

McIDAS-MVS

Man computer Interactive Data Access System

for IBM mainframes running MVS-SP, MVS-XA or MVS-ESA

Users Guide

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Preface

The purpose of this manual is to assist meteorologists in the structure of McIDAS user commands. The user of this manual is assumed to have a prior working knowledge of McIDAS. This manual contains several hundred user level commands. Each command includes a description of its usage, a breakdown of all positional parameters and keywords, and practical examples.

Preface

The purpose of this manual is to assist in the use of the McIDAS-MVS system. The user of this manual is assumed to have a prior knowledge of McIDAS. This manual contains several chapters which deal with the use of the system. The first chapter is an introduction to the system and the second chapter is a description of the system. The third chapter is a description of the system and the fourth chapter is a description of the system. The fifth chapter is a description of the system and the sixth chapter is a description of the system. The seventh chapter is a description of the system and the eighth chapter is a description of the system. The ninth chapter is a description of the system and the tenth chapter is a description of the system. The eleventh chapter is a description of the system and the twelfth chapter is a description of the system. The thirteenth chapter is a description of the system and the fourteenth chapter is a description of the system. 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Command Conventions

The conventions used in documenting the commands in this manual are described below.

Bold and Italicized Terms

Actual keyboard entries appear in **BOLD** type. You will type these entries exactly as they appear. Command names, some parameters, all keywords and examples are bolded. For example,

IGG MAKE 2 SUB 1

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

HELP *command*

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

HELP CUR

Use capital letters and leave a space between each term or number in a command line.

Concatenating Commands

You can concatenate commands with semicolons. For example,

SF 3; EG 3; DF 101 3 EC MSN; MAP

Commands using quote fields can only be concatenated if the quote field is substituted with curly brackets ({ }). For example, **ZA 3 15 {MCIDAS}; LA 100 110**.

Entering **ZA 3 15 "MCIDAS; LA 100 110** won't work; it displays "MCIDAS; LA 100 110 as the text string.

Alt Key Entries

When you see an Alt entry, it means you will press two keys simultaneously. The Alt key is like the Shift key in that you hold it down while typing another key. For example,

Press: **Alt C**

means you should hold down the Alt key and press the C key.

Screen Prompts

System prompts and responses look like this:

Boxed text displayed in this typestyle indicates a screen message.

Day and Time Standards

Many McIDAS commands ask for the time of day, satellite identifications and/or latitude and longitude locations. Only the standards below are accepted in McIDAS command formats. Parentheses indicate optional identification.

Sensor Source/Year/Day	Time	Latitude/Longitude
SSYYDDD	HH:MM:SS	(-)DDD:MM:SS
YYDDD	HH:MM	(-)DDD:MM
YY/MM/DD	HH:	(-)DDD:
MM/DD	HH.fraction	(-)DDD.fraction
(SS)YY//	HH	(-)
SS///	:	
where:	where:	where:
SS sensor source	HH hours (GMT)	DDD degrees (West
YY year	MM minutes	is positive)
MM month	fraction fractional	MM minutes
DD day of month	degree	SS seconds
DDD Julian day	SS seconds	fraction fractional
	:	degree
	uses the	
	current time	

Global Keywords

Any McIDAS-MVS command can utilize the global keywords below.

- ALSO=
- DEV=
- DTERM=
- VIRT=

ALSO

This keyword writes graphics to your workstation and the workstation number you designate. For example, ALSO=10 writes graphics on workstation 10 and your workstation. Keyword ALSO works only on workstations with identical configurations as the source workstation.

DEV

This keyword specifies the destination device of any output generated by a command.

DEV= C	sends all output to the text screen
P	sends all output to the printer
N	discards all output
F file A	appends the output to a specified LW file
F file R	replaces the output in a specified LW file
S	sends the output to the system line printer at SSEC
U	causes the current setting to remain unchanged

For example, **LA 100 120 DEV=P** runs the LA command and routes the output to the printer.

DTERM

This keyword writes graphics on the designated workstation. For example, **DTERM=22** writes the graphics on workstation 22. Keyword **DTERM** works only on workstations with identical configurations as the source workstation.

VIRT

This keyword specifies a virtual graphics number. It applies only to commands that generate graphics. Use **DMAP VIRT** to list your files.

VIRT=number	simultaneously draws graphics on a graphics frame and stores them in the designated virtual graphic number; the range is 1 to 1024
--------------------	--

For example, **MAP USA VIRT=1** draws a USA map on the graphics frame and writes the output to the file **VIRT0001**. To restore it, use command **SVG**.

Command Information Most commands have Format, Parameter, Keyword, Remark and Example sections. However, some commands have only a Remarks section. To better understand the information in each of these sections, see the sample command description on the next page.

Command Name

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

Format

The format contains the command name along with any positional parameters and/or keywords it needs to perform its function. Commands can have several formats. Enter **BOLDED** terms exactly as they appear in the command format. *Italicized* terms 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 McIDAS-MVS 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. Enter **BOLDED** parameters exactly as they appear in the text. If a parameter is *italicized*, 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 from 1 to 6 characters, followed by an equals sign (or comma) and a value, e.g., **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. Just be sure 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. For example, you can enter **COL** instead of **COLOR**, or **UNI** in place of **UNIT**.

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. If an example takes more than one line, the second line is indented. Directly below each bolded command line is an explanation of what the entry does.

Reader Response

We would like your comments on our manual. Please take a moment to fill out this self-mailing form and return it to SSEC - McIDAS User Services and Documentation. Thank you.

Manual name (from the title page)

On a day-to-day basis, do you actually need this manual in order to use the system?

Have you found specific informational uses for this manual? Please explain.

Did you find errors or omissions in the manual? Please be very specific.

Please rate this manual on the following items from 1 to 5, with 1 as low and 5 as high.

Text	1	2	3	4	5
Graphics	1	2	3	4	5
Ease-of-use	1	2	3	4	5
Overall	1	2	3	4	5

What is the best feature of this manual?

What is the worst feature of this manual?

Your name and title

Date

McIDAS site

Address

Telephone

Check here if you would like a written reply. ☐

Reader Response

We would like your comments on our manual. Please take a few minutes to fill out this questionnaire. Your comments will be used to improve the manual. Thank you.

Manual name (from the title page)

On a day-to-day basis, do you actually use this manual in order to do the work?

Have you found specific information in this manual? Please explain.

Fold Here

Did you find errors or omissions in the manual? Please be specific.

Please rate this manual on the following items from 1 to 5, with 1 as low and 5 as high.

Text	1	2	3	4	5
Graphics	1	2	3	4	5
Usefulness	1	2	3	4	5
Overall	1	2	3	4	5

What is the best feature of this manual?

Fold Here

What is the worst feature of this manual?

Your name and title

Date

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Address

Telephone

Check here if you would like a written reply.

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CALC

Integer arithmetic utility.

Formats

CALC *value*
CALC "*expression*"

Parameters

value decimal numbers (123, 909, -33, etc.), alphabetic characters (maximum of 4) or hexadecimal values

"expression" arithmetic expression containing the values in decimal, hexadecimal, characters and operators; the operators are:

+	addition
-	subtraction
*	multiplication
/	division
\$	mod function
	exponentiation

Remarks

CALC works on integers only. If no parentheses are used, the normal hierarchy is observed. The output is in decimal, hexadecimal and character values.

Hexadecimal values must be preceded by a Z and evaluated as an expression.

Examples

CALC D
This entry lists the values below.

DEC: -1002422208	HEX: C4404040	CHAR: D
------------------	---------------	---------

CALC "ZC4404040"
This entry evaluates the hexadecimal value and displays the same results as shown above.

CALC "(365/52)*24"
This entry lists the values below.

DEC: 168	HEX: A8	CHAR: Y
----------	---------	---------

CCODE

Lists country codes.

Format	CCODE <i>country</i>
Parameter	<i>country</i> country to list (default=ALL)
Remarks	If <i>country</i> is two characters, CCODE looks for the one country whose code matches it. If only 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 that contain the letter Z.

CT

Converts temperatures and computes wind chill.

Format

CT centigrade mps fahrenheit kts

Parameters

centigrade Centigrade temperature

mps wind speed in mps

fahrenheit Fahrenheit temperature

kts wind speed in knots

Remarks

CT converts temperatures from Centigrade to Fahrenheit or Fahrenheit to Centigrade, and computes wind chill factor.

Examples**CT 13**

This entry converts 13°C to °F.

CT X X 45

This entry converts 45°F to °C.

CT -9 20

This entry calculates the wind chill factor for -9°C with a 20 mps wind.

CT X 14 -8

This entry calculates the wind chill factor for -8°F with a 14 mps wind.

CU

Converts units.

Formats

CU LIST

CU *value unit nunit*

Parameters

LIST lists the available units and their abbreviations

value value to be converted

unit current unit taken from LIST

nunit new unit taken from LIST

Remarks

CU converts a value from its current unit to a new unit. Enter the units in the abbreviated form shown below.

Abbreviation	Unit	Abbreviation	Unit
ACRE	acre	KPH	kilometers/hr
C	Celsius	L	liter
CM	centimeter	LB	pound
DAY	day	M	meter
DEG	degree of latitude	MB	millibar
F	Fahrenheit	MI	mile
FATH	fathom	MM	millimeter
FPMIN	feet/minute	MIN	minute
FPS	feet/second	MPH	miles/hour
FT	foot	MPS	meters/second
HR	hour	NMI	nautical miles
IN	inch	OZ	ounce
K	Kelvin	RD	rod
KG	kilogram	SEC	second
KM	kilometer	YD	yard
KT	knot		

To square or cube a unit, append 2 or 3, e.g., square inch=IN2.

Examples**CU LIST**

This entry lists the units that can be used.

CU 24 IN FT

This entry converts 24 inches to feet.

CU 25 MPH MPS

This entry converts 25 miles per hour to meters per second.

CU 67.3 FT3 M3

This entry converts 67.3 cubic feet to cubic meters.

CU 1 M3 FT3

This entry converts 1 cubic meter to cubic feet.

CU 11 M FT

This entry converts 11 meters to feet.

CUR

Defines the cursor size, type and color.

Formats

CUR *height width type color*
CUR *height width type blue green red*
CUR *height width type number*
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 (not available on VGA workstations)
BULL	external crosshair with bullseye cursor (not available on VGA or McIDAS-X workstations)

color color name from the color palette (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)

number VGA color level; the range is 0 to 15 (default=2)

option

ON	makes the cursor visible (default)
OFF	makes the cursor invisible

Remarks

To list VGA workstation color levels, enter: **GU TABLE**. To list palette colors and red, green and blue intensities for other workstations, enter: **GU COLORS**.

The CUR command is reflected back to the workstation for execution even when preceded by a period. CUR can be executed on the mainframe via mainframe macros.

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 by 31 red crosshair cursor.

CUR 21

This entry makes the cursor 21 by 21 pixels.

CUR X X 5

This entry makes the current cursor a bullseye cursor.

CUR 40 30 XBOX BLUE

This entry makes a 41 by 31 pixel, blue, crosshair inside box cursor.

CUR 31 21 BOX 45 15 25

This entry makes a 31 by 21 box cursor colored by the intensities for blue, green and red as 45, 15 and 25, respectively.

CUR X 53 4

This entry makes a solid cursor with a width of 53 pixels; the height and color do not change.

CUR 100 X X YELLOW

This entry makes a 101 by "X" yellow cursor, where "X" is the last dimension. The type does not change.

CUR OFF

This entry turns off the cursor making it invisible.

DATOLW

Copies the contents of an edit member into an LW file.

Format

DATOLW *member file R [keyword]*

Parameters

member edit member name

file LW file name

R replaces the contents of the LW file

Keyword

CLEAN= Y cleans up bad characters in the data making them
blanks; also blanks columns 73 through 80
N does not clean up the data (default)

See Also

Use command LWTODA to copy an LW file into an edit member. Use
command SEE to list the LW file and SHOWME to list the edit
member.

Example

DATOLW DATEMP TEMP

This entry copies the contents of edit member DATEMP into an LW
file called TEMP, but does not clean up the data.

DMAP

Lists the name and size of McIDAS LW files.

Format	DMAP <i>bfile efile</i>
Parameters	<i>bfile</i> beginning LW file to list (default=lists usage space) <i>efile</i> ending LW file to list for a range of files (default= <i>bfile</i>)
Remarks	If no file is specified, available LW file free space is listed. To list all files beginning with a given letter, enter the letter in place of <i>bfile</i> and <i>efile</i>. DMAP also lists LW file protection by including a (W) or (D) after the creation project number. (D) indicates the file can be deleted only by the creator project; (W) indicates the file can be written to or deleted only by the creator project.
Examples	DMAP This entry lists LW file available space. DMAP MDX This entry lists all MD files. DMAP A D This entry lists the LW files beginning with letters A, B, C and D. DMAP A 9 This entry lists all LW files on the host.

HELP

Lists the McIDAS command formats.

Formats

HELP *command abbr [keyword]*
HELP X *abbr [keyword] "member*
HELP *'McBASI command*
HELP *chapter*

Parameters

<i>command</i>	McIDAS-MVS command name
<i>abbr</i>	any keyboard letter to list an abbreviated help; all help lines that begin with the command name are listed (default=entire help)
<i>"member</i>	source member name with prefix, e.g., ML, MR
<i>'McBASI command</i>	McBASI command name preceded by a single quote
<i>chapter</i>	<u>McIDAS-MVS Users Guide</u> chapter number; the range is 1 to 13

Keyword

LIB=	CORE	specifies the help for the command's MCIDAS.CORE.SOURCE version
	TEST	specifies the help for the command's MCIDAS.TEST.SOURCE version
	USER	specifies the help for the command's MCIDAS.USER.SOURCE version (default=searches CORE first followed by USER; if the command begins with a Y, searches USER version first)

Examples

HELP

This entry lists the McIDAS-MVS Users Guide chapter names and numbers.

HELP 3

This entry lists all the commands in Chapter 3 and gives a brief description of each.

HELP LA DEV=P

This entry lists the user documentation for command LA on the line printer.

HELP WHO

This entry lists the help for the McBASI program WHO.

HELP SKU S

This entry lists the command syntax for SKU.

HELP YSKU

This entry lists the help for the USER library version of the SKU command.

HELP DF LIB=USER

This entry lists the help of the USER source member DF.

HELP LIB=USER "MLDF

This entry lists the help of the USER source member MLDF.

HELP YDF

This entry lists the help of the USER source member DF.

HELP X D LIB=USER "MLDF

This entry lists the abbreviated help for the USER source member DF.

HOWBIG

Calculates the disk space needed for areas, MD files and grid files.

Formats

HOWBIG AREA *barea earea*
 HOWBIG AREA SIZE *lsize esize zsize zres prefix [keyword]*
 HOWBIG GRID *bgfile egfile*
 HOWBIG MD *bfile efile*
 HOWBIG MD SIZE *schema version rows columns*

Parameters

AREA	calculates the bytes used by the specified areas
SIZE	calculates the number of tracks needed for the specified area characteristics or the number of pages needed for the specified MD file characteristics
GRID	calculates the bytes used by the specified grid file
MD	calculates the bytes used by the specified MD file
<i>barea</i>	beginning area number
<i>earea</i>	ending area number (default= <i>barea</i>)
<i>lsize</i>	line size of the area
<i>esize</i>	element size of the area
<i>zsize</i>	number of bytes per element (default=1)
<i>zres</i>	number of bands (default=1)
<i>prefix</i>	size of the line prefix (multiple of 4); value of the total length in LA <i>area</i> FORM=ALL
<i>bgfile</i>	beginning grid file number
<i>egfile</i>	ending grid file number (default= <i>bgfile</i>)
<i>bfile</i>	beginning MD file number
<i>efile</i>	ending MD file number (default= <i>bfile</i>)
<i>schema</i>	schema name of the MD file

version version number of the MD file schema (default=current)

rows number of rows in the MD file (default=schema default)

columns number of columns in the MD file (default=schema default)

Keyword	VOL=	volume number of the area; use with the SIZE option (default=0)
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Remarks	Use HOWBIG to determine the number of disk tracks and bytes your areas, MD files and grid files are using.
----------------	--

HOWBIG also shows the protection associated with each file. If a (P) is listed after the file, it is protected and only the assigned owners are authorized to alter it.

MD files and grid files can have LW protection in addition to WQP protection. It is indicated by a (W) or (D) after the creation project number. (D) means the creation project number only may delete the file; (W) means the creation project number only may write to or delete the file.

HOWBIG MD and **HOWBIG GRID** use the program DMAP to produce the MD and grid space usage. The actual size of an MD file on the mainframe may be less depending on the number of stations reporting data.

HOWBIG MD SIZE is useful for calculating the destination size of an MD file when using SENMD2. This option calculates the maximum size, $\pm 5\%$, of an MD file.

The parameters AREA, MD, GRID and SIZE can be shortened to single letters. See the examples below.

Examples **HOWBIG AREA 6512 6514**

This entry calculates the number of tracks and bytes used by areas 6512 to 6514.

HOWBIG AREA SIZE 1000 1250

This entry calculates the number of tracks and bytes used by an area 1000 lines by 1250 elements.

HOWBIG MD SIZE ISFC

This entry calculates the number of bytes needed by an MD file of schema ISFC.

HOWBIG GRID 6512 6515

This entry calculates the number of bytes used by grid files 6512 to 6515.

HOWBIG A 101

This entry calculates the number of tracks and bytes used by area 101.

HOWBIG A S 3000 2048 2 5 244

This entry calculates the number of tracks and bytes needed for an area that is 3000 lines by 2048 elements, has 5 bands of 2-byte data and a prefix length of 244 bytes. This is an example for a 3000-line full resolution HRPT or LAC area.

HOWBIG M 1002

This entry calculates the bytes and pages used by MD file 1002.

LISDAY

Converts a Julian date to or from a Gregorian date.

Format **LISDAY** *date*

Parameter *date* year and day, YYDDD or YYMMDD (default=current)

Remarks The range available is April 1, 1960 (the launch of TIROS) to December 31, 1999. The maximum month and day are 12 and 31.

Examples **LISDAY**
This entry lists the current day in two formats, YYDDD and YYMMDD.

LISDAY 92205
This entry converts day 205, 1992 into the Gregorian date (920723).

LISDAY 911204
This entry converts December 4, 1991 into the Julian date.

LOCATE

Lists the position of a polar orbiting satellite.

Format

LOCATE *ss date time*

Parameters

ss sensor source number (no default)

date date of the orbit, YY/MM/DD or YYDDD (default=current)

time time of the orbit, HH:MM:SS (default=current)

Example

LOCATE 60 92121 12

This entry lists sensor source 60's position for day 92121 at 12Z.

LOGOFF

Ends a McIDAS-MVS session.

Remarks

When you complete your McIDAS-MVS session,

Type: **LOGOFF**

Press: **Enter**

McIDAS-MVS echoes the message:

--- WORKSTATION IDLE ---

LOGON

Begins a McIDAS-MVS session.

Formats

LOGON *initials project I password*
LOGON *initials project . password*
LOGON *initials project string password*

Parameters

<i>initials</i>	your initials; 3 or 4 alphanumeric characters
<i>project</i>	your 4-digit project number
<i>I</i>	initializes the workstation
<i>.</i>	initializes the workstation; the string table named <i>initials</i> becomes your current string table; any string in that table beginning with <i>initials</i> is immediately executed
<i>string</i>	name of the string table and string to execute; if logging on from a blank 3270-connected terminal, the string name must be preceded by a TAB or at least 4 spaces; the string name is suppressed as it is entered
<i>password</i>	your password (changed with command PASS); if logging on from a McIDAS-OS2 or -X workstation, each character of the password is suppressed with a dash (-)

Remarks

When you log on to McIDAS, your workstation is initialized and the following information is listed.

- a communications connection message
- your workstation identification
- message of the day from McIDAS-MVS operations
- +LOGON COMPLETE+ message
- MAIL WAITING message, when applicable

To view the LOGON message during a workstation session,

Type: **SEE LOGON**
Press: **Enter**

LOGON commands cannot be scheduled on the -MVS scheduler.

McIDAS-OS2 and -X workstations suppress your password with a series of dashes. Passwords entered from a blank screen of a 3270-connected terminal are completely suppressed.

McIDAS-MVX has four LOGON procedures. Review the examples below and select one that is suitable for you.

See Also

Use the PASS command to set or change a password. See the McIDAS-OS2 or McIDAS-X Users Guide for more information on logging on to -X and -OS2 workstations.

Examples

LOGON ABC 1234 I CBA\$ABC

This entry initializes your McIDAS-MVS session as follows:

- clears the string table
- does not set the current MD file number
- sets the current grid file number to your terminal number
- displays the first image and graphics frames
- sets image frame loop bounds from one to one-half the total number of image frames on your terminal
- connects image frame looping
- sets graphics frame loop bounds to one and the total number of graphics frames on your terminal
- disconnects graphics frame looping
- sets image and graphics frame dwell rates to 9/15 second for the first frame and 6/15 second for remaining frames
- sets the graphics line width to one pixel
- initializes graphics color levels
- displays a red 31 by 31 pixel crosshair cursor; on VGA workstations, the crosshair cursor is cyan
- unlocks cursor control
- turns off the pictel interlace switch (N key)

LOGON ABC 1234 X CBA\$ABC

This entry leaves McIDAS-MVS in its current state and sets the image and graphics frames to the lowest loop bound frame.

LOGON ABC 1234 . CBA\$ABC

This entry initializes the McIDAS-MVS workstation. The string table named ABC becomes the current string table. Any string in that table beginning with ABC is executed.

LOGON ABC 1234 STR CBA\$ABC

This entry initializes the McIDAS-MVS workstation. The string table named STR becomes the current string table. Any string in that table beginning with STR (e.g., STRCOLOR, STRERASE) is executed.

LTEN

Lists the 10 closest stations to the cursor position.

Format

LTEN type

Parameters

type	ISFC	lists the 10 closest ISFC stations (default)
	SVCA	lists the 10 closest SVCA stations
	RAOB	lists the 10 closest RAOB stations
	FOUS	lists the 10 closest FOUS stations
	IRAB	lists the 10 closest IRAB stations

Remarks

The station identification, latitude and longitude are listed.

When the video image is on, the calculation is based on the satellite image. When the image is off, the calculation is based on the graphical analysis.

Position the cursor and type another period (.) after you enter LTEN. You may continue moving the cursor and typing periods to collect more station lists. Type two periods to exit the program.

Examples

LTEN

This entry lists the 10 closest ISFC stations to the cursor position.

LTEN FOUS

This entry lists the 10 closest FOUS stations to the cursor position.

LWS

Lists LW file space usage.

Formats

LWS *user project*
LWS *user project* **LIST**

Parameters

user user initials (default=all)
project project number (default=all)
LIST lists all files found

Remarks

LWS is useful for maintaining LW file space usage within site-specified limits.

