current frame. The tornado watches and warnings are plotted in graphics color level 5. The severe thunderstorm watches and warnings are plotted in graphics color level 4. The outlines of counties with warnings are displayed in graphics color level 6.

WWDISP MID WATCH=490 492 PLOT=COUNTY
This entry plots severe thunderstorm or tornado watches 490, 491 and 492 as county outlines on a map of the Midwest. The watches are plotted only if they are currently active. If they are no longer active, you must use the DAY and TIME keywords to specify the day and time when they were active.

WWDISP USA DAY=97270 97274 TIME=0 23:59
This entry plots all severe thunderstorm watches and warnings, tornado watches and warnings, winter storm watches and warnings, blizzard warnings, and snow advisories that were active on days 97270 through 97274 on a map of the United States.

IMGDISP GOES8/VIS BAND=1 STA=KBUF REFRESH='MAP VH'
WWDISP NAV=C DAY=1998361 TIME=18 23:59 TYPE=WINWARN BLIZZARD FILL=TRAN 6
The first entry displays the most recent image in dataset GOES8/VIS on the current frame with Buffalo, New York, at the center, and includes a high-resolution map. The second entry uses the image's navigation to plot all winter storm and blizzard warnings active between 18 and 23:59 UTC on day 1998361. Every sixth pixel in the zones under a warning is filled, producing a transparent effect that allows most of the satellite image to be seen.

WWLIST

Lists active weather warnings, watches and advisories.

Format

WWLIST *state 'county' [keywords]*

Parameters

state	state to list; two-character P.O. abbreviation (default=all)
'county'	county name or National Weather Service state zone number to list; single quotes are mandatory (default=all)

Keywords

DAY=	*bday eday*	day range of active bulletins to list (default=current *bday*)
GROup=	ADDE group name to search; the group name must be mapped with the DATALOC command to a server with weather text data (default=**RTWXTEXT**)	
OUTput=	**RAW**	list output as the original text product
	TAB	list output in a condensed, tabular format (default)
TIMe=	*btime etime*	time range of active bulletins to list (default=current *btime*)
TYPe=	*t1 . . tn*	bulletin types to list; you cannot use TYPE with the WATCH keyword

BLIZZARD	blizzard warnings
SEVWARN	severe thunderstorm warnings
SEVWATCH	severe thunderstorm watches
SNOWADV	snow advisories
TORWARN	tornado warnings
TORWATCH	tornado watches
WINWARN	winter storm warnings
WINWATCH	winter storm watches
ALL (default)	

WATch=	*num1 . . numn*	severe thunderstorm and tornado watch numbers to list; watches are listed only if they are active during the time period specified with the DAY and TIME keywords; you cannot use WATCH with the TYPE keyword (default=all active watches during time period specified with DAY and TIME)

Remarks

Omit punctuation when specifying county names with the '*county*' parameter. For example, to list the watches and warnings for St. Cloud county, specify 'ST CLOUD', not 'ST. CLOUD'.

If both watches and warnings are active for the specified location, WWLIST lists the watches before the warnings, regardless of which were issued first.

If you specify a range with the DAY and TIME keywords, any bulletins active during the range are listed. For example, DAY=185 187 TIME=21 3 specifies a window from 21:00 UTC on day 185 through 03:00 UTC on day 187. If you specify a single day and time, bulletins active at that day and time are listed. The default is the current day and time.

Examples

WWLIST
This entry lists all active severe thunderstorm watches and warnings, tornado watches and warnings, winter storm watches and warnings, blizzard warnings, and snow advisories for the United States.

WWLIST TX TYPE=TORWATCH TORWARN
This entry lists all active tornado watches and warnings for Texas.

WWLIST FL 'ST LUCIE' OUTPUT=RAW TYPE=TORWARN
This entry lists all active tornado warnings for St. Lucie county in Florida. The data is listed in the text format of original bulletins.

WWLIST OK DAY=97200 TIME=0 23:59
This entry lists all severe thunderstorm watches and warnings, tornado watches and warnings, winter storm watches and warnings, blizzard warnings, and snow advisories that were active on day 97200.

WWLIST WATCH=490 491 492
This entry lists severe thunderstorm or tornado watches 490, 491 and 492 as county. The watches are listed only if they are currently active. If they are no longer active, you must use the DAY and TIME keywords to specify the day and time when they were active.

WXTLIST

Lists weather text products.

Formats

WXTLIST *predprod [keywords]*
WXTLIST *[keywords]*
WXTLIST DIR

Parameters

predprod	lists a predefined text product; see the Remarks (no default)
DIR	displays a list of the available predefined products

Keywords

APRo=	*head1 . . headn*	lists text products with the specified AFOS/AWIPS product headers; must be three characters; you cannot use APRO with the WMO keyword; see the Remarks
ASTn=	*stn1 . . stnn*	lists text products with the specified AFOS/AWIPS stations; must be two or three characters, for example, **SFO**, **CA**
DAY=	*bday eday*	range of days to search; see the Remarks for DAY, TIME and DTIME interactions (*bday* default=current; *eday* default=*bday* if a range is specified using the TIME keyword; if a range is not specified in either DAY or TIME, then *bday*, *btime* and DTIME determine the day and time range)
DTIme=	maximum number of hours back in time to search; the range is 1-720; see the Remarks for DAY, TIME and DTIME interactions (default=96 when used with the APRO, ASTN, WMO and WSTN keywords; otherwise default=1)	
FORm=	**TEXT**	lists only the text products (default)
	HEADER	lists only the header information
	ALL	lists both the header information and text products
GROup=	ADDE group to search; the group name must be mapped with the DATALOC command to a server with weather text data (default=**RTWXTEXT**)	

MATch=	*string1 . . stringn*	lists text products containing all specified character strings; the strings can occur anywhere in the product
	'string'	lists text products that contain an exact match of the specified string, including any spaces
NUM=	number of text products matching the search criteria to list (default=1)	
SOUrce=	*src1 . . srcn*	lists text products with the specified source circuit, for example, **IDS**, **DDS** (default=all circuits)
TIME=	*btime etime*	range of times to search; see the Remarks for DAY, TIME and DTIME interactions (*btime* default=current if the DAY requested is the current, *btime* default=23:59:59 for any other day; *etime* default=*btime* if a range is specified in DAY keyword; if a range is not specifed in either DAY or TIME, then *bday*, *btime* and DTIME determine the day and time range)
WMO=	*head1 . . headn*	lists text products matching the specified WMO product headers; must be at least two characters; you cannot use WMO with the APRO keyword; see the Remarks
WSTn=	*stn1 . . stnn*	lists text products with the specified WMO stations; must be four characters, for example, **KLAX**, **KSFO**

Remarks

Weather text data must reside on a McIDAS-X remote server; it cannot reside on the local server.

The first line of text products received by McIDAS contains WMO information about the data being received. An example of this WMO information line is shown below:

Example: **FPUS5 KMKE 171245**

Format: *product origin date*

product	the product header; includes a two-character WMO product code (**FP**), a two-character geographic identification code (**US**), and an optional product ID number between 0 and 99 (**5**)

origin	the station initiating the report (**KMKE**)
date	day of the month (**17**), hour UTC (**12**), and minute (**45**)

The WMO keyword matches the product header. The WSTN keyword matches the station initiating the report. The DTIME and TIME keywords use the date header to determine matches within their time range.

You must specify at least two characters for the WMO keyword; the simplest search includes only the WMO product code. You can also use wildcard characters and ranges. For example, to list text products that begin with FPUS and have a product number between 1 and 5, specify WMO=FPUS1-5. To list all WMO products that begin with FP, have any country code, and a product number 5, specify WMO=FP??5. To list all FPUS products that contain a 5 as their last digit, specify WMO=FPUS?5. This entry matches on FPUS5, FPUS15, FPUS25, etc.

Many text products sent by the National Weather Service contain an additional line of information. This AFOS/AWIPS information also indicates product and origin. Examples of the AFOS/AWIPS information lines are shown on the next page.

Examples: **ZFPWI**
LFPMKE

Format: *pppsss*

ppp	the product header; three-character AFOS/AWIPS product code (**ZFP** or **LFP**)
sss	the station initiating the report; two or three characters depending on the AFOS product (**WI** or **MKE**)

The APRO keyword matches the product header. The ASTN keyword matches the station initiating the report.

Use the APRO, ASTN, WMO and WSTN keywords to significantly decrease your search time. The values specified within each of these keywords are connected with a logical OR. For example, APRO=ZFP SFP matches any product with the AFOS/AWIPS product code ZFP or SFP. The values specified within the MATCH keyword are connected with a logical AND. For example, MATCH= TORNADO WARNING matches any product with the words TORNADO and WARNING.

If you do not specify the TIME and DAY keywords or you specify a single day and/or time with them, then DTIME determines how many hours back in time to search. For example, TIME=12 DAY=340 APR=ZFP uses the default DTIME of 96 and therefore searches from 12 UTC on day 336 through 12 UTC on day 340. Likewise, TIME=12 APRO=ZFP searches backward 96 hours from 12 UTC today. Use the NUM keyword to list more than the first (most recent) match.

If you specify a range of times and/or days with the TIME and/or DAY keywords, then you cannot use the DTIME keyword. For example, DAY=340 TIME=12 18 APRO=ZFP ignores the DTIME default of 96 hours and searches only between 12 and 18 UTC on day 340. Likewise, DAY=305 306 TIME=12 APRO=ZFP also ignores the DTIME default and searches from 12 UTC on day 305 through 12 UTC on day 306. And, DAY=300 306 TIME=21 3 APRO=ZFP searches from 21 UTC on day 300 through 03 UTC on day 306.

The predefined text products are defined in the files **WXUSER.PRD**, **WXSITE.PRD** and **WXCORE.PRD**. When you request a predefined product, WXTLIST first looks for it in these files on your workstation. If the product is not found on your workstation, the request is sent to the server. If the server cannot find the requested product, you see an error message.

To set up your own predefined products, create the file **WXUSER.PRD** in any directory accessible from your McIDAS session. Use this file to create names for specific search conditions you use frequently or to add search conditions to existing products.

The format of a line in a personal product file and a sample file are shown below:

product_name WXTLIST_keywords

```
# ------------ Personal Product File ------------
MSN_NOWCAST      APRO=NOW ASTN=MKE MATCH=MADISON
DANE_ZONE        PROD=ZONE_FCST ASTN=WI MATCH=DANE
BADNEWS          PROD=TORNADO_WARNING
```

To add search conditions to a product that is already defined on the server, use the special keyword PROD. Specify PROD as an existing predefined product. You can also use this keyword to give personal alias names to other predefined products.

Use the pound sign (#) in the first column to indicate comment lines. To continue a command on the next line, end the line with a backslash character (\).

Search conditions defined in your personal product file override the keywords you enter in the WXTLIST command. For example, suppose your personal product file contains the following entries:

```
MILWAUKEE                WSTN=KMKE
ZONE                     APRO=ZFP
```

If you enter WXTLIST ZONE APRO=LFP, LFP is ignored because the product ZONE is predefined in your personal product file with the search condition APRO=ZFP.

If you enter WXTLIST MILWAUKEE APRO=LFP, WXTLIST lists products matching both WSTN=KMKE and APRO=LFP.

Examples

WXTLIST
This entry lists the last text product received.

WXTLIST WMO=FP NUM=2
This entry lists the two most recent text products with the FP product code in the WMO product header.

WXTLIST WMO=FOUS
This entry lists the most recent text product with the FOUS product/country code in the WMO product header.

WXTLIST WMO=FOUS14
This entry lists the most recent text product with a FOUS14 WMO product header.

WXTLIST WMO=FOX?60-75 NUM=3
This entry lists the three most recent text products with a WMO product header beginning with FOX, containing one additional character, and having a product ID range of 60 to 75.

WXTLIST WMO=FPUS5 FPUS3 WSTN=KMKE NUM=2
This entry lists the two most recent text products sent from Milwaukee (KMKE) with FPUS5 or FPUS3 WMO product headers.

WXTLIST WSTN=KMKE NUM=50 DTIME=2
This entry lists up to 50 of the most recent products issued out of Milwaukee in the last two hours, regardless of the WMO product header.

WXTLIST MATCH=MADISON
This entry lists the most recent text product containing the string MADISON. Because the APRO, ASTN, WMO and WSTN keywords are not used in this command, the default for DTIME is one hour. Only records from the last hour are searched.

WXTLIST WMO=FOUS14 MATCH=MSN
This entry lists the most recent FOUS14 product that also contains the string MSN. Because this product is issued from Washington DC, MSN does not appear as WMO or AFOS station information. To find the Madison forecast, you must search for the string MSN.

WXTLIST APRO=ZFP SFP ASTN=MN WI NUM=10
This entry lists the 10 most recent text products that are either AFOS products ZFP or SFP and are issued for AFOS stations MN or WI.

WXTLIST APRO=ZFP MATCH='DENSE FOG'
This entry lists the most recent ZFP product that contains the string DENSE FOG. This must be an exact match: the word DENSE, followed by a space, followed by the word FOG.

WXTLIST APRO=ZFP MATCH=DENSE FOG
This entry lists the most recent ZFP product that contains the strings DENSE and FOG. The two words can occur anywhere in the text product.

WXTLIST TORNADO_WARNING
This entry lists the most recent TORNADO_WARNING product.

WXTLIST ZONE_FCST ASTN=WI
This entry lists the most recent ZONE_FCST product issued for AFOS station WI. Because the station name included with the zone forecast for Wisconsin is WI, it must be included in the ASTN keyword. If you specify MKE, the station issuing the report, no match is found.

X (McIDAS-OS2 only)

Tracks cloud drift wind targets with one keystroke.

Remarks

You can use the X key in place of the right mouse button when tracking cloud drift winds. It makes one wind measurement for each pair of frames in the loop bounds without stepping through the frames.

For example, in a loop of three images, you would press the right mouse button four times to make two wind measurements. The X key will make the same measurements by reading the cursor displacement on each frame without advancing through the frames; it's handled through the software so nothing mechanical is seen. This technique is useful if you find consistent flow in a large cluster of clouds.

To use this function,

Press: **Alt X**

XSECT

Displays a vertical cross section.

Format

XSECT *bid eid [keywords] "text*

Parameters

bid	beginning station ID number
eid	ending station ID number
"text	cross section title; up to 42 characters

Keywords

CINT=	*c1 . . cn*	contour interval (default=see the table in the Remarks)
COLOR=	*l1 . . ln*	contour color level (default=see the table in the Remarks)
DAY=	MD file Julian day, YYDDD (default=current)	
ERAse=	**NO**	does not erase the graphics frame
	YES	automatically erases the graphics frame (default)
FORM=	*f1 . . fn*	see the table in the Remarks for the defaults
	DIR	reported wind directions, 0 to 360° clockwise from the north
	MIX	derived mixing ratios (g/kg)
	SPD	reported wind speeds (meters/second)
	SPDE	derived wind speed projected normal to the cross section axis and enhanced by thermal information through the geostrophic wind equation (meters/second)
	SPDN	derived wind speed normal to the cross section axis (meters/second); see the Remarks
	SPDS	derived wind speed tangential to the cross section axis (meters/second)
	SPDZ	derived vertical wind speed shear (1/s)
	T	reported temperature (°C)

	TD	reported dew point temperature (°C)
	THA	derived isentropes (°K) (default)
	U	derived u-component of the reported wind speed (meters/second)
	V	derived v-component of the reported wind speed (meters/second)
	WIN	wind barbs of the reported winds (kts)
	Z	reported heights (meters)
GCOLOR=	background border and interior grid color level (default=1)	
GRA=	graphics frame (default=current)	
IDN=	*id1 . . 25*	station ID numbers for the cross section
LABEL=	**YES**	displays parameter labels (default)
	NO	does not display parameter labels
LAT=	*end beg*	latitude limits for the cross section (default=*eid bid*)
LDASH=	*l1 . . ln*	contour dashing; use with keyword FORM
		-2 all contours are dashed
		-1 only negative contours are dashed
		0 no dashing
	(default=see the table in the Remarks)	
LINT=	label interval of contours (default=see the table in the Remarks)	
LON=	*end beg*	longitude limits for the cross section (default=*eid bid*)
LSIZE=	label size of contours (default=see the table in the Remarks)	
MAP=	**NO**	does not plot a map showing the cross section location (default)
	YES	plots a map showing the cross section location
MDF=	*mand sig*	mandatory and significant level MD file numbers; set *sig* to 0 if only mandatory levels are needed (default=see the Remarks)

PBOT= bottom mandatory pressure level of the cross section (default=1050 mb)

PTOP= top mandatory pressure level of the cross section (default=100 mb)

SMOOTH= smoothing factor (default=see the table in the Remarks)

TIME= MD file time, HH:MM:SS (default=most current)

TITLE= title and ID label color level (default=3)

UNIT= units of contours (default=see the table in the Remarks)

WIDTH= corridor half width in kilometers (default=±250 km)

Remarks

The first station specified with *bid* or the IDN keyword is on the left edge of the display; the last station specified is on the right edge. The stations selected with the LAT and LON keywords are displayed first on the left and last on the right, based on whether the longitudinal or latitudinal extent of the cross section is larger. Consequently, if you reverse the order for selecting stations, the orientation of the cross section will be affected. Altering the order may also impact the intermediate station selections as stations are included and excluded in order from first to last.