The LIST parameter lists the names of all files associated with the user and project number specified.

The data used by LWS is generated by background job MBLW2. Run LWS after MBLW2.

Examples

LWS

This entry lists LW file space usage for all users and project numbers, in bytes.

LWS AMW 7000

This entry lists LW file space usage for user AMW, project number 7000.

LWS LAR 2000

This entry lists the total LW file space usage by user LAR under project 2000. The output is shown below.

LWS -- TOTAL2000LAR = 36.4M

LWS TAS X LIST

This entry lists the name and size of each LW file created by user TAS. The output is shown below.

FILENAME	PROJ	USER	SIZE
BASICVV67	2000	TAS	16K
GRID5728	3000	TAS	40K
GRID5730	2000	TAS	43.6M
GRID5738	4650	TAS	<u>164K</u>
LWS--TOTAL TAS=			43.8M

LWTODA

Copies the contents of an LW file into an edit member.

Format

LWTODA *file member R* [*keywords*]

Parameters

file LW file name

member edit member name

R replaces the contents of *member* (default=does not replace)

Keywords

BEGIN= number of the first line to copy (default=1)

NCARDS= number of lines to copy (default=all)

Remarks

LWTODA cannot be executed on a remote CPU; that is, it cannot be executed via XMT.

See Also

Command DATOLW copies an edit member into an LW file. Use command SEE to view the contents of the LW file and SHOWME to view the contents of the edit member.

Example

LWTODA TEMP DATEMP

This entry copies the contents of an LW file called TEMP into the edit member DATEMP.

LWU

LW file utility.

Formats

LWU DEL *file*
LWU MAKE *file*
LWU INFO *file*
LWU LIST *file bword eword*
LWU COPY *sfile dfile*
LWU COMP *file1 file2*
LWU RENAME *sfile dfile*
LWU POKE *file value word*
LWU PROT *file state*

Parameters

DEL	deletes a file
MAKE	generates a file
INFO	lists the file size in pages
LIST	lists the words in the LW file
COPY	copies a file
COMP	compares <i>file1</i> and <i>file2</i>
RENAME	renames an LW file
POKE	pokes a value into an LW file
PROT	protection value
<i>file</i>	name of the file
<i>sfile</i>	source file name
<i>dfile</i>	destination file name
<i>bword</i>	beginning word number to list; the range is 0 to 8 million (default=0)
<i>eword</i>	ending word number to list; the range is 0 to 8 million (default=39)
<i>file1,2</i>	LW file names to compare

<i>value</i>	value poked into the LW file word
<i>word</i>	number of the LW file word
<i>state</i>	0 unprotected (default) 1 delete protected 2 write protected

Remarks

Do not use a period (.) in an LW file name. Use only alphanumeric (A-Z, 0-9) characters. A period in an LW file name indicates a partitioned data set.

Examples**LWU INFO**

This entry lists the total number of pages free and pages used for each disk volume allocated to LW space.

LWU MAKE CLOUDS

This entry creates an LW file named CLOUDS.

LWU INFO CLOUDS

This entry lists the size of the LW file CLOUDS.

LWU COPY CLOUDS NEWONE

This entry copies the LW file CLOUDS into NEWONE.

LWU DEL CLOUDS

This entry deletes the file CLOUDS.

LWU LIST LWTXT 10 20

This entry lists words 10 to 20 of the LW file LWTXT.

MAIL

Mails messages to users, terminals or project numbers.

Formats

MAIL LIST *recipient*
MAIL DELETE *number*
MAIL SENT
MAIL *recipient pending [keyword] "message"*

Parameters

LIST chronologically lists the messages sent to your initials, terminal or project number (default)

DELETE deletes messages sent to you or by you

SENT chronologically lists messages you sent

recipient the recipient's initials, terminal number or project number
site.initials name of a remote McIDAS site followed by the user initials or terminal number; site names are CCFF, EADS, JSC, SSEC and VDUC

pending **NO** message is not pending after it is listed once by the recipient (default)
YES message is pending every time the recipient logs on to McIDAS; use keyword DAY to set the number of pending days

number number preceding a message used to delete that message

"message" message to send; the maximum length is the text screen width; the pound sign (#) is invalid in a MAIL message

Keywords

DAY= number of days before the message is purged; maximum is 14 days (default=1)

LOG= **YES** does not send a message if the receiving terminal is logged off (default)
NO sends the message even if the receiving terminal is logged off

SAVE=	YES	saves messages for terminals logged off when the message is sent
	NO	doesn't save messages for terminals logged off (default)

Remarks

If you are logged on to a video terminal, it makes a bell sound when mail is sent to you.

If the message recipient is not logged on to McIDAS at the time of the message transmission, the message is saved for a maximum of two weeks or until the recipient lists the message. If the recipient has not listed the message within this two-week period, it is purged from McIDAS. All listed messages are purged on their expiration dates, either 24 hours after the message is sent or as specified by keyword DAY.

If you have pending mail, a MAIL WAITING message is listed on your text screen following the logon message.

To send a message to a user or terminal on a networked system, use the form *site.initials*, e.g., SSEC.AMW.

The LOG= keyword only applies when sending mail to a specified terminal.

Examples**MAIL**

This entry chronologically lists all mail sent to your initials, terminal or project number.

MAIL LIST 7000

This entry chronologically lists all mail sent to project 7000.

MAIL 11 "HELLO TERMINAL 11

This entry sends the message HELLO TERMINAL 11 to terminal 11.

MAIL ABC Y DAY=5 "IMPORTANT MESSAGE

This entry sends the message IMPORTANT MESSAGE to user ABC. Notification of this message appears every time user ABC logs onto McIDAS during a 5-day period.

MAIL DELETE 6

This entry deletes message number 6.

MAIL SENT

This entry chronologically lists all mail that you have sent.

MAIL SSEC.AMW "RESPONSE REQUESTED"

This entry sends the message RESPONSE REQUESTED to SSEC, user AMW.

MAIL 67 LOG=NO "THIS IS A TEST"

This entry sends the message THIS IS A TEST to terminal 67, even if the terminal is logged off.

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*" an 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 to match

TYPE= RADAR lists radar stations
 RAOB lists RAOB stations
 SURF lists surface hourly stations
 SYNOP lists synoptic stations

Remarks

MSL 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.

The codes under DATA TYPES in the output from MSL are:

Code	Definition
A	TAF forecast
B	coastal/SMARS
C	short-range terminal forecast
D	radar
I	3-hourly synoptic
L	PLATF forecast
M	6-hourly synoptic
N	off-hour synoptic

Code	Definition
O	AERO
P	PIBAL
R	RAOB
T	METAR
W	service airways (surface hourly)

See Also Command CCODE lists the country codes.

Examples

MSL TAP

This entry lists the location information for Tapachula, Mexico.

MSL ST=WI

This entry lists all stations in Wisconsin.

MSL ST=WI TYPE=RADAR

This entry lists all radar stations in Wisconsin.

MSL "AFB

This entry lists all Air Force bases.

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.

PASS

Defines a user logon password.

Format

PASS *password*

Parameter

password new or changed user password required for logon authorization; can be any string from 6 to 12 alphanumeric characters; all new passwords must contain one of these special symbols:
@ \$ % & * + - < > ? \!

Remarks

Check with an operator at your site to determine if your system is using passwords.

When you log on to a system that utilizes password security, a message tells you that you must create a new password with the PASS command. If you don't create a new password before logging off, you won't be able to log on again without assistance from an operator.

The password is the fourth parameter for the LOGON command. All passwords are suppressed by the system; they are not echoed or repeated.

Passwords are not kept by operations. Therefore, if you forget your password, operations must reinitialize it for you.

You can change your password at any time by entering the PASS command with a new password.

Example

PASS \$CYCLONE

This entry defines \$CYCLONE as your logon password. You must enter it as the fourth parameter in LOGON when logging on to McIDAS.

PASSBY

Lists the time an orbiting sensor source views a ground point.

Format `PASSBY ss day lat lon`

Parameters

<i>ss</i>	sensor source number (no default)
<i>day</i>	YYMMDDD or YYDDD default=current)
<i>lat</i>	latitude (default=43.08°)
<i>lon</i>	longitude (default=89.43°)

Remarks PASSBY also displays the angle of elevation from a horizontal plane, the angle the sensor source makes from an easterly direction, and whether the sensor source is in ascending or descending mode.

Example `PASSBY 62 #Y 43 89`

This entry lists the times that NOAA-12 scans normal to 43° N and 89° W for the current day.

SEE

Lists LW file text.

**The ADDE command READ may be used in place of SEE.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Format

SEE *file* *nchars* [*keywords*]

Parameters

file name of an LW file or partitioned text file to list

nchars number of characters per line (default=80)

Keywords

BEGIN= first line number to list; if negative, number of the first word to list

EOF= N suppresses the ***EOF*** text output line
Y shows the ***EOF*** text output line (default)

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

Examples

SEE LOGON

This entry lists the message seen when logging on to McIDAS.

SEE MYFILE BEGIN=25

This entry lists the text in LW file MYFILE beginning with line 25.

SEE MYFILE NLINES=25 STEP=-1 DEV=P

This entry lists the text in MYFILE beginning with line 1, stepping backwards, listing 25 lines, and sends the output to the line printer.

SEE SCHEMA BEGIN=99 NLINES=15 STEP=-1

This entry lists file SCHEMA starting at line 99 and stepping backwards by 1 line for 15 lines.

SEE JCL

This entry lists the partitioned text file directory. Use **SEE JCL.file** to list individual files.

SENLOW

Sends a mainframe LW file to a remote host or workstation.

Format **SENLOW** *sfile dfile [keywords]*

Parameters

<i>sfile</i>	source LW file name
<i>dfile</i>	destination LW file name on the remote host or workstation; 12 characters maximum including drive and path (default= <i>sfile</i>)

Keywords

BEGIN=	begins writing word 0 of <i>sfile</i> at the specified word in <i>dfile</i> ; do not use this option with the RANGE or PAGE options	
FLIP=	NO	does not flip bytes (default)
	YES	flips bytes of 32-bit words
PAGE=	NO	sends missing pages (default)
	YES	suppresses the sending of missing pages from the LW file; use this option for host-to-host communication only
RANGE=	<i>beg end dest</i>	beginning and ending pages to send, and the destination page of the beginning page in <i>dfile</i> ; you must use LW file page numbers, 1024 words per page (default for <i>dest</i> =0)
TRANS=	A	translates from EBCDIC to ASCII; the source LW file must contain EBCDIC characters only
	F	translates from mainframe format floating point values to McIDAS-OS2 format floating point values
	T	sends text to the workstation (implies A option)

Remarks

To send an LW file to a drive other than C on a McIDAS-OS2 workstation, precede the destination LW file name with the destination drive letter and a colon (e.g., A:*dfile*). Necessary drive extensions should follow the destination file name, separated by a period (e.g., *dfile.ET*). When transferring enhancements to a McIDAS-OS2 workstation, always add the file extension .ET to the destination file name. The total number of characters for *dfile* is twelve, including drive names, file extensions, colons and periods.

Examples**SENLOW LWTXT**

This entry sends the LW file LWTXT to a workstation LW file named LWTXT in the current McIDAS directory.

SENLOW MSTATS A:PCSTAT

This entry sends source LW file MSTATS to destination LW file PCSTAT and copies it to the diskette in drive A.

WAV1.SENLOW MDXX4570 MDX13696 PAGE=Y

This entry transfers MD file 4570, on the WAV1 system, to your host MD file 13696. PAGE=Y deletes blank pages and should be used for host-to-host file transfers.

SHOWME

Lists text from source code files.

Format	SHOWME <i>file page ALL</i> [<i>keywords</i>]	
Parameters	<i>file</i>	name of the McIDAS source code member
	<i>page</i>	page number (default=first 20 lines of <i>file</i>)
	ALL	lists the entire file
Keywords	NUM=	N suppresses line numbers when using the ALL option
	PREF=	any valid two-letter file prefix
Remarks	If you enter a file name without a two-letter prefix, SHOWME will locate the first occurrence of the file name in DATABLE . The user library is searched before the core library.	
See Also	Use command > or < to page forward or backward one page.	
Examples	SHOWME MYFILE This entry lists the first 20 lines of MYFILE .	
	SHOWME PLOT ALL PREF=DN DEV=P This entry lists the entire file PLOT on the printer.	

SS

Lists McIDAS-MVS command status.

Remarks

The SS command lists all commands currently running on McIDAS-MVS.

A sample SS output is shown below.

SSEC	S T A T U S	R E P O R T	17 Dec 92 92352 15:04:09
WRK#	Terminal ID	CPU Program	Command(s)
WRK00	114 OS2SRV	0.1 SS	?
WRK03	3 639	0.1 WTOR	WTOR "CHANGE TEMP/HUMIDITY CHART ...
WRK05	9 248D	3.9 IGTV	#HGTTOFOR
WRK06	62 QC-B	5.7 TIRCAL	MULTIR 828
WRK07	9 248D	0.5 MAP	#HGTTHRTSX

Each column in the output is defined below.

Column	Definition
WRK#	the letters WRK followed by the worker number; most systems have 15 workers where four may be used by a single workstation at one time
Terminal ID	workstation number and its location
CPU	executing command's total CPU cycles, in seconds
Program	program name executing
Command(s)	command entered

To stop your program, type a slash (/) followed by a space and the worker number. You cannot abort a program running on another workstation.

See Also

The question mark (?) command is a shorter form of command SS.

Example

/ 5

This entry terminates the program running on worker 5 and restarts worker 5.

SST

Lists McIDAS-MVS command status and terminal usage.

Remarks

The output format of SST is a combination of the SS and ST commands, as shown below.

SSEC	S T A T U S R E P O R T				17 Dec 92 92352 19:24:28
WRK#	Terminal	ID	CPU	Program	Command(s)
-----	-----	-----	-----	-----	-----
WRK03	114	OS2SRV	0.1	SS	SST
WRK04	52	248C-WW	2.9	DF	DF 11126 23 IU 16500 -275 BAND,6
0 OPCOM	6999	OPER	34.6		1 QC-A 6999 OPER 0.4 V570
4 243	3332	THA	0.1	DOWN	6 JSC 7000 HOST 0.2
12 248A	3305	AJS	0.5	V570	14 UNIREC 2360 RCD 4.9 V550
17 235-TA	3340	THA	0.0	DOWN	18 CCFF 7000 HOST 0.0
22 LOOPER	7000	LOOP	27.3	V560	25 601 6999 DEEW 3.6 V570

See Also

For more information, see commands SS and ST.

ST

Lists terminals and users logged on to McIDAS-MVS.

Remarks

The output format of ST is shown below.

0	OPCOM	6999	OPER	34.6		1	QC-A	6999	OPER	0.4	V570
4	243	3332	THA	0.1	DOWN	6	JSC	7000	HOST	0.2	
12	248A	3305	AJS	0.5	V570	14	UNIREC	2360	RCD	4.9	V550
17	235-TA	3340	THA	0.0	DOWN	18	CCFF	7000	HOST	0.0	
22	LOOPER	7000	LOOP	27.3	V560	25	601	6999	DEEW	3.6	V570
27	MSFC	3378	HOST	10.9		32	TOAST	2233	STW	0.0	V163

Each column in the output is defined below.

Column	Definition
1	terminal number
2	terminal location or name
3	user project number
4	user initials
5	total minutes of CPU cycles of your current terminal session, in seconds
6	McIDAS workstation version number or terminal communication status

See Also

Use command SS or SST to list the program being executed.

SUNLIT

Lists the sunrise and sunset for a date and location.

Formats

SUNLIT TODAY *lat lon*
SUNLIT *date lat lon*

Parameters

TODAY uses today's date for sunrise and sunset; after 18 CST today, it lists tomorrow's times; times are given in UTC

date date of sunrise and sunset, YYDDD

lat latitude for sunrise and sunset (default=43:04:48)

lon longitude of sunrise and sunset (default=89:25:48)

Examples

SUNLIT

This entry lists today's sunrise, sunset, latitude and longitude for Madison, WI.

SUNLIT TODAY 36 90

This entry lists sunrise and sunset for today at 36°N and 90°W.

SUNLIT 92233 38:42:05 96:22

This entry lists sunrise and sunset for day 92233 at 38°42'05" N and 96°22'W.

U

Lists the logged on project number.

Remarks

To list the logged on project numbers,

Type: **U**

Press: **Enter**

A sample screen output is shown below.

92338	3 DEC 92	195548	ABC	7000	T#=60
-------	----------	--------	-----	------	-------

Each field is defined below.

Output	Definition
92338	year, Julian day (YYDDD)
3 DEC 92	day, month, year
195548	time (GMT), HHMMSS
ABC	user's initials
7000	user's project number
T#=60	terminal number

VER

Displays the McIDAS-MVS software version number.

Remarks

VER displays the current McIDAS-MVS software version number and the date of the most recent upgrade in the format YYDDD.

Below is a sample output.

```
**MCIDAS SOFTWARE VERSION 92289  
**15 October 1992
```

WTOR

Sends a text message to the system operator.

Format

WTOR *"text"*

Parameter

"text" the text message; must be less than 46 characters

Remarks

The operator must reply to the text message. Use this command with discretion.

Example

WTOR "HELLO, HAS TAPE SS1441 BEEN READ IN?"
This entry displays the message HELLO, HAS TAPE SS1441 BEEN READ IN? on the operator's text screen.

& (Ampersand)

Recalls a previously entered command.

Remarks

The ampersand command displays a previously entered command on the text screen. You can then press the carriage return key to execute the command, or change characters and then execute it.

>

Lists the next 20 source code lines.

Remarks

When listing source code with command SHOWME, press > to view the next 20 lines. Press < to page backwards 20 lines.

See Also

Use command SHOWME to list text from source code files.

<

Lists the previous 20 source code lines.

Remark

When listing source code with command SHOWME, press < to view the previous 20 lines. Press > to page forward 20 lines.

See Also

Use command SHOWME to list text from source code files.

? (Question Mark)

Lists McIDAS-MVS command status.

Remarks

The question mark (?) command lists all commands currently running on McIDAS-MVS.

A sample output is shown below.

SSEC	S T A T U S R E P O R T			17 Dec 92 92352 15:04:09
WRK#	Terminal ID	CPU	Program	Command(s)
WRK00	114 OS2SRV	0.1	SS	?
WRK03	3 639	0.1	WTOR	WTOR "CHANGE TEMP/HUMIDITY CHART ...
WRK05	9 248D	3.9	IGTV	#HGTTOFOR
WRK06	62 QC-B	5.7	TIRCAL	MULTIR 828
WRK07	9 248D	0.5	MAP	#HGTTHRTSX

Each column in the output is defined below.

Column	Definition
WRK#	the letters WRK followed by the worker number; most systems have 15 workers where four may be used by a single workstation at one time
Terminal ID	workstation number and its location
CPU	executing command's total CPU cycles, in seconds
Program	program name executing
Command(s)	command entered

To stop your program, type a slash (/) followed by a space and the worker number. You cannot abort a program running on another workstation.

See Also

Use the slash (/) command to stop a program. Command SS also lists McIDAS-MVS command status.

/ (Slash)

Terminates a command.

Remarks

To terminate a command, type a slash followed by a space and the worker number. If you don't know the worker number, use the question mark (?) command to list it.

To determine the worker number,

Type: ?

Then,

Type: / *worker number*

Press: **Enter**

Example

/7

This entry terminates the program running on worker 7 and restarts worker 7.

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2-7	Display a set of graphics	CH02
2-8	Display a set of graphics	CH02
2-9	Display a set of graphics	CH02
2-10	Display a set of graphics	CH02
2-11	Display a set of graphics	CH02
2-12	Display a set of graphics	CH02
2-13	Display a set of graphics	CH02
2-14	Display a set of graphics	CH02
2-15	Display a set of graphics	CH02
2-16	Display a set of graphics	CH02
2-17	Display a set of graphics	CH02
2-18	Display a set of graphics	CH02
2-19	Display a set of graphics	CH02

CLOCK

Displays a clock on the graphics.

Format

CLOCK *time wcolor ccolor tint tlength*

Parameters

time time for the wedge to cover, in minutes; the range is 0 to 60 (default=0)

wcolor graphics color level of the wedge (default=1)

ccolor graphics color level of the clock (default=3)

tint interval between tic marks, in minutes (default=no marks)

tlength length of the tic mark, in pixels (default=3)

Remarks

The clock is drawn at the current cursor location. Its diameter is the smallest dimension of the cursor or 30 pixels, whichever is larger.

Examples

CLOCK 10

This entry displays a clock centered at the cursor position. The wedge is graphics color level 1; the clock is level 3. The wedge is from 0 to 10.

CLOCK 10 4 X 5

This entry displays a clock in graphics color level 3 at the current cursor position. The wedge, in graphics color level 4, is from 0 to 10. Tic marks are 3 pixels long, every 5 minutes.

CW

Fills or erases the graphics within the cursor.

Format

CW level frame height width

Parameters

<i>level</i>	graphics color level; the range is zero to the maximum available for the display type (default=0 to erase graphics within the cursor)
<i>frame</i>	graphics frame number (default=current)
<i>height</i>	height of the area to erase, in pixels (default=cursor height)
<i>width</i>	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 6 2 50 30

This entry fills a box 50 by 30 centered at the cursor with graphics color level 6 on graphics frame 2.

DYOg

Displays your own graph.

Format

DYOg *xlen xtic xbeg xinc xcolor ylen ytic ybeg yinc ycolor* [keywords]

Parameters

xlen length of the x-axis in pixels, maximum length is 450
(default=450)

xtic number of evenly spaced tic marks on the x-axis
(default=10)

xbeg beginning value of the x-axis tic marks

xinc increment of the *xtic* labels

xcolor graphics color level of the x-axis tics and labels (default=2)

ylen length of the y-axis in pixels, maximum length is 380
(default=380)

ytic number of evenly spaced tic marks on the y-axis
(default=10)

ybeg beginning value of the y-axis tic marks

yinc increment of the *ytic* labels

ycolor graphics color level of the y-axis tics and labels (default=3)

Keywords

XLAB= x-axis label, maximum of 48 characters

YLAB= y-axis label, maximum of 48 characters

Remarks

DYOg will display the x and y axes with labels and tic marks.

See Also

Use command ZA to insert data points.

Examples**DYOG X X 0 2 X X X 0 2 X**

This entry displays an x-axis 450 pixels long with 10 tic marks beginning at 0, incrementing by 2, in graphics color level 2. The y-axis is 380 pixels long with 10 tic marks beginning at 0, incrementing by 2, in graphics color level 3.

**DYOG 400 12 0 2 4 350 20 -10 10 6 XLAB=TIME
YLAB=TEMP**

This entry displays an x-axis 400 pixels long with 12 tics beginning at 0, incrementing by 2, in graphics color level 4 and labels it TIME. The y-axis is 350 pixels long with 20 tics beginning at -10, incrementing by 10, in graphics color level 6 and labels it TEMP.

EG

Erases a graphics frame.

Formats

EG ALL
EG *bframe eframe*

Parameters

ALL erases all graphics frames

bframe beginning graphics frame number to erase
 (default=current)

eframe ending graphics frame number to erase (default=*bframe*)

See Also

Use command CW to erase small portions of the graphics frame.

Examples

EG
This entry erases the current graphics frame.

EG 6 12
This entry erases graphics frames 6 through 12.

EG ALL
This entry erases all graphics frames on your terminal.

EVG

Erases virtual graphics.

Format

EVG *bvirt evirt*

Parameters

bvirt beginning virtual graphics number to erase; the range is 1 to 1024

evirt ending virtual graphics number to erase (default=*bvirt*)

Remarks

EVG will not erase the graphics displayed on the frame, only those stored in the virtual graphics. You cannot erase individual graphics scenes.

Examples

EVG 22

This entry erases virtual graphics 22.

EVG 10 30

This entry erases virtual graphics 10 through 30.

GD

Defines graphics display parameters.

Format

GD *width display flip dlength gcolor glength*

Parameters

width graphics line width, in pixels; the range is 1 to 64 (default=1)

display ON draws graphics
OFF does not draw graphics (default=current mode)

flip ON flips the graphics display left to right; valid for tower displays only
OFF does not flip the graphics display (default)

dlength length of the dashes in a line; the range is 0 to 64 (default=5)

gcolor graphics color levels of the gaps in a dashed line (default=255, transparent)

glength length of the gaps in a dashed line; the range is 0 to 64 (default=5)

Remarks

Use the *display* OFF option when creating virtual graphics on a nonvideo workstation. Use the *flip* option with tower workstations only.

Examples

GD
This entry lists the current graphics status.

GD 4
This entry defines the graphics width as 4 pixels.

GD X OFF
This entry turns off the graphics display.

GD 1 X X 20 0
This entry defines the dash length as 20 pixels on the current display.

GD 1 X X 10 1 10
This entry defines the dash and gap lengths as 10 pixels and the gap color as graphics color level 1 on the current workstation.

LG

Lists the graphics frame directory.

Format

LG *scene* [*keywords*]

Parameter

scene graphics scene number (default=all scenes on the frame)

Keywords

FORM= **STN** standard list (default)
ALL expanded list; you must specify the *scene*

FRAME= graphics frame number (default=current)

TERM= terminal number (default=current)

Remarks

Scene numbers increase from 1 to n , where n is the total number of graphics scenes drawn on a frame since the last erase (command EG).

To select keyword FORM=ALL, you must specify *scene*.

A scene is one element of a virtual graphics display, for example a map outline or temperature plot.

Examples

LG

This entry lists the graphics frame directory for all scenes on the current graphics frame.

LG 2 FRAME=6

This entry lists the graphics frame directory for scene number 2, graphics frame 6.

LVG

Lists virtual graphics directory entries.

Format **LVG** *bvirt evirt scene [keywords]*

Parameters *bvirt* beginning virtual graphics number to list; the range is 1 to 1024

evirt ending virtual graphics number to list (default=*bvirt*)

scene graphics scene number stored in the virtual graphics (default=all scenes)

Keywords **FORM= ALL** expanded list; you must specify a scene number (default=standard 1-line list)

TERM= terminal number with virtual graphics (default=current)

Examples **LVG 250**
 This entry lists the information for virtual graphic 250.

LVG 100 200 5
 This entry lists all virtual graphics from 100 to 200, scene 5 only.

LVG 10 30 TERM=67
 This entry lists the virtual graphics between 10 and 30 stored on terminal 67.

MAPORB

Displays polar orbital tracks on a Mercator map.

Format

MAPORB *ss date ulat ulon llat llon LALO clalo [keywords]*

Parameters

ss sensor source number (POES satellites)

date date, YYDDD (default=current)

ulat upper-left latitude (no default)

ulon upper-left longitude (no default)

llat lower-right latitude (no default)

llon lower-right longitude (no default)

LALO displays latitude/longitude lines with a map
(default=does not draw lines)

clalo graphics color level for the latitude/longitude lines
(default=3)

Keywords

COLOR= graphics color level of the map (default=1)

GRA= graphics frame number to draw on (default=current)

INT= *lat lon* intervals for latitude and longitude lines
(default is computed)

LINEC= orbit line color level (default=2)

Remarks

When specifying latitude and longitude, positive numbers are degrees North and degrees West respectively, while negative numbers are degrees South and degrees East respectively.

See Also

See *Appendix B* for a list of satellite sensor numbers.

Examples**MAPORB 60 92100 42 115 23 81 LALO 3 COLOR=5**

This entry draws orbital tracks for sensor source 60, day 92100, from 42° North, 115° West to 23° North, 81° West in graphics color level 5 with latitude/longitude lines drawn in graphics color level 3.

MAPORB 61 91300 80 100 -10 -10 LALO 7 LINEC=5 GRA=5

This entry draws orbital tracks on graphics frame 5 for sensor source 61, day 91300, from 80° North, 100° West to 10° South, 10° East with the latitude/longitude lines drawn in graphics color level 7 and the orbital tracks in graphics color level 5.

SENVG

Sends a virtual graphic from the mainframe to a workstation.

Format	SENVG <i>svirt</i> <i>dvirt</i> <i>frame</i> [<i>keywords</i>]		
Parameters	<i>svirt</i>	source virtual graphic number; the range is 1 to 1024 (no default)	
	<i>dvirt</i>	destination virtual graphic number (default= <i>svirt</i>)	
	<i>frame</i>	graphics frame number to display (default=does not display the virtual graphic)	
Keywords	ALSO=	<i>t1 . . . tn</i>	list of additional McIDAS-OS2 workstations to receive and display the virtual graphic
	COORD=	ON	sends Z dimension coordinates
		OFF	does not send Z dimension coordinates (default)
	TERM=	McIDAS-MVS terminal number of the source virtual graphic (default=current)	
Remarks	1024 virtual graphics numbers are reserved for each McIDAS-MVS workstation connection.		
See Also	To list a saved virtual graphic, use command LVG.		
Examples	SENVG 5 This entry copies virtual graphic 5 from the mainframe to the current workstation, but does not display it.		
	SENVG 21 22 3 TERM=11 This entry copies virtual graphic 21 from terminal 11 as virtual graphic 22 onto the current workstation and displays it on graphics frame 3.		
	SENVG 2 X 1 ALSO=11 13 This entry copies virtual graphic 2 saved on the current terminal as virtual graphic 2 and displays it on graphics frame 1 on the current workstation and also workstation numbers 11 and 13.		

SVG

Displays virtual graphics.

Format	SVG <i>virt frame</i> [<i>keywords</i>]	
Parameters	<i>virt</i>	virtual graphics number; the range is 1 to 1024
	<i>frame</i>	graphics frame number to display the virtual graphic (default=current)
Keywords	TERM=	McIDAS-MVS terminal number where the virtual graphic is stored (default=current)
	TOTERM=	destination terminal number usually assigned by the computer operators; use TOTERM when you plan to write virtual graphics to tape and need protection from accidental deletion by other users; numbers are greater than 1000, usually 1000 + terminal number; call your computer operators for more information
	SCALE=	NO does not scale the graphic for a VGA display YES scales the graphic for a VGA display
Remarks	Virtual graphics are deleted at SSEC with the monthly purge. To store virtual graphics, append keyword VIRT to any graphics command.	
	On a VGA workstation, use the SCALE=NO option to accurately display graphics that are navigated (MAP, SP, SC, etc.). Use SCALE=YES on VGA workstations to display graphics that are not navigated (MG, STUVE, ZA, etc.).	
See Also	Use command DMAP VIRT to find the available TOTERM numbers.	
Examples	SVG 250 This entry displays virtual graphic 250 on the current graphics frame.	
	SVG 800 5 TERM=23 This entry displays virtual graphic 800 stored on terminal 23 on graphics frame 5.	

SVS

Displays and manipulates virtual graphics.

Format

SVS *virt frame [keywords]*

Parameters

virt virtual graphics number; the range is 1 to 1024

frame graphics frame number (default=current)

Keywords

ANGLE= angle to rotate the scene, in degrees

BLOW= *line ele* multiplies the line and element coordinates differentially before rotating the scene (default=1,*line*)

BOX= 0 use keyword CURFLG to select the scene's output
1 saves all or part of the scene within the cursor as a virtual graphic; output is centered on the graphics frame

CURFLG= 0 if BOX=0 and SHR=-1, the scene is replotted and adjusted to fit inside the cursor; if BOX=0 and SHR=some real number, the scene is shrunk according to SHR=
1 if BOX=0 the scene remains unaltered when replotted (default)

POSX= TV center line of the scene

POSY= TV center element of the scene

SCENE= scene numbers to display (default=all)

SHRINK= draws the scene inside the cursor; its size is changed according to the real number entered (i.e., if SHR=.5 the scene is plotted 1/2 its original size); use SHR with keywords BOX=0 and CURFLG=0
-1 fits the scene to the cursor size

SIZEX= TV line dimension of the scene

SIZEY= TV element dimension of the scene

	TERM= terminal number where the virtual graphic is stored (default=current)
Remarks	Use SVS to display virtual graphics. Scenes can be rotated, blown up, blown down or repositioned.
Examples	SVS 100 This entry displays virtual graphic 100 on the current graphics frame. SVS 50 4 SCENE=3 4 6 This entry displays virtual graphic 50 scenes 3, 4 and 6 on graphics frame 4. SVS 50 SCENE=1 BOX=0 CURFLG=0 SHR=-1 This entry displays virtual graphic 50 scene 1 on the current graphics frame inside the cursor.

TG

Displays text from an LW file on a graphics frame.

Format

TG *file nlines raster pictel color height bline [keywords]*

Parameters

file name of the LW file containing the text

nlines number of text lines to display on the graphics; maximum number of lines is based on the height of the characters (default=maximum)

raster TV raster to begin text on (default=15)

pictel TV pictel to begin text on (default=15)

color graphics color level (default=1)

height height of the letters in pixels; minimum for legibility is 5 (default=8)

bline beginning line of text to print (default=1)

Keywords

GRA= graphics frame number (default=current)

WID= width of the graphics, in pixels (default=1)

Remarks

The LW file must be in 80-character card image format.

See Also

Use command DATOLW to copy an edit member into an LW file and command LWTODA to copy an LW file into an edit member. Use command SEE to view the contents of the LW file and command SHOWME to view the contents of the edit member.

Examples

TG SFCPLT

This entry displays the first 32 lines of text from the LW file SFCPLT. The characters are magenta, 8 pixels high.

TG WXDAT 10 X X X 6 4

This entry displays 10 lines of text from the file WXDAT starting at line 4. The text starts at TV coordinates (15,15). The characters are 6 pixels high and drawn in magenta.

TGW

Displays text on a graphics frame with word wrap.

Format	<i>TGW file height raster pictel color bline [keyword]</i>	
Parameters	<i>file</i>	name of the LW file containing the text
	<i>height</i>	height of the letters, in pixels; the minimum for legibility is 5 (default=8)
	<i>raster</i>	TV raster to begin writing text on (default=15)
	<i>pictel</i>	TV pictel to begin writing text on (default=15)
	<i>color</i>	graphics color level (default=1)
	<i>bline</i>	beginning line of text to plot (default=1)
Keyword	GRA=	graphics frame number (default=current)
Remarks	A % in the first column of the LW file starts a new line instead of filling the current line.	
See Also	Use command DATOLW to copy an edit member into an LW file; use LWTODA to copy an LW file into an edit member. Use command SEE to view the contents of the LW file; use command SHOWME to view the contents of the edit member.	
Examples	TGW LWTXT This entry displays text from the LW file LWTXT. The characters are 8 pixels high in graphics color level 1.	
	TGW FPWI 10 200 X 3 4 This entry displays text from the LW file FPWI, starting at line 4. The text wraps around so each line is filled. The characters are 10 pixels high, in graphics color level 3, starting on TV raster 200, TV pictel 15.	

USAORB

Displays polar orbiting satellite tracks over North America.

Format

USAORB *ss yyddd map [keyword]*

Parameters

ss sensor source number (POES satellites); if the sensor source number is negative, antenna circles are drawn

yyddd date of the tracks (default=current)

map 0 doesn't display a map
1 displays a map without state boundaries (default)
2 displays a map with state boundaries

Keyword

GRA= graphics frame number (default=current)

See Also

See *Appendix B* for a list of sensor source numbers.

Examples

USAORB 60 92300 2

This entry displays orbital paths for sensor source 60 on day 92300 and includes state boundaries on the map.

USAORB 61 GRA=10

This entry displays today's orbital paths over North America for sensor source 61 onto graphics frame 10.

ZA

Displays annotations on the current graphics frame at the cursor position.

Format

ZA *color height justify [keyword] "text"*

Parameters

color graphics color level (default=1)

height letter height, in pixels (default=10)

justify **R** right justification
C centered
L left justification (default)
V vertical

"text" text to write on the graphics frame; you can use uppercase and/or lowercase letters; the double quote is mandatory

"\$text" plots weather symbols or arrows on the graphics; enter a dollar sign (\$) plus any of the following alphanumeric characters to plot the corresponding weather symbols

T= thunderstorm		H= haze	
W= rain shower		Z= freezing rain	
X= snow shower		0=	
R= rain		1=	
S= snow		2=	
F= fog		3=	
C= clear		4=	
Q= partly cloudy		5=	
B= mostly cloudy		6=	
O= overcast		7=	
D= drizzle		\$= \$	

Keyword	GRA= graphics frame number (default=current)
Remarks	To write lowercase letters, unlock the capital letters with the alpha lock key located on the left side of the keyboard. Remember to switch back to uppercase again to type in your next commands. McIDAS-MVS does not accept lowercase input for any other command.
See Also	Use command CW to erase graphics inside the cursor.
Examples	ZA 3 15 "MCIDAS IBM This entry writes MCIDAS IBM in graphics color level 3, 15 pixels high on the current graphics frame. ZA 2 20 "streamlines This entry writes streamlines in graphics color level 2, 20 pixels high on the current graphics frame. ZA 4 25 GRA=6 "Upper air data This entry writes upper air data in graphics color level 4, 25 pixels high on graphics frame 6. ZA 3 20 "\$T This entry plots a thunderstorm symbol on the current graphics frame. ZA 3 10 C "TEST This entry writes the word TEST in graphics color level 3, 10 pixels high on the current graphics frame, centering it at the cursor location. ZA "Wisconsin This entry writes the word Wisconsin 10 pixels high on the current graphics frame in graphics color level 1.

Chapter 3. String Tables

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Chapter 3. String Tables

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DUO

Repeats a command.

Format

DUO *string start TO end BY inc start BY inc ... start BY inc*
[*keyword*]

Parameters

string string name or prefix from the string table containing the command(s) to execute; 1 to 12 characters; all strings matching the prefix are executed

start starting parameter value

end ending parameter value

inc values to increment the parameter by the execution of DUO

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 execute (default=200)

Remarks

Before executing DUO, set up your string table using a *number* for each parameter to be incremented during execution; *number* must begin at 1 and increment by 1.

DUO only executes mainframe commands; use command REPEAT to execute workstation commands.

Examples

DUO PSEUDO 1 TO 1

This entry executes each command shown in the string table entries below one time. The commands are executed but no values are incremented.

```
PSEUDO A:=EL 10 20 0 0 35 45 20 50
PSEUDO B:=EL 25 45 50 50
PSEUDO C:=EL 46 63 0 0 0 0 30 63
```

DUO ERASE 1 TO 10 BY 2

This entry executes the string ERASE on every second frame from frames 1 to 10. The entry in the string table is:

```
ERASE:=EG!1
```

DUO TV 101 TO 103 BY 1 1 BY 1 105 BY 1 11 BY 1

This entry executes strings TVLOAD and TVMES three times each; the execution stops when area 103 is displayed. The string table entries are shown below.

```
A:=EC 36 90
B:=-4
TVLOAD:=DF !1 !2 #A #B;DF !3 !4 #A
TVMES:=MAIL 21 "TV LOADS STARTED
```

The following DF commands are executed.

```
DF 101 1 EC 36 90 -4
DF 102 2 EC 36 90 -4
DF 103 3 EC 36 90 -4
DF 105 11 EC 36 90
DF 106 12 EC 36 90
DF 107 13 EC 36 90
MAIL 21 "TV LOADS STARTED
```

PROMPT

Prompts the next linefeed using a string table.

Formats

TE *string* "PROMPT
TE *string* "PROMPT "*command*

Parameters

"PROMPT executes a linefeed

string string name

"*command* part or all of an executable command

Remarks

When PROMPT is part of an executable command, the text screen responds with a linefeed. If a command follows PROMPT, the cursor waits at the end of the line for you to type a carriage return. You can edit this line before typing the carriage return.

3270 terminals must have one keystroke made before typing a carriage return or all blanks are entered in spite of the command line listed.

Example

TE LIST "PROMPT "LA 101

Entering command ##LIST echoes command LA 101 and the cursor pauses after the 101. You can modify the LA command before typing the carriage return.

SENST

Sends a string table from the mainframe to a workstation.

Format

SENST *PC table initials*

Parameters

PC string table destination; you must enter **PC** (no default)

table string table name on the mainframe

initials author's initials (default=current initials)

Remarks

The table name is assigned the initials of the user logged on to the workstation unless otherwise specified.

See Also

Enter command **TU SAVE** in the local mode to save the transferred string table.

Enter command **SENST** in the local mode to send string tables to the mainframe.

Examples

SENST PC MYTABLE

This entry sends the string table named **MYTABLE** from the mainframe to the workstation, assigning the user's initials to the table.

SENST PC TVLOAD DLX

This entry sends the mainframe table **TVLOAD** to the workstation and assigns the initials **DLX** to it.

TC

Stores an arithmetic calculation in a string table.

Format	TC <i>number operator number operator . . . [keyword]</i>	
Parameters	<i>number</i>	a decimal integer, hex value prefixed by Z, or any sequence of 4 characters whose left adjusted EBCDIC value is an integer
	<i>operator</i>	+ arithmetic addition operator - arithmetic subtraction operator * arithmetic multiplication operator / arithmetic division operator \$ arithmetic mod function operator arithmetic exponentiation operator
Keyword	ANS=	stores the result of the calculation in the string table entry (default=X)
Remarks	The new string is listed and stored in your local string table under the name specified with ANS=. Parentheses are permitted to modify the calculation sequence.	
	Numbers, operators and parentheses are individual parameters and must be surrounded with blanks.	
Examples	TC #Y + 1 ANS=TOMORROW	
	This entry, if run on 92218, assigns the string TOMORROW the value 92219, which is used to create O&A data for 1992, day 219.	
	TC 8 * Z4F - 2	
	This entry stores the answer 630 in string X.	
	TC 8 * (Z4F - 2)	
	This entry stores the answer 616 in string X.	

TD

Deletes string(s) 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 that begin with this prefix

PREFIX searches for the string *prefix*

ALL deletes all strings 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

Use command TL or TE to list or edit strings. Use command TU to save 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 with a question mark.

TE

Enters or edits a string in a string table.

Formats

TE *string* "*text*"

TE *string* *val1 val2 ... valn*

Parameters

string an alphanumeric string name, 1 to 12 letters; only the first character may be numeric

"*text*" the value, command or text defining *string*

val1 ... n values to edit in a string's parameter position

- a period will not change a parameter; at least one period must appear in each edit command
- X** deletes the parameter from the string
- valn* inserts additional parameters into the string

Note: To enter keywords (*keyword=value*), each keyword is broken down into two parameters, the *keyword=* and the *value*.

Remarks

To execute a command entered under a string name on a 3270 terminal or from a macro, type: **#string**. If **#string1** is included within another string, such as **#string2**, the value of **#string1** is used when **#string2** is executed. Enter an extra pound sign if the command is entered from a workstation. The command line interpreter drops one pound sign before execution.

You cannot use the letter X as a string name since McIDAS interprets X as a place holder for default values. Likewise, if you have a series of strings beginning with X (e.g., XMAP, XSOUND, XSEL) you cannot delete them with **TD PREFIX X** nor execute them with **DUO X 1 TO 1**.

A string name whose first character is a question mark (?) is called a global string. To delete a global string, use: **TD ALL GLOB**.

See Also

Use command **TL** to list strings and **TD** to delete strings. **TU** is the string table utility.

Examples**TE BLANK**

This entry assigns blanks to the string named BLANK.

TE NOTE "MAP OF NORTH AMERICA IN SATELLITE PROJECTION

This entry stores the text MAP OF NORTH AMERICA IN SATELLITE PROJECTION under the string name NOTE.

TE MAPS "MAP NA

This entry stores the command MAP NA under the string name MAPS. To execute the MAP NA command from your workstation, type: ##MAPS.

TE MAPS . SAT

This entry changes NA in the above example to SAT. The new string looks like this: MAPS:=MAP SAT.

TE MAPS . . 5

This entry adds a third parameter (5) to the string which now looks like this: MAPS:=MAP SAT 5.

TE MAPS . DEF LAT=20 40 LON=90 120

This entry changes SAT to DEF and adds new parameters to the end of the string which now looks like this:
MAPS:=MAP DEF LAT=20 40 LON=90 120.

TE MAPS . MID X X X X X X X

This entry changes DEF to MID and deletes the remaining parameters. The new string looks like this: MAPS:=MAP MID

In the compound string example below, remember to define the string that replaces the *##value* before defining the string that uses it. This example is entered from a workstation, not a 3270 terminal.

TE A "120

The replacement string is ##A.

TE LIST "LA 100 ##A

The actual string stored under LIST is LIST:=LA 100 120.

To vary the value in ##A, insert four # signs in string LIST:

TE LIST "LA 100 ####A

The actual string stored is LIST=LA 100 #A.

If you change string A now, the new value will be used when LIST is executed. For example, if you enter the following change:

TE A "150

The system will use LA 100 150 the next time ##LIST is executed.

Assume the following string commands exist on the system.

TE LIST "LA 100 120;####TVLOAD

TE TVLOAD "DF 101 1 EC MSN

When ##LIST is executed from a workstation, the following commands are executed.

LA 100 120

DF 101 1 EC MSN

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 0-9 and A-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)

TERM= terminal number to list string table from (default=current)

Remarks

Strings are stored alphabetically with numbers 0 to 9 at the end 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 0-9 or A-Z, use TL OUT.

See Also

Use commands TD and TE to delete and enter strings. TU is the string table utility.

Examples

TL
This entry lists the first 20 strings from the current string table.

TL NUM=10
This entry lists the first 10 strings in the string table.

TL ALL
This entry lists all strings; the maximum is 256.