The maximum number of stations is 25. When two stations projected along the cross section axis lie too close to each other to allow a solution for the contouring algorithm, the station farthest from the beginning of the cross section is excluded.

If more than 25 stations are selected with the IDN keyword, the program stops. If more than 25 stations are selected with the *bid* and *eid* parameters and the LAT and LON keywords, the program doesn't stop, but uses only the first 25 stations selected and lists appropriate error messages.

If a station report is missing a surface pressure or reports less than three levels of information, it is excluded. If a station provides a partial report, the missing levels are not included in the contouring analysis and that area of the cross section display is left blank.

The MDF keyword has two parameters, *mand* and *sig*, which specify the mandatory and significant level MD file numbers, respectively. The default for *mand* is the MD file in the range 11 to 20 whose last digit matches the last digit of the current Julian day. If *mand* is in the default range 11 to 20, the default for *sig* is the value of *mand* plus 10; otherwise, the default for *sig* is the value of *mand* plus one. For example, if *mand*=14, the default for *sig* is 24; if *mand*=2500, the default for *sig* is 2501. To automatically exclude significant level data, set *sig* to zero.

You can specify the FORM keyword options in any combination and order. However, the sequence must be maintained when invoking any of the context specific keywords, i.e., CINT, LINT, COLOR, UNIT, LDASH, LSIZE or SMOOTH.

Graphics options conform to the IGTV standards.

The orientation for SPDN and SPDS with respect to the cross section axis is the positive tangential direction. This direction is along the cross section axis going from the last station towards the first station with the positive perpendicular (normal) direction following a right-hand rule, i.e., positive to the right relative to the positive tangential direction. This scheme results in the mathematically appropriate sign which is appropriate for the cross section orientation but may not be equivalent to the physically intuitive sign that you anticipate. The SPDN and SPDS signs will vary with the cross section orientation although the contour patterns are very similar.

XSECT checks for missing values and obviously bad data, e.g. negative temperatures. If the cross section output seems incorrect, run command SKEWT or UL on the suspect station soundings to check the input values.

The table below defines the defaults for the keyword FORM.

FORM	CINT	COLOR	LDASH	LINT	LSIZE	SMOOTH	UNIT
DIR	90	1	-2	1	6	20	deg
MIX	2	4	-2	1	6	20	g/kg
SPD	5	2	0	1	6	20	MPS
SPDE	5	2	-1	1	6	40	MPS
SPDN	5	2	-1	1	6	20	MPS
SPDS	5	2	-1	1	6	20	MPS
SPDZ	5	2	-1	1	6	40	1/S
T	5	5	-1	2	6	20	C
TD	5	4	-1	2	6	20	C
THA	5	5	-1	2	6	20	K
U	5	2	-1	2	6	20	MPS
V	5	3	-1	2	6	20	MPS
WIN	NA	7	NA	NA	8	NA	KT
Z	1000	1	-1	5	6	20	M

The SC, SP, UC, UL, UP, and XSECT commands were not modified with year 2000 changes because they have or will have ADDE replacements that are year 2000 capable. The SC, SP, UC, UL, UP, and XSECT commands, however, continue to work with dates before and after year 2000, but only if the date specified in the DAY keyword exactly matches the value stored in the point/MD file. For example, if using an MD file with the new ccyyddd date format (e.g., ISFC or IRAB schema MD files created with McIDAS-XCD 7.5 and later), then the value for the DAY keyword must include the century (e.g., 1999240). If using an ISFC or IRAB schema MD file created using a version of McIDAS-XCD prior to 7.5, you must continue to specify the date in the yyddd format (e.g., DAY=97240).

Examples

XSECT 72747 72203
This entry displays an isentropic cross section from station reports lying within a 250 km corridor along a cross section axis from station 72747 to station 72203.

XSECT 72747 72203 MAP=Y
This entry is the same as the first example, except it also displays a map in the upper-right corner indicating the location of the cross section axis and the included stations.

XSECT 72747 72203 FORM=MIX THA SPD LDASH=0 X -2
This entry is the same as the first example, except it also overlays the mixing ratio cross section without dashing contours, the isentropic cross section dashing negative contours only, and the isotach cross section dashing all contours.

XSECT 72747 72203 PTOP=400 WIDTH=150 FORM=MIX
This entry displays a mixing ratio cross section for a narrower corridor width along the same cross section axis as in the first example. It emphasizes the lower levels by limiting the top pressure level to 400 mb.

XSECT 72747 72203 FORM=MIX THA SPD COLOR=1 2 3 CINT=X 5 10
This entry is the same as the third example, except the color level for the mixing ratio contours is set to 1, the isentropes to 2, and isotachs to 3. It uses the default contour interval for the mixing ratios. The isentropic contour interval is set at 5° K, while the isotach contour interval is set at 10 m/s.

XSECT FORM=SPDZ SMOOTH=100 COLOR=4 IDN=72694 72681 72576 72562 MAP=Y LSIZE=10
This entry draws a cross section of vertical wind speed shear from Salem, Oregon, to North Platte, Nebraska, using the IDN keyword to specify the stations to include. The graphic displays a small map of the cross section location. The contours are in color level 4; the label size for the contours is 10 pixels. This entry also smooths the analysis by a factor of 100.

Y (McIDAS-X only)

Toggles image frames to and from the loop control system.

Remarks

To toggle image frames to and from the loop control system,

Press: **Alt Y**

or

Type: **Y**

Press: **Enter**

Use the Y command only on McIDAS-X sessions with independent graphics. See the TERM command for more information.

The loop control system consists of the A, B, J (McIDAS-X only), L, O, Y, LB, and LS commands.

You can connect or disconnect the image frames from the loop control keys independently of the graphics frames.

Z

Toggles the McIDAS-X zoom function on and off; resizes the McIDAS-OS2 image window.

Remarks

Zooming (blowup) provides a more detailed view of a frame's features. Both McIDAS-X and -OS2 provide a zoom capability, though there are significant operational differences between them.

To run the Z command:

Press: **Alt Z**

or

Type: **Z**

Press: **Enter**

McIDAS-X Remarks

In McIDAS-X, use the Z command to toggle between zoomed and normal view states. Use the ZM command to set the zoom factor between 1 to 6. After setting the zoom factor, use the Z command to toggle to the zoomed state.

To roam in the zoomed state, press and hold the middle mouse button. Press the right mouse button to reposition the frame so the upper-left corner of the frame appears in the upper-left corner of the Image Window. If you specified the **`-autoResize`** flag at start up or in your **`.mcidasrc`** file, the Image Window is automatically resized to fit the zoomed frame.

McIDAS-OS2 Remarks

In McIDAS-OS2, zooming is possible only if you selected the Storage mode when running the SETUP program. See Chapter 1, *Installation and Configuration* for more information.

Use the Z command to return Image Window to its start-up size. To zoom in McIDAS-OS2, resize the Image Window. The geographical area remains constant while the Image Window size changes. If you make the window larger, pixels are replicated; if you make the window smaller, pixels are dropped. Because you always view the same geographical area, regardless of the window size, there is no roam function. See the *Image Window* section on page 2-15 for more information.

ZA

Displays annotations on the current graphics frame at the cursor position.

Format

ZA *color height justify [keywords] "text*

Parameters

color graphics color level; 0 for erase (default=1)

height pixel height to draw text and symbols (default=10 for text; cursor height for keyword TCYC symbol)

justify

L left justify the text; the upper-left corner of the first letter of the text or symbol is placed at the cursor center (default)

R right justify the text; the upper-right corner of the last letter of the text or symbol is placed at the cursor center

C centers the text; the top of the center letter of the text or symbol is placed at the cursor center

V vertical justification of the text; the upper-left corner of the text or symbol is placed at the cursor center; consecutive letters are written below the previous letter

M mouse; see the Remarks

N numerous plots of the same text or symbol; the center letter of the text or center of the symbol is placed at the cursor center

"text text to write on the graphics frame; you may use uppercase and/or lowercase letters; quotes are mandatory and may be substituted with curly brackets ({})

"$text displays weather symbols or arrows on the graphics; see the Remarks

Keywords

Ang= angle to write text; do not use with the FONT command or global keyword, or keywords ENCL and TCYC

Encl=

C draws a circle around the text in the N mode

E draws an ellipse around the text in the N mode

FULlframe= **YES** use the entire frame for output, regardless of the panel configuration; do not use FUL=YES with the global keyword PAN

NO limit output to the current panel or the panel specified with the global keyword PAN (default)

Gra= graphics frame number (default=current)

POS= *lin ele* TV line and element position to draw text, symbols, or arrows (default=current cursor position)

TCYc= *color hemi*
plots a hurricane or tropical storm symbol

color graphics color level of the symbol's center

X leave the center blank

hemi determines the direction of spirals

S southern hemisphere (default)

N northern hemisphere

Wid= graphics line width, in pixels; the maximum is 64 (default=current)

Remarks

Use the global keyword FONT to change the font for a single command entry. See *Appendix A*. Use command FONT to change fonts for all graphics commands.

To write lowercase letters, toggle the Caps Lock key or press the Shift key when typing. Press it again before entering the next command, as McIDAS commands are normally entered in uppercase letters.

When you specify the M option for the *justify* parameter, the position of the mouse and the clicking of its buttons control the location of the cursor text. Clicking the left mouse button (McIDAS-OS2) or the middle mouse button (McIDAS-X) repositions the start of the text at the cursor location. Clicking the right mouse button repositions the end of the text at the cursor location. The height is scaled as needed. Using the FONT command or global keyword with the M option positions the text horizontally at various sizes. You can't change the angle of the text.

If you specify the N option for the *justify* parameter, clicking the left mouse button (McIDAS-OS2) or the middle mouse button (McIDAS-X) centers the text at the cursor location. Clicking the right mouse button erases the last drawn text.

To plot weather symbols and arrows, enter a dollar sign ($) before any of the alphanumeric characters shown below.

T - thunderstorm	C - clear	0 - arrow
W - rain shower	Q - partly cloudy	1 - arrow
X - snow shower	B - mostly cloudy	2 - arrow
R - rain	O - overcast	3 - arrow
S - snow	D - drizzle	4 - arrow
Z - freezing rain	H - haze	5 - arrow
	F - fog	6 - arrow
	$$ - dollar sign	7 - arrow

Tropical storm and hurricane symbols are plotted at the center of the cursor, regardless of the justification specified.

The practical maximum number of characters for keyword ENCL is three.

Examples

ZA "Wisconsin
This entry writes the word *Wisconsin* 10 pixels high on the current graphics frame in graphics color level 1.

ZA 3 15 "MCIDAS
This entry writes the word *MCIDAS* in graphics color level 3 on the current graphics frame. The letters are 15 pixels high and left justified.

ZA 2 20 C GRA=2 {streamlines}
This entry writes the word *streamlines* in lowercase letters in graphics color level 2 on graphics frame 2. The letters are 20 pixels high and centered under the cursor. Curly brackets are used instead of the double quote.

ZA 4 7 V FONT=HELBO "Nevada
This entry writes the word *Nevada* vertically on the current graphics frame in graphics color level 4 using the bold, oblique Helvetica font. The upper-left corner of the N is at the cursor center. The letters are seven pixels high.

ZA 4 20 L ANG=45 "Green Mountains
This entry writes *Green Mountains* at a 45° angle in graphics color level 4. The letters are 20 pixels high and left-justified in relation to the cursor.

ZLM

Draws graphics using the mouse.

Formats

ZLM BOX *color height width*
ZLM CIRCLE *color height width*
ZLM DRAW *color* **SMOOTH=**
ZLM FILL *color height width*
ZLM FREE *color*

Parameters

BOX draws a box

CIRCLE draws a circle or ellipse

DRAW draws a smooth, continuous line as you move the mouse

FILL draws and fills a box

FREE draws a straight line between points selected with the mouse (default)

color graphics color level (default=3)

0 erases graphics when used with the FILL option

height height of the box, circle or ellipse, in pixels (default=cursor height)

width width of the box, circle or ellipse, in pixels (default=cursor width)

Keywords

SMOoth= number of samples to take for the running average; use with the DRAW option; larger numbers produce smoother lines; the maximum is 50 (default=3)

Remarks

You cannot change the cursor size with the mouse in McIDAS-X; use command CUR to resize the cursor.

Examples

ZLM

This entry permits straight-line freehand drawing in graphics color level 3. One of the two responses below is displayed on the text frame. For McIDAS-OS2, the response is:

```
Move mouse to position the cursor on the image frame.
Press the LEFT mouse button to select point for option.
Press the RIGHT mouse button to end segment.
Press BOTH mouse buttons or type Alt+Q to end ZLM.
```

For McIDAS-X, the response is:

```
Move mouse to position the cursor on the image frame.
Press the MIDDLE mouse button to select point for option.
Press the RIGHT mouse button to end segment.
Press MIDDLE AND RIGHT mouse buttons or type Alt+Q to end ZLM.
```

ZLM BOX

For McIDAS-OS2, this entry displays the response below on the text frame.

```
Move mouse to position the cursor on the image frame.
Press the LEFT mouse button and drag to size the cursor.
Press the RIGHT mouse button to draw the box.
Press BOTH mouse buttons or type ALT+Q to end ZLM.
```

For McIDAS-X, this entry displays the response below on the screen.

```
Move mouse to position the cursor on the image frame.
Press the RIGHT mouse button to draw the box.
Press MIDDLE AND RIGHT mouse buttons or type Alt+Q to end ZLM.
```

ZLM DRAW 4 SMOOTH=10

For McIDAS-OS2, this entry displays the response below on the text frame.

```
Move mouse to position the cursor on the image frame.
Press LEFT mouse button and hold, while moving
the cursor wherever on the screen you want to draw.
Press RIGHT mouse button to end segment.
Press BOTH mouse buttons or type ALT+Q to end ZLM.
```

For McIDAS-X, this entry displays the response below on the screen.

```
Move mouse to position cursor on the image frame.
Press MIDDLE mouse button and hold, while moving
the cursor wherever on the screen you want to draw.
Press RIGHT mouse button to end segment.
Press MIDDLE AND RIGHT mouse buttons or type Alt+Q to end ZLM.
```

Following the above directions produces a smooth line drawing in graphics color level 4 with a running average of 10.

ZM (McIDAS-X only)

Sets the zoom factor to use with the Z command.

Format

ZM *zoom*

Parameter

zoom zoom factor for the currently displayed image; the range is 2 to 6 (default=list current zoom factor)

Remarks

If you specified the **-autoresize** flag at startup or in your **.mcidasrc** file, the Image Window is automatically resized to fit the zoomed frame.

See Also

Alt Z toggles the zoom function on and off; see the Z command.

Examples

ZM
This entry lists the current zoom factor.

ZM 2
This entry sets the zoom factor to 2.

Chapter 4
McBASI Interpreter

This chapter contains an introduction to McBASI in McIDAS-X and -OS2, a description of the McBASI interpreter commands and reserved words, and three McBASI sample programs.

The name McBASI was first coined in 1985 on McIDAS-MVS to describe a line oriented editor and online BASIC language interpreter within the mainframe McIDAS environment. In McIDAS-X and -OS2, only the interpreter (the RUN command) has survived.

McBASI programs are presented as ASCII text files created by an editor that stores text as ASCII text with a new line character at the end of each line. The line of text for McBASI programs can not be longer than 80 characters. In McIDAS-X, these files are stored in the **`$HOME/mcidas/data`** directory, or a REDIRECT or **`MCPATH`** directory with the extension .MCB. In McIDAS-OS2, these files are stored in the **`\mcidas\data`** or a REDIRECT directory with the extension .MCB. Commands may be in uppercase or lowercase; line numbers are only needed on program lines referenced as targets of GOTO or GOSUB statements.

McBASI Interpreter Commands and Reserved Words

Use the following McBASI interpreter commands and reserved words to create and run a McBASI program. They are listed alphabetically. Each description contains the command's function, syntax and one or more examples.

CLOSE

Frees the I/O table entry for the specified *unit* (text file).

Syntax

CLOSE *unit*

Parameter

unit any valid numeric expression associated with a text file by a previous OPEN command

Remarks

A maximum of 10 files are active at once.

Example

CLOSE 10
For this example, 10 is the *unit* number associated with a text file by a prior OPEN command.

GOSUB

Changes the normal downward flow of control.

Syntax

GOSUB *x*

Parameter

x any valid numeric expression

Remark

This command is like GOTO, except control may be returned to the statement following the GOSUB by executing a RETURN statement.

Example

```
GOSUB   1000
        100     REM Return Here
        .
        .
        1000    PRINT B
        1010    RETURN
```

In this example, control is returned to line 100.

GOTO

Changes the downward, line-by-line flow of control.

Syntax

GOTO *x*

Parameter

x is any valid numeric expression

Examples

```
GOTO 300
GOTO 13+6*X
```

IF

Compares expressions, using relational operators, to determine whether to execute a statement.