TL TEMP NUM=15
This entry lists up to 15 strings starting with TEMP.

TU

String table utility.

Formats

TU SAVE *name* [*keywords*]
TU DEL *name* [*keywords*]
TU LIST *initials* [*keywords*]
TU REST *name initials* [*keywords*]

Parameters

SAVE	saves the string table
DEL	deletes the string table
LIST	lists string table directories (default=string tables saved under the logged on initials)
REST	restores a string table to your terminal and makes it the current string table
<i>name</i>	1- to 12-character name identifying the string table
<i>initials</i>	1- to 4-character name identifying your string table file; this file name may contain numerous string tables (default=initials used at log on)
ALL	lists all string tables stored on McIDAS

Keywords

ALL=	YES saves or restores all strings including global strings
	NO saves or restores only the alphanumeric strings (default)
SAVEFILE=	LW file name to store the table in or restore it from; should only be used when you plan to write a file to tape; the LW file is deleted during the monthly purge at SSEC; use LWU LIST to list the contents of the file; command SEE , normally used to list LW files, does not work on the string table format

Remarks

If you do not specify initials with the LIST option, only entries saved under the logged on initials are listed. You may restore any string table as long as the correct name and initials are entered. You cannot save over or delete another user's string table.

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.

See Also

Use commands TD, TE, and TL to delete, enter and list strings.

Examples**TU**

This entry lists the string tables saved under your initials.

TU LIST ABC

This entry lists all the string tables stored under the initials ABC.

TU SAVE CLOUDS

This entry saves the current string table under the logged on initials and the name CLOUDS.

TU REST CLOUDS KJB

This entry restores the string table named CLOUDS stored under initials KJB.

TU DEL CLOUDS

This entry deletes the string table CLOUDS. The logged on initials must match the saved initials.

TU SAVE MYTABLE SAVEFILE=TEMPFILE

This entry stores table MYTABLE in the LW file TEMPFILE. This is not a permanently saved file and is deleted monthly. TEMPFILE can be written to tape and restored at a later date. To restore TEMPFILE on your terminal, use: **TU REST name SAVEFILE=LWfile**

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4-7	Copy and display images	AA
4-8	Copy and display images	AA
4-9	Copy and display images	AA
4-10	Copy and display images	AA
4-11	Copy and display images	AA
4-12	Copy and display images	AA
4-13	Copy and display images	AA
4-14	Copy and display images	AA
4-15	Copy and display images	AA
4-16	Copy and display images	AA
4-17	Copy and display images	AA
4-18	Copy and display images	AA
4-19	Copy and display images	AA
4-20	Copy and display images	AA
4-21	Copy and display images	AA
4-22	Copy and display images	AA
4-23	Copy and display images	AA
4-24	Copy and display images	AA
4-25	Copy and display images	AA
4-26	Copy and display images	AA
4-27	Copy and display images	AA
4-28	Copy and display images	AA
4-29	Copy and display images	AA
4-30	Copy and display images	AA
4-31	Copy and display images	AA
4-32	Copy and display images	AA
4-33	Copy and display images	AA
4-34	Copy and display images	AA
4-35	Copy and display images	AA
4-36	Copy and display images	AA
4-37	Copy and display images	AA
4-38	Copy and display images	AA
4-39	Copy and display images	AA
4-40	Copy and display images	AA
4-41	Copy and display images	AA
4-42	Copy and display images	AA
4-43	Copy and display images	AA
4-44	Copy and display images	AA
4-45	Copy and display images	AA
4-46	Copy and display images	AA
4-47	Copy and display images	AA
4-48	Copy and display images	AA
4-49	Copy and display images	AA
4-50	Copy and display images	AA
4-51	Copy and display images	AA
4-52	Copy and display images	AA
4-53	Copy and display images	AA
4-54	Copy and display images	AA

AA

Copies and displays an area.

**The ADDE command IMGCOPY may be used in place of AA.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Formats

AA *sarea darea frame locate station mag line ele [keywords]*

AA *sarea darea frame locate y-coord x-coord mag line ele [keywords]*

Parameters

sarea source area number of the data

darea destination area number; must be different than *sarea*

frame image frame number for display; the data in *darea* is displayed on the frame (default=does not display *darea*)

OPP displays the image on the frame opposite the current image frame

locate coordinate type for loading images (default=AU, meaning the area coordinates are displayed with the upper-left corner line and element); use one of these coordinate systems:

A area
E earth
I image
T TV

followed by one of these locations:

U upper-left corner
C center
D lower-right corner

station station ID, e.g., MSN, DSM, 2C2; it must be preceded by EU, EC or ED

y-coord y-axis coordinate (default=upper-left corner of the area)

x-coord x-axis coordinate (default=upper-left corner of the area)

mag image blowup or blowdown factor; positive numbers blow up; negative numbers blow down; blowups repeat data values; blowdowns sample data (default=1)

line line number dimensioning *darea* (default=500)

ele element number dimensioning *darea* (default=640)

Keywords

ASIZE= ALL copies the entire area including all bands; specify only *sarea* and *darea* with ASIZE=ALL; do not use any other keywords with this option; you can designate a frame number, but it is not necessary

SAME retains the original area size; overrides the default *line* and *ele*

BAND= band number to move; the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for GOES IR, 4 for POES)

ALL moves all bands if subsecting a multibanded area

DOC= YES moves the image documentation section (default)

NO does not move the image documentation section

EMAG= element only blowup or blowdown factor

GRAY= repeat inc start adds a grayscale bar to the bottom of the image

repeat brightness repetition factor (default=10)
inc if greater than 0, it increments black to white, if less than 0, it increments white to black (default=1)

start starting brightness value; the range is 0 to 63 (default=increment dependent)

IR= 1 moves the image documentation section

LMAG= line only blowup or blowdown factor

Remarks

You cannot run this command from a remote mainframe. Also, you cannot specify keyword ASIZE and parameter *locate* in the same command line.

The coordinates for displaying images are listed below.

Location	Y-coordinate	X-coordinate	Format
A	line	element	0 to 5 digits
E	latitude	longitude	DDD:MM:SS, DDD.fraction or station ID
I	line	element	0 to 5 digits
T	raster	pictel	0 to 3 digits

Examples**AA 102 4000**

This entry copies area 102 into area 4000, which is 500 lines by 640 elements, but does not display the image.

AA 101 2000 1 EC 38 90 -4

This entry copies area 101 to area 2000 and displays the image on image frame 1, earth centering it at 38° N and 90° W. It has a blowdown factor of 4. Area 2000 is 500 lines by 640 elements, regardless of the size of area 101.

AA 101 2000 1 ASIZE=ALL

This entry copies area 101 plus all bands into area 2000 and displays the image on image frame 1.

AA 104 2000 10 EC 36 90 2

This entry copies area 104 into area 2000 and displays the image on image frame 10. It is centered on earth coordinates 36° N and 90° W. The brightness values are replicated to make a two times blowup.

AA 101 3000 OPP IU 5000 6000

This entry copies area 101 into area 3000 and displays it on the image frame opposite the displayed frame. The area is moved and displayed by upper-left corner image coordinates 5000 and 6000.

AA 110 5000 OPP EC MSN

This entry copies area 110 into area 5000 and displays the area on the opposite image frame, centering it on Madison, Wisconsin.

AA 105 6512 ASIZE=ALL

This entry copies area 105 plus all bands to area 6512, but does not display the image.

ARCLST

Lists the GOES/GVAR satellite archive inventory.

Format **ARCLST** *ss bday eday opt1 opt2 opt3 opt4 [keywords]*

Parameters

ss sensor source number, or enter one of the following locations:

WEST GOES/GVAR West satellites

EAST GOES/GVAR East satellites

PRIME GOES Prime satellites; used when the satellite is not located at the typical EAST or WEST longitude (75°W or 135°W)

IND GOES satellite over the Indian Ocean, 60°E

VAS GOES satellites sending Mode-AA VAS data (1980-1981)

Prefix the *ss* number with a 2 for satellites sending Mode-AA VAS data (1980-1981). Also use a 2 for VAS satellites when three GOES satellites were simultaneously operational (e.g., 228).

bday beginning day, YYDDD or YY/MM/DD

eday ending day, YYDDD or YY/MM/DD (default=*bday*)

opt1 . . . 4 listing options, use one or more of the following in any order:

ACT image time, type and activity description

COM comments about image quality and exceptions to the intended schedule

SKD operational schedules and associated times

TAP archive tape numbers and time of data on each tape (default=ACT COM SKD)

Keywords

FILE= name of the inventory database file to search (default=file name in the table for the specified sensor source)

FORM= ALL lists an expanded version of the catalog comment names and explanations for schedule exceptions; to see the entire comment explanation, direct output to a printer

GEN= ACT lists tapes for active generation

ALL lists all tape generations

MATCH= lists the activities under the column heading Image Names containing the specified substring

MCHSKD=		lists the schedules matching the specified substring
RANGE=	<i>btime etime</i>	time range to list; lists all times between <i>btime</i> on <i>bday</i> and <i>etime</i> on <i>eday</i> , HH:MM:SS (if only <i>btime</i> is specified, <i>etime</i> defaults to <i>btime</i>)
TIME=	<i>btime etime</i>	time range for each day to list, HH:MM:SS (if only <i>btime</i> is specified, <i>etime</i> defaults to <i>btime</i>)
TYPE=	IMAGER	lists standard VISSR images and MSI imagery
	SOUNDER	lists all Mode-AA, AAA, and GVAR block 11 dwell soundings
	ALL	lists Imager and Sounder (default)

Remarks

ARCLST lists schedules, schedule times, schedule activities, schedule exceptions, comment names and their explanations, tapes and tape times for a specified day of the GARS (METEOSAT-3, GOES/GVAR) online inventory. Presently, this inventory exists only on the SSEC and GARS systems.

When using the default options ACT, COM and SKD, only comments for existing images are listed. To see a complete listing of all comments for all scheduled image times, enter COM for the options parameter.

If the values for keywords TIME and RANGE are both specified, TIME is used and RANGE is ignored. If neither TIME nor RANGE is specified, the listing includes all times for all days requested.

If the FORM=ALL option is listed, the comment explanations for the schedule exceptions may be truncated. To see the complete comment name and explanation, direct the output to a printer.

When listing comments and/or activities, all time periods of data loss are listed. The data loss comments are also listed regardless of the value of keyword MATCH.

The ARCLST output for the GVAR satellites (GOES-8 and GOES-9) reflects the flexible scanning capabilities of these satellites. Since they can scan extremely small earth sectors, the coverage listed by this command is defined by parameters that create geographical boundaries. The R used in the W-ELON parameters indicates the radius from earth center, which can be either + or -. When R is greater than .5, that corner of the geographical coverage is actually in space.

The ARCLST output parameters for the GVAR satellites are shown in the sample output below and defined in the table that follows.

IMAGE TIMES	IMAGE NAMES	IMAGE DESCRIPTIONS
2:02	CONUS	CVRAGE= 375 816 9249 17752 CLAT=31 NLAT=58 W-ELON=-.6R 47 CLON=86 SLAT=13 W-ELON=111 62 BAND=12345
2:09	SHS	CVRAGE= 1258 1570 8173 22020 CLAT=-34 NLAT=-21 W-ELON=123 32 CLON=77 SLAT=-54 W-ELON=-.8R .7R BAND=12345

Parameter	Definition
CVRAGE	image scan coordinates (<i>www xxx yyy zzz</i>); where, <i>www</i> = beginning image scan line number <i>xxx</i> = ending image scan line number <i>yyy</i> = beginning image element number <i>zzz</i> = ending image element number
CLAT	center latitude
NLAT	north latitude
W-ELON	(first entry) longitude of the upper left and right corners
CLON	center longitude
SLAT	south latitude
W-ELON	(second entry) longitude of the lower left and right corners

In the CONUS output, the center latitude of the image is 31° N; the center longitude is 86° W; the northern latitude is 58° N; the southern latitude is 13° N. The upper-left longitude of the image is -.6R (out in space); the upper-right longitude is 47° W; the lower-left longitude is 111° W; the lower-right longitude is 62° W.

In the SHS output, the center latitude of the image is 34° N; the center longitude is 77° W; the northern latitude is 21° S; the southern latitude is 54° S. The upper-left longitude is 123° W; the upper-right longitude is 32° W; the lower-left longitude is -.8R (in space); the lower-right longitude equals .7R (in space).

Examples**ARCLST 32 90010 X RANGE=00:01 06:01 MATCH=MSI**

This entry lists all schedule times, activities and exceptions that contain the substring MSI for sensor source 32, from 00:01 through 06:01 images on day 90010.

ARCLST WEST 90010 X RANGE=1 6 MATCH=MSI

This entry lists the schedule times, activities and exceptions that contain the substring MSI for any GOES West satellite, from 01:00 through 06:00 images on day 90010. The listing will not contain data for the 6 UTC image, which is transmitted at 06:01 UTC.

ARCLST 228 81160 81160 ACT

This entry lists the activities on Julian day 81160 for sensor source 228.

ARCLST VAS 81160 81160 ACT

This entry lists the same information as the previous example, except it uses the more broad descriptor VAS instead of the specific sensor source number. If other operational satellites were classified as VAS satellites for this period, an activity list for those satellites is also generated.

ARCLST 32 90010 90012 TIME=00:01 06:01

This entry lists the schedule times, activities and exceptions that occurred for sensor source 32 from 00:01 through 06:01 for days 90010 through 90012.

ARCLST 32 90010 X COM FORM=ALL

This entry lists only comments and comment explanations for schedule exceptions, for sensor source 32 on day 90010. The output is in an expanded screen format.

ARCLST 32 90010 X COM SKD TAP FORM=ALL

This entry lists the comment names and explanations for schedule exceptions, schedules and their times, and tape IDs and times for sensor source 32 on day 90010. The output is in an expanded screen format.

ARCLST 32 90010 X ACT

This entry lists only schedule activities for sensor source 32 on day 90010.

ARCLST 32 90152 90243 SKD MCHSKD=RISOP

This entry lists the schedule times from June 1 to August 31, 1990, on days that a RISOP schedule was in effect.

ARCLST 54 93010 ACT

This entry lists the activities for METEOSAT-3, sensor source 54, for day 93010.

BU

Blows an image up or down.

Format	BU frame lmag emag area		
Parameters	<i>frame</i>	OPP	displays the blowup on the opposite image frame
		TV	frame number for the image load (default=current)
	<i>lmag</i>		line magnification factor (default=1)
	<i>emag</i>		element magnification factor (default= <i>lmag</i>)
	<i>area</i>		area number containing the data (default=current frame's area number)
Remarks	Magnification factors are relative to the area resolution. If line and element magnifications are less than zero, the image is blown down. The image is center loaded using the coordinates of the cursor center.		
Examples	BU 2 -3 This entry blows down the currently displayed image three times and displays it on image frame 2. BU 1 4 X 10 This entry blows up area 10 four times and displays it on image frame 1. Because X means use the default value, this example can also be entered as: BU 1 4 4 10.		

CA

Modifies the area directory.

Format	CA <i>area parm1...parm11 [keywords] "text"</i>	
Parameters	<i>area</i>	area number of the directory to be changed
	<i>parm1...11</i>	new directory values; insert X to indicate no change
	<i>"text"</i>	text to replace the memo portion of the area directory as seen by typing the command line: LA area FORM=EXP ; quotes are mandatory
Keywords	BAND=	replaces the band sequence; the range is 1 to 32 NA means not applicable
	CAL=	changes the length of the calibration section of the prefix; must be a multiple of 4
	CODE=	changes the validity code
	CTYPE=	changes the calibration type
	DOC=	changes the length of the documentation section of the prefix; must be a multiple of 4
	LEV=	changes the length of the level section of the prefix; must be a multiple of 4
	NAV=	<i>pri sec</i> changes the primary and secondary codicil navigation pointers; for system navigation enter: NAV=0 10
	PFX=	changes the total length of the line prefix; must be the sum of the fields that can be changed with the keywords CAL= , DOC= and LEV= ; add 4 if the validity code is present
	STYPE=	changes the source type
Remarks	Parameters entered with CA replace the area directory and current values listed by typing: LA area .	

Examples

To change the line and element coordinates from 1698 and 2830 to 1700 and 2800, first list area 1100.

Type: **LA 1100**

The following information is displayed on the screen.

AREA	SS	YYDDD	HMMSS	LCOR	ECOR	LR	ER	ZR	LSIZ	ESIZ	Z	BANDS
1100	28	83199	190000	1698	2830	1	1	0	2880	5948	1	NA

To change the line and element coordinates,

Type: **CA 1100 X X X 1700 2800 BAND=1 3 8**

The area directory's LCOR and ECOR are changed to 1700 and 2800. The information below is displayed on the screen.

AREA	SS	YYDDD	HMMSS	LCOR	ECOR	LR	ER	ZR	LSIZ	ESIZ	Z	BANDS
1100	28	83199	190000	1700	2800	1	1	0	2880	5948	1	1.3...8
PROJ: 0 CREATED: 85113 165702 MEMO:												
TYPE: AREA VALCOD: 0 IMAGE ID: 0												
NAVIGATION CODICIL: PRIMARY= 0 SECONDARY=300												
ZCOR: 0 Y-Z PREFIX: 0												

DF

Displays an area on an image frame.

The ADDE command IMGDISP may be used in place of DF.
See the ADDE section of the *McIDAS-X* or *McIDAS-OS2 Users Guide*
for more information.

Formats

DF *area frame locate y-coord x-coord mag repeat [keywords]*

DF *area frame locate station mag repeat [keywords]*

Parameters

area area number of the data to display

frame image frame number to display

OPP displays the image on the frame opposite the current frame

locate coordinate type for loading images (default=AU, meaning the area coordinates are displayed with the upper-left corner line and element); use one of these coordinate systems:

A area
E earth
I image
T TV

followed by one of these locations:

U upper-left corner
C center
D lower-right corner

optionally followed by:

R uses the current load enhancement table set up by command IS, table 0; only works on tower workstations

0 to 8 uses this load enhancement table number set up by command IS; only works on tower workstations

y-coord y-axis coordinate (default=upper-left corner of the area)

x-coord x-axis coordinate (default=upper-left corner of the area)

station station ID, e.g., MSN, DSM, 2C2; must be preceded by EU, EC or ED

mag image blowup or blowdown factor (default=1)

repeat number of consecutive frames to load from consecutive areas; see keyword INC below for an incremental load (default=1)

Keywords

ANN= *bkgrd char* grayscale values for the annotation line's background and characters located at the bottom of the screen (default=32 192 for WIDE WORD and McIDAS-X workstations; 32 160 for tower and SDA workstations; 0 255 for VGAs)

AREA= destination area number; the area is sent via command SENAA to WIDE WORD and SDA workstations connected asynchronously (default=*frame number*)

BAND= area band number; the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for GOES IR, 4 for POES)

CAL= **QTIR** calibration module name; use QTIR for a fast POES load (default=from the area directory); the first calibration is used for the entire image; the area is unaffected

EMAG= element only blowup or blowdown factor (default=1)

EU= *name* name of the enhancement table on the workstation to apply to the image

GRAY= **NO** does not display a grayscale bar (default)
YES adds a grayscale bar to the bottom of the image using the defaults below

repeat inc start line

repeat brightness repetition factor (default=10)

inc if greater than 0, increments black to white; if less than 0, increments white to black (default=1)

start starting brightness value (default=0)

line starting TV line (default=-23, the bottom of the image)

INC= *ainc finc* area and frame increments for repeat parameters (default=1 1)

LMAG= line only blowup or blowdown factor (default=1)

Remarks

The coordinates for displaying images are listed below.

Location	Y-coordinate	X-coordinate	Format
A	line	element	0 to 5 digits
E	latitude	longitude	DDD:MM:SS, DDD.fraction or station ID
I	line	element	0 to 5 digits
T	raster	pictel	0 to 3 digits

DF displays images from areas up to 12,000 lines and elements in size.

If your workstation is on ProNET and has an VGA display, DF deletes the mainframe graphics directory corresponding to the destination frame number for the display so that coordinate transformations work correctly.

If you have a VGA workstation and want to adjust the gray scale, use command SENAA to transfer the data. Then display the image with DF's LEVELS= keyword on the workstation.

When using keyword EU, the name specified must be an enhancement saved on the workstation. Use the workstation command EU LIST to list the saved enhancements on your workstation.

SSEC does not recommend running the McIDAS-MVS version of DF on asynchronously-connected WIDE WORD or SDA workstations. The preferred method is to send the area to the workstation with command SENAA and load the image with DF on McIDAS-OS2. If you DF an area to an asynchronously-connected WIDE WORD or SDA workstation, the area is sent via SENAA and loaded with the McIDAS-OS2 DF. The data is sent to the area number equal to the frame number. If you designate a repeat factor, consecutive workstation area numbers are used. For a single DF, the area number can be overridden using the AREA keyword. The same area number is reused when using a repeat factor combined with the AREA keyword. Due to the limitations of SENAA, positive magnification values are not available.

Examples**DF 1 10 EC 36.5 90.5 -4 2 INC=3 -2**

This entry loads areas 1 and 4 onto image frames 10 and 8, respectively. The images are centered at $36\frac{1}{2}^{\circ}$ North and $90\frac{1}{2}^{\circ}$ West with a 4-times slowdown.

DF 4 2 ED MSN

This entry loads area 4 on image frame 2 with Madison, Wisconsin, positioned in the lower-right corner.

DF 101 OPP

This entry loads area 101 on the image frame opposite the displayed frame. It loads from the upper-left corner of area 101.

DF 7500 3 EC 75 -150 EU=POLAR.ET

This entry loads area 7500 on image frame 3. The image is centered at 75° N and 150° E. The saved enhancement POLAR.ET is applied when the image is loaded.

DFASAP

Displays an actively ingested area on multiple WWWs.

Formats

DFASAP *area frame locate y-coord x-coord mag repeat [keywords]*

DFASAP *area frame locate station mag repeat [keywords]*

Parameters

area area number of the data for display

frame image frame number for display

locate coordinate type for loading images (default=AU, meaning the area coordinates are displayed with the upper-left corner line and element); use one of these coordinate systems:

A area

E earth

I image

T TV

followed by one of these locations:

U upper-left corner

C center

D lower-right corner

optionally followed by:

R uses the current load enhancement table set up by command IS, table 0

0 to 8 uses this load enhancement table number set up by command IS

y-coord y-axis coordinate (default=0)

x-coord x-axis coordinate (default=0)

station 3-letter station ID, e.g., MSN, DSM; must be preceded by EU, EC or ED

mag image blowup or blowdown factor (default=1)

repeat number of consecutive frames loaded from consecutive areas; only the area being ingested at the moment DFASAP is run is displayed line-by-line; all other areas are displayed as old data (default=1)

Keywords	ALSO= <i>t1 t2 t3 ...</i>	terminal numbers of other WWWs on which the image will be displayed on the same image frame number (default=your WWW)
	ANN= <i>bkgrd char</i>	grayscale values for the annotation line's background and characters located at the bottom of the screen (default=32 192)
	BAND=	specifies bands for soundings (default=8 for VAS, 4 for AVHRR)
	CAL=	calibration module name; use QTIR for a quick POES load (default=from the area directory)
	EMAG=	element only blowup or blowdown factor (default=1)
	LMAG=	line only blowup or blowdown factor (default=1)

Remarks

Use DFASAP on WIDE WORD workstations only. Currently, it only works correctly for GOES and GVAR data.

You can run DFASAP while data is being received. The DF command only displays data that currently resides in an area, whereas DFASAP displays data as each line is ingested.

DFASAP is recommended for large frames (greater than 1024 x 1024), even for non real-time data. Non real-time data with smaller frame sizes will be more efficient with DF.

Use keyword ALSO to display the same image on several WWWs.

Examples**DFASAP 200 5**

This entry loads area 200 on image frame 5 using the upper-left corner area coordinates.

DFASAP 102 1 EC MSN -2 3

This entry loads areas 102, 103 and 104 on image frames 1, 2 and 3 respectively, centered on MSN with a two times blowdown for each image. If area 102 is still collecting data, a worker is held until the satellite has scanned enough data to complete the area. Areas 103 and 104 will not be updated before they're displayed.

DFASAP 202 12 ID 1000 1200 ALSO=67

This entry loads area 202 on image frame 12 with image line 1000 and image element 1200 located in the lower-right corner. The same image is also displayed on image frame 12 of terminal 67.

DFC

Displays a radar area on a graphics frame.

Formats

DFC *area frame locate y-coord x-coord mag repeat [keywords]*

DFC *area frame locate station mag repeat [keywords]*

Parameters

area radar area number to display

frame graphics frame number to display

locate coordinate type used to load images, e.g., IC, EC, UC, etc. (default=AU, meaning the area coordinates are displayed with the upper-left corner line and element); use one of these coordinate systems:

A area
I image
E earth
T TV (cursor)

followed by one of these locations:

U upper-left corner
C center
D lower-right corner

optionally followed by:

R uses the current load enhancement table set up by command IS, table 0

0 to 8 loads this enhancement table number set up by command IS

y-coord y-axis coordinate (default=0)

x-coord x-axis coordinate (default=0)

station three-letter station ID; must be preceded by EU, EC or ED

mag image blowup or blowdown factor (default=1)

repeat number of consecutive frames loaded from consecutive areas (default=1)

Keywords

BAND= band specifier for soundings (default=8 for VAS, 2 for AVHRR)

CAL= most significant bit number for left or right shift
0 calibrates sounding data (default)

EMAG= element only blowup or blowdown factor

LMAG= line only blowup or blowdown factor

NAV= YES attaches the graphics frame navigation to the frame directory
NO leaves the image frame as the source for navigation (default)

Remarks Command DFC displays only radar images on graphics frames. It does not display satellite images.

To overlay a satellite image with a manually digitized radar (MDR) image, use command MDRIMG to create the radar image, then use command REMAP to convert the radar image from polar stereographic to satellite projection. Finally, use command DFC to display the radar area on a graphics frame that overlays the corresponding satellite image.

Selecting NAV=YES attaches the graphics frame navigation (which comes from the radar area) to the current frame directory. Therefore, running any navigation dependent command (e.g., MAP, E, PC) will result in that command using the navigation from the graphics frame instead of the image frame. This state will exist until another image is displayed on the image frame, resulting in its navigation being written to the frame directory, as usual.

Examples

DFC 1200 5

This entry displays radar image 1200 on graphics frame 5, with the upper-left corner of the area in the upper-left corner of the graphics frame.

DFC 1001 2 EC 36 90

This entry displays radar image 1001 on graphics frame 2 centered at 36° N and 90° W.

DFLOOP

Automates displaying images in real time on tower workstations.

Formats

DFLOOP *loop barea earea bframe eframe lat lon interval band res*
irtype [keyword]
DFLOOP *loop* **ON**
DFLOOP *loop* **OFF**
DFLOOP *loop* **MOD** *lat lon*
DFLOOP *loop* **NEXT** *bframe*

Parameters

loop loop number; the range is 1 to 32 (no default)

ON enables a loop

OFF disables a loop

MOD changes the center point of a loop

NEXT displays the next frame in the loop (no default)

barea beginning area to display (no default)

earea ending area to display (no default)

bframe beginning frame to display (no default)

eframe ending frame to display (no default)

lat image center point latitude, adjusted by MOD
(no default)

lon image center point longitude, adjusted by MOD
(no default)

interval time interval in minutes; not a time notation (default=30)

band band number (default=0 for visible)

res image resolution; a positive number means blow up; a
negative number means blow down (default=1, blow up)

irtype IR table number from the IS command for data
modification; the range is 1 to 8 (default=0, none)

Keyword	TERM= terminal number (default=current)
Remarks	DFLOOP works only on tower workstations. WWWs should use DFASAP. Use command DFLOOP to set real-time image display parameters (request DF commands) for your workstation. The image displays are performed automatically by command MULMUL, which initiates the multiple TV loads and is run by the event scheduler. DFMUL is started by MULMUL to do individual TV loads. Neither MULMUL nor DFMUL should be entered by a user. See command GOLOOP for easy loop activation after TV loads occur. The DFLOOP method of automatic image loading is more efficient than the older SEQ or LOOP/LOAD methods. However, this is true only if the resolution of the ingested data matches the resolution of the image load request. If you request a different resolution for the image load, DFLOOP provides only a slight performance advantage.
Examples	DFLOOP This entry lists the previously entered loops. DFLOOP 1 OFF This entry disables loop number 1. DFLOOP 1 ON This entry enables loop number 1. DFLOOP 12 6000 6008 1 10 X X X 3 X 2 This entry sets real-time loop control parameters for loop 12, areas 6000 to 6008. It also loads frames 1 to 10, band number 3, IR table 2. DFLOOP 2 0 0 0 0 0 This entry deletes loop 2 from the list.

GA

Generates an area.

Format	GA area line ele zsize	
Parameters	<i>area</i>	area number to generate
	<i>line</i>	number of lines in the area (default=500)
	<i>ele</i>	number of elements in the area (default=640)
	<i>zsize</i>	number of bytes per data element (default=1)
Remarks	The default area size is 500 by 640 by 1, which is the size of one TV image.	
See Also	Use command AA to copy data into the new area.	
Examples	GA 2500 This entry generates area 2500 to be 500 lines by 640 elements.	
	GA 1007 1000 1500 This entry generates area 1007 to be 1000 lines by 1500 elements.	
	GA 3000 800 1000 This entry generates area 3000 to be 800 lines by 1000 elements.	

GOLOOP

Sets the image and graphics frame parameters for DFLOOP on tower workstations.

Format

GOLOOP *loop dwell cdwell*

Parameters

loop loop number from command DFLOOP; the range is
 1 to 32 (default=1)

dwell dwell rate for all but the most current frame
 (default=5/15 seconds)

cdwell dwell rate for the current frame in seconds
 (default=15/15 seconds)

Remarks

Command GOLOOP sets image and graphics frame bounds from the loop parameter set by command DFLOOP for McIDAS-OS2 and tower workstations. This activates a loop. In this way GOLOOP can run from a single keystroke string, allowing easy loop activation. Command DFLOOP sets real-time TV load parameters.

Examples**GOLOOP**

This entry sets image and graphics frame bounds for the loop number in command DFLOOP. The loop number is 1; dwell rates are 15 for the current frame, 5 for all others.

GOLOOP 10 X 10

This entry sets image and graphics frame bounds from DFLOOP parameter *loop* for loop 10; the dwell rate is 10/15 seconds for the current frame.

IS

Generates GOES IR stretch tables.

Formats

IS CLE *table*
 IS LIST *table* [*keyword*]
 IS DEF *table input1 output1 ... inputn outputn* [*keyword*]
 IS GRA *table min max* [*keyword*]

Parameters

CLE clears the table of existing values

LIST lists the input and output values of the table

DEF defines the table

GRA graphs the interpolated data

table table number; the range is 0 to 8

input1 .. n input number; pixel range is 0 to 255; Kelvin range is 163 to 330; Celsius range is -110 to 57

output1 .. n output number for the gray scale; the range is 0 to 63

min minimum plotted value on the x-axis

max maximum plotted value on the x-axis

Keyword

UNIT= K Kelvin
 P pixel brightness
 C Celsius (default)

Remarks

Command IS only works on GOES IR imagery and on tower and WIDE WORD workstations.

You can specify multiple pairs of input and output per command. Use the DF command to display a stretched image. Before generating a new stretch table (3), clear the table with: IS CLE 3.

The output range 0 to 63 is scaled from 0 to 255 during image enhancement on a WIDE WORD workstation.

Examples**1. IS DEF 3 240 30 UNIT=K**

This entry creates table 3. Temperatures of 240°K are now represented as brightness count 30, thereby stretching temperatures less than 240° over counts 30 to 63 which are scaled from 121 to 255 during image display.

IS LIST 3 UNIT=K

This entry lists table 3 in Kelvin.

DF 109 5 EC3 36 90

This entry applies table 3 to GOES IR area 109.

2. This example generates a new table 5.**IS CLE 5**

This entry clears table 5.

IS DEF 5 -32 40 -34 42 -36 44 -38 46

This entry generates table 5 using multiple cutoffs. Values are linearly stretched between values; -32°C becomes brightness 40, -34°C becomes 42, etc.

DF 1001 5 AU5

This entry applies table 5 to area 1001.

LA

Lists an area directory.

**The ADDE command IMGLIST may be used in place of LA.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Format	LA <i>barea earea</i> [<i>keywords</i>]		
Parameters	<i>barea</i>	beginning area directory to list	
	<i>earea</i>	ending area directory to list (default= <i>barea</i>)	
Keywords	DAY=	lists areas for the specified day and year only, YYDDD or YY/MM/DD; if DDD=0, all days for YY are listed	
	FORM=	ALL	lists the entire area directory
		AUDIT	lists the entire directory with its audit trail
		EXP	lists an expanded version of the area directory
		SS=	<i>ss1 ss2</i>
	TIME=	lists the areas with this time only, HH:MM:SS	
Remarks	If you use FORM=ALL with POES, be sure to check the MEMO line in the directory information. The signal will be HRPT (LAC or GAC). The product will be MULT (multiple) or SIG (single) band. The ground station will be Wallops Island (W) or Gilmore Creek/ Fairbanks (G). The A or D in the line represents Ascending or Descending pass. If D appears on the line, the image is upside down.		
	Type SHOWME DNBANDS for detailed information on the BANDS column.		
Examples	LA 101 120 TIME=21:01		
	This entry lists the areas between 101 and 120 with time 2101 UTC.		
	LA 101		
	This entry lists the single line directory for area 101 only.		
	LA 1000 1040 SS=32 55		
	This entry lists the areas between 1000 and 1040 for sensor sources 32 and 55.		

LOAD

Displays real-time satellite images using loop numbers.

Formats

```
LOAD SCH DR=
LOAD ESCH SAT= DR=
LOAD loop OPT=ALL DR=
```

Parameters

SCH checks and displays satellite images for all loops associated with the current terminal number; SCH is usually run from the command scheduler; see the SKE command

ESCH checks and displays satellite images for all loops associated with the current terminal number; ESCH is usually run from the event scheduler; see the ESKE command

loop number of the loop to display; the range is 1 to 9

Keywords

DR=	YES	changes the dwell rate to 5 (default)
	NO	leaves the dwell rate at its current setting
OPT=	ALL	displays all images of a loop; if not specified, only one image is displayed
SAT=	EAST	loads GOES EAST satellite images (default)
	WEST	loads GOES WEST satellite images

Remarks

The loop numbers are from the LOOP command. This command is mainly used from the scheduler.

The dwell rate is in units of $1/15$ second.

See Also

See the LOOP, SETLUP and SKE commands for more information.

Examples

LOAD 4 OPT=ALL

If you type this entry interactively, the frames defined in loop 4 are displayed immediately. See Example 4 in the LOOP command for the definition of loop 4.

SKE 92200 18:00:00 999999 :05 "LOAD SCH

This entry defines a scheduler entry that is turned on at 18:00:00 UTC, day 200, 1992. All loops are checked every five minutes and applicable images are displayed.

ESKE "F22=2&(F27>550VF23=5VF23=8)&F5002=0

"LOAD ESCH SAT=EAST

ESKE "F22=2&(F27>550VF23=5VF23=8)&F5002=0

"SETF F5002 1

ESKE "F22=2&F23=1 "SETF F5002 0

This entry runs LOAD from the event scheduler when a new satellite image is ingested from image spool 2. For a description of the event flags, see DNEFLAGS. The character V represents the logical operator OR (V).

LOOP

Defines real-time satellite image loop control parameters.

Format **LOOP** *loop option [keywords]*

Parameters

loop loop number; the range is 1 to 9

option **ON** turns the loop on
 OFF turns the loop off
 DEL deletes the loop

Keywords

AREA= *beg end* beginning and ending real-time area numbers to search

BAND= band number

DR= **YES** changes the dwell rate to 5 (default)
 NO leaves the dwell rate at its current setting

FRA= *beg end* beginning and ending image frame numbers defining the loop

INC= time increment between scheduled TV loads, in minutes (default=30)

IS= IR stretching table number set by the IS command; the range is 1 to 8; works only on tower workstations

LAT= latitude of the image center

LON= longitude of the image center

OPP= defines the loop opposite the currently defined loop

RES= image resolution, in km (default=4)

SAT= **EAST** data is from GOES East (default)
 WEST data is from GOES West

SEQ= *loop1 . . n* ordered sequence of loop numbers loaded by the scheduler (default=1 2 3 4 5 6 7 8 9)

TYP= **IR** infrared
 VIS visible
 WV water vapor, band 10

Remarks

The parameters defined here are used by the LOAD command for the scheduled displaying of satellite loops.

If keywords SAT, FRA, LAT, LON, RES and INC are changed or the loop is turned OFF or DELETED, the opposite loop is removed.

The dwell rate is in units of $\frac{1}{15}$ second.

See Also

See the LOAD and SETLUP commands for more information.

Examples**LOOP**

This entry lists all previously defined loops.

**LOOP 1 TYP=VIS SAT=EAST FRA=1 4 LAT=40 LON=90
RES=1 INC=15 AREA=101 104**

This entry defines loop 1 using GOES East visible 1 km satellite data from areas 101 to 104. It loads the loop on frames 1 to 4, centered on 40° N, 90° W. The time interval between loop loads is 15 minutes.

LOOP 3 OPP=1

This entry defines loop 3, which is the opposite of loop 1. All parameters are the same as loop 1 except the opposite type (IR) is used. FRA is opposite; AREA is the opposite data areas, (105-108); the IS table is 0.

**LOOP 4 TYP=VIS SAT=EAST FRA=5 6 LAT=30 LON=77
RES=4 AREA=113 114 IS=1**

This entry defines loop 4 using GOES East visible 4 km resolution satellite data from areas 113 and 114. It loads frames 5 and 6, centered on 30° N, 77° W, using IS table 1.

LOOP 6 OPP=4 SEQ=4 6 3 1

This entry defines loop 6, which is the opposite of loop 4, and sets the loading sequence so loop 4 is loaded first, then loop 6, etc.

LOOP 1 OFF

This entry turns off loop 1. When the scheduler scans the loop, it will not be loaded. Also, loop 6 is no longer the opposite of loop 1.

MOVIT

Copies areas and updates an image frame loop.

**The ADDE command IMGCOPY may be used in place of MOVIT.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Formats

MOVIT *bsarea esarea bdarea edarea bframe eframe locate y-coord
x-coord mag line ele [keywords]*

MOVIT *bsarea esarea bdarea edarea bframe eframe locate station
mag line ele [keywords]*

Parameters

bsarea beginning source area number

esarea ending source area number

bdarea beginning destination area number; must be different
than *bsarea*

edarea ending destination area number

bframe beginning image frame number (default=does not update
the image frame)

eframe ending image frame number (default=*bframe*)

locate coordinate type for loading images (default=AU, meaning
the area coordinates are displayed with the upper-left corner
line and element); use one of these coordinate systems:

A area

E earth

I image

T TV

followed by one of these locations:

U upper-left corner

C center

D lower-right corner

y-coord y-axis coordinate (default=upper-left corner)

x-coord x-axis coordinate (default=upper-left corner)

station 3- or 4-character station ID, e.g., MSN, DSM; must be
preceded by EU, EC or ED

mag image resolution blowup (positive numbers) or blowdown (negative numbers); blowups repeat data values while blowdowns sample data (default=1)

line line number dimension defining *bdarea* and *edarea* (default=500)

ele element number dimension defining *bdarea* and *edarea* (default=640)

Keywords

ASIZE= ALL moves an entire area including all bands

BAND= band number to move, the range is 1 to 32; command LA will list bands higher than 9 as A, B, C etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for GOES IR, 1 for POES)

ALL moves all bands if subsecting a multibanded area

IR= 1 moves image documentation (default=strips off line documentation section)

MOVE= ALL moves all areas

TEST lists the first AA command generated to update the sequence, but does not run it

STYPE= VISR converts a 2-byte area to a 1-byte area

Remarks

MOVIT locates the most recent area in the range *bsarea* to *esarea* and copies it using the AA command into the area following the most recent area in the range *bdarea* to *edarea*. There is a limit of 200 areas in the *bdarea* to *edarea* range. To copy all areas in *bsarea* to *esarea* in time order (oldest to most recent), use keyword MOVE=ALL.

The coordinates for displaying images are listed below.

Location	Y-coordinate	X-coordinate	Format
A	line	element	0 to 3 digits
E	latitude	longitude	DDD:MM:SS, DDD.fraction or station ID
I	line	element	0 to 5 digits
T	raster	pictel	0 to 3 digits

Examples**MOVIT 1000 1010 3300 3310**

This entry searches areas 1000 to 1010 for the most recent time and copies the most recent image into the area following the latest time in 3300 to 3310. It does not display the image.

MOVIT 1000 1010 3300 3310 MOVE=TEST

This entry displays the first AA command for copying the area with the most recent time between the range of 3300 to 3310.

MOVIT 1000 1010 3300 3310 10 20

This entry locates the most recent time in areas 1000 to 1010 and copies it into the area following the latest time in 3300 to 3310. It also displays the image after the latest image frame from 10 to 20.

The coordinates for displaying images are listed below.

Location	Y-coordinate	X-coordinate	Format
A	line	element	0 to 3 digits
B	latitude	longitude	DDD-MM-SS DDD-fraction or station ID
I	line	element	0 to 3 digits
T	vector	vector	0 to 3 digits

PAA

Displays and scales an area to its display head size.

Format

PAA *area device options bias* **MAP** [*keywords*]

Parameters

area area number to read the data from; the entire area is read and scaled to the size of the display (no default)

device

CW	text screen display, alphanumeric, 24 x 80 (default)
3	3278, alphanumeric, 20 x 80
PW	100 x 160 workstation display
ZW	350 x 640 workstation display
YW	200 x 320 workstation display
AW	Apple II computer

options

A	alphanumeric characters, 26 levels, use with any device (default)
G	16 gray levels, use with device P, Z, Y
H	half tone, use with device P, Z, Y, A
S	squeezed half tones, use with device P, Z, Y, A
Q	quarter tone, use with device P, Z, Y
E	extended alpha, 32 levels, use with any device

bias value to subtract from each value prior to scaling and transmission (default=0)

MAP includes a base map in the data (default=none)

Keywords

AREA= output destination area number; this is only valid on workstations running McIDAS-OS2 (default=does not store the data upon receipt)

BAND= wavelength band chosen from a multibanded area (default=8 for multibanded data)

ELE= number of elements of output on each line (default=defined by output device)

LIN= number of lines of output (default=defined by output device)

NAM= name of the map base file; valid only when MAP is specified; use OUTLUSA, OUTLUSAL, OUTLWRLD, OUTLEURO, OUTLPOLI or OUTLAUST (default=OUTLUSA or OUTLUSAL depending on the geographic coverage of the area number)

NAV= **ON** for polynomial coefficients
 COD sends a navigation codicil with the data
 (default=does not send navigation)

STR= *min max* stretches the original values between *min* and
 max into the range 0 to 255 before any additional
 scaling is performed (default=0 255)

TIME= if the value specified is greater than the time of the AREA
 specified, nothing is sent; used for scheduling commands
 (default=the time in AREA)

Remarks

PAA stretches the data to fit the output device. Source area line/element extents should match the output device (e.g., 350 by 640 for VGA). Otherwise, navigation will not match the image.

If the *options* are not specified, the default is a form of character shading suitable for a quick look. For G/H/S output formats, the following information is provided on the header line:

TYPE NAVSTAT SSYYDDD HHMMSS IMGLINE IMGELE LINES ELES LINRES ELERES LINESOUT ELESOUT
--

For all device types, using the letter W (e.g., ZW) fills the output packets and speeds up data transmission; otherwise, only one line is placed in a packet. For example, PAA 123 Z G.

Examples**PAA 1001**

This entry scales area 1001 onto a 24x80 text screen. It produces 26 brightness levels shown with letters on the display.

PAA 112 CW E 0 MAP

This entry scales area 112 onto a 24x80 text screen display, and produces 32 levels of brightness, shown with letters on the display. A base map of geography is imbedded in this display using the quote sign (").

PAA 4321 ZW G 0 MAP NAME=OUTLUSA

This entry scales area 4321 onto a 350x640 VGA display, and converts the values into 16 gray levels. A map is imbedded in the data using the latitude/longitude coordinates in the OUTLUSA file. Several lines are packed into transmission packets.

PAA 4332 Z Q 0 MAP STR=50 200 TIME=20:08

This entry does nothing if the time of the data in area 4332 is past 20:08. Otherwise, data is extracted from this area and values are stretched by mapping values from 50 to 200 into the range 0-255. This data is averaged to a 350x640 domain, and then converted into quarter-tones, suitable for an EGA display. Each line of data is contained in a separate communications packet for transmission (since the W option is omitted).

POESAA

Sends fully calibrated POES areas to a workstation.

Formats **POESAA** *sarea darea locate y-coord x-coord mag line ele [keyword]*
POESAA *sarea darea locate station mag line ele [keyword]*

Parameters

<i>sarea</i>	source area number of the data (no default)
<i>darea</i>	destination area number for the data (no default)
<i>locate</i>	coordinate type used to transfer the area; use one of these coordinate systems: E earth I image followed by one of these locations: U upper-left corner C center D lower-right corner
<i>y-coord</i>	y-axis coordinate (default=first line)
<i>x-coord</i>	x-axis coordinate (default=first element)
<i>station</i>	station ID, e.g., MSN, DSM, 2C2; it must be preceded by EU, EC or ED
<i>mag</i>	this option has not been implemented; data must be full resolution (default=1)
<i>line</i>	number of lines in <i>darea</i> (default is workstation dependent)
<i>ele</i>	number of elements in <i>darea</i> (default is workstation dependent)
Keyword	BAND= band number to move (default=4) ALL moves all bands

Remarks POESAA sends sectorized POES data to a McIDAS workstation. The data is fully calibrated before it is sent to the workstation.