Syntax

IF *expr relop expr statement*

Parameters

expr any valid expression

relop any relational operator

=	means equal
< > or > <	means not equal
>	means greater than
<	means less than
>= or =>	means greater than or equal to
<= or =<	means less than or equal to

statement step to be executed if the relationship is true

Remarks

If several *statements* are used, either all are done (if the relationship is true) or none are done (if it is false). To compare character strings, use only the = and < > relational operators. If *statement* is a let statement (a replacement statement) use the command LET.

Example

```
IF X=8 LET Y=13:LET J=9:GOTO 890
```

If X=8 is true, both LET *statements* and the GOTO *statement* are executed.

INPUT

Allows data to be gathered from an LW file, the RUN command line and, in McIDAS-OS2, the keyboard.

LW File Data Gathering

Syntax

INPUT *@u(r) , A$*

Parameters

u	numeric expression for the unit number; @ is required
(r)	numeric expression used to specify a record number; record numbers begin with zero
A$	variable into which the record is read

Remarks

The input statement for LW files is restricted; only one character variable may be designated in the list and the record from the file will be read into this variable. This form of INPUT is useful for reading text files. Refer to the OPEN statement regarding fixed length and variable length records. The INPUT statement in this form handles both; the *(r)* record number is available for either format.

Example

INPUT @3, A$
IF MID$(A$,1,4)=EOF$ GOTO *xxx*
This example tests for an end-of-file, using the pseudovariable EOF$.

Run Command Line Data

Syntax

INPUT *a,b,c*

Parameters

a,b,c variables

Remarks

Values are taken from the RUN command line as positional parameters of a normal McIDAS command. If the named variable is numeric, it is picked up as a number. If the variable is a character string, the value is picked up as a character parameter (up to 12 characters, no blanks). Each INPUT statement of this form picks up the next positional parameter. Thus, these statements are equivalent to the single INPUT statement above:

INPUT *a*

INPUT *b*

INPUT *c*

If the RUN command line contains a quoted string (for example, "THIS IS A QUOTED STRING), it may be read by using a character variable. The first character in the variable is a double quote (") to indicate it was picked up from the quoted string. An attempt to input a parameter which is not present results in either a numeric value of zero or a character string of length zero.

Keyboard Data (McIDAS-OS2 only)

Syntax

INPUT *A$*

Parameters

A$ variable into which the record is read

Remark

In McIDAS-OS2, if the file OPENed is named KBD*, input may be obtained from the keyboard. Only one character variable may be used: INPUT A$. See the LOCATE statement regarding cursor position and alternate text frames.

KEYIN

Submits a McIDAS command to be run.

Syntax

KEYIN *list*

Parameter

list zero or more expressions; place a comma or semicolon between expressions; commas tabulate to a print position (column) that is a multiple of 16; semicolons allow no spaces to be inserted; do not end the *list* with a semicolon or comma unless you don't want the statement to execute until you've entered another KEYIN statement that does not terminate with a semicolon

Remark

The exit status from the KEYIN command is placed in a pseudovariable named STATUS. A nonzero value usually indicates failure of the command.

Example

```
LET A$="KMSN"
LET T= 6
KEYIN "SFCLIST ";A$;" ";T
IF STATUS < > 0 PRINT "Something went wrong"
```

This example runs the command SFCLIST KMSN 6. If the command fails, the message *Something went wrong* is displayed.

LET

Creates a replacement statement in a McBASI program.

Syntax

LET *var=expr*

Parameters

var variable for numeric quantities; it is a single letter or a single letter followed by a digit; numeric variables are REAL*4 quantities; for character strings, A$ through Z$ are available and may contain up to 255 characters each

expr any valid numeric or character expression; numeric expressions may contain the operators +,-,*, /,**, with normal precedence rules; for character or string expressions, *expr* may be a string variable, a string constant enclosed in quotes ("ABC"), a concatenation of two strings with the + operator, or a string function, e.g., pseudovariable TIME$

Remarks

The hexadecimal constant $*nnnn* is available, e.g., $FE equals 254. A single array is also available; one thousand words are reserved and referenced by following a numeric variable name with a parenthetical expression. The value of this expression is added to the value of the variable to obtain an index into this array space.

Example

```
LET A=0
LET B=A(13)  References the 13th word
LET C=10
LET B=C(13)  References the 23rd word (10 + 13)
```

Do not mix numeric and character expressions. The VAL function converts character to numeric; STR$ converts numeric to character. In most cases, the LET may be omitted.

LOCATE (McIDAS-OS2 only)

Enables the use of text frames 5 to 9 for specific, tailored applications.

Syntax

LOCATE *row, column, frame, color, erasecolor*

Parameters

row	text frame row for the next PRINT or INPUT when using KBD*; specify a value from 0 to 24
column	column number; specify a value from 0 to 7
frame	text frame for all subsequent output; values are 0 to 9; specify only if changing text frames
color	text color value for subsequent output; see the COLORS command for the list of color values; specify only if changing colors
erasecolor	erases the named text frame (only 5 to 9) to the color given; if omitted, the text frame is not erased

Remark

You cannot omit a value unless it is the last one in the statement, for example, LOCATE 5, 3, , 7 is not legal.

Example

```
LOCATE 5, 6, 7, 11, 2
PRINT "Please enter the value:"
OPEN "KBD*", 10
INPUT @10, A$
CLOSE 10
LOCATE 24, 0, 0
PRINT A$
```

This example prompts the input on text frame 7 and prints the value on text frame 0.

OPEN

Logically equates a *unit* number with the name of a text file for INPUT and OUTPUT.

Syntax

OPEN *filename, unit, reclength*

Parameters

filename	valid string expression, less than 13 characters
unit	valid numeric expression
reclength	valid numeric expression; only useful when dealing with old-style or otherwise fixed length text files; must be specified to randomly write (PRINT) data into a file; otherwise, writing is sequential; should be 80 when dealing with old-style McIDAS text files, including those created by specifying a DEV=F in McIDAS commands

Remarks

When an OPEN statement is executed, the record pointers for input and output are set to point to the first record of the file (record zero). If these options are omitted from the INPUT or PRINT statements, the next record is used.

For McIDAS-OS2 only, a special file called KBD* may be opened to solicit input from the user. Input from this file comes from the user who must type it. See the INPUT statement.

Example

OPEN "YYEXPLE",10

PLOT

Draws lines on the image/graphic display.

Syntax

PLOT *line, element, color, frame, width*

Parameters

line	frame line coordinate value (no default)
element	frame element coordinate value (no default)
color	graphics color level (no default)
frame	graphics frame to write on (default=current)
width	line width (default=1)

Remark

Each PLOT command draws a line from the previous location to the specified coordinates. Specifying zero for *color* does not draw a line although it does change the location.

Examples

PLOT 100, 200, 0
This example establishes the drawing position at line 100, element 200 on the current frame.

PLOT A, B, 1, 3
This example draws a line from the previous position to the line/element coordinates specified in the variables A and B, respectively. The line is drawn in graphics color level 1 on frame 3.

PLOT A, A+3, 2
This example draws a line in graphics color level 2 from the previous position to a new line coordinate in the variable A, and an element coordinate equal to A plus 3.

PLOT 1, 1, 0
This example moves the starting coordinate to the upper-left corner of the frame.

POKE

Forces a value into a User Common location.

Syntax

POKE *value, location*

Parameters

value numeric or string expression; if numeric, it is converted to an integer quantity unless a string is specified

location numeric expression identifying the word in User Common to be written into

Remark

See also functions PEEK and PEEK$.

> ***Caution !***
> ***Be careful when using this command. It is possible to set your computer into a state from which the only recovery is to boot.***

PRINT

Displays command text on your workstation.

Syntax

PRINT *list*

Parameter

list is zero or more expressions; place a comma or semicolon between expressions; commas tabulate to a print position (column) that is a multiple of 16; semicolons allow no spaces to be inserted; do not end the *list* with a semicolon or comma unless you don't want the statement to execute until a future PRINT or KEYIN statement is executed

Remark

When developing programs that generate commands, use the PRINT statement for testing. It lets you to see the command text on your workstation. The PRINT statement is identical in structure to the KEYIN statement.

Examples

```
LET X=123
LET A$= "KMSN"
LET T= 12.0
PRINT "this is a test ";X;
KEYIN "SFCLIST ";
PRINT " of the ",
KEYIN A$;
PRINT " print statement"
KEYIN " ";T
```

This example produces the following print line and submits the command: SFCLIST KMSN 12.

```
this is a test 123 of the print statement
```

```
? "A=";A
PRINT "A=";A
```

The question mark (?) may be used in place of the PRINT statement. For example, the two statements above are equivalent:

Printing to a Text File

Output may be directed to a text file in either fixed length or variable length (text) format. This file-directed form of the PRINT statement has the following syntax.

Syntax

PRINT *@u(r),list*

Parameters

u	numeric expression for the unit number; @ is required
r	numeric expression used to specify the record number (begins with zero); parentheses are required; may only be specified for files with fixed length records (see the OPEN statement); variable length files are sequentially written; if the *r* clause is omitted, the next record is assumed (record following the last one written); the comma is required and followed by a list of variables, constants, etc.; if a PRINT statement ends with a semicolon or comma (meaning *do not print this yet*), the *@u(r)* clause is ignored
list	is zero or more expressions; place a comma or semicolon between expressions; commas tabulate to a print position (column) that is a multiple of 16; semicolons allow no spaces to be inserted; do not end the *list* with a semicolon or comma unless you don't want the statement to execute until a future PRINT or KEYIN statement is executed

Example

PRINT @4,EOF$

This is a final PRINT statement that outputs a logical end-of-file. Use it for a sequential file that will be read by another McIDAS program.

PTABLE

Places the value of *stringvalue* in the string table entry named *stringname*.

Syntax

PTABLE *stringvalue, stringname*

Parameters

stringvalue valid string expression containing the value to put into the McIDAS string named *stringname*

stringname valid string expression containing the name of the McIDAS string; less than 13 characters

Remark

See the McBASI TABLE$ function.

Example

PTABLE MID$(TIME$,1,2),"HR"
This example sets the value of the McIDAS string HR to the current hour.

REM

Adds comments or inserts a help into your program.

Syntax

REM *comment*

Remark

Remarks (REMs) do not affect the flow of the program.

Examples

Use one of these examples to begin a help line. The normal McIDAS HELP facility can then be employed to list the help for this program.

REM ?
REM?

RETURN

Returns from a subroutine call.

Syntax

RETURN

Remark

Also see the McBASI command GOSUB.

RUN

Runs the McBASI program.

Syntax

RUN *p1 . . . pn* **FILE= CLEAR= VAR=**
'filename p1 . . . pn **CLEAR= VAR=**
RUN *"statement*
' "statement

Parameters

p1 . . n		parameter values
filename		name of the McBASI program to run; the extension defaults to .MCB
statement		McBASI statement to execute immediately; 80 characters maximum
FILE=		runs a program from a different file; invalid when using the single quote format (')
CLEAR=	**YES**	suppresses initialization of all variables
	NO	variables retain previous values
VAR=		variable's source or destination LW file
	SHARE	shares variables when one McBASI program RUNs another
	x	LW file in which to store the variables (different from the default, which is assigned by terminal number), or the LW file holding the source variables

Remark

The RUN statement can be abbreviated; see the examples below.

Examples

RUN *p1 . . . pn* **FILE=***xxxxxx*
'xxxxxx p1 . . . pn
Replace *xxxxxx* with the file name (limited to 6 characters); these two RUN statements are interchangeable.

SLEEP

Suspends the running of your McBASI program for a specified time.

Syntax

SLEEP *seconds*

Parameters

seconds constant, variable, or expression containing the number of seconds (including decimal fractions) to suspend the program

Examples

```
SLEEP .5
SLEEP 10
SLEEP C
SLEEP 6.2
```

STOP

Stops your program.

Syntax

STOP
STOP *"Message"*

Remark

Your program also stops by "falling off the end," completing the last line of a program. If you don't provide a quoted message, a line is displayed indicating the program line or statement number where the STOP occurred.

Functions

The following functions are available. *x* and *y* refer to numeric expressions; *a$* and *b$* refer to character expressions.

Function	Meaning
SIN(*x*), COS(*x*), TAN(*x*)	trigonometric functions; *x* is an angle in radians;
ASIN(*y*), ACOS(*y*), ATAN(*y*)	the arc functions return values in radians
EXP(*x*)	exponential
LN(*x*)	natural logarithm
LOG(*x*)	base ten logarithm
ABS(*x*)	absolute value of *x*
INT(*x*)	integer part (truncated value) of *x*
NINT(*x*)	nearest integer value to *x*
MOD(*x,y*)	the remainder resulting from *x/y*
LEN(*a$*)	length of the string in *a$*
INDEX(*a$,b$*)	location in *a$* string of *b$* substring; if *b$* is not in *a$*, zero is returned
VAL(*a$*)	numeric value of string *a$*
SQRT(*x*)	square root of *x*
STR$(*x*)	calculates the string corresponding to the number *x* using McIDAS function CFG for the conversion
MID$(*a$,x,y*)	extracts a string of length *y* from *a$*, starting at character position *x* (first position = 1)
TIME$	a pseudostring variable of length 6 which has the current time in the format HH:MM:SS
DATE$	a pseudostring variable of length 7 which has the current date in the format CCYYDDD
DAY$	a pseudostring variable of length 6 which has the current date in the format YYMMDD

Function	Meaning
TFILA$ . . TFILE$	a pseudostring variable of length 9; a temporary LW file named during execution of a BASIC program; it is deleted when the program terminates; five temporary LW files are available per program execution EOF$ a pseudostring variable; contains the universal value Z80808080
PEEK(*x*)	returns a value from User Common (UC) location *x*; the value in UC is assumed integer and is converted to REAL*4
PEEK$(*x*)	returns a character string
BIN(*string$*)	the real number equivalent of the binary integer value in *string$*; assumes the first four bytes are an integer value (in binary)
BIN$(*x*)	returns an ASCII string equivalent to the integer value of *x*
CHR$(*x*)	returns a string of length one which is equivalent to the ASCII code value *x*
KSYS(*x*)	returns the value from the System KeyTable location *x*; the value in SYSKEY is assumed to be an integer and is converted to REAL*4
KSYS$(*x*)	returns the value from the System KeyTable location *x*; the value in SYSKEY is assumed to be a character string of length 4
TABLE$(*a$*)	returns the value of the string stored in the current string table under the name *a$*
STATUS	numeric pseudovariable set to the value of the exit status each time a KEYIN is performed; a nonzero status usually indicates failure

McBASI Sample Programs

1. In this program, parameters are read from the RUN command until the list is exhausted. DEV=CNN suppresses the normal DONE messages from SFCLIST and TAFRPT. This sends the standard output to the CRT, but does not send the error or debug output. Use RUN KMSN KMKE KCLE KBOS KDCA or RUN KMEM KORD for this example. A step-by-step practice session with this example follows.

```
10      INPUT A$
        IF LEN(A$)< 4 GOTO 100
        KEYIN "SFCLIST ";A$;" 12
        KEYIN "TAFRPT ";A$;" 12
        GOTO 10
100     REM FINISHED. . .
```

2. This program illustrates a method of looping. The NINT function ensures that B will at some time be exactly equal to 101. No parameters are necessary in the RUN statement.

```
        let a=0
        let b=0
30      let a=a+b
        let b=b+1
        if nint(b)<>101 goto 30
        print a
```

3. In this example, the two character variables are read from the RUN statement. If they are identical, line 20 causes EQUAL to be displayed on the CRT and the program stops at line 100. If they are not equal, line 30 causes NOT EQUAL to be displayed, and lines 40 and 50 use the INDEX function to find out if one is a subset of the other. The semicolons between PRINT list items are omitted, as they are only required to prevent syntax ambiguities.

   For example, **RUN ABC ABC** produces EQUAL on the CRT while **RUN ABC DEFABCGHI** produces NOT EQUAL plus BUT ABC IS WITHIN DEFABCGHI.

```
        INPUT A$,B$
        IF A$=B$ PRINT "EQUAL": GOTO 100
        IF A$< >B$ PRINT "NOT EQUAL"
        IF INDEX(A$,B$)< >0 PRINT " BUT "B$" IS WITHIN "A$
        IF INDEX(B$,A$)< >0 PRINT " BUT "A$" IS WITHIN "B$
100     STOP
```

4. This program copies the current day's 0 or 12 UTC mandatory RAOB MD file data to a workstation MD file. If the current hour is between 0 and 11, the 0 UTC RAOB data is copied to the dataset position equal to the value of the current three-digit Julian day plus 1000. If the current hour is between 12 and 23, the 12 UTC RAOB data is copied to the dataset position equal to the value of the current three-digit Julian day plus 2000.