You must specify 1 as the magnification factor for the image. Only full resolution POES data can be calibrated.

Examples**POESAA 710 1000 EC OMA 1 200 200 BAND=4**

This entry sends band 4 of area 710 to workstation area 1000. The data is fully calibrated and centered on Omaha, Nebraska. The size of the destination area on the workstation is 200 lines by 200 elements.

POESAA 829 1001 IU 91 1 BAND=ALL

This entry sends all bands of area 829 to workstation area 1001. The data is fully calibrated. The size of the destination area depends on the workstation.

QA

Deletes areas.

**The ADDE command IMGDEL may be used in place of QA.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Format

QA *barea earea*

Parameters

barea beginning area number to delete

earea ending area number to delete (default=*barea*)

Examples

QA 1101 1120

This entry deletes areas 1101 to 1120.

QA 1101

This entry deletes area 1101 only.

ROTIRO

Rotates a POES image 180°.

Format **ROTIRO** *sarea darea*

Parameters *sarea* source area number

darea destination area number

Remarks ROTIRO flips an entire POES real-time image 180° so that an image scanned south to north can be viewed with north up.

Use this command only on an original AVHRR image area. If the image size is moved with AA, it will work only if the image is the same size as the original.

Example **ROTIRO 5205 6000**

This entry rotates POES area 5205 by 180° and writes the new area into 6000.

SECTOR

Uses the cursor to outline image sector extents.

Format	SECTOR <i>mag line ele</i>
Parameters	<i>mag</i> magnification factor applied to the area, not the displayed image; no positive numbers more than half the resolution of the displayed image (default=1) <i>line</i> number of lines in the image sector (default=480) <i>ele</i> number of elements in the image sector (default=640)
Remarks	Use command SECTOR to specify the magnification and size of an area subset. The currently displayed image is used when indicating the coverage of the subset. The cursor size is changed in proportion to the parameters entered, illustrating the exact coverage. When you use command SECTOR on a WIDE WORD workstation, the maximum size of the cursor is 256 x 256.
See Also	Use command DF to display the area on an image frame at the magnification established with command SECTOR.
Examples	SECTOR This entry encloses the image sector on the displayed image with no change in resolution. The sector is based on the digital area's resolution, not the displayed area's resolution. SECTOR -4 This entry changes the cursor size to represent a 4x blowdown of the area, not the displayed image.

SENAA

Sends areas from the mainframe to a workstation.

**The ADDE command IMGCOPY may be used in place of SENAA.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Formats

SENAA *sarea darea locate y-coord x-coord mag line ele [keywords]*

SENAA *sarea darea locate station mag line ele [keywords]*

Parameters

sarea source area number of the data (no default)

darea destination area number for the data (no default)

locate coordinate type for loading images; use one of these coordinate systems (no default):

E earth

I image

followed by one of these locations:

U upper-left corner

C center

D lower-right corner

y-coord y-axis coordinate (default=first line)

x-coord x-axis coordinate (default=first element)

station station ID, e.g., MSN, DSM, 2C2, preceded by EU, EC or ED

mag blowup or blowdown factor of the image (default=1)

line number of lines in *darea* (default is workstation dependent)

ele number of elements in *darea* (default is workstation dependent)

Keywords

ASIZE= ALL moves the entire area including all bands and the documentation section; specify only *sarea* and *darea* when using ASIZE=ALL; do not use any other keywords with this option

BAND= band number, the range is 1 to 32; command LA lists bands higher than 9 as A, B, C, etc.; they must be entered as integer, i.e., A=10, B=11, etc. (default=8 for GOES IR, 4 for POES)
ALL moves all bands if subsecting a multibanded area; do not use STYPE=VISR with this option

EMAG= element only blowup or blowdown factor (default=1)

LMAG= line only blowup or blowdown factor (default=1)

MODE= **PACK** sends data in compressed form
UNPACK sends data in uncompressed form
 (default=PACK for asynchronous connections unless sending 2-byte data; otherwise, default=UNPACK)

PAKSIZ= number of bits per pixel to send when packing data, 6 or 8; see the Remarks (default=8)

STYPE= **VISR** reduces two-byte data to one-byte data; see the Remarks

Remarks

The Z column in the mainframe area directory is the number of bytes per pixel in the area. Visible data is usually 1-byte; most IR data is 2-byte. The 2-byte data is usually a raw value which can be operated on with calibration coefficients to convert the data to radiance, temperature or brightness. **STYPE=VISR** converts the original data to brightness data. Do not use **STYPE=VISR** with **ASIZE=ALL** or **BAND=ALL**.

SENAA can extract single bands from multibanded data and retain full calibration when the area is sent to the workstation. The workstation must be running version 5.0 or later. Mainframe to mainframe transfers require sending all bands (**BAND=ALL**) to retain the calibration. Multibyte data must be sent in uncompressed form.

When sending single-byte data, you can reduce the transmission time by specifying **PAKSIZ=6**. SENAA ignores the two bits that are not useful for image display. IR data requires all eight bits of data.

To retain the line header information stored in the documentation section of an area, you must copy the entire area with **ASIZE=ALL**.

Examples**SENAA 101 1 EC MSN**

This entry transfers area 101 from the mainframe to workstation area 1. The image, with earth coordinates, is centered on Madison, Wisconsin.

SENAA 109 2 EC 43 89 X 350 640 STYPE=VISR

This entry transfers IR area 109 from the mainframe to workstation area 2. The image, with earth coordinates, is centered over Madison, Wisconsin, and is 350 lines by 640 elements. **STYPE=VISR** reduces the 2-byte data to 1-byte data. This speeds up the transfer, but the resulting area will not contain radiance information from the mainframe area.

SEP

Sends the most recent image from the mainframe to a workstation or remote host via command SENAA.

**The ADDE command IMGCOPY may be used in place of SEP.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Formats

SEP *barea earea darea locate y-coord x-coord mag line ele [keywords]*

SEP *barea earea darea locate station mag line ele [keywords]*

Parameters

<i>barea</i>	beginning area number to search (no default)
<i>earea</i>	ending area number to search (default= <i>barea</i>)
<i>darea</i>	destination area number
<i>locate</i>	coordinate type for loading images; use one of these coordinate systems (no default): A area E earth I image T TV followed by one of these locations: U upper-left corner C center D lower-right corner optionally followed by: S smooths data; this works on visible and IR data during a blowup of the image
<i>y-coord</i>	y-axis coordinate (default=first element)
<i>x-coord</i>	x-axis coordinate (default=first line)
<i>station</i>	3-letter station ID, e.g., MSN, DSM; must be preceded by EU, EC or ED
<i>mag</i>	blowup or blowdown factor of the image (default=1)
<i>line</i>	number of lines in <i>darea</i> (default is workstation dependent)

	<i>ele</i>	number of elements in <i>darea</i> (default is workstation dependent)
Keywords	ASIZE=	ALL moves the entire area including all bands; specify only <i>barea</i> and <i>earea</i> when using ASIZE=ALL; do not use any other keywords with this option
	BAND=	band number to move, the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for GOES IR, 1 for POES)
	ALL=	moves all bands if subsectioning a multibanded area; do not use with keyword STYPE=VISR
	CAL=	calibration coefficient (default=1)
	CYCLE=	<i>num inc</i> places the selected area into a circular queue of destination areas beginning with <i>darea</i> , consisting of the <i>num</i> number of areas (default <i>num</i> =0 meaning no queue; default <i>inc</i> =1:00 meaning a 1-hour increment when <i>num</i> is not equal to zero)
	DAY=	selects areas on this day only, YYDDD
	MODE=	NONE moves a copy of the data to <i>darea</i> but doesn't send it PACK packed data UNPACK unpacked data AUTO packed data if remote or background, unpacked if local (default)
	PAKSIZ=	data compaction resolution (default=8)
	RTIME=	<i>beg end</i> beginning and ending minute range (MM) for selecting an area with the image time for the current hour; an area is selected if the image time falls between the minute range specified for the current hour; if multiple areas have image times falling within the range, the first area is selected; RTIME values override TIME values
	STYPE=	VISR reduces 2-byte data to 1-byte; see the Remarks
	TIME=	<i>beg end</i> selects an area within the time window specified above, HH:MM:SS

Remarks

Command SEP, like command SEQ, is most useful when used with the scheduler to transfer the most recent satellite data from a mainframe to another mainframe or workstation.

Use keyword CYCLE with the scheduler to copy the most recent McIDAS-MVS area to a loop of areas on the workstation. The beginning area in the loop is specified with *darea*; the number of areas in the loop is specified with keyword CYCLE.

When using keyword CYCLE, the following formula determines which area in the workstation's loop the most recent McIDAS-MVS area is copied to:

$$(\text{modulus}(\text{time}/\text{inc}, \text{num})) + \text{darea}$$

where *time* is the image time of the area, *inc* and *num* are the values specified in keyword CYCLE, and *darea* is the value specified in the *darea* positional parameter.

For example, if the command:

SEP 101 104 1 EC DCA CYCLE=5 1:00

is scheduled to run once an hour, the 13:00 UTC McIDAS-MVS area is copied to workstation area 4, since *time*=13.0, *inc*=1.0, *num*=5, and *darea*=1 ($13.0 \div 1.0 = 13$; $13 \div 5 = 2$, with a remainder 3; $3 + 1 = 4$).

The 14:00 UTC area is copied to area 5, the 15:00 UTC area is copied to area 1, etc.

If a similar SEP command is scheduled to run every half-hour, but **CYCLE=6 00:30** and *darea* is 11, the 20:00 UTC McIDAS-MVS area is copied to workstation area 15, since *time*=20.0, *inc*=0.5, *num*=6 and *darea*=11 ($20.0 \div 0.5 = 40$; $40 \div 6 = 6$ with a remainder of 4, $4 + 11 = 15$).

The 20:30 UTC area is copied to area 16, the 21:00 UTC area is copied to area 11, etc.

Keywords TIME and RTIME identify an area to send. Use them to specify a time range that must be met for the area copy to occur. This is especially useful for choosing the desired area when new areas are received frequently, such as GOES images during a RISOP schedule. These keywords also allow you to spread out the scheduled area copies so scheduler activity is more evenly distributed throughout the hour.

Keyword STYPE=VISR converts original data to brightness (1-byte) data. Do not use STYPE=VISR with BAND=ALL.

See Also

See commands SENAA, AA and SEQ in this chapter.

Examples**SEP 101 104 968 ED**

This entry sends the most recent data from areas 101 to 104 into area 968, positioned in the lower-right corner.

SEP 109 112 5000 EC MIA 2 CYCLE=10 00:30 RTIME=30 35

This entry searches areas 109 to 112 for an area with an image time falling between 30 and 35 minutes after the current hour. The first area that matches these criteria is sent (via SENAA) to the next available area within area range 5000 to 5010 that follows the 30-minute image time increment set with RTIME. It is centered at Miami, Florida, with a 2x blowup.

SEP 305 312 1 EC 43 75 X 480 640 CYCLE=7 X

This entry sends the most recent data from areas 305 to 312 into the next available area in a seven-area circular queue of destination areas starting with area 1. The areas sent to the workstation are centered at coordinates 43° N and 75° W and are limited to a size of 480 lines by 640 elements.

SEQ

Updates an image frame loop.

**The ADDE command IMGDISP may be used in place of SEQ.
See the ADDE section of the *McIDAS-X* or *McIDAS-OS2 Users Guide*
for more information.**

Formats

SEQ *barea earea bframe eframe locate y-coord x-coord mag [keywords]*

SEQ *barea earea bframe eframe locate station mag [keywords]*

Parameters

barea beginning area number to search

earea ending area number to search

bframe beginning image frame number to search

eframe ending image frame number to search

locate coordinate type for loading images (default=AU, meaning the area coordinates are displayed with the upper-left corner line and element); use one of these coordinate systems:

A	area
E	earth
I	image
T	TV

followed by one of these locations:

U	upper-left corner
C	center
D	lower-right corner

optionally followed by:

R uses the current enhancement table set up by command IS

0 to 8 uses this enhancement table number set up by command IS

y-coord y-axis coordinate (default=upper-left corner)

x-coord x-axis coordinate (default=upper-left corner)

station 3-letter station ID, e.g., MSN, DSM; must be preceded by EU, EC or ED

mag blowup or blowdown factor of the image (default=1)

Keywords

BAND= band number, the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for VAS channel, 4 for AVHRR)

CAL= QTIR calibration module name; use QTIR for a fast POES load (default=from area directory); the first calibration is used for the entire image; the area is unaffected

OPT= ALL reloads all image frames

RTIME= beg end beginning and ending minute range (MM) for selecting an area with the image time for the current hour; an area is selected if the image time falls between the minute range specified for the current hour; if multiple areas have image times falling within the range, the first area is selected; RTIME values override TIME values

TEST= Y lists the DF commands that update the sequence without running them

TIME= beg end selects an area within the time window specified above, HH:MM:SS

Remarks

SEQ displays real-time images. Areas are not copied into new areas, they are only displayed on image frames. To copy areas and display them, use command MOVIT.

SEQ locates the most recent area in the *barea* and *earea* range and displays it on the image frame loop. The single image frame displayed is selected by determining which existing frame within the *bframe* and *eframe* range displays the most recent image. Then the new image is displayed on the next frame.

Keywords TIME and RTIME are useful for identifying an image to display. They allow you to specify a time range that must be met for the image display to occur. This is especially useful for choosing the desired image when new images are being received frequently, such as GOES images during a RISOP schedule. These keywords also allow you to spread out scheduled image loads so scheduler activity is more evenly distributed throughout the hour.

Examples**SEQ 100 104 1 4**

This entry searches areas 100 to 104 and image frames 1 to 4 for the most recent time and displays the most recent area on the frame following the most recent image in frames 1 to 4.

SEQ 100 104 1 4 EC 36 90 -4 OPT=ALL

This entry searches areas 100 to 104 and image frames 1 to 4 for the most recent time. At earth center coordinates 36° N and 90° W, with a 4x blowdown, it displays all image frames arranged in a time series.

SEQ 109 112 10 20 EC HUT -2 RTIME=00 05

This entry searches areas 109 to 112 for an area with an image time falling between 0 minutes and 5 minutes after the current hour. The first area that matches these criteria is displayed and centered at Hutchinson, Kansas, with a 2x blowdown, on the frame between 10 and 20 that follows the frame displaying the most recent image.

SEQG

Updates an image and graphics frame loop.

Formats	SEQG <i>barea earea bframe eframe locate y-coord x-coord mag</i> [keywords] "command"	
	SEQG <i>barea earea bframe eframe locate station mag</i> [keywords] "command"	
Parameters	<i>barea</i>	beginning area number searched
	<i>earea</i>	ending area number searched
	<i>bframe</i>	beginning image frame number searched
	<i>eframe</i>	ending image frame number searched
	<i>locate</i>	coordinate type for loading images (default=AU, meaning the area coordinates are displayed with the upper-left corner line and element); use one of these coordinate systems:
	A	area
	E	earth
	I	image
	T	TV
		followed by one of these locations:
	U	upper-left corner
	C	center
	D	lower-right corner
		optionally followed by:
	R	uses the current enhancement table set up by the IS command
	0 to 8	uses this enhancement table number set up by the IS command
	<i>y-coord</i>	y-axis coordinate (default=upper-left corner)
	<i>x-coord</i>	x-axis coordinate (default=upper-left corner)
	<i>station</i>	3-letter station ID e.g., MSN, DSM; must be preceded by EU, EC or ED
	<i>mag</i>	blowup or blowdown factor of the image (default=1)
	<i>command</i>	graphics command to update the graphics frames

Keywords

BAND= band number, the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for VAS channel, 4 for AVHRR)

CAL= QTIR calibration module name; use QTIR for a fast POES load (default=from the area directory); the first calibration is used for the entire image; the area is unaffected

OPT= ALL displays all frames

Remarks

SEQG displays real-time images with graphics overlays. Areas are not copied into new areas, they are only displayed on image frames. To copy areas and display them, use command MOVIT.

SEQG locates the most recent area in the *barea* and *earea* range and displays it on the image frame loop. The single image frame displayed is selected by determining which existing frame within the *bframe* and *eframe* range displays the most recent image. Then the new image and graphics are displayed on the next frames.

Use keyword OPT=ALL to display all image frames.

On workstations with embedded graphics (VGA, McIDAS-X and the briefing frames on a WWW), the graphics sent may be overwritten by the images displayed.

SEQG places graphics on the graphics frame number corresponding to the image frame. That is, an image on frame 5 will have its graphics displayed on graphics frame 5.

Examples

SEQG 110 115 2 10

This entry searches areas 110 to 115 and image frames 2 to 10 for the most recent time and displays the most recent image on the image frame following the latest displayed image frame, using the upper-left area coordinates.

SEQG 105 108 1 4 EC 43 89 OPT=ALL "MAP ; SP WX SAT

This entry displays areas 105 to 108 on TV frames 1 to 4 from the earliest to most recent, earth centered at 43° N and 89° W. It plots map and surface data on corresponding graphics frames 1 to 4.

SETLUP

Defines frame bounds from loop parameters.

Format	SETLUP <i>loop</i>
Parameter	<i>loop</i> number of a loop defined with the LOOP command; the range is 1 to 9
Remarks	SETLUP defines the following parameters from the LOOP command: • frame loop bounds from the loop parameter; graphics loop bounds from the loop number • dwell rates for the loop • enhancement table whose number is the loop number

Use this command to define executable strings for different loops. Then you can access these image loops by simply typing the defined keystroke.

The enhancement must be stored on the workstation if SETLUP is run from it.

Examples

```
TE 1 "SETLUP 1
TE 3 "SETLUP 3
TE 4 "SETLUP 4
TE 6 "SETLUP 6
```

These entries define string table values 1, 3, 4 and 6 to loop frames. Typing 1, 3, 4 or 6 will loop the images defined for loop number 1, 3, etc.

SVGA

Generates an area from virtual graphics.

Format	SVGA <i>virt area width [keywords]</i>
Parameters	<i>virt</i> virtual graphics number; the range is 1 to 1024 <i>area</i> area number to put graphics in; must be 500 lines by 640 elements <i>width</i> graphics line width, in pixels (default=1)
Keywords	LEV= <i>lev1 . . . 7</i> brightness values for graphics levels; the range is 0 to 255 (default=32 64 96 128 160 192 224) TERM= terminal number where the virtual graphic is stored (default=current)
Remarks	Create virtual graphics by appending the keyword VIRT to any graphics command. SVGA adds virtual graphics to an existing area, so maps and other graphics can be permanently added to an image.
Examples	SVGA 101 6848 2 This entry writes virtual graphic 101 into area 6848, with a line width of two pixels. Graphics color level 1 is transformed into a brightness value of 32; level 2 becomes a brightness value of 64, etc. SVGA 114 6852 LEV=255 200 150 This entry writes virtual graphic 114 into area 6852, with a line width of one pixel. Level 1 has a value of 255, level 2 of 200, level 3 of 150. Other levels retain their default values. SVGA 250 5265 This entry writes virtual graphic 250 into area 5265 with a line width of one pixel.

TIRCAL

Calibrates POES images.

Format	TIRCAL area [keyword]
Parameter	area POES area number to calibrate
Keyword	CAL= QUICK applies quick calibration to the area FULL fully calibrates the area (default)

Remarks

Caution!
Do not run TIRCAL on TIP data.

The FULL option generates a calibration for each group of five image lines through the entire area. The QUICK calibration uses the average calibration for the first five good lines and applies that calibration to the entire area. The quick calibrated data shows only slight differences visually. Do not rely on the quick calibration for scientific purposes. Temperature differences of 2-3 degrees along with radiance differences have been seen at the end of GAC areas.

If commands TPREP and MULTIR are run, you do not have to run TIRCAL as they call it.

TPREP

Calibrates and navigates POES images.

Format	TPREP area [keyword]
Parameter	area POES area number to calibrate and navigate
Keyword	CAL= QUICK applies quick calibration to the area FULL fully calibrates the area (default)

Remarks

Caution!
Do not run TPREP on TIP data.

TPREP is a macro that calibrates and creates a navigation codicil for real-time POES images using TIRCAL and NK, respectively. If a navigation codicil is not created, use command NK with a day where navigation is available. Use NVU LIST to list the available days.

Schedule the command MULTIR on your event scheduler to automatically calibrate and navigate each POES image after it is ingested.

The FULL option generates a calibration for each group of five lines through the entire area. The QUICK calibration uses the average calibration for the first five good lines and applies that calibration to the entire area. The quick calibrated data shows only slight differences visually. Do not rely on the quick calibration for scientific purposes. Temperature differences of 2-3 degrees along with radiance differences have been seen at the end of GAC areas.

Chapter 5. Derived Image Products

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5-11	Displays a series of images from a plan view	
5-12	Displays a series of images from a plan view	
5-13	Displays a series of images from a plan view	
5-14	Displays a series of images from a plan view	
5-15	Displays a series of images from a plan view	
5-16	Displays a series of images from a plan view	
5-17	Displays a series of images from a plan view	
5-18	Displays a series of images from a plan view	
5-19	Displays a series of images from a plan view	
5-20	Displays a series of images from a plan view	
5-21	Displays a series of images from a plan view	
5-22	Displays a series of images from a plan view	
5-23	Displays a series of images from a plan view	
5-24	Displays a series of images from a plan view	
5-25	Displays a series of images from a plan view	
5-26	Displays a series of images from a plan view	
5-27	Displays a series of images from a plan view	
5-28	Displays a series of images from a plan view	
5-29	Displays a series of images from a plan view	
5-30	Displays a series of images from a plan view	

AAMAP

Remaps an area into a Mercator or polar stereographic projection.

Format

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

Parameters

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

Keywords

ASIZE=	ALL creates a destination area to contain the entire source area (default=number of lines and elements in <i>frame</i>)
BAND=	band number for multiband <i>sarea</i>
SPLINE=	spline size (default=20)

Remarks

AAMAP remaps any navigated image to a 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.

Examples

AAMAP 4960 6848 2 MERC 35 90 4

This entry remaps area 4960 into a Mercator projection centered on 35°N and 90°W. The new image, which has a resolution of 4 km, is stored in area 6848 and displayed on image frame 2.

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.

AAMAP 2001 9000 X PS 44 72

This entry remaps area 2001 into a polar stereographic projection centering it on 44°N and 72°W. It stores the resulting image in area 9000, but does not display it.