   If this program is run from the command scheduler every 12 hours for an entire year, the 0 UTC data for days 1 through 365 are placed in positions 1001 through 1365, and the 12 UTC data is placed in positions 2001 through 2365.

```
        REM  RAOBDATA.MCB
        H=VAL(MID$(TIME$,1,2)):REM   Hour
        J=VAL(MID$(DATE$,5,3)):REM   Julian Day
        PRINT "  "
        REM
        REM   Determining which point file time to request
        IF H<=23 LET T=12
        IF H<=11 LET T=00
        IF T=00 GOSUB 100
        IF T=12 GOSUB 200
        REM
100     LET F=J+1000
        PRINT "Destination Position: ";F;" Time: ";T
        GOTO 500
200     LET F=J+2000
        PRINT "Destination Position: ";F;" Time: ";T
        GOTO 500
        REM  Constructing command to enter...
500     KEYIN "PTCOPY RTPTSRC/UPPERMAND M/M.";F;" SEL='TIME ";T;";CO US'"
        PRINT "  "
        STOP "*** COMMAND SENT ***"
```

The command RUN FILE=RAOBDATA.MCB run at 19:20 UTC on Julian day 98019 generates the output below.

```
Destination Position:   2019    TIME:  12
PTCOPY RTPTSRC/UPPERMAND M/M.2019 SEL='TIME 12;CO US'

*** COMMAND SENT ***
```

Chapter 5
F Key Menu System

The F Key Menu System uses menu files to predefine function keys with user commands and format display screens with menus. It is useful for creating command menus to simplify the user interface. This chapter describes how to create and test menu files.

In McIDAS-X, the function key combinations described in this chapter work correctly if the workstation is configured according to the instructions in the *Configuring a New User Account* section in the *Installation* chapter.

Menus are displayed in a separate window in McIDAS-X and in text frame 9 of the McIDAS-OS2 Text and Command Window. The text content, color and format are completely flexible. To select a menu item, simply press one of the function keys (F1 through F12) on the workstation keyboard. Use these 12 function keys alone or with one of the Ctrl, Shift or Alt keys, giving 48 combinations. You can also define the Esc key, allowing each menu to contain up to 48 items.

Each menu file can contain up to 1000 menus. Only one menu is displayed at a time. Menus may be nested, displaying a different menu (a submenu) in the window. Typically, a Main Menu refers to various submenus dealing with a cluster of related functions.

A menu file is an ordinary ASCII text file with a carriage return at the end of each line. In McIDAS-X, menu files reside in the `$HOME/mcidas/data` directory, or a REDIRECT or `MCPATH` directory. In McIDAS-OS2, menu files reside in `\mcidas\data` or a REDIRECT directory. Sample menu files are provided at the end of this chapter; they are helpful for working through the following sections.

Starting and Debugging the F Key Menu System

Use the MCMENU command in McIDAS-X or the MAKMNU command in McIDAS-OS2 to start the menu system. In -X, a new window running the specified menu appears. In -OS2, the specified menu appears when you press the Esc key. You can also use the SHOMNU command to debug your menus. For more information, see MCMENU, MAKMNU, and SHOMNU in the *Commands* chapter.

In McIDAS-OS2, you may hang the McIDAS session while developing a menu. For example, a buggy menu may lock up the keyboard so that you can't select the option that unlocks it. If this happens, delete the **\mcidas\data\menu** file and restart McIDAS. This file was created when you ran MAKMNU. Because McIDAS automatically goes into the menu mode if this file is present when booting, you must delete it before restarting McIDAS.

ASK1 and the ASK User Interface

The -X and -OS2 command ASK1 and the -OS2 ASK User Interface let you prompt the user for information that can be used in a menu. ASK1 has slightly different formats in -X and -OS2; see Chapter 3, *Commands* for more information. See Chapter 6 for more information about the -OS2 ASK User Interface.

PSB Command

The -OS2 command PSB displays *PLEASE STAND BY* on the text frame. You can use this command in a menu file if a McIDAS command takes a long time to run and does not give any apparent feedback. See the PSB command in the *Commands* chapter of this manual.

Creating a Menu File

A menu file defines both the menu text and commands associated with the function key combinations. It is an ASCII text file containing instructions for the McIDAS menu system. These instructions obey certain format rules: the instructions need specific character positions. The first character in an instruction line defines the type of instruction. These characters include the following.

Character	Instruction
M	Menu or Window defines the menu number described by subsequent instructions.
I	Initialization defines a McIDAS command sequence to run when the menu is accessed.
T	Text defines the screen row and column where a string of text begins, the color and the text itself.
F	The function key defines a McIDAS command or sequence of commands to run when a specified function key is pressed.
A	Alt + Function key defines a McIDAS command or sequence of commands to run when you press Alt and the specified function key simultaneously.
C	Ctrl + Function key defines a McIDAS command or sequence of commands to run when you press Ctrl and the specified function key.
S	Shift + Function key defines a McIDAS command or sequence of commands to run when you press Shift and the function key simultaneously.
U	User Common Pokes define values to poke into User Common whenever this menu is displayed.
+	+ means a line is continued from the previous line (for A, C, F, I, S and T characters only).

If the first character in an instruction line is not one of those listed above, the system treats the line as a comment line and ignores it. Each character is described in more detail below, including a character definition, format, parameter descriptions and example.

M

Defines the menu number.

Format

M *number*

Parameter

number number of the menu being defined; the range is 0 to 9999

Remarks

All menu file instructions following an M instruction refer to the specified menu (window) until the system encounters another M instruction or reaches the end of the template file. Always define menu zero in any menu file.

You can have up to 1000 menus in a menu file.

Example

M 7

This entry defines menu 7 using all subsequent instructions up to the next M or W instruction.

I

Defines the commands to run each time the menu is invoked.

Format

I *"commands*

Parameter

"commands series of McIDAS commands to run when the menu is invoked

Remarks

The I line is usually placed at the beginning of the Menu definition.

Examples

Below are some useful McIDAS commands.

IGU SET 1
This entry sets the grid file number to 1, which is the default.

MDU SET 14
This entry sets the default MD file number to 14.

LS 1-4; DR 5 1 1 1
This entry sets the loop bounds to frames 1 through 4 and defines dwell rates.

I "IGU SET 1; MDU SET 14; LS 1-4; DR 5 1 1 1
This entry runs the three command lines above each time this menu is displayed.

T

Defines the row and column where a string of text will begin, the text color and the text itself.

Format

T *row column color "text*

Parameters

row	screen row number; the range is 0 to 21
column	screen column number; the range is 0 to 79
color	color number; the range is 0 to 15 (see below)
"text	text to display starting at *row* and *column*

Remarks

Row and column numbers are zero based; the upper-left corner of the screen is row 0, column 0. The McIDAS color numbers are:

Number	Color	Number	Color
0	blue	8	dark gray
1	black	9	bright blue
2	green	10	bright green
3	cyan	11	bright cyan
4	red	12	bright red
5	magenta	13	bright magenta
6	brown	14	yellow
7	gray	15	white

Text is displayed as it appears in columns 8 to 80. Leading blanks are significant; trailing blanks aren't. Leave at least 1 character between columns 8 to 80. Blank lines are not allowed. Don't use rows 23 and 24.

Example

T 13 21 15 "Radar Loop

This entry displays the words Radar Loop on row 13, starting in column 21, with white characters.

F

Defines a command or sequence of commands to run when you press a function key.

Format

F *key "command*

Parameters

key function key number; the range is 0 to 12

"command McIDAS commands to run separated by semicolons, or a string in the form *@nnn* (which means switch to menu *nnn*)

Remarks

A function key definition pertains only to a given menu. Since you can redefine function key F1 in each menu, the commands that are run by pressing F1 depend on the currently displayed menu. For example, if you press F1 when menu 7 is displayed, the commands run are those defined for F1 in menu 7.

The function key zero (00) is a special case, and actually refers to the Esc key. Use it only when redefining the Main Menu number. The default for the *F0* or Esc key is zero. If it is not defined, menu zero is displayed when you press the Esc key.

Examples

F 1 "IMGDISP GOES/EAST 2 STA=KMSN
This entry runs the command IMGDISP GOES/EAST 2 STA=KMSN when you press F1.

F 0 "@15
This entry displays menu 15 when you press the Esc key. Define the F0 key in each menu, as the default is zero. Menu 0 is displayed unless F0 is explicitly defined in the currently displayed menu.

A

Defines a command or sequence of commands to run when you press a function key and the Alt key.

Format

A *key "command*

Parameters

key	function key number; the range is 1 to 12
"command	commands to run separated by semicolons

Examples

A 4 "PTDISP PT/ISFC SELECT='TIME 12' PAR=T[F] MAP=MID
This entry runs the PTDISP command when you press the F4 and Alt keys simultaneously.

A 4 "ASK1 10 10 5 STATE "Enter state ID:
In McIDAS-OS2, this entry runs the ASK1 command when you press the F4 and Alt keys simultaneously.

C

Defines a command or sequence of commands to run when you press a function key and the Ctrl key.

Format

C *key "command*

Parameters

key	function key number; the range is 1 to 12
"command	commands to run separated by semicolons

Example

C 5 "@83
This entry displays menu 83 when you press the F5 and Ctrl keys simultaneously.

S

Defines a command or sequence of commands to run when you press a function key and the Shift key.

Format

S *key* *"command*

Parameters

key	function key number; the range is 1 to 12
"command	commands to run separated by semicolons

Example

S 3 "EG
This entry runs the EG command when you simultaneously press F3 and Shift.

U

Defines values to poke into User Common.

Format

U *number value*

Parameters

number	User Common word number
value	value to poke

Remark

The maximum number of U commands allowed per menu is 36.

Example

U 51 3

This entry pokes the value 3 in User Common word 51 and displays frame 3 in the image window. This entry is more efficient than the UCU POKE command entry as it is performed directly by the menu subsystem.

+

Continues text from the previous line.

Format

+ *"text*

Parameter

"text	text continued from the previous line; the double quote is mandatory

Remarks

The continuation line (starting in column 2) is concatenated to the previous line, following the last nonblank character of that line.

Be careful with McIDAS commands and parameters that require blank spaces. See the examples below.

Examples

F 3 "LB 1 5; IMGDISP EAST/CONUS 1
+ "STA=CLE
This entry generates the commands LB 1 5 and IMGDISP EAST/CONUS 1STA=CLE, which is an error, since 1STA=CLE is not a legal value. Instead, enter:

F 3 "LB 1 5; IMGDISP EAST/CONUS 1
+ " STA=CLE
This entry places a space between " and STA=CLE. Consequently, it generates LB 1 5 and IMGDISP EAST/CONUS 1 STA=CLE as desired.

Pseudocommands

The F Key Menu System allows for some rudimentary flow control by permitting pseudocommands in the menu file. The pseudocommand syntax allows multiple commands on a line separated by semicolons (;). There are two restrictions:

- @ must always be the last pseudocommand on the line
- * pseudocommands must always precede other normal McIDAS commands in the line, for example:
  F7 "*S02; *R27; GDISP MET/IR STA=EGLL; @09

The F Key Menu System pseudocommands are listed below.

@nnnn
This pseudocommand switches to menu *nnnn*. See the examples on pages 5-7, 5-9, 5-14, 5-15, 5-17.

Snn*
This pseudocommand saves the current loop state (bounds, rates, etc.) under loop number *nn*. See the example on page 5-14.

Rnn*
This pseudocommand recalls the loop state *nn*. See the example on page 5-14.

***EXIT** (McIDAS-X)
@EXIT (McIDAS-OS2)
This pseudocommand prompts McIDAS to perform an EXIT command and removes all McIDAS resident programs from memory. Use this command on rare occasions only.

@RET
This pseudocommand invokes the previous menu. For example, if menu 1 switches to menu 4 using the @4 command, and menu 4 switches to menu 23 using @23, then performing an @RET pseudocommand in menu 23 invokes menu 4 just as if an @4 was done. Consequently, performing an @RET in menu 4 invokes menu 1, not menu 23.

***QUIT** (McIDAS-X only)
This pseudocommand exits the menu and closes its window.

Defining Loops

Use the F Key Menu System to define a sequence of frames and their dwell rates as a loop, as shown in the example below. Then use a function key to invoke the loop. Use command DR to set the dwell rates; use command LS or LB to define the loop bounds. Have available an F Key Menu containing the internal instruction *S*nn* for one of the keys. This saves the state of the workstation under the label *nn*. You can do this for up to 99 loops, although there are only 48 possible combinations of F Keys. To quickly recall the loop, define an F Key with the internal command *R*nn*. The only restriction is *R or *S must be the first command on a line.

```
M 0
U 208 0
T 2 20 7 "McIDAS Loop control
T 4 10 7 "F1-Go to Loop #1
T 6 10 7 "F2-Go to Loop #2
T 8 10 7 "F3-Go to Loop #3
T 20 10 7 "Press 0 on numeric keypad to return to Command Mode
F 1 "*R1;@1
F 2 "*R2;@2
F 3 "*R3;@3
M 1
T 2 20 7 "Current Loop is #1
T 4 10 7 "F1-SAVE current context as Loop #1
T 6 10 7 "F2-Go to Loop #2
T 8 10 7 "F3-Go to Loop #3
T 20 10 7 "Press 0 on numeric keypad to return to Command Mode
F 0 "@1
F 1 "*S1
F 2 "*R2;@2
F 3 "*R3;@3
M 2
T 2 20 7 "Current Loop is #2
T 4 10 7 "F1-Go to Loop #1
T 6 10 7 "F2-SAVE current context as Loop #2
T 8 10 7 "F3-Go to Loop #3
T 20 10 7 "Press 0 on numeric keypad to return to Command Mode
F 0 "@2
F 1 "*R1;@1
F 2 "*S2
F 3 "*R3;@3
M 3
T 2 20 7 "Current Loop is #3
T 4 10 7 "F1-Go to Loop #1
T 6 10 7 "F2-Go to Loop #2
T 8 10 7 "F3-SAVE current context as Loop #3
T 20 10 7 "Press 0 on numeric keypad to return to Command Mode
F 0 "@3
F 1 "*R1;@1
F 2 "*R2;@2
F 3 "*S3
```

Sample Menu Files

Below are sample menu files for McIDAS-X and McIDAS-OS2. Commands are on the left; their functions are on the right. Blank lines are not part of the file. Most of the commands and their functions are identical. The differences in the files are restricted to the commands that deal with the environment (-X or -OS2) in which the menu is run.

McIDAS-X Sample Menu File

Commands	Function
`M 0`	Defines menu zero.
`F 0 "@1`	The Esc key is aimed at menu 1.
`T 00 00 07 "Esc to enter menu system`	Defines the display for line zero, column zero, using graphics color level 7.
`----------`	Comment; used here to indicate a new menu.
`M 1`	Defines menu 1.
`I "SF 2;LB 2 2`	Displays frame 2, then sets the loop bounds to 2-2.
`T 2 10 14 "F1`	Displays *F1* on line 2, starting in column 10 in graphics color level 14.
`T 2 14 7 "Receive latest satellite image`	Displays this message after the *F1* above.

`T 4 10 14 "F2`
`T 4 14 7 "Receive current meteorogram`
`T 6 10 14 "F3`
`T 6 14 7 "See satellite image`
`T 8 10 14 "F4`
`T 8 14 7 "See meteorogram`
`T 12 10 14 "F5`
`T 12 14 7 "Return to McIDAS-X`
	Displays the rest of the menu choices.

`F 0 "@1`	Redefines the Esc key to go to menu 1.
`F 1 "IMGDISP GOES/EAST 1 STA=KMSN`	Command for F1.
`F 2 "SFCMG KMSN`	Command for F2.

`F 3 "@2`
`F 4 "@3`
`F 5 "@4`
	F3 takes you to menu 2, etc.

`----------`	Comment; used here to indicate a new menu.
`M 2`	Defines menu 2.
`I "SF 1;LB 1 1`	Displays frame 1, then sets the loop bounds to 1-1.
`T 10 10 7 "Esc to return to menu`	Displays *Esc* message.
`F 0 "@1`	Redefines the Esc key to go to menu 1.
`----------`	Comment; used here to indicate a new menu.

Commands	Function
`M 3`	Defines menu 3.
`I "SF 2;LB 2 2`	Displays frame 2, then sets the loop bounds to 2-2.
`T 10 10 7 "Esc to return to menu`	Displays *Esc* message.
`F 0 "@1`	Redefines the Esc key to go to menu 1.
`----------`	Comment; used here to indicate a new menu.
`M 4`	Defines menu 4: return to the normal interface.
`T 10 10 7 "Esc to exit menu system`	Displays *Esc* message.
`F 0 "*QUIT`	Redefines the Esc key to exit the menu.

McIDAS-OS2 Sample Menu File

Commands	Function
`M 0`	Defines menu zero.
`F 0 "@1`	The Esc key is aimed at menu 1.
`T 00 00 07 "Esc to enter menu system`	Defines the display for line zero, column zero, using graphics color level 7.
`U 208 1`	Pokes User Common word 208 to a value of 1 and locks out the keyboard except for the F keys.
`----------`	Comment; used here to indicate a new menu.
`M 1`	Defines menu 1.
`I "SF 2;LB 2 2`	Displays frame 2, then sets the loop bounds to 2-2.
`T 2 10 14 "F1`	Displays *F1* on line 2, starting in column 10 in graphics color level 14.
`T 2 14 7 "Receive latest satellite image`	Displays this message after the F1 above.

`T 4 10 14 "F2`
`T 4 14 7 "Receive current meteorogram`
`T 6 10 14 "F3`
`T 6 14 7 "See satellite image`
`T 8 10 14 "F4`
`T 8 14 7 "See meteorogram`
`T 12 10 14 "F5`
`T 12 14 7 "Return to window 0`
	Displays the rest of the menu choices.

`F 0 "@1`	Redefines the Esc key to go to menu 1.
`F 1 "IMGDISP GOES/EAST 1 STA=KMSN`	Command for F1.
`F 2 "SFCMG KMSN`	Command for F2.

`F 3 "@2`
`F 4 "@3`
`F 5 "@4`
	F3 takes you to menu 2, etc.

`----------`	Comment; used here to indicate a new menu.
`M 2`	Defines menu 2.
`I "SF 1;LB 1 1`	Displays frame 1, then sets the loop bounds to 1-1.
`T 10 10 7 "Esc to return to menu`	Displays *Esc* message.
`F 0 "@1`	Redefines the Esc key to go to menu 1.
`----------`	Comment; used here to indicate a new menu.

Commands	Function
`M 3`	Defines menu 3.
`I "SF 2;LB 2 2`	Displays frame 2, then sets the loop bounds to 2-2.
`T 10 10 7 "Esc to return to menu`	Displays *Esc* message.
`F 0 "@1`	Redefines the Esc key to go to menu 1.
`----------`	Comment; used here to indicate a new menu.
`M 4`	Defines menu 4: return to the normal interface.
`U 200 0`	Shows text frame zero.
`U 201 57`	Resets the text pointer on text frame zero to show lines 57 through 80. If you have more than 80 lines in the text frame and you want to set the text pointer so the bottom line of text is displayed, change the value from 57 to the number of lines in the text frame minus 23.
`U 208 0`	Unlocks the keyboard to allow normal entries.

Chapter 6
McIDAS-OS2 ASK User Interface

This section of the manual describes the ASK user interface. ASK solicits F Key Menu responses from the keyboard and stores them in a string table, allowing any McIDAS-OS2 command to fetch them. First, the function key invokes the ASK command. Then ASK reads a user created text file containing instructions similar in form to the menu instructions. ASK uses these instructions to manipulate text on the screen, describe attributes of the text, and solicit a response from the keyboard. Each response is stored in the string table under the string name specified on the instruction line in the text file.

Suppose you want to create a McIDAS-OS2 menu interface to list surface hourly (SAO) station data for several regions of the United States. One of the instruction lines displayed on the screen could ask which stations to list. The ASK program would wait for your response from the keyboard and store it in the string table. Other responses, such as the beginning and ending time periods to list, could also be solicited. The instruction line containing the McIDAS-OS2 command would fetch the appropriate string(s) from the string table just updated. The final instruction could be a McIDAS-OS2 command or string of commands that uses the information stored in the string table.

A command sequence is run either synchronously or asynchronously. You can use multiple command instruction lines appearing anywhere in a sequence of instruction lines.

ASK uses text frame 8 as its display screen. It contains 25 rows (0-24) and 80 columns (0-79). When ASK is finished, text frame 8 is erased.

Text output produced by a McIDAS command initiated during an ASK session defaults its text output to text frame zero unless otherwise specified by keyword TWIN. Appending TWIN to a McIDAS command line displays the text output on one of the five (0-4) text scrolling text frames. For example, appending TWIN=3 directs text output to text frame 3.

Invoking ASK

To invoke the ASK user interface, use the McIDAS-OS2 ASK command or press a predefined F key as described below.

ASK Command

To invoke the ASK user interface with the ASK command,

Type: **ASK** *file*

where *file* is the name of the instruction text file (12 characters maximum). You must specify a file name; there is no default. The text file must reside in the **\McIDAS\DATA** subdirectory. Use the operating system editor or another word processor to create this ASCII text file. The file name must contain an .ASK extension. You don't have to type the extension when entering the ASK command; the program automatically appends it.

F Key

You can also invoke the ASK user interface using a predefined F key. For more information about the F Key Menu System, see Chapter 4. The example below shows three ASK command lines in a sample F Key Menu file.

```
F 1 "ASK LIST.ASK
F 2 "ASK CONTOUR.ASK
F 3 "ASK IMAGES.ASK
```

In this example, function keys F1 to F3 are used for a particular window in the menu. Pressing F1 invokes the ASK command, which reads its instructions from the text file **LIST.ASK**. This text file may contain instructions to solicit responses for the station and time periods for the listing. Other text files contour gridded data and display satellite images using F Keys 2 and 3.

Stopping ASK

Press the Esc key to stop ASK. Text frame 9 is displayed.

Creating an .ASK Text File

Because the ASK program reads the .ASK text file one line at a time, posted text and command line sequences must be less than 80 characters per line. Each line must end with a carriage return. Since each line contains an instruction for ASK to perform, the first character must be one of the instruction characters listed below.

Character	Instruction
D	describes text attributes
W	determines the exit text frame
V	determines the string table value substitution toggle
P	posts a line of text on the screen
R	posts text on the screen and waits for a response
E	posts text, waits for a response and echoes the response
B	blanks out a line or lines of text on the screen
S	runs a command or sequence of commands synchronously
A	runs a command or sequence of commands asynchronously

The format and parameters for each character are described below.

D

Describes the text attributes.

Format

D *tcolor pcolor rcolor prow pcol "prompt*

Parameters

tcolor	color of the posted text (default=11)
pcolor	color of the prompt message (default=15)
rcolor	color of the response text (default=14)
prow	row to position the prompt message; the first row is numbered 0 (default=24)
pcol	column to position the prompt message; the first column is numbered 0 (default=0)
"prompt	text for the prompt message (default=ENTER:)

W

Determines the exit text frame.

Format

W *frame*

Parameter

frame	text frame number to display after exiting ASK (default=the text frame where ASK was initiated or previously set)

V

Toggles string table value substitution.

Formats

V ON
V OFF

Parameters

ON	turns string substitutions on (default)
OFF	turns string substitutions off

Remarks

You can substitute values from the string table in a text string using a pound sign (#) followed by the string name. For example, #XYZ in a text string will be substituted with the value in the string table for string XYZ.

P

Posts a line of text on the screen.

Format

P *trow tcol "text*

Parameters

trow	screen row number for the text, rows 0 to 24 (no default)
tcol	screen column number for the text, columns 0 to 79 (default=centers text on the screen)
"text	character string to display on the screen

R

Posts text on the screen and waits for a response.

Format

R *trow tcol string "text*

Parameters

trow	screen row number for the text, rows 0 to 24 (no default)
tcol	screen column number for the text, columns 0 to 79 (default=centers text on the screen)
string	string name to hold the response
"text	character string to display on the screen

E

Posts text on the screen, waits for a response and echoes it.

Format

E *trow tcol string rrow rcol "text*

Parameters

trow	screen row number for the text, rows 0 to 24 (no default)
tcol	screen column number for the text, columns 0 to 79 (default=centers text on the screen)
string	string name to hold the response
rrow	screen row number for the echoed text, rows 0 to 24 (default=*trow*+1)
rcol	screen column number for the echoed text, columns 0 to 79 (default=centers text on the screen)
"text	character string to display on the screen

B

Blanks out rows of text on the screen.

Format

B *brow erow*

Parameters

brow	beginning row to erase (no default)
erow	ending row to erase (default=*brow*)

S

Runs a command or sequence of commands synchronously.

Format

S *command*

Parameter

command McIDAS command or sequence of commands, separated by semicolons

A

Runs a command or sequence of commands asynchronously.

Format

A *command*

Parameter

command McIDAS command or sequence of commands, separated by semicolons

Manipulating Text

Use the keys below to manipulate text on the response line.

Key	Function
Space bar *or* Alt Backspace	spaces forward with erase
Backspace	backspaces with erase
Right tab	tabs right to a blank character
Left tab	tabs left to a blank character
End	sends the cursor to the end of the text without erasing
Ctrl+End	erases from the cursor to the end of the text
Home	sends the cursor to the start of the line without erasing
Delete	deletes a character
Insert	inserts text at the cursor (toggle)
Esc	quits the ASK session

A Sample .ASK File

Below is a sample .ASK file followed by an explanation of each instruction line.

```
D 10 12 14 20 30 "ENTER HERE:
W 3
P 3 "ASK INTERFACE SEQUENCE TO LIST SAO DATA
R 5 X ABC "ENTER STATION ID CURRENT ID=#ABC
B 5
E 5 X DEF 7 "ENTER BEGINNING OBSERVATION HOUR TO BE LISTED
R 11 20 GHI "ENTER ENDING HOUR
S CLEAR 3
S SL #ABC #DEF #GHI TWIN=3
```

Instruction line 1 sets the text attributes. The colors of the posted text, prompt message and response are 10, 12 and 14, respectively. The prompt message *ENTER HERE:* begins on line 20, column 30.

Instruction line 2 sets text frame 3 to be displayed after exiting the ASK session.

Instruction line 3 posts and centers the text on screen line 3.

Instruction line 4 posts and centers the text on screen line 5. A response is requested and stored in string ABC. Because positional parameters may be defaulted using an X, the *tcol* positional parameter centers the text string on line 5. String name ABC appears in the text string. If the string table value substitution toggle (instruction character V) is ON, the value in string ABC is displayed on the screen. To choose the current value for the response, press Enter. If a string contains no associated value, it is blank.

Instruction line 5 blanks out line 5 on the screen.

Instruction line 6 centers the text on screen line 5. The system requests a response, stores it in string DEF and echoes it on screen line 7.

Instruction line 7 posts and centers the text on screen line 11, again beginning at column 20. The response is stored in string GHI.

Instruction line 8 sets a command line to run CLEAR (a synchronous McIDAS-OS2 command) to clear text frame 3.

Instruction line 9 runs the McIDAS-OS2 SL command to fetch the numbers stored in strings ABC, DEF and GHI. Since this command produces text output, TWIN=3 is appended to the command.

Appendix A
Global Keywords

You can use the global keywords below with any McIDAS-X or -OS2 command.

- DEV - routes text output to a device
- FONT - specifies the font for graphics
- PAN - specifies the frame panel to use for output or input
- TCOL - specifies text output color
- TWIN - specifies the text frame for output
- VIRT - creates virtual graphics files

DEV

This keyword specifies the destination device of text output generated by a command. The format of the DEV keyword is shown below.

DEV=*device filename file_option*
DEV=*device print_flag*

device 1-, 2- or 3-letter string indicating destination for each of the three output types (standard, error, and debug); the first letter directs standard (non-error) output, the second letter directs error output, the third letter directs debug output; do not specify both F and T together, for example, DEV=FTT; the letters below are valid options (default=**CCN**)

- **C** sends output to the text frame
- **P** sends output to the default printer
- **N** suppresses output
- **F** sends output to an LW file
- **T** sends output to a text file

filename the name of the LW or text file for saving output; specify only when *device* includes F or T

file_option
- **A** appends the output to the specified file
- **R** replaces the output in the specified file (default)

print_flag `lpr` command printer flag and argument; valid only in McIDAS-X and when *device* includes a P; the flag and argument must be specified exactly as they are with the Unix command `lpr`; if no flag is specified, the default `lpr` settings are used

See the SVGIF command for information about printing image and graphics output.

Below are five examples of using the DEV keyword.

IMGLIST MY/DATA.ALL DEV=NNN
This entry displays no output text.

IMGLIST MY/DATA.ALL DEV=CCC
This entry directs all text output (standard, error and debug) to the text frame.

IMGLIST MY/DATA.ALL DEV=FFF IMAGES
This entry directs all text output (standard, error, and debug) to the LW file IMAGES.

IMGLIST MY/DATA.ALL DEV=NC
This entry directs error messages to the text frame. Standard and debug messages are suppressed.

IMGLIST MY/DATA.ALL DEV=P -Plp10ps
This entry directs standard output text to the printer named lp10ps.

FONT

This keyword specifies the font type for plotting McIDAS graphics. Use the command FONT LIST to list the valid font types. If the requested font size is not available, the closest available font size is used. See the Remarks in the FONT command for details. Below is an example.

ZA 3 20 FONT=HELBO "Using HELBO font
This entry runs the ZA command using a bold, oblique, Helvetica font.

PAN

This keyword specifies number of the frame panel to display image or graphics output, or to provide navigation and image information. The valid range is determined by how many panels the frame has (set with the PANEL command). The default is the panel where the cursor is when the command is run. Below are four examples.

IMGDISP GOES/VIS PAN=2
This entry displays the image GOES/VIS on panel 2 of the current frame.

MAP USA PAN=4
This entry displays a map of the USA on panel 4 of the current frame.

PC L KMSN PAN=1
This entry moves the cursor into panel 1 of the current frame and positions it over the station KMSN.

IMGPROBE PAN=9
This entry lists digital values for the point in panel 9. The point listed is in the same panel location (as opposed to geographical location) as the cursor in the current panel. For example, if the cursor is positioned at the center of panel 1, this command lists values for the point at the center of panel 9 no matter what the geographical coverage.

TCOL

This keyword defines the text output color. Use the COLORS command to list the 128 valid text and background color combinations. Below is example.

IMGLIST LOCAL/IMAGES.1 100 TCOL=46
This entry runs the IMGLIST command, displaying its output in yellow text on a green background.

TWIN

This keyword specifies the destination text frame to route the command output to. The valid range is 0 through 9 on McIDAS-X, and 0 through 4 on McIDAS-OS2. The default is the current text frame. Below is an example.

GU TAB GRAPHIC TWIN=1
This entry runs the GU command, routing the output to text frame number 1.

VIRT

This keyword specifies a virtual graphics number. It applies only to commands that generate graphics. To list your virtual graphics files, use DMAP VIRT.

VIRT=	*number* **A**	appends the graphics to the specified virtual graphics number, the range is 1 to 9999
	number **R**	replaces the graphics in the specified virtual graphics number, the range is 1 to 9999 (default)

Graphics are simultaneously drawn on a graphics frame and saved to a designated file. The file name is of the form VIRT*xxxx* where *xxxx* is the number specified in the keyword. Below are three examples.

MAP USA VIRT=1
This entry draws a map of the USA on the graphics frame and writes the output to file VIRT0001, which can later be restored using the SHOWVG command.

MAP USA X LALO VIRT=1 A
This entry draws a map of the USA on the graphics frame, appending it to the output in file VIRT0001. It can later be restored using the SHOWVG command.

MAP MID VIRT=1 R
This entry replaces the USA map above with a map of the Midwest United States.

Appendix B
Julian Day Calendar

The chart below shows the day numbers corresponding to the numbered Greenwich days.

Day of Month	Jan	Feb	March	April	May	June	July	August	Sept	October	Nov	Dec
1	001	032	060 061	091 092	121 122	152 153	182 183	213 214	244 245	274 275	305 306	335 336
2	002	033	061 062	092 093	122 123	153 154	183 184	214 215	245 246	275 276	306 307	336 337
3	003	034	062 063	093 094	123 124	154 155	184 185	215 216	246 247	276 277	307 308	337 338
4	004	035	063 064	094 095	124 125	155 156	185 186	216 217	247 248	277 278	308 309	338 339
5	005	036	064 065	095 096	125 126	156 157	186 187	217 218	248 249	278 279	309 310	339 340
6	006	037	065 066	096 097	126 127	157 158	187 188	218 219	249 250	279 280	310 311	340 341
7	007	038	066 067	097 098	127 128	158 159	188 189	219 220	250 251	280 281	311 312	341 342
8	008	039	067 068	098 099	128 129	159 160	189 190	220 221	251 252	281 282	312 313	342 343
9	009	040	068 069	099 100	129 130	160 161	190 191	221 222	252 253	282 283	313 314	343 344
10	010	041	069 070	100 101	130 131	161 162	191 192	222 223	253 254	283 284	314 315	344 345
11	011	042	070 071	101 102	131 132	162 163	192 193	223 224	254 255	284 285	315 316	345 346
12	012	043	071 072	102 103	132 133	163 164	193 194	224 225	255 256	285 286	316 317	346 347
13	013	044	072 073	103 104	133 134	164 165	194 195	225 226	256 257	286 287	317 318	347 348
14	014	045	073 074	104 105	134 135	165 166	195 196	226 227	257 258	287 288	318 319	348 349
15	015	046	074 075	105 106	135 136	166 167	196 197	227 228	258 259	288 289	319 320	349 350
16	016	047	075 076	106 107	136 137	167 168	197 198	228 229	259 260	289 290	320 321	350 351
17	017	048	076 077	107 108	137 138	168 169	198 199	229 230	260 261	290 291	321 322	351 352
18	018	049	077 078	108 109	138 139	169 170	199 200	230 231	261 262	291 292	322 323	352 353
19	019	050	078 079	109 110	139 140	170 171	200 201	231 232	262 263	292 293	323 324	353 354
20	020	051	079 080	110 111	140 141	171 172	201 202	232 233	263 264	293 294	324 325	354 355
21	021	052	080 081	111 112	141 142	172 173	202 203	233 234	264 265	294 295	325 326	355 356
22	022	053	081 082	112 113	142 143	173 174	203 204	234 235	265 266	295 296	326 327	356 357
23	023	054	082 083	113 114	143 144	174 175	204 205	235 236	266 267	296 297	327 328	357 358
24	024	055	083 084	114 115	144 145	175 176	205 206	236 237	267 268	297 298	328 329	358 359
25	025	056	084 085	115 116	145 146	176 177	206 207	237 238	268 269	298 299	329 330	359 360
26	026	057	085 086	116 117	146 147	177 178	207 208	238 239	269 270	299 300	330 331	360 361
27	027	058	086 087	117 118	147 148	178 179	208 209	239 240	270 271	300 301	331 332	361 362
28	028	059	087 088	118 119	148 149	179 180	209 210	240 241	271 272	301 302	332 333	362 363
29	029	060	088 089	119 120	149 150	180 181	210 211	241 242	272 273	302 303	333 334	363 364
30	030		089 090	120 121	150 151	181 182	211 212	242 243	273 274	303 304	334 335	364 365
31	031		090 091		151 152		212 213	243 244		304 305		365 366