AVGI

Reduces image resolution by averaging.

Format	AVGI <i>sarea darea lres eres [keyword]</i>	
Parameters	<i>sarea</i>	source area to average
	<i>darea</i>	destination area of the averaged data
	<i>lres</i>	number indicating the resolution reduction for lines (default=1)
	<i>eres</i>	number indicating the resolution reduction for elements (default= <i>lres</i>)
Keyword	BAND=	band number from multibanded areas (default=lowest numbered band)
Remarks	The area size cannot exceed 10,000 elements.	
Examples	AVGI 2112 1288 This entry averages area 2112 by one line and element and places the averaged data in area 1288.	
	AVGI 10 20 4 This entry blows down area 10 four times by averaging pixel values. The new area number is 20.	

CLDMAK

Generates and displays stereo perspective cloud images over a topographical map.

Format

CLDMAK *irarea visarea darea frame [keywords]*

Parameters

irarea area number of the IR image

visarea area number of the corresponding visible image

darea destination area number for the topographical map and stereo perspective images; four consecutive areas are used unless you specify keyword TOPO

frame frame number on which the left eye view of the perspective image is displayed; the right eye view is displayed on the opposite frame

Keywords

LAT= *south north* latitude extents (default=30.0 40.0)

LON= *east west* longitude extents (default=80.0 90.0)

TOPO= first area number of the areas containing the topographical map; should be the value of *darea* in a previous CLDMAK command

Remarks

CLDMAK uses IR temperature and a visible image to create a stereo perspective cloud image over a topographical map. The right and left eye views of the map are stored in the first 2 areas used; the right and left eye views of the cloud image are stored in the next 2 areas. The areas are loaded onto the specified image frame and its opposite. One-half of the total number of frames is color enhanced red; the other frames are color enhanced green. Use the N key to combine the images and enhancements, thereby creating a display which appears to be in stereo when viewed with red-green glasses.

The containing box used in the display is 24 km high.

Examples**CLDMAK 112 107 11210 7**

This entry generates a stereo perspective cloud image from the IR image in area 112 and the visible image in area 107. The image and map are displayed on frame 7 and its opposite. The geographic area covered is the southeast central USA.

CLDMAK 109 105 6900 1 LAT=35 45 LON=75 85

This entry uses the IR image in area 109 and the visible image in area 105 to generate a stereo perspective cloud image. The image is displayed over a topographical map on frame 1 and its opposite. The geographical extents are 35° to 45°N latitude and 75° to 85°W longitude.

CLDMAK 110 106 6902 2 LAT=35 45 LON=75 85 TOPO=6900

This entry uses the IR image in area 110 and the visible image in area 105 to generate a stereo perspective cloud image. The topographical map generated in the first example is used. This image is displayed on frame 2 and its opposite. The two sets of images created in these examples can be animated using the L key.

DF3D

Displays an area for false stereo view.

Formats

DF3D *area frame locate y-coord x-coord mag t1 t2 t3 t4 tref*
shift range tunits [keywords]

DF3D *area frame locate station mag t1 t2 t3 t4 tref shift range*
tunits [keywords]

Parameters

area area number of the visible image; must have the same resolution as the IR area

frame image frame number for display
OPP displays the image on the frame opposite the current frame

locate type of coordinates the TV load will use as a reference point; (default=AUS, meaning the area coordinates are displayed with the upper-left corner line and element; the image is shifted left and above the screen); use one of these coordinate systems:

A area
E earth
I image
T TV

followed by one of these locations:

C center
D lower-right corner
U upper-left corner

followed by one of these shifting factors:

H split screen, view images side-by-side
Q right shift and above screen
S left shift and above screen
V right shift and below screen
W left shift and below screen

y-coord y-axis coordinate (default=0)

x-coord x-axis coordinate (default=0)

station station ID, e.g., MSN, DSM, 2C2; it must be preceded by EU, EC or ED

<i>mag</i>	image blowup or blowdown factor (default=1)
SQUA	gives pixels a square aspect ratio
<i>t1</i>	low temperature (default=164)
<i>t2</i>	high temperature (default=164)
<i>t3</i>	low temperature of nonlinear shift (default= <i>t1</i>)
<i>t4</i>	high temperature of nonlinear shift (default= <i>t2</i>)
<i>tref</i>	reference temperature level of the TV screen; overrides stereo geometry key if used (default=none)
<i>shift</i>	maximum left/right shift (default=32)
<i>range</i>	percent of shift allocated to nonlinear region (default=50)
<i>tunits</i>	units of <i>t1</i> to <i>t4</i>
C	temperature in Celsius (default)
F	height in feet
M	height in meters
P	pressure level in mb
T	temperature in Kelvin
THA	Theta surface in Kelvin

Keywords	ANN=	<i>bkgrd char</i>	gray scale values for the annotation line's background and characters located at the bottom of the screen (default=32 160)
	BAND=		area band number; the range is 1 to 9; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for GOES IR, 1 for POES)
	EMAG=		element only blowup or blowdown factor
	IR=		area number for the IR data
	LMAG=		line only blowup or blowdown factor

Remarks

This command works only on tower workstations.

Display the shifted image generated by DF3D on the frame opposite the visible image. You must have an IR area on disk that corresponds to the visible image time and resolution.

To display the false stereo red and green coloring, execute the following two commands:

Type: **ET NOR**

Press: **Enter**

Type: **N**

Press: **Enter**

Now look through the red and green glasses to see stereo. If the image does not appear in stereo, try flipping your glasses.

The coordinates for displaying images are listed below.

Location	Y-coordinate	X-coordinate	Format
E	latitude	longitude	DDD:MM:SS, DDD.fraction or station ID
I	line	element	0 to 5 digits
T	raster	pictel	0 to 3 digits
A	area line	area element	0 to 5 digits

Examples

DF3D 1288 20

This entry displays area 1288 on image frame 20 shifted for stereo view. The image is loaded from the upper-left corner of the area and shifts the image a maximum of 32 pixels to the left. The ground is at screen level. To view, wear the red lense over your right eye.

Use the commands below to display a false stereo image.

DF 106 1 EC MSN

This entry loads visible area 106 into TV frame 1 at earth center MSN. Make sure the image resolutions of the visible and IR data match.

DF3D 101 OPP ECS MSN

This entry loads a stereo image with left shift on the frame opposite the visible image.

ET NOR

This entry generates a red and green color enhancement table.

N

This entry overlays the imagery in red-green stereo. View the display with red-green glasses; place the red lens over your right eye.

IMGPRO

Generates derived satellite imagery products.

*The ADDE command IMGOPER may be used in place of IMGPRO.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.*

Format

IMGPRO *sarea darea [keywords] "text*

Parameters

sarea source area number; keyword AREA overrides this entry
(no default)

darea destination area number (no default)

"text" text to attach to the destination area directory;
32 characters maximum

Keywords

AREA= single or multiple source area numbers (default=*sarea*)

BAND= single or multiple band numbers (default=lowest band
number)

COEF= coefficients for each term in the equation (default=+1.0)

CONST= constant for the equation (default=0.0)

FACTOR= internal source and destination scaling factors
(default=1.0; if UNIT=TEMP, default=10.0)

FORM= **ADD** adds each term in the equation (default)
MULT multiplies each term in the equation

FUNC= allows a transcendental function operation on the
output of the additive or multiplicative equation, i.e.,
LOG, ALOG, LN, EXP (default=NONE)

LLMT= lower limit thresholds, inclusive, for each term in the
equation (no default)

NAME= derived imagery product name; up to 4 characters
(default=PROD)

OFF= offsets for each term in the equation (default=0.0)

POW= powers for each term in the equation (default=+1.0)

QA= YES quits the output area if it already exists
NO does not quit the output area (default)

SCALE= *prodlo prodhi britlo brithi*
minimum and maximum product and brightness values
for the calibration (default=none for the product values;
0 255 for the brightness counts)

SIGN= P plus the band values for each term in the
equation (default)
M minus the band values

ULMT= upper limit thresholds, inclusive, for each term in the
equation (no default)

UNIT= calibration types for each term in the equation
(default=TEMP)

ZERO= DATA assigns zero pixel values as data and includes
them in the analysis
MISS assigns zero pixel values as missing and
excludes them from the analysis (default)
a nonzero numeric value identifies that pixel value to
represent the missing value flag

Remarks

IMGPRO produces simple and complex derived satellite imagery. Each term in the equation can be defined independently. Although the defaults allow for a minimum number of simple mathematical manipulations such as band differencing, averaging or ratioing, the equation specification can be as complicated as you like. The equation formats are:

Output = Constant + FORMat [Coef*(Off+Sign*Band)**Pow]

Output = FUNCtion [Output]

Some keyword defaults are context sensitive. If more than one band or input area is processed, the default for the equation keywords is the first value specified for the keyword (see the examples).

When using IMGPRO on POES temperature data, specify FACTOR=1 for each input area.

The derived imagery product is always written into band 1 in the output area.

IMGPRO has no line limit, but has a 4000 element maximum.

You can specify a maximum of 12 terms for an equation. A maximum of six areas can be opened for any individual job.

You can list bands in any order, but the order must be maintained consistently for all keywords.

By creating a new calibration codicil with its own name (calibration type), you can display the derived imagery product in its appropriate and physically meaningful units. That is, when you access the area information with the D key, the true values are listed under a column heading with the product name. You can use this product name as a parameter in the OD L command to list the derived values contained within the cursor. Use the product name just like any other standard calibration types such as BRIT, TEMP, RAW or RAD.

All areas have the same size, central location and resolution. If this is not the case, use the REMAP, AAMAP or AA command.

Zero pixel values can be treated as missing value codes or real data values. Nonzero numeric values can be substituted to specify a different missing value code other than zero.

Examples

IMGPRO 310 445 SCALE=200 250

This entry processes brightness temperatures from the lowest numbered band in area 310 using a scaling factor of 10. It attaches a new calibration codicil to area 445, linearly stretching the range 200 to 250 between 0 and 255. It also copies the navigation codicil in area 310 into the area 445 navigation codicil and rewrites the source area data with a new calibration codicil into the destination area. No mathematical operations are performed.

IMGPRO 2048 2070 BAND=4 FACTOR=1 SCALE=200 300

This entry writes the band 4 brightness temperatures from area 2048 (which is a multibanded POES image) into area 2070 and defines a new calibration, linearly stretching the temperature range 200 to 300 between 0 and 255. The new calibration type is PROD.

IMGPRO X 2070 BAND=8 AREA=2048 2049 2050 2051 NAME=AVG COEF=0.25 SCALE=200 300 0 255

This entry calculates the average band 8 brightness temperature from four different areas and writes it into area 2070. It has a calibration type name of AVG and a linear stretch for the temperature range 200 to 300 degrees between 0 and 255 brightness counts.

**IMGPRO 2048 2070 FORM=M BAND=7 8 POW=1 -1
NAME=RATI SCALE=0.5 1.5 UNIT=BRIT
FACTOR=X X 100**

This entry calculates the ratio of band 7 brightness counts to band 8 brightness counts from area 2048 and writes it to area 2070 scaled up by a factor of 100. That is, the brightness ratios are saved to the hundredths decimal place. It is calibrated for a range of 0.5 to 1.5 to linearly stretch between 0 and 255.

**IMGPRO 2048 2070 BAND=7 8 NAME=DIFF SIGN=X M
SCALE=-10 10 UNIT=TEMP TEMP FACTOR=10 10 10
LLMT=230 ULMT=270**

This entry calculates the difference between band 7 and band 8 brightness temperatures warmer than 230° and cooler than 270° from area 2048 and writes it to area 2070 scaled up by a factor of 10. That is, the temperature differences are saved to the nearest tenth of a degree. It is calibrated for a range of -10° to +10° to linearly stretch between 0 and 255. The calibration is named DIFF.

**IMGPRO X 2070 BAND=8 AREA=2048 COEF=0.0118
OFF=267 POW=1.75 SIGN=M CONST=-1.117 ULMT=253.2
NAME=RAIN SCALE=0 10**

This entry applies a power law regression algorithm for estimating rain rate to band 8 GOES temperatures. This generates a rain rate image in area 2048 in units of 0.1mm. The rain rate can be accessed using the calibration type (i.e., product name) RAIN.

IMSCAT

Displays a scatter plot of two images' data.

Format	IMSCAT <i>image1 image2 [keywords]</i>
Parameters	<i>image1</i> x-axis image number (default=current frame) <i>image2</i> y-axis image number (default=opposite frame)
Keywords	COLOR= graphics color level of the plot (default=3) XP= <i>min max div sdiv</i> x-axis plotting parameters <i>min</i> minimum brightness value on the axis <i>max</i> maximum brightness value on the axis <i>div</i> number of labeled tic marks <i>sdiv</i> number of tic marks between the labels (default=0 260 10 4) YP= <i>min max div sdiv</i> y-axis plotting parameters
Remarks	IMSCAT plots a graph of <i>image1</i> vs. <i>image2</i> on the current graphics frame. The cursor bounds define the plotted data.
Examples	IMSCAT This entry makes a scatter plot of the current image versus the opposite image brightness values using the data within the cursor. It is plotted in graphics color level 3. The x and y axes range from 0 to 260. IMSCAT COLOR=5 This entry plots the current vs. the opposite image data in graphics color level 5 on the current graphics frame, using the default values for the x and y axes labels. IMSCAT 10 11 XP=100 220 10 YP=170 200 15 1 This entry plots image 10 vs. image 11 data. The x axis labels range from 100 to 220 with 10 major tic marks; the y axis labels range from 170 to 200 with 15 major tic marks and one subdivision between each major tic.

MA

Modifies an area.

The ADDE command IMGOPER may be used in place of MA with options ADD, C, FLX, LIN, SCA, and TEM. See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide for more information.

Format

MA *sarea darea frame option p1 p2 p3 p4 [keyword]*

Parameters

sarea source area number

darea destination area number

frame image frame number to display modified area
(default=area is not displayed)

option

A	automatic enhancement
C	contrast stretching
E	lookup table enhancement
F	data fill
G	gradient
H	high pass filter
L	low pass filter
N	shot noise filter
S	digital stretching
ADD	adds a parameter to the data
BAD	removes buffer flakes and bad lines; places the average in all bad lines
CLN	removes buffer flakes and bad lines; places zeros in the bad lines
FLX	converts the IR counts to flux in $W/M^2M/2$
LIN	converts the square root digitization to a linear scale
SCA	scales the data
TEM	converts the IR counts to Kelvin-100

p1-p4 these parameters vary with the selected *option*; see the Remarks below

Keyword

BAND= band number to process; defaults to the single band when using single band data; you must specify the band when using multiband data

Remarks

The MA command modifies the brightness values in an area by applying a data operator, transferring the result to another area, and displaying the data on an image frame. *Sarea* specifies the input area; *darea* specifies the output area. If *darea* is zero, the modified area is written into *sarea*. *Frame* specifies the frame number if the area is to be displayed following modification; the default is not to load.

The maximum number of elements in a line is 5000.

Option indicates one of the data operators which may require the use of *p1* to *p4* for control parameters. Each *option* is further described below.

A

A means automatic enhancement. It makes a histogram of the occurrence of the values for the input area. The output area is an enhancement of the input area where the range of digital values is proportional to the occurrence of the histogram values. That is, if there are many digital values in a small range of brightnesses on the input area, they are stretched to a wider range of brightnesses in the enhanced output. The values *p1* and *p2* are ignored.

ADD

This option adds the constant *p1* to the digital data. $J(I)=J(I)+p1$. The overflow is set to 255; the underflow is set to 0.

p1=constant added to the data; $-255 < p1 < 255$ (no default)

BAD

This option locates bad lines and replaces them with the average of the lines on either side. It also removes buffer flakes with a shot noise filter. The program finds bad lines by correlating each line with the last good line. Lines with averages of 255 or 0 are automatically defined as bad.

p1=shot noise window; $0 < p1 < 255$ (default=40)

p2=first good line of the area (default=1)

p3=last line to be cleaned up (default= last line)

p4=correlation criteria between lines (default=20)

C

C is an enhancement that stretches the values between *p1* and *p2* to range between 0 and 255.

p1=lower digital value (default=8)

p2=upper digital value (default=240)

- positive stretch

- negative stretch (*p1*=255, *p2*=0)

- compress stretch, (*p1*=-300, *p2*=600)

- real numbers (*p1*=26.8, *p2*=150.2)

CLN

CLN performs the same function as the BAD option, except that zeros replace the bad lines if there is more than one bad line in a row. The maximum number of elements in a line is 1680.

p1=shot noise window; $0 < p1 < 255$ (default=40)

p2=first good line (default=1)

p3=last line to be cleaned up (default=last line)

p4=correlation criteria between lines (default=20)

E

This option applies the enhancement from the video lookup tables to the digital data. *p1*= B(blue, default), G(green) or R(red) lookup table.

F

This option fills in the holes along a line. The holes have values between *p1* and *p2*. The average value of the data on either side of the hole is placed in the hole.

p1=lower value that defines the hole; $0 < p1 < 255$ (default=0)

p2=upper value that defines the hole; $0 < p2 < 255$ (default=0)

FLX

FLX converts the infrared image into an image of longwave flux divided by 2 in units of watts/m². The formula is:

$$J(I) = 0.543 * (5.66 \times 10^{-8}) * J(I)^4 + 44.538$$

G

This option applies a gradient operator (IABS[J(I)] - J[I+1]) along each line. *p1* and *p2* are not used.

H

This option applies a high pass filter (suppressing low frequency or broad features) along a line.

p1=filter radius; $1 < p1 < 500$ (default=50 pixels)

p2=filter efficiency; $1 < p2 < 100$ (default=100%)

L

This option applies a low pass filter (suppressing high frequency or small features) along a line.

p1=filter radius; $1 < p1 < 500$ (default=30 pixels)

p2=filter efficiency; $1 < p2 < 100$ (default=100%)

LIN

This option converts the SMS square root digitization to a linear scale in which the visible image brightness values are proportional to the radiances measured by the satellite. $J(I) = P2 * (J[I] * J[I] / 16 - p1 / 4) / 3969$

p1 = calibration offset; space view (default=8)

p2 = scaling factor (default=200)

N

This option applies a shot noise filter to remove spikes along a data line. The shot noise pixel is replaced by the average value of the pixels, one to the left and two to the right. $p1$ =shot noise window (default=40 pixels)

S

This option takes an enhancement of the digital data which throws away the lower $p1\%$ and upper $p2\%$ of the data and stretches the remaining data to fit between 0 and 255.

$p1$ =lower cutoff percentage; $1 < p1 < 100$ (default=3)

$p2$ =upper cutoff percentage; $1 < p2 < 100$ (default=3)

SCA

This option scales the data by multiplying by $p1$. The $J(I)*p1$ overflow is set to 255. $p1$ =multiplying factor; it can be an integer or real number (default=1)

TEM

This option converts the infrared counts into an image of temperature -100 (in Kelvin -100). $p1$ and $p2$ are not used.

Examples**MA 6512 6513 2 CLN**

This entry cleans up the data in area 6512, places the new data in area 6513 and displays the new image on frame 2.

MA 6513 6514 10 C 150 200

This entry contrast stretches area 6513 into area 6514 displaying the image on frame 10. It stretches digital values 150 to 200 between values 0 and 255.

MA 1000 2500 X ADD 100

This entry adds the constant 100 to each digital value in area 1000. The destination area is 2500; no image is displayed. Any new values greater than 255 become 255.

MA 7384 7385 0 BAD BAND=A

This entry removes buffer flakes and bad lines from BAND A data in area 7384 and places the modified data in area 7385.

MC

Combines areas.

The ADDE command IMGOPER may be used in place of MC with options ADD, AVE, DIV, MAX, MIN, MPY, RAT, RMS, SUB, and WAV. See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide for more information.

Format	MC <i>sarea1 sarea2 sarea3 sarea4 darea option p1 p2 p3 p4 p5</i> [keywords]	
Parameters	<i>sarea1 ... 4</i>	source area numbers to combine
	<i>darea</i>	destination area number to store the combined results; the area is 1-byte data with VISR calibration
	<i>option</i>	AVE averages the brightness values CLD clouds COR cloud cores DIS discriminate DIV divides images by a constant MAX saves the maximum brightness values MIN saves the minimum brightness values MPY multiplies images by a constant RAT color ratio RMS root mean square SPL generates a split screen image SUB subtracts brightness values WAV weighted average
	<i>p1 . . 5</i>	these parameters vary with the selected <i>option</i> ; see the Remarks
Keywords	BAND=	<i>band1 ... 4</i> band numbers corresponding to the area numbers
	IMA=	image frame number; displays <i>darea</i>
Remarks	MC does a pixel-by-pixel combination of up to four areas to produce a new output area which has an area directory equal to the directory for the first input area, plus the appropriate message code. All areas must be the same size, centered at the same location, and have the same resolution.	

The options available are described below. *sarea1*, *sarea2*, *sarea3* and *sarea4* are the entire source areas. *s1*, *s2*, *s3* and *s4* are individual pixels from *sarea1* to 4, respectively. A lowercase *s* is a pixel from *sarea1* to 4; *d1* is the pixel value of the destination area.

AVE

Averages up to 4 areas.

Function: $d1 = \frac{s1 + s2 + s3 + s4}{4}$

p1 and *p2* are threshold limits. A pixel is included in the average if $p1 < s < p2$. (default=0 for *p1*; 255 for *p2*)

CLD

Creates an area of only clouds (using the minimum brightness composite from the MIN option) in *sarea2* as background brightness. *p1* defines the brightness threshold.

Function: $d1 = s1$ (if $s1 > s2 + p2$). Otherwise $d1 = p1$.
(default=0 for both *p1* and *p2*)

COR

Selects cloud cores by comparing the brightness values defined by *p1* and *p2* and placing the results in *darea*.

Function: If brightness $s1 > p1$ and brightness $s2 > p2$, then $d1 = p3$.
Otherwise, $d1 = p4$ (default=0 for *p1*, *p2* and *p3*; 255 for *p4*).

DIS

Discriminates the values of one area against the values in a second area.

Function: $d1 = p5$ if $p1 < s1 < p2$ and $p3 < s2 < p4$. Otherwise, $d1 = s1$.
(default=0 for *p5*)

DIV

Normalizes the area ratio of two areas and, if desired, changes the brightness value. *p1* cannot equal zero.

Function: $d1 = 100 * (s1/s2) * p1/100 + p2$

p1 = normalization factor; *p2* = factor to increase or decrease the baseline brightness (default=100 for *p1*; 0 for *p2*)

MAX

Selects the maximum brightness value from up to 4 areas.

Function: $d1 = \text{MAX}(s1, s2, s3, s4)$.

If $s1, s2, s3$ or $s4 \geq p1$, it is ignored. If all values $\geq p1$, $d1 = p2$.
(default=255 for *p1*)

MIN

Selects the minimum brightness value from up to 4 areas.