Appendix C
Sensor Source Numbers

Number	Sensor Source
0	Derived data
1	Test patterns
2	Graphics
3	Miscellaneous
4	PDUS METEOSAT Visible
5	PDUS METEOSAT Infrared
6	PDUS METEOSAT Water Vapor
7	Radar
8	Miscellaneous aircraft data
9	Raw METEOSAT
10	Composite image
12	GMS Visible
13	GMS Infrared
14	ATS 6 Visible
15	ATS 6 Infrared
16	SMS-1 Visible
17	SMS-1 Infrared
18	SMS-2 Visible
19	SMS-2 Infrared
20	GOES-1 Visible
21	GOES-1 Infrared
22	GOES-2 Visible
23	GOES-2 Infrared
24	GOES-3 Visible
25	GOES-3 Infrared
26	GOES-4 Visible (VAS)
27	GOES-4 Infrared and Water Vapor (VAS)
28	GOES-5 Visible (VAS)
29	GOES-5 Infrared and Water Vapor (VAS)
30	GOES-6 Visible
31	GOES-6 Infrared
32	GOES-7 Visible, Block 1 Auxiliary Data
33	GOES-7 Infrared
34	FY-2B
35	FY-2C

Number	Sensor Source
36	FY-2D
37	FY-2E
38	FY-2F
39	FY-2G
40	FY-2H
41	TIROS-N (POES)
42	NOAA-6
43	NOAA-7
44	NOAA-8
45	NOAA-9
46	Venus
47	Voyager 1
48	Voyager 2
49	Galileo
50	Hubble Space Telescope
54	METEOSAT 3
55	METEOSAT 4
56	METEOSAT 5
57	METEOSAT 6
58	METEOSAT 7
60	NOAA-10
61	NOAA-11
62	NOAA-12
63	NOAA-13
64	NOAA-14
65	NOAA-15
66	NOAA-16
67	NOAA-17
68	NOAA-18
69	NOAA-19
70	GOES 8 (Imager)
71	GOES 8 (Sounder)
72	GOES 9 (Imager)
73	GOES 9 (Sounder)
74	GOES 10 (Imager)
75	GOES 10 (Sounder)
76	GOES 11 (Imager)
77	GOES 11 (Sounder)
78	GOES 12 (Imager)
79	GOES 12 (Sounder)
80	ERBE
82	GMS-4

Number	Sensor Source
83	GMS-5
84	GMS-6
85	GMS-7
86	GMS-8
87	DMSP F-8
88	DMSP F-9
89	DMSP F-10
90	DMSP F-11
91	DMSP F-12
92	DMSP F-13
93	DMSP F-14
94	DMSP F-15
95	FY-1B
96	FY-1C
97	FY-1D
101	AM-1 MODIS

Appendix D
Bands for Satellite Imagery

The bands for satellite data, which are sometimes called channels, are described below.

The band numbers in the *Band* columns in the tables below are arbitrary numbers that are assigned to each central wavelength data output from a specific satellite instrument. Satellites having more than one instrument may have a separate assignment table for each instrument (compare GOES Variable Imager to GOES Variable Sounder).

Resolution refers to the maximum resolution of the instrument, which is not always the same as the resolution of the ingested data in the area. Definitions for the terms and acronyms follow.

GOES Variable Imager

Satellites	GOES-8 through GOES-10
Area Types	VIS and IR
Instrument	Imager
Resolution	1 km VIS, 4 km IR, 8 km Water Vapor

Band	Central Wavelength (μm)	Primary Uses
1	0.65 (VIS)	Cloud cover
2	3.9 (IR)	Nighttime clouds; shortwave window
3	6.8 (IR)	Upper level water vapor
4	10.7 (IR)	Surface temperatures; longwave window
5	12.0 (IR)	Sea surface temperature and water vapor

GOES Variable Sounder

Satellites	GOES-8 through GOES-10
Area Type	Sounding
Instrument	Sounder
Resolution	8 km

Band	Central Wavelength (μm),	Absorbing Gases	Wave Number (cm^{-1})	Sounding Level (mb)	Primary Uses
1	14.7	CO_2	680	90	Stratosphere temperature
2	14.4	CO_2	696	300	Sounding; tropopause temperature
3	14.1	CO_2	711	550	Sounding; upper-level temperature
4	13.6	CO_2; H_2O	733	850	Sounding; mid-level temperature
5	13.4	CO_2; H_2O	748	900	Sounding; low-level temperature
6	12.7	H_2O	790	Surface	Sounding; total precipitable water
7	12.0	H_2O	832	Surface	Surface temperature and moisture
8	11.0	H_2O	907	Surface	Surface temperature
9	9.7	O_3	1030	25	Total ozone
10	7.4	H_2O	1345	725	Low-level moisture
11	7.0	H_2O	1425	550	Sounding; mid-level moisture
12	6.5	H_2O	1535	350	Sounding; upper-level moisture
13	4.6	N_2O	2188	1000	Sounding; low-level temperature
14	4.5	N_2O	2210	950	Sounding; mid-level temperature
15	4.4	CO_2; N_2O	2248	650	Sounding; upper-level temperature
16	4.1	CO_2	2420	Surface	Sounding; boundary layer
17	4.0	Window	2513	Surface	Temperature
18	3.7	Window	2671	Surface	Temperature
19	0.70	Window	14367	Surface	Clouds
20					Star scan

GOES AAA

Satellites	GOES-6 and GOES-7
Area Types	VIS, IR, MSI, Dwell Sounding
Instrument	VAS
Resolution	1 km VIS, 4/8 km IR

Band	Central Wavelength (μm)	Major Absorbing Gases	Sounding Level (mb)	Primary Uses
1	14.7 (IR)	CO_2	70	Temperature sounding
2	14.5 (IR)	CO_2	125	Temperature sounding
3	14.3 (IR)	CO_2	200	Temperature sounding
4	14.0 (IR)	CO_2	500	Temperature sounding, cloud heights
5	13.3 (IR)	CO_2	920	Temperature sounding, cloud heights
6	4.5 (IR)	CO_2, N_2O	850	Temperature sounding
7	12.7 (IR)	H_2O	1000	Water vapor detection
8	11.2 (IR)	Window	Surface	Nighttime cloud detection, surface temperature temperature
9	7.3 (IR)	H_2O	600	Water vapor detection
A(10)	6.7 (IR)	H_2O	400	Water vapor detection
B(11)	4.4 (IR)	CO_2, N_2O	300	Temperature sounding
C(12)	3.9 (IR)	Window	Surface	Surface skin temperature, cloud detection
D*	-	-	-	-
NA	0.65 (VIS)	Window	Surface	Daytime cloud detection

* Band D(13) in a McIDAS Area is the same as band 8 but at lower resolution.

POES

Satellites	NOAA-6 through 15 (currently NOAA-12, 14 and 15)
Area Types	HRPT and GAC
Instrument	AVHRR
Resolution	1 km (VIS and IR)

Band	Central Wavelength (μm)	Primary Uses
1	0.63 (VIS)	Daytime cloud detection
2	0.91 (NIR)	Delineation of surface water, vegetation analyses
3	3.7 (IR)	Sea surface temperatures, hot spot detection
4	11.0 (IR)	Cloud detection, surface temperature
5	12.0 (IR)	Sea surface temperatures, soil moisture; band 5 on NOAA-10 is not available.
6	1.61 (NIR)	Daytime snow and ice detection (NOAA-15 only)

POES (continued)

Satellites	NOAA-6 through 14 (currently NOAA-12 and 14)
Area Types	TIP
Instrument	HIRS
Resolution	20 km

Band	Central Wavelength (μm)	Major Absorbing Gases	Sounding Level (mb)	Primary Uses
1	15.0 (IR)	CO_2	30	Temperature sounding
2	14.7 (IR)	CO_2	60	Temperature sounding
3	14.5 (IR)	CO_2	100	Temperature sounding
4	14.2 (IR)	CO_2	400	Temperature sounding
5	14.0 (IR)	CO_2	600	Temperature sounding
6	13.7 (IR)	CO_2,, H_2O	800	Temperature sounding
7	13.3 (IR)	CO_2,, H_2O	900	Temperature sounding
8	11.1 (IR)	Window	Surface	Surface temperature
9	9.7 (IR)	O_3	25	Ozone measurement
10	8.2 (IR)	H_2O	900	Water vapor detection; NOAA-6 through 10 and 12
	12.5 (IR)	H_2O	Surface	Water vapor detection; NOAA-11 and 14
11	7.3 (IR)	H_2O	700	Water vapor detection
12	6.8 (IR)	H_2O	500	Water vapor detection
13	4.57 (IR)	N_2O	1000	Temperature sounding
14	4.52 (IR)	N_2O	950	Temperature sounding
15	4.47 (IR)	CO_2,, N_2O	700	Temperature sounding
16	4.4 (IR)	CO_2,, N_2O	400	Temperature sounding
17	4.2 (IR)	CO_2	Surface	Temperature sounding
18	4.0 (IR)	Window	Surface	Surface temperature
19	3.8 (IR)	Window	Surface	Surface temperature
20	0.70 (VIS)	Window	Cloud	Daytime cloud detection

POES (continued)

Satellites NOAA-6 through 14 (currently NOAA-12 and 14)
Area Types TIP
Instrument SSU
Resolution 62 km

Band	Central Wavelength (μm)	Major Absorbing Gases	Sounding Level (mb)	Primary Uses
1	15.0	CO_2	100	Temperature sounding
2	15.0	CO_2	35	Temperature sounding
3	15.0	CO_2	10	Temperature sounding

Satellites NOAA-6 through 14 (currently NOAA-12 and 14)
Area Types TIP
Instrument MSU
Resolution 150 km

Band	Frequency (GHz)	Major Absorbing Gases	Primary Uses
1	50.3	O_2	Temperature sounding
2	53.8	O_2	Temperature sounding
3	55.0	O_2	Temperature sounding
4	58.0	O_2	Temperature sounding

Meteosat

Satellites	M-1 through M-7 (currently M-5 and M-7)
Area Types	VIS, IR, B-sector
Instrument	METEOSAT Radiometer
Resolution	2.5 km VIS, 5 km IR

Band	Central Wavelength (μm)	Primary Uses
1	0.75 (VIS)	Daytime cloud detection
8	11.5 (IR)	Nighttime cloud detection, surface temperature
10 (A)	6.9 (IR)	Water vapor detection

GMS

Satellites	GMS-4 with sensor source numbers 12 and 13
Area Types	VIS, IR and DOC
Instrument	VISSR
Resolution	1.25 km VIS, 5.0 km IR

Band	Central Wavelength (μm)	Primary Uses
Raw Ingest		
1	11.5 (IR)	Nighttime cloud detection, surface temperatures
4	Documentation	Not displayable; ingest documentation
14	0.63 (VIS)	Daytime cloud detection
Converted		
1	0.63 (VIS)	Daytime cloud detection
8	11.5 (IR)	Nighttime cloud detection, surface temperatures

GMS (continued)

Satellites	GMS-4 through GMS-8 with sensor source numbers 82 through 86 (currently GMS-5)
Area Types	VIS, IR, and DOC
Instrument	VISSR
Resolution	1.25 km VIS, 5.0 km IR

Band	Central Wavelength (μm)	Primary Uses
1	0.63 (VIS)	Daytime cloud detection
2	11.0 (IR)	Nighttime cloud detection, surface temperature
3	12.0 (IR)	Sea surface temperatures, soil moisture
4	6.8 (IR)	Water vapor detection
5	Documentation	Not displayable; ingest documentation

Terms

Term	Definition
absorbing gases	primary gases that absorb and emit radiation at the central wavelength
band	number given to the wavelength channel of the satellite data
B-sector	data covering Europe, northern Africa, and the eastern Atlantic
central wavelength	wavelength falling in the middle of the band over which the satellite collects data
primary uses	examples of how a band is used in physical applications
sounding level	average level where most of the radiant energy sensed by the satellite originates, assuming a cloud-free atmosphere
window	channel that is transparent to atmospheric radiation

Acronyms

Acronym	Definition
AVHRR	Advanced Very High Resolution Radiometer
GAC	Global Area Coverage
GMS	Geostationary Meteorological Satellite
GOES	Geostationary Operational Environmental Satellite
HIRS	High resolution Infrared Radiation Sounder
HRPT	High Resolution Picture Transmission
IR	InfraRed
NIR	Near InfraRed
MSI	MultiSpectral Imagery (IR)
MSU	Microwave Sounding Unit
NOAA	National Oceanic and Atmospheric Administration
POES	Polar Orbiting Environmental Satellite
SSU	Stratospheric Sounding Unit
TIP	TIROS Information Processor
VAS	VISSR Atmospheric Sounder
VIS	VISible
VISSR	Visible and InfraRed Spin Scan Radiometer
WV	Water Vapor (IR)

Appendix E
Stability Parameters

This appendix defines some of the stability parameters output by the HODO, SKEWT, UALIST, UAPLOT and UL commands. The heading of each section (e.g., TTI or TOTAL) shows the abbreviations used by the commands.

TTI or TOTAL

TOTAL is the Total Totals Index. It is the sum of the Vertical Totals (VT) and Cross Totals (CT). TOTAL = Vertical Totals + Cross Totals = (850 mb TEMP + 850 mb DEW POINT) - 2 (500 mb TEMP).

EL or EQUIP

EQUIP is the equilibrium pressure, in mb. It is synonymous with the Equilibrium Level (EL). EQUIP is the pressure at which the rising saturated parcel encounters negative buoyancy. Above that pressure, the parcel is cooler than its surroundings.

FMAX

FMAX is the forecast maximum temperature, computed only at 12 UTC, in degrees Celsius. It is found by displacing the parcel at the top of the boundary layer to the surface pressure dry adiabatically.

CVT

CVT is the convective temperature, in degrees Celsius. It is found by first computing the parcel's equivalent potential temperature (theta-E). This is followed by a "march" up the sounding to the point where the parcel theta-E equals the sounding theta-E. This point is the Convective Condensation Level (CCL). From the CCL, the parcel is brought down to the surface pressure dry adiabatically. The temperature at the surface pressure is the CVT.

LI

LI is the lifted index, in degrees Celsius. The point at which the parcel is cooled dry adiabatically until saturated is called the Lifted Condensation Level (LCL). From the LCL, the moist parcel is cooled moist adiabatically until reaching the 500 mb level. The difference between the 500 mb temperature and the lifted parcel's temperature is the LI.

KI or KINX

KINX is the K-Index, in degrees Celsius. It provides a measure of thunderstorm potential based on lapse rate and the vertical extent of the moisture content in the lower atmosphere. KINX= (850 TEMP - 500 TEMP) + 850 DEW POINT - 700 DEW POINT DEPRESSION.

PW

PW is precipitable water, in mm. It is the sum of average mixing ratios across pressure layers up to and including 500 mb, i.e., w(ave) * DP, where w(ave) represents the average mixing ratio across the pressure layer (DP). The data used is from the interpolated sounding seen with the following command: UL LIST *station* OPT=7.

Appendix F
System Files

Listed below in alphabetical order are some of the McIDAS-OS2 and McIDAS-X system files. Some are required to run McIDAS while most are used by McIDAS commands (e.g. **OUTLUSAM** is used by command MAP).

In McIDAS-OS2, the system files are located in **\mcidas\data** or **REDIRECT** directories. In McIDAS-X, the system files are located in the **~mcidas/data**, **$HOME/.mctmp** and other **McPATH** and **REDIRECT** directories.

-X	-OS2	File name	Function
✓	✓	**ADDERROR.DOC**	list of ADDE error messages and the routines that produce them
✓	✓	**ALLOC.WWW**	allocation of frame sizes
✓	✓	**AREA***nnnn*	area files, where *nnnn* is the area number
	✓	***.ASK**	ASK user interface text files
✓	✓	**BASICVV1**	LW file used by the RUN command to store variables
✓	✓	***.bdf**	bitmap distribution files that define fonts you can use
✓	✓	**CNTYOUTL.DAT**	county outline basemap for the WWDISP command
	✓	**CONTEXT.SLT**	LOOP management context file (DEFBRIEF, MOVIE, etc.)
✓	✓	**CONTOUR.DEF**	default contour intervals for the GRDDISP command
✓	✓	**CORE.SAT**	satellite names and information used by the ADDE navigation commands
✓	✓	**COUNTRY.TXT**	list of countries and their two-letter codes used by the CCODE command
✓	✓	**DCFO14**	MD file schema for FO14 data (LW format)
✓	✓	**DCGRET**	MD file schema for GRET data (LW format)
✓	✓	**DCIHGT**	MD file schema for IHGT data (LW format)
✓	✓	**DCIRAB**	MD file schema for IRAB data (LW format)
✓	✓	**DCISEN**	MD file schema for ISEN data (LW format)
✓	✓	**DCISFC**	MD file schema for ISFC data (LW format)
✓	✓	**DCISHP**	MD file schema for ISHP data (LW format)

-X	-OS2	File name	Function
✓	✓	DCPIRP	MD file schema for PIRP data (LW format)
✓	✓	DCRAOB	MD file schema for RAOB data (LW format)
✓	✓	DCRAWI	MD file schema for RAWI data (LW format)
✓	✓	DCSVCA	MD file schema for SVCA data (LW format)
✓	✓	DCSYN	MD file schema for SYN data (LW format)
✓		DEFAULT.GRX	default graphics palette for the GU command
✓	✓	DNKEYS	list of MD file keys, field widths and units used by the system commands (ASCII format); LW file FLDWDTH is generated from this list
✓	✓	*.ET	image palette files created with the EU command
✓	✓	*.FFD	font types used by the FONT command and global keyword
✓	✓	FLDWDTH	LW file list of MD file keys and field widths for the MDL command
✓	✓	FRAMED	frame panel information
✓	✓	FRAMENH.001	frame enhancement
✓	✓	Framen.p	frame directory where *n* is the frame number and *p* is the panel number; examples are 1.1, 3.2, 2.4, 10.2
✓	✓	*.GIF	files created by the SVGIF command
✓	✓	GMSCAL	GMS calibration file
✓	✓	GRaannnn	grid files where *aa* is either part of the grid file number or the letters ID; *nnnn* is the grid file number
	✓	GRAPHIC.GRP	default graphics palette for the GU command
✓		GRAPHIC.GRX	default graphics palette for the GU command
	✓	*.GRP	graphics palette files created by the GU command
✓		*.GRX	graphics palette files created by the GU command
✓	✓	HIRSCRPF	HIRS calibration reference parameters for computing HIRS brightness temperatures
✓	✓	HIRSTAUL	HIRS transmittance coefficients
	✓	HOSTTMP.n	ADDE remote server names and IP addresses, where *n* is a number greater than zero; examples are 1, 2 and 121
✓	✓	IDMSL	master station identifiers list
✓	✓	IDSVCA	surface station identifiers (binary format)
✓	✓	IMAGE.ET	default image palette for the EU command
✓	✓	license.txt	McIDAS software acquisition and distribution policies

-X	-OS2	File name	Function
✓	✓	LWPATH.NAM	current file redirection listing
✓	✓	MAPDEFLT.COR	settings used for drawing the WWDISP command's predefined maps
✓	✓	*.MCB	McBASI program text files
✓	✓	MCRGB.TXT	list of predefined colors and RGB values for the EU and GU commands (ASCII format)
✓	✓	MCTABLE.TXT	ADDE client routing table
✓	✓	MD*aannnn*	MD files where *aa* is either part of the MD file number or the letters XX; *nnnn* is the MD file number
	✓	MENU	compiled menu file output from the MAKMNU command; delete this file to prevent McIDAS-OS2 from booting in the menu mode
✓	✓	*.MNU	F Key Menu text files
✓	✓	*mon*yyINQ.TXT	list of an upgrade's changed modules, grouped by SSEC inquiry number; the date of the upgrade is indicated by *mon* (first three letters of the month, e.g., NOV for November) and *yy* (last two digits of the year, e.g., 98 for 1998)
✓	✓	*mon*yyOPN.TXT	list of open (unresolved) SSEC inquiries at the time of the upgrade; the date of the upgrade is indicated by *mon* (first three letters of the month, e.g., NOV for November) and *yy* (last two digits of the year, e.g., 98 for 1998)
✓	✓	*mon*yyPRG.TXT	list of an upgrade's changed modules, in alphabetical order; the date of the upgrade is indicated by *mon* (first three letters of the month, e.g., NOV for November) and *yy* (last two digits of the year, e.g., 98 for 1998)
✓	✓	MSUSCRPF	MSU calibration reference parameters
✓	✓	*.NAM	file redirection listings for the REDIRECT command
	✓	OFFSET.GMT	offset in hours between local and UTC time
✓	✓	OUTLANT	high-resolution Antartica basemap
✓	✓	OUTLAUSS	Australia states basemap
✓	✓	OUTLAUST	high-resolution Australian region basemap
✓	✓	OUTLAUSW	Austrailia's Lake Eyre basemap
✓	✓	OUTLEURO	high-resolution European region basemap
✓	✓	OUTLHPOL	world political boundary basemap
✓	✓	OUTLHRES	North America high-resolution basemap
✓	✓	OUTLSUPU	high-resolution USA basemap

-X	-OS2	File name	Function
✓	✓	OUTLSUPW	world outline basemap
✓	✓	OUTLUSAL	North America low-resolution basemap
✓	✓	OUTLUSAM	North American medium-resolution basemap
✓	✓	OUTLWRLD	world basemap
✓	✓	*.PIX	virtual frame files saved with the SVF command
✓	✓	*.PRD	predefined text products for WXTLIST command
✓	✓	RADAR.ET	radar palette for the EU command
✓	✓	RESOLV.SRV	ADDE dataset names on the local server
✓	✓	SATANNOT	satellite annotation line information
✓	✓	SATBAND	image band information used by the IMGLIST command
✓	✓	SAVESTR	string table save file
✓	✓	SCHEMA	blueprints of all registered schemas
✓	✓	SKEDFILE	system scheduler commands file
✓	✓	*.ST	stretch tables created with the SU command
	✓	STARTUP.SYS	list of McIDAS components to start for different communications or display configurations
✓	✓	STRTABLE	active string table files
	✓	SYSIMAGE.PM	displayed imagery; used to restore correct image when the EG command runs
✓		SYSIMAGE.SAV	displayed imagery; used to restore correct image when the EG or SG command runs
✓	✓	SYSKEY.DOC	system key table; ASCII representation for the SYSKEY.TAB file
✓	✓	SYSKEY.TAB	system key table derived from SYSKEY.DOC (binary format)
	✓	*.TAB	compiled Soft Tablet files (binary format)
✓	✓	TERMCHAR.001	McIDAS display characteristics file
✓	✓	towns.nd1	geographic data used by the TOWNS and FIND commands
✓	✓	towns.nd2	geographic data used by the TOWNS and FIND commands
✓	✓	towns.txt	geographic data used by the TOWNS and FIND commands
✓	✓	UC.DOC	list of User Common words and their functions
✓	✓	UNIDATA.MNU	sample F Key Menu template file (ASCII format)
✓	✓	USCOUNTY.MAP	National Weather Service county basemap used by the MAP and WWDISP commands

-X	-OS2	File name	Function
✓	✓	**USSTATE.MAP**	National Weather Service state basemap used by the MAP and WWDISP commands
✓	✓	**USZONE.MAP**	National Weather Service zone basemap used by the MAP and WWDISP commands
✓	✓	**VASTBLS**	calibration file used to display 2-byte mode AA VAS data transmitted by GOES satellites from 22 September 1980 to 18 November 1986
✓	✓	**VERSION.TXT**	ASCII text for the current version of McIDAS-X or -OS2
✓	✓	**VIRT***nnnn*	virtual graphics files created with the VIRT global keyword, where *nnnn* is the virtual graphic number
	✓	**WX.TAB**	sample tablet created from the **WX.TXT** file (binary format)
	✓	**WX.TXT**	sample Soft Tablet documentation and descriptor file (ASCII format)
✓	✓	**XRD***vv***.TXT**	list of commands available in McIDAS-XRD optional sidecar package; *vv* is the version number without the decimal, e.g., XRD75.TXT lists commands in McIDAS-XRD 7.5)

Appendix G
MCPATH

MCPATH is a Unix environment variable that defines directories for McIDAS-X commands to search when they look for data and help files. Commands requiring these files look in each of the directories listed in **MCPATH** to find them.

MCPATH has a default value that automatically locates the data files that required linking or redirection in previous versions of McIDAS-X. If users elect to set their own **MCPATH** value, they only need to know the directories where the files reside, not the exact file names.

MCPATH Format

The **MCPATH** variable specifies, in order of precedence, the directories McIDAS-X searches when looking for data and help files. A colon (:) separates each directory.

For example, if **MCPATH** is set to:

```
/experiment:/home/fred/mcidas/data:~mcidas/data:~mcidas/help
```

and McIDAS-X wants to read from a data file, it first looks for the file in **/experiment**. If the file is not there, McIDAS-X checks for the file in **/home/fred/mcidas/data**, then **~mcidas/data**, and finally **~mcidas/help**. If the file is not located in any of the directories, the system outputs a message saying the file was not found.

Setting MCPATH

You can set **MCPATH** in two ways:

- let the McIDAS-X start-up script set the value
- set **MCPATH**'s value before starting McIDAS-X

If you do not define **MCPATH**, the McIDAS-X start-up script sets **MCPATH** to the value below.

```
$HOME/mcidas/data:$HOME/mcidas/help:~mcidas/data:~mcidas/help
```

To change **MCPATH**'s value, exit McIDAS-X, set **MCPATH** to the new value, and restart McIDAS-X. If you use the Korn or Bourne shell, the Unix command to explicitly set **MCPATH** is similar to the example below.

```
export MCPATH;MCPATH=$HOME/data:$HOME/mcidas/data:~mcidas/data:~mcidas/help
```

To set this value of **MCPATH** each time you log on to your account, add the command above to your **$HOME/.mcenv** file and add the following line to your **$HOME/.profile** file.

```
. $HOME/.mcenv
```

When you start McIDAS-X, the temporary directory created, for example,**$HOME/.mctmp/356052**, is appended to the **MCPATH>** value, whether the McIDAS-X start-up script set **MCPATH** or you set its value.

Writing Data

If you run a McIDAS-X command that creates a new file, the file is placed in the first **MCPATH** directory where you have write permissions. If you run a command that writes to a file residing in one or more **MCPATH** directories, the command selects the file in the first directory listed in **MCPATH**.

For example, if a file named **AREA0001** exists in the third and fourth **MCPATH** directories, McIDAS commands that write to the file (IMGCOPY, for example) will do so in the third **MCPATH** directory. If you do not have write permissions for that file, you may get unexpected results; for example, the command stops due to write failure.

REDIRECT Precedence

Files that are redirected with the McIDAS-X REDIRECT command, have precedence over files defined by **MCPATH**. This lets you explicitly state the location of a particular file. For example, if **MCPATH** is set to:

```
/home/experiment:/home/fred/data:~mcidas/data:~mcidas/help
```

and each of these directories contains a file named **AREA0001**, McIDAS commands that use the file (IMGDISP, for example) will use the one in **/home/experiment** if the file is not redirected to another directory. However, if you have the redirection entry:

```
AREA00* /home/dave/aircraft/data
```

the McIDAS command uses the file **AREA0001** stored in **/home/dave/aircraft/data** instead of a **MCPATH** directory.

MCPATH Requirements

MCPATH must contain the following directories:

- **~mcidas/data**
- **~mcidas/help**
- a directory where you have write permissions, for example, **$HOME/mcidas/data**

The first two directories let you access the required data and help files that are installed with each version of McIDAS-X. The third requirement lets you write or modify files with McIDAS-X commands like IMGCOPY, EU, and SVGIF.

Troubleshooting

If you have problems running McIDAS-X and believe the problems may be related to **MCPATH**, complete the following steps:

1. Run the McIDAS-X command below to verify that your current **MCPATH** value meets the three requirements listed above.

   Type: **OS "echo $MCPATH**

   You will not see **~mcidas/data** and **~mcidas/help** in the directory list because the Unix **echo** command expands them to their full directory names, for example, **/home/mcidas/data** and **/home/mcidas/help**. If your current **MCPATH** value does not meet the three requirements listed above, exit McIDAS-X, reset **MCPATH** to a valid value, and restart McIDAS-X.

2. Run the following command from a Unix window to see if the files **SKEDFILE**, **ALLOC.WWW**, **ALLOC.FLG**, **FRNVDIR.001** and **FRNVEXP.001** reside in the **~mcidas/data** directory. Enter the command as one line.

   Type: **ls ~mcidas/data/SKEDFILE ~mcidas/data/ALLOC.* ~mcidas/data/*.001**

   These files exist in the **~mcidas/data** directory if user **mcidas** started a McIDAS-X session sometime in the past. Since you can no longer run McIDAS-X as user **mcidas**, these files should not be present in **~mcidas/data**. If they are present, ask the system administrator or person who installs McIDAS-X to delete them, since they may cause problems with other users' McIDAS-X sessions.

Appendix H
Running Commands Outside a McIDAS-X Session

You can run McIDAS-X commands without starting a McIDAS-X session by entering commands at the Unix prompt or using the **mcenv** process. When you run commands without starting McIDAS-X, a McIDAS environment is created, like the one created for a McIDAS session. This appendix describes the following.

- Creating a McIDAS-X Environment
- Using Unix Conventions
- Entering Commands at the Unix Prompt
- Using the mcenv Process

Creating a McIDAS-X Environment

To run McIDAS-X commands outside of a McIDAS-X session, a McIDAS-X environment must be created. A McIDAS-X environment is the information a McIDAS session uses to run commands. It consists of User Common, the redirect table, and the frame objects that McIDAS-X programs need to run commands. This information is stored in a shared memory segment and a temporary subdirectory of **$HOME/.mctmp**.

A McIDAS-X environment is created automatically when you start a McIDAS command with the **.k** extension or run the **mcenv** process from a Unix prompt. The duration of the McIDAS-X environment depends on how it was started, as listed in the table below.

Starting Procedures from the Unix Prompt	Duration
mcidascommand.**k**	duration of the command
mcenv with a Unix script	duration of the script or program
mcenv without a Unix script	until **mcenv** is cancelled with the Unix **exit** command

When you are running commands outside of a McIDAS-X session, it is important to consider the duration of the environment. You don't want the environment to close before your commands or scripts are finished.

Using Unix Conventions

When entering McIDAS commands at the Unix prompt or with the **mcenv** process, follow the command in lowercase with the **.k** extension. All parameters and keywords are entered in the same form and case as in the McIDAS Text and Command Window, as shown in the example below.

```
& map.k VH IMA=1 GRA=1
```

Some characters require a preceding escape character so that Unix interprets them literally. Use a backslash (\) to escape the character immediately following it. Use pairs of double (") and single quotes (') to escape groups of characters. Double quotes escape all characters except other double quotes and dollar signs ($). Single quotes escape all characters except other single quotes.

The characters below have special meaning in Unix and require an escape character when entered as part of a McIDAS-X command.

- ampersand (&)
- semicolon (;)
- parentheses ( )
- pipe (|)
- less than and greater than symbols (< >)
- **unpaired** double quotation marks (")
- **unpaired** single quotation marks (')
- backslash (\)
- pound sign (#)
- asterisk (*)
- question mark (?)
- dollar sign ($)

In the example below, a backslash is used in the first line because the unpaired double quote must be escaped. In the second line, the paired single quotes do NOT need to be escaped; paired single quotes are also capable of escaping other characters, so the semicolon does not need to be escaped.

```
& skl.k \"GOES-9
& ptlist.k SURFACE/HOURLY  SELECT='TIME 12 ; ID BWI'
```

When using string names, the command must be preceded by the command **mceval.k** in addition to a pound sign (#). See *Using String Tables* on page H-9 for more information.

Entering Commands at the Unix Prompt

When you enter McIDAS-X commands from the Unix prompt, a McIDAS environment is started and lasts only the duration of the command. For example, a separate McIDAS environment is started for each command below.

```
$ imgdisp.k 1000 1
$ svgif.k 1 NHEM
```

The command **imgdisp.k** loads area 1000 into frame 1. When **imgdisp.k** is finished, the frame is deleted and the McIDAS environment closes. The Unix shell reads the next command, **svgif.k**, and creates a new McIDAS environment and a new frame 1. The **svgif.k** command saves the contents of frame 1 into the file **NHEM.GIF**. However, frame 1 is empty so **NHEM.GIF** is black except for the annotation line at the bottom.

Using the mcenv Process

Use the **mcenv** process to run programs, scripts, or McIDAS-X commands. When you use **mcenv**, you ensure that the same McIDAS environment is used for the life of the script or until you exit the **mcenv** process. You can enter single McIDAS-X commands or create a script with multiple McIDAS-X commands to manipulate frames, grids, and images without starting a McIDAS-X session. You can start the **mcenv** process from the Unix prompt, shell scripts, and the Unix scheduler **cron**.

Flag	Description
-f *framespec*	specifies a set of frames to include in the McIDAS environment (default=one, 480x640 frame)
-e *bytes*	specifies a memory pool for the frames
-g *number*	specifies the number of graphics levels (default=8)
-i *number*	specifies the number of display levels (default=48)
prog	specifies a program, script or command to run; see *Using Unix Conventions* on page H-2 for the correct format to enter McIDAS commands

This following sections describe:

- running scripts and commands using **mcenv**
- starting shell scripts that run **mcenv**
- running **mcenv** from **cron**
- passing variables into a **mcenv** script
- using string tables

Running Scripts and Commands Using mcenv

Use the format below for **mcenv**. The table provides a description of the flags. See the section *Configuring McIDAS-X Sessions with .mcidasrc* on page 1-16 for more information about the **-f** and **-e**, **-g** and **-i** flags (Note the **-g** and **-i** flags are analogous to the **-graphicsColors** and **-imageColors** flags in that section). You can nest **mcenv** processes. Commands run under a subsequent **mcenv** do not affect the McIDAS environment created by the initial **mcenv**.

mcenv **-f** *framespec* **-e** *bytes* **-g** *number* **-i** *number* *prog*

The examples below show commands and scripts run from **mcenv**. The dollar signs ($) indicate the Unix prompt and the ampersands (&) indicate the McIDAS environment.