Function: $d1 = \text{MIN}(s1, s2, s3, s4)$. If $s1, s2, s3$ or $s4 \leq p1$, it is ignored.
If all values $\leq p1$, $d1 = p2$. (default=0 for *p1*)

MPY

Multiplies two areas together.

Function: $d1 = \frac{(s1 * s2) + p1}{(256)}$

(default=0 for $p1$)

RAT

Makes color ratios of two areas.

Function: $d1 = \frac{(p1*s1 - p2*s2) * p3 + p4}{s1 + s2}$

(default=1 for $p1$ and $p2$; 100 for $p3$; 0 for $p4$)

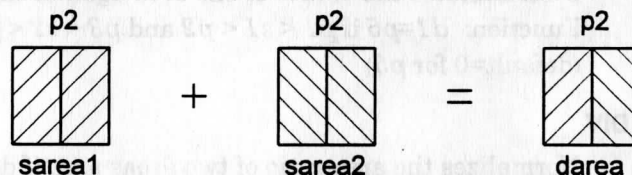
RMS

Root-mean-square of up to 4 areas.

Function: $d1 = \frac{(s1^2 + s2^2 + ...)^{1/2}}{(number\ of\ areas)}$

SPL

Combines two or four areas to make a split image. For two vertically split images, enter: **MC sarea1 sarea2 darea SPL p1 p2** (where *sarea1* and *sarea2* are the area numbers to combine, *darea* is the destination area of the split image, $p1$ is an integer whose value exceeds the number of lines in *sarea1* and *sarea2*, and $p2$ defines the TV element where the split occurs). The left side of *sarea1* and the right side of *sarea2* comprise the final image. See the diagram below. You may need to do several AA commands to get the desired result.



For 2 horizontally split images, $p1$ defines the line number where the split occurs and $p2$ must be larger than either area's line number. The $p1$ and $p2$ coordinates define the origin of the new image.



For a 4-way split, enter:

MC sarea1 sarea2 sarea3 sarea4 darea SPL p1 p2 p3 p4

where *p1* is the TV line number where the split occurs, *p2* is the TV element number where the split occurs and *p3* and *p4* are integers whose value exceeds the number of lines and elements, respectively, in *sarea1* through *sarea4*. See the figure below.



SUB

Subtracts two areas. Function: $d1 = (p1 * (s1 - s2)) + p2$.

(default=1 for *p1*; 0 for *p2*)

WAV

WAV is the weighted average of up to four areas. *p1* must be greater than zero. If *p1* and *p2* are not specified, the AVE option is used.

Function: $d1 = \frac{(s1 * p1) + (s2 * p2)}{p1 + p2}$

(default=1 for *p1* and *p2*)

Examples

MC 9 10 95 100 16 AVE IMA=5

This entry averages areas 9, 10, 95 and 100 placing the result in area 16 and displaying it on frame 5.

MC 13 6 2 SUB 10

This entry subtracts area 6 from area 13 and stores the results in area 2, but does not display the new image. It stretches the brightness range using *p1*=10.

MC 6512 6513 6520 SPL 1000 300 IMA=10

This entry combines areas 6512 and 6513 into a vertically split image, placing the output in area 6520 and displaying it on frame 10. The source areas are all less than 1000 lines; therefore, the image is vertically split on TV pictel 300.

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 numbered band)

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/or data smoothing

<i>limb</i>	YES	for limb smoothing
	NO	for no limb smoothing (default)
<i>data</i>	YES	for data smoothing
	NO	for no data smoothing (default)

Remarks

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. MERGE is useful to combine polar orbiter images.

For REMAP to be successful, the destination area must meet the requirements below. See command CA for more information.

- The destination area must be 1-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.
- The *sarea* and *darea* must contain navigation before you can remap images.
- Both the area PREFIX and VALCOD must be zero.

See Also

Use command 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. After execution, 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.

STRDF

Displays images for stereo perspective display.

Format	STRDF <i>area frame</i>	
Parameters	<i>area</i>	displays four areas beginning with <i>area</i> into <i>frame</i>
	<i>frame</i>	designates image frame and image frame + 1 and their opposites as the destination for the four TV loads
Remarks	STRDF displays a sequence of 4 areas into 2 image frames and their opposites for stereo and motion perspective.	
Example	STRDF 2000 1	
	This entry displays areas 2000 to 2003 on image frames 1 and 2 and their opposites.	

TOPO3D

Generates a 3-D topographical map.

Format

TOPO3D *area view [keywords]*

Parameters

area number of the area in which to create the topography map;
also creates a depth map in *area+1*

view **1** generates left eye view (default)
 -1 generates right eye view

Keywords

DEPTH= *view depth* (default=1.0)

DIM= dimming factor of the topographical map; 1 is full
 brightness (default=0.8)

HGT= *bottom top* height extents in meters
 (default=0.0 12000.0)

HROT= horizontal rotation angle (default=0.0)

LAT= *south north* latitude extents (default=20.0 50.0)

LON= *east west* longitude extents (default=60.0 125.0)

MAP= name of the map outline file from the MAP command
 (default=OUTLUSA)

MESH= number of mesh points (default=5000)

VROT= vertical rotation angle (default=0.0)

Examples

TOPO3D 2010

This entry generates a topographical map in area 2010 and a depth map in area 2011 for left eye view.

TOPO3D 1100 1 LAT=26 49 LON=75 112

This entry generates a topographical map in area 1100 and a depth map in area 1101 for left eye view. The extents are 26° to 49° North and 75° to 112° West, suitable for use with the default extents of the VAS4D analyses. US boundaries are drawn on the map.

TRNIMG

Translates images from one area to another.

Format

TRNIMG *sarea darea time spline [keywords]*

Parameters

sarea area number of the source data (no default)

darea area number of the destination for the remapped image (no default)

time forecast time, HH:MM:SS (default=1 hour)

spline spline function, area pixels (default=10)

Keywords

AREA= *dir spd unit* area direction, speed and unit (default unit=kt)

CELL= *dir spd unit* cell direction, speed and unit; the unit range is in kt (default), mph, km/hr or mps

STAY= *lat lon radius unit* sets the region; the unit range is in nmi (default), km or mi

Remarks

Command TRNIMG translates (remaps) image data at a specified speed and direction for a forecast time. It was originally designed for radar data (thus keywords AREA and CELL), but may be extended to satellite images.

See Also

Command REMAP remaps an area into a satellite projection.

Example

**TRNIMG 2076 4013 1:00 AREA=270 15 CELL=225 30
STAY=40 90 20**

This entry translates the radar image in area 2076 to area 4013, predicting the location of the echoes 1 hour from the image time. From another source we have determined that the radar area is moving from 270° at 15 kt (AREA=270 15), and the cells are moving from 225° at 30 kt (CELL=225 30). There is a ground clutter area within 20 nmi of the radar at 40°N 90°W that remains stationary (STAY=40 90 20).

Chapter 6. Frame Analysis

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8-5	Deletes the current character	CA
8-6	Deletes the current character	CA
8-7	Deletes the current character	CA
8-8	Deletes the current character	CA
8-9	Deletes the current character	CA
8-10	Deletes the current character	CA
8-11	Deletes the current character	CA
8-12	Deletes the current character	CA
8-13	Deletes the current character	CA
8-14	Deletes the current character	CA
8-15	Deletes the current character	CA
8-16	Deletes the current character	CA
8-17	Deletes the current character	CA
8-18	Deletes the current character	CA
8-19	Deletes the current character	CA
8-20	Deletes the current character	CA
8-21	Deletes the current character	CA
8-22	Deletes the current character	CA
8-23	Deletes the current character	CA
8-24	Deletes the current character	CA
8-25	Deletes the current character	CA
8-26	Deletes the current character	CA
8-27	Deletes the current character	CA
8-28	Deletes the current character	CA
8-29	Deletes the current character	CA
8-30	Deletes the current character	CA
8-31	Deletes the current character	CA
8-32	Deletes the current character	CA
8-33	Deletes the current character	CA
8-34	Deletes the current character	CA
8-35	Deletes the current character	CA
8-36	Deletes the current character	CA
8-37	Deletes the current character	CA
8-38	Deletes the current character	CA
8-39	Deletes the current character	CA
8-40	Deletes the current character	CA

AC

Computes area statistics.

Format	<i>AC outline area [keywords]</i>	
Parameters	<i>outline</i>	outline number; the range is 0 to 500 (default= last outline generated)
	<i>area</i>	area number to compute statistics on (default=current)
Keywords	BAND=	band number (default is data dependent)
	COORD=	EAR uses earth coordinates
		IMA uses image coordinates
	CUT=	<i>low high</i> brightness limits used for measurements; the range is 0 to 255
	FILL=	0 does not fill the outline (default)
		1 fills the outline with graphics color level 1
		2 fills the outline with graphics color level 2
		3 fills the outline with graphics color level 3
	HDEV=	CRT lists a histogram on the text screen
		GRA displays a histogram on the graphics
		NONE does not output a histogram (default)
		PRI lists a histogram on the line printer
	TAIL=	tail brightness percent (default=0)
Remarks	Use the keywords to modify the area statistics options set up by command AX.	
Examples	AC This entry computes area statistics on the last generated outline.	
	AC 20 10 HDEV=PRI This entry applies outline 20 to area 10 and lists the histogram on the line printer.	

AX

Defines the area statistics options.

Format

AX *file* [*keywords*]

Parameter

file

MD file number for the results; once you define the MD file number, you don't have to enter it again

Keywords

COLOR=

used when OTYPE=GO

1 uses graphics color level 1 for the outline type (default)

2 uses graphics color level 2 for the outline type

3 uses graphics color level 3 for the outline type

COORD=

EAR defines outline in earth coordinates

IMA defines locates outline in image coordinates

CUT=

low high brightness or temperature limits used for measurements; the range is 0 to 255 for brightness, 163 to 330 for temperature

FILL=

0 does not fill the outline with graphics (default)

1 fills the outline with graphics color level 1

2 fills the outline with graphics color level 2

3 fills the outline with graphics color level 3

HDEV=

CRT lists a histogram on the text screen

GRA displays a histogram on the graphics

NONE does not output a histogram (default)

PRI lists a histogram on the line printer

LAG=

distance the cursor must be moved before command GO will draw an outline segment, in pixels (default=7)

NPAIR=

number of user specified threshold/limit pairs; the range is 1 to 16

0 clears all pairs

OTYPE=

CUR uses the cursor to define the outline (default)

GO uses the cursor to draw the outline

PAIR=	<i>low high</i>	defines a brightness threshold/limit pair for measurement; the range is 0 to 255; when PAIR is defined, keyword NPAIR is set to the appropriate number of pairs
SUM=	IDE	identity function used for the weighted sum (default)
	SPL	spline function used for the weighted sum
TAIL=		tail brightness percent (default=0)
TINT=		sampling time interval (default=200 microseconds)
UNIT=	PIX	uses the pixel brightness count to compute statistics (default)
	TEM	uses IR temperatures to compute statistics

Remarks

Set your area statistics options before using command GO or AC.
 Outlines are filled when FILL=1, 2 or 3, only after command AC is executed.

Examples**AX 1050**

This entry defines the default area statistics options for MD file 1050.

AX 1000 COLOR=1 HDES=PRI

This entry defines the outline color as graphics color level 1, sends the histogram output device to the nearest line printer and stores the results in MD file 1000.

AX OTYPE=GO

This entry defines the outline type as cursor drawn. It is not necessary to specify an MD file number, as this example assumes the MD file was specified in a previous command.

C

Lists an image 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:

FRM	SS	YYDDD	HHMMSS	BAND	LINE	ELEM	LMAGN	EMAGN	AREA
5	61	91042	91300	4	2923	41	1/4	1/4	9400

Each column is defined below.

Column	Definition
FRM	image frame number
SS	sensor source
YYDDD	year and Julian day
HHMMSS	image time
BAND	band number
LINE	first (uppermost) image line displayed in the image frame
ELEM	first (leftmost) image element displayed in the image frame
LMAGN	the first number is the blowup factor applied to the image lines; the second number is the area's resolution
EMAGN	the first number is the blowup factor applied to the image elements; the second number is the area's resolution
AREA	area number

A local ALT C on an image whose area resides on the mainframe lists the correct frame directory because the DF command transfers the directory to the workstation. The AREA number listed is -1.

Entering ALT C on the host for an image residing on the workstation will list incorrect results in most cases because a local DF command does not transfer the frame directory to the host. The directory listed is for the last image frame displayed while in the host mode.

CF

Changes an image frame directory.

Format

CF *image parm1 ... parm13 [keywords]*

Parameters

image image frame number of the directory to be changed

parm1...13 new directory value; insert X to indicate no change

Keywords

NAV= *pri sec* changes the primary and secondary
codicil navigation pointers

TERM= terminal number of the directory to be changed

TV= *raster pictel* changes the first TV raster and pictel
coordinate

Remarks

Caution!

Be very careful when using this command. It changes the mainframe copy of the frame directory only. The directory on the workstation is unaffected. Changing the frame directory entry is not recommended under normal conditions.

Examples

To change the time, HHMMSS, from 19 GMT to 1930 GMT, first list the frame directory for the displayed frame 1.

Type: **LF**
Press: **Enter**

The information below is displayed on the screen.

FRAM	SS	YYDDD	HHMMSS	LINE	ELEM	ZCOR	LNBU	ELBU	LNBD	ELBD	BAND	AREA
1	30	84289	190000	2192	8181	1	1	1	1	1	NA	104

To change the time,

Type: **CF 1 X X 193000**
Press: **Enter**

This information is displayed on the screen.

FRAM	SS	YYDDD	HHMMSS	LINE	ELEM	ZCOR	LNBU	ELBU	LNBD	ELBD	BAND	AREA
1	30	84289	193000	2192	8181	1	1	1	1	1	NA	104

NAVIGATION CODICIL--3084289 193000
FIRST LINE OF DATA AT TV LINE=1 ELEMENT=1
AREA CREATION DATE 84289 190023
FRAME CREATION DATE 84289 200313

COTV

Contours the data inside the cursor and produces a 2- or 3-dimensional plot.

The ADDE command *IMGPROBE* may be used in place of COTV. See the ADDE section of the *McIDAS-X* or *McIDAS-OS2 Users Guide* for more information.

Format

COTV *interval unit [keywords]*

Parameters

interval contour interval number; do not use with a 3-dimensional plot (default=1)

unit **BRIT** brightness values (default)
RAD radiance
TEMP temperatures
RAW value stored in the area
 or any valid unit that is output by command D

Keywords (General)

BAND= band number of the area; the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=current image band)

COLOR= graphics color level (default=1)

DIM= 2 draws a 2-dimensional display (default)
 3 draws a 3-dimensional mesh, where height is related to brightness

OPTION= G 2-dimensional gradient (default=digital data counts)

RANGE= *beg end* range of values to contour (default=0 to 255)

Keywords (2-Dimensional Only)

LMOD= 1 labels every line
 2 labels alternate lines (default)

SIZE= height of the labels, in pixels, (default=6)

SMO= contour smoothing parameter (default=20)

Keywords
(3-Dimensional Only)**ELE=** *min max* element limits for the plot (default=50 600)**ELV=** elevation viewing angle (default=20°)**LINE=** *min max* line limits for the plot (default=50 450)**PAN=** graphics panel number; the range is 1 to 4**ROT=** rotation angle (default=45°)**Remarks**

You may need to blow up the image resolution when using 2-dimensional contours. Otherwise, the plot inside the cursor may be too cluttered to read. You can use a maximum of 30,000 pixels within the cursor when plotting.

Examples**COTV**

This entry contours the entire brightness range of the data inside the cursor with a contour interval of 1 count. The 2-dimensional plot is plotted in graphics color level 1.

COTV 3 COLOR=3

This entry contours the data inside the cursor every 3 counts in graphics color level 3.

COTV DIM=3

This entry draws a 3-dimensional mesh of the data inside the cursor.

CPYPATH

Copies a path to an LW file.

Format	CPYPATH <i>sfile</i> <i>spath</i> <i>dfile</i> <i>dpath</i>								
Parameters	<table><tr><td><i>sfile</i></td><td>source file of the path to copy (default=PATHFIND)</td></tr><tr><td><i>spath</i></td><td>source path name to copy</td></tr><tr><td><i>dfile</i></td><td>destination file of the path</td></tr><tr><td><i>dpath</i></td><td>destination path name (default=<i>spath</i>)</td></tr></table>	<i>sfile</i>	source file of the path to copy (default=PATHFIND)	<i>spath</i>	source path name to copy	<i>dfile</i>	destination file of the path	<i>dpath</i>	destination path name (default= <i>spath</i>)
<i>sfile</i>	source file of the path to copy (default=PATHFIND)								
<i>spath</i>	source path name to copy								
<i>dfile</i>	destination file of the path								
<i>dpath</i>	destination path name (default= <i>spath</i>)								
Remarks	CPYPATH copies any path from the system path LW file PATHFIND, or any other LW file containing paths, and writes it to a new LW file which can then be saved on tape. Once you create an LW file containing paths, you can use any of the PATH utilities by adding the FILE= keyword.								
See Also	See the PATH command in this chapter.								
Examples	CPYPATH PATHFIND CYCLONE MYLWFILE 3MAY8312Z This entry copies path CYCLONE from the system path file to LW file MYLWFILE and renames the path 3MAY8312Z. CPYPATH PATHFIND STORM ANYFILE This entry copies path STORM from the system path file to LW file ANYFILE. CPYPATH MYLWFILE WATCHBOX NEWLWFILE BOX126 This entry copies path WATCHBOX from LW file MYLWFILE to LW file NEWLWFILE and renames the path BOX126.								

CTY

Displays county outlines.

Format

CTY *map color [keywords]*

Parameters

map **SAT** satellite projection (default)
 MID Midwest
 NTE northeast region
 STE southeast region
 NTC north central region
 PL plains
 STC south central region
 W western region
 Post Office abbreviation

color graphics color level (default=1)

Keywords

LAT= *min max* minimum and maximum latitude bounds

LON= *min max* minimum and maximum longitude bounds

Examples

CTY

This entry displays county outlines over a satellite projection in graphics color level 1.

CTY STE 5

This entry displays county outlines of the southeast region in graphics color level 5.

CTY LAT=30 60 LON=80 110

This entry displays county outlines in satellite projection from 30° to 60°N and 80° to 110°W.

D

Lists the area values at the cursor center.

*The ADDE command IMGPROBE may be used in place of D.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.*

Remarks

To list the area value 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 area number, area coordinates, image coordinates, raw digital values, brightness values, radiance, blackbody temperature, or other units appropriate to the data source.

The data must reside on the mainframe.

Any 2-byte IR or dwell sound GOES data converted to 1-byte data, via command SENAA or AA, assigns missing temperature or brightness values of zero. Brightness values of 255 also indicate missing values. This includes data off the earth edge or missing lines.

See Also

Command OD lists the area inside the cursor.

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
<i>angle</i>	moves the cursor away from the original location by this angle, in degrees (default=0)
<i>inc</i>	increment to shift the cursor along its circular path, in degrees
<i>distance</i>	number of km to move the cursor from its original location
<i>din</i>	increment to step the cursor along its straight line path, in km
<i>lat</i>	degrees of latitude to move the cursor; northward is positive
<i>lon</i>	degrees of longitude to move the cursor; westward is positive

<i>line</i>	number of lines to move the cursor, downward is positive
<i>ele</i>	number of elements to move the cursor, rightward is positive
<i>raster</i>	number of TV lines (rasters) to move the cursor, downward is positive
<i>pictel</i>	number of TV elements (pictels) to move the cursor, rightward is positive

Keywords

COLOR=	graphics color level of the characters; the range is 1 to 7 (default=1)								
SIZE=	height of the plotted characters, in pixels (default=5)								
SYM=	<table><tr><td>.</td><td>use the period character to mark off distances (default)</td></tr><tr><td>+</td><td>use the plus sign to mark off distances</td></tr><tr><td>*</td><td>use an asterisk to mark off distances</td></tr><tr><td>o</td><td>use a lowercase o to mark off distances</td></tr></table>	.	use the period character to mark off distances (default)	+	use the plus sign to mark off distances	*	use an asterisk to mark off distances	o	use a lowercase o to mark off distances
.	use the period character to mark off distances (default)								
+	use the plus sign to mark off distances								
*	use an asterisk to mark off distances								
o	use a lowercase o to mark off distances								

Remarks

Command DIST will not run unless the satellite image is navigated or a MAP command is run.

Each cursor location that you mark 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 space bar.

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**
Press: **Enter**

The program replies:

```
READY
HIT SPACE FOR POINT---HIT . TO EXIT
```

Move the cursor to the point where you want the distance measured and type one period in place of one spacebar. The distance from the original cursor location appears on the screen. When you reposition the cursor, DIST refers to the original cursor location for measurements. You must type two periods (..) to exit.

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°.

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**

The output format of **E** looks like this:

	FRAME/SCENE	LATITUDE	LONGITUDE	TVLIN	TVELE	LINE	ELE
IMAGE	nn	DDD:MM:SS	DDD:MM:SS	nnnn	nnnn	nnnnnn	nnnnnn
GRAPHIC	nn/nn	DDD:MM:SS	DDD:MM:SS	nnnn	nnnn		

Each column is defined below.

Column	Definition
FRAME/SCENE	image and graphics frame number and navigated graphics scene number; normally 1 (using the first navigated graphics found); will vary for commands using panels (keyword PAN)
LATITUDE	latitude of a pixel on a navigated frame; use command EKEY UNIT=D to change to decimal output
LONGITUDE	longitude of a pixel on a navigated frame; use EKEY UNIT=D to change to decimal output
TVLIN	TV raster (line) coordinates
TVELE	TV pictel (element) coordinates
LINE	satellite image line coordinates
ELE	satellite image element coordinates

To list the graphics coordinates, disconnect the image using the **K** command on workstations supporting separate graphics frames.

The last image or graphic displayed via host-based commands is listed when a host-based **E** command is run. Use a local **E** command when displaying images or graphics that reside on the workstation since the navigation is not sent to the host.

ENH

Displays NESDIS enhancement curves.

Formats

ENH AVA

ENH *name*

Parameters

AVA lists the 2-letter names of the available enhancements (default)

name 2-letter enhancement curve name to display on the current frame

- AB locates tropical cyclones at night using IR to depict cirrus canopy and cumulus cloud bands
- BB enhances hurricane patterns in certain temperature ranges
- BD Dvorak hurricane curve
- CA enhances cold cloud tops with a steep linear enhancement for coldest and warmest data
- CB convective activity curve for fall and spring; enhances warm features, thunderstorms and CB tops; see also DB, EB and MB curves
- CC cloud interpretation over colder northern latitudes in winter
- CE cloud level differentiation at higher latitudes
- DB convective activity curve for spring and fall
- DD