In the example below, the user started a McIDAS environment, logged on to the workstation, and copied an image from one dataset to another, then closed the McIDAS environment.

```
$ mcenv
& logon.k USER 1234 X WS
& imgcopy.k EAST/VIS.1 MYDATA/VIS
& exit
$
```

In the example below, the user started a McIDAS environment with a 400 line by 500 element frame and ran the **mkvisgif** script. The second box shows the contents of the **mkvisgif** script.

```
$ mcenv -f 400x500 mkvisgif
#!/bin/sh
# mkvisgif: this script generates GIFs
logon.k User 1234 X WS
imgcopy.k EAST/VIS.1 MYDATA/VIS
imdisp.k MYDATA/VIS 1
svgif.k 1 MYPICT.GIF
exit 0
```

Note for users running under C shell

When you start **mcenv**, it adds a new **.mctmp** subdirectory to your **MCPATH**. If your **SHELL** environment variable is set to **/bin/csh** (C shell), **mcenv** then runs your **.cshrc** file, if it exists. If **MCPATH** is set in **.cshrc**, it overwrites the **MCPATH** that **mcenv** just set. Edit your **.cshrc** file so that it checks to see if your **MCPATH** is already set. An example of **.cshrc** file's original **MCPATH** setting is shown below.

```
setenv MCPATH $HOME/mcidas/data:$HOME/mcidas/help:~mcidas/data:~mcidas/help
```

Make the following changes to the **MCPATH** setting.

```
if ( ! ${?MCPATH} ) then
     setenv MCPATH $HOME/mcidas/data:$HOME/mcidas/help:~mcidas/data:~mcidas/help
endif
```

Starting Shell Scripts That Run mcenv

Other programs and scripts can run **mcenv**. The sample below shows a sample shell script that runs a **mcenv** script. The **mcenv** script appears in bold.

```
#!/bin/sh
# Sample script

MCPATH=/home/user/mcidas/data:/home/mcidas/data
export MCPATH

mcenv -f 520x690 << 'EOF'
logon.k USER 1234 X WS
imgcopy.k EAST/VIS MYDATA/VIS
imgdisp.k MYDATA/VIS 1
svgif.k 1 MYPICT.GIF
exit
EOF
exit 0
```

The **mcenv** script runs everything from the **logon.k** command to the EOF statement within the McIDAS environment set with a 520x690 frame. Note that single quotes surround the first EOF in the first line of the **mcenv** script. Single quotes prevent the shell from substituting any variables within the **mcenv** script before they are set to the correct value.

Running mcenv From cron

You can run **mcenv** from the **cron**, the Unix scheduler. However, you must set the shell environment for **mcenv**. It is not started automatically when **mcenv** is run in **cron**. You can specify the environment as part of the **mcenv** script, or set it up before starting the script.

Setting the environment before starting the script

To set the shell environment before starting the script, follow the steps below.

1. Create a file that specifies the environment in which your script will run. In the example below, the file containing the **PATH** and **MCPATH** environment variables is named **$HOME/.cronprofile** .

```
#This file is named .cronprofile

PATH=$HOME/bin:
PATH=$PATH:/usr/sww/bin:/usr/local/bin:$HOME/mcidas/bin
PATH=$PATH:/home/mcidas/bin:/bin:/usr/bin:/etc:/usr/ucb
PATH=$PATH:/usr/bin/X11:/common/tool/bin:.

export PATH

MCPATH=$HOME/mcidas/data
MCPATH=$MCPATH:/home/mcidas/data

export MCPATH
```

2. Add a crontab entry to **cron** similar to one of the two examples below. Add the top entry if the script contains **mcenv** and the second entry if the **mcenv** is external to the script. Enter the entries below as single lines.

```
10 * * * * ( . /home/user/.cronprofile &&
   /home/user/mcidas/data/mcenvscript )
```

```
10 * * * * ( . /home/user/.cronprofile &&
   /home/mcidas/bin/mcenv -f 300x600 /home/user/
   mcidas/data/mcenvscript)
```

Setting the environment in the script

To set the environment in the script, follow the steps below.

1. Add lines to the script that specify the environment. In the sample script below, the lines that set the environment appear in bold.

```
#!/bin/sh
# Sample script

#set up environment
PATH=$HOME/bin:
PATH=$PATH:/usr/sww/bin:/usr/local/bin:$HOME/mcidas/bin
PATH=$PATH:/home/mcidas/bin:/bin:/usr/bin:/etc:/usr/ucb
PATH=$PATH:/usr/bin/X11:/common/tool/bin:.

export PATH

MCPATH=$HOME/mcidas/data
MCPATH=$MCPATH:/home/mcidas/data

export MCPATH
mcenv -f 520x690 << 'EOF'
logon.k USER 1234 X WS
imgcopy.k EAST/VIS MYDATA/VIS
imgdisp.k MYDATA/VIS 1
svgif.k 1 MYPICT.GIF
exit
EOF
exit 0
```

2. Add an entry to crontab similar to the example below.

```
10 * * * * /home/user/mcidas/data/mcenvscript
```

3. It may be useful to redirect output from a cron job to a log file. Add lines similar to the example below to crontab to prevent output from being mailed by **cron** to the owner of the crontab. The entry below directs the standard error and output to a file.

```
10 * * * * /home/user/mcidas/data/mcenvscript >>/home/user/logs/mclog 2>&1
```

Passing Variables into a mcenv Script

Shell variables are not passed to **mcenv** unless they are first exported. If the script contains the **mcenv** command (as opposed to being run as argument of the **mcenv** command), any variables set before calling **mcenv** must be exported if they are to be used within the **mcenv** environment. In the example below, the variable SAT is being passed.

```
#!/bin/sh
# Sample script

# get first argument to script
SAT=$1
export SAT

# Set MCPATH
MCPATH=/home/user/mcidas/data:/home/mcidas/data
export MCPATH

mcenv -f 520x690 << 'EOF'

logon.k USER 1234 X WS
imgcopy.k ${SAT}/VIS MYDATA/VIS
imgdisp.k MYDATA/VIS 1
svgif.k 1 MYPICT.GIF
exit
EOF
exit 0
```

Using String Tables

Strings previously set in McIDAS can still be accessed from **mcenv** or at a Unix prompt. The command **mceval.k** must start any line containing a McIDAS string variable and a backslash (\) must precede pound signs (#). For example, to use the string #D=IMGDISP EAST/FDV.0 from **mcenv** or a Unix prompt, add the command **mceval.k** and a pound sign (#) as shown below.

```
$ mceval.k \#D 2 MAG=-4 DAY=\#Y
```

The command **mceval.k** does not let you use a semicolon(;) as an argument. To run consecutive commands on the same line, **mceval.k** must be specified each time, as shown below.

```
$ mceval.k \#D 2 MAG=-4 DAY=\#Y ; mceval.k IMGLIST EAST/FDV.0 DAY=\#Y
```

It may be easier to use Unix variables to build McIDAS commands rather than McIDAS strings when writing Unix scripts. To use a Unix variable, set the Unix script variable to the command or value. Use quotes to enclose the command or value. The following two examples use a script to list images. The first example uses Unix variables and the second uses strings. Both scripts produce the same output.

```
#!/bin/sh
# List images using Unix variables
mcenv << 'EOF'

logon.k USER 1234 X WS
# Make key in
# Set date to current Julian day
date=`date -u +%y%j`
# Build keyword
day="DAY=$date"

# Build commands
listFDV="imglist.k EAST/FDV"
listboth="imglist.k EAST/FDV $day ;imglist.k EAST/FDIR $day "

# Run keyin
eval $listFDV $day

# Run same keyin 2 times using a different form for each
eval $listFDV $day \; $listFDV DAY=${date}

# Run keyin with a Unix variable inside another Unix variable
# and also utilizes a ;
eval $listboth
exit
EOF
```

```
exit 0
#!/bin/sh
# List images using strings
mcenv << 'EOF'

logon.k USER 1234 X WS
# Make string
# commands
te.k listFDV \"IMGLIST EAST/FDV
te.k listnext \"IMGLIST EAST/FDIR DAY=\#Y

# Run keyin
mceval.k \#listFDV DAY=\#Y

# Run same keyin 2 times
mceval.k \#listFDV DAY=\#Y ; mceval.k \#listFDV DAY=\#Y

# Run keyin combination
mceval.k \#listFDV DAY=\#Y ; mceval.k \#listnext
exit
EOF
exit 0
```

Appendix I McIDAS-OS2 Exception Vector Assignments

This appendix applies only if your workstation contains an Intel processor.

If you are running remotely or don't always monitor your workstations, you may want to include the AUTOFAIL=YES statement in your `CONFIG.SYS` file. This prevents interrupts of the entire computer when a problem occurs in a session (except for the DOS box).

If you get an error message on your workstation showing a trap number, use the table below to determine the nature of the problem.

TRAP	#	Type	Description
0000	0	Divide Error	division by zero was attempted
0001	1	Debug Exception	trap was caused by single stepping or bebug trap
0002	2	Hardware Error	probably a memory error
0003	3	Breakpoint	breakpoint instruction was run; 0xCC is a single byte opcode used to trigger a breakpoint
0004	4	Integer Overflow	integer overflow exception occurred when the OF overflow flag was set
0005	5	Bounds Violation	processor detected a bounds violation
0006	6	Invalid Opcode	processor attempted to run an instruction which was not a valid value
0007	7	Coprocessor Missing	required a numeric coprocessor which is not present in the current configuration
0008	8	Double Fault	service routine or exception handler was being processed

TRAP	#	Type	Description
0009	9	Coprocessor Operand Segment Overrun	operand for the numeric coprocessor crossed a segment boundary
000a	10	Invalid Task State Segment	80386 detected an error in the contents of the TSS register when performing a task switch
000b	11	Segment loaded into CS, DS, ES, FS, GS is not present	segment is not currently in memory (fix lock segment into memory)
000c	12	Segment loaded into ss is not present	stack overflow occurred or stack pointer was corrupted
000d	13	General protection violation	memory was accessed that was not owned by the process
000e	14	Page fault	program tried to access a page in violation of its access rights
0010	16	Numeric Coprocessor Error	error was generated by the numeric coprocessor

Appendix J
McIDAS-X Site Administration and Management

This appendix is intended for site administrators and operations staff responsible for acquiring and making data available to the site's users. It contains the following information:

- configuring a remote server account on a McIDAS-X workstation
- acquiring data for the remote server account
- updating client routing tables
- updating clients to use compressed data transfers

Configuring an ADDE Remote Server

If you have data on a McIDAS-X workstation that you want to make available to all of your site's users, you can create a remote server account on the workstation. Datasets in the remote server account are available to all other McIDAS-X and McIDAS-OS2 clients. Each McIDAS-X workstation can have only one remote server account. McIDAS-OS2 workstations cannot be used as remote servers.

Before you configure the remote server account on your workstation, you must select a name for the account. Consider the following guidelines.

- Do not use the **mcidas** account as the remote server account. You cannot run McIDAS-X while logged in as **mcidas**. This account should only be used to install McIDAS-X and other SSEC-supplied software packages that run under it.
- The McIDAS-XCD and McIDAS-XSD packages provide conventional and satellite data that you may want to make available to your ADDE clients. The -XCD and -XSD packages require an account, usually named **oper**, for administrative purposes. Do **not** use this account as the remote server account.
- Although you can run ADDE client commands from the remote server account, you should use other accounts for this purpose. Dedicate the remote server account to acquiring and naming data for ADDE clients.

SSEC recommends adding a new account named **mcadde** for the remote server account. The account must be configured with the appropriate directories and **PATH** to run McIDAS-X. This information is discussed in *Configuring a New User Account* in Chapter 1.

Installing a Remote Server

Once you configure the remote server account to run McIDAS-X, follow the steps in the section called *Installing the McIDAS-X ADDE Remote Server* in Chapter 1. The remote server shell script provided with the McIDAS-X package makes the configuration changes that allow the account to act as a remote server.

Removing a Remote Server

To remove the remote server account from the workstation or make a different account the remote server, you must first uninstall the remote server using the same shell script. Perform steps 1 through 4 in the section called *Installing the McIDAS-X ADDE Remote Server* in Chapter 1.

Acquiring Data for the Remote Server

When the remote server account is configured, McIDAS-X and McIDAS-OS2 clients can request data from it. When a client requests data, the remote server searches for the dataset in the **$HOME/mcidas/data** and the **~mcidas/data** directories, respectively. If you have datasets in another directory, use one of the following methods to make them accessible to clients.

- Add the directory to the remote server account's **MCPATH** environment variable.
- Use the McIDAS REDIRECT command to add a path redirection to the directory.
- If the directory is on another workstation, NFS mount the directory and use **MCPATH** or REDIRECT.

Since clients request the data by name, you must also name the datasets with the DSSERVE command.

If you use **MCPATH**, you must explicitly define its value in the remote server account's **$HOME/.mcenv** file and source it in the remote server account's **$HOME/.profile** file. For example, if you use the Korn or Bourne shell, you must add a line similar to the following in the **$HOME/.mcenv** file:

```
export MCPATH;MCPATH=$HOME/mcidas/data:/alldata:/u/demo/images:~mcidas/data:~mcidas/help
```

To set the **MCPATH** value each time you log in to the remote server account, add the following line to the **$HOME/.profile** file. Be sure to leave a space between the period (.) and **$HOME**.

```
. $HOME/.mcenv
```

If you use the REDIRECT command, you must run it in a McIDAS-X session started from the remote server account. The examples below make areas 100 to 199 in the directory **/alldata** and areas 8000 to 8999 in the directory **/u/demo/images** accessible to ADDE clients.

REDIRECT ADD AREA01* "/alldata

REDIRECT ADD AREA8* "/u/demo/images

You can start a McIDAS-X session, run your REDIRECT commands and then exit the session. The client requests will find the data in the REDIRECT and **MCPATH** directories even if the remote server is not running a McIDAS-X session.

Updating Client Routing Tables

When an ADDE command is run, the client checks its routing table to determine where to route the data request. If you add a remote server, you must use the DATALOC command to update the routing table on each client using the server's data.

Use one of the following methods to update the client routing tables.

- Start a McIDAS session on each McIDAS-X client account and McIDAS-OS2 workstation and run the DATALOC commands.
- Place the DATALOC commands in a text file that each client can access. Start a McIDAS session on each client and use the text file with the BATCH command to run the DATALOC commands.
- Create or update a site routing table that contains the routing information for your site's clients.

The site routing table is the easiest way to modify routing tables for a large number of McIDAS-X and McIDAS-OS2 clients. It allows the site administrator or operations staff to maintain a single table that is accessible to all clients at the site. The site routing table can be created and updated in any McIDAS-X session by using the DATALOC command to link group names to the IP addresses of remote servers. You may need to copy the table to a directory that is accessible to all clients. If a client is on another workstation, the client must NFS mount the directory to access the file.

The default file name for all client routing tables is **MCTABLE.TXT**. To use a different name when creating or updating the site table, you must specify the file name in the **MCTABLE_WRITE** environment variable value of the account running the McIDAS-X session. Write-protect the file so it can't be modified or deleted by your clients.

To make the site routing table accessible to your McIDAS-X and McIDAS-OS2 clients, each client's **MCTABLE_READ** environment variable value must be modified to include this table. See *Introduction to the ADDE* in Chapter 2 for detailed information about the **MCTABLE_READ** and **MCTABLE_WRITE** environment variables.

Updating Clients to Use Compressed Data Transfers

Remote servers running McIDAS-X versions 7.3 or later can compress data before transferring it to McIDAS-X clients also running 7.3 or later. The data is compressed only if the client requests it. Clients request compressed data by sending the request to port 503 on the remote server. The server then uses the Unix **compress** command to shrink the data, and sends it to the client through port 503. Sites with firewalls or other screening mechanisms must open port 503 on their remote servers to use data compression.

Data compression is most beneficial for McIDAS-X clients that transfer large data files or those with slow data connections. For a McIDAS-X client to use data compression, the environment variable **MCCOMPRESS** must be set in the user's account. See *Using Compressed Data Transfers* in Chapter 2 for instructions. Other than firewall precautions, no special actions are required on the remote server. The data compression option is automatically implemented when you run the **mcinet7.*x*.sh** script as part of the normal McIDAS-X installation. See *Installing the McIDAS-X ADDE Remote Server* in Chapter 1.

To allow McIDAS-X users to take advantage of data compression, first install McIDAS-X 7.3 or later on ALL your remote servers. Notify users that your remote servers are updated and that they can configure their McIDAS-X sessions to request compressed data transfers by completing the instructions in the Chapter 2 section *Using Compressed Data Transfers*. Warn them that they should NOT make those changes unless their client workstation and ALL of the remote servers they access are running McIDAS-X 7.3 or later.

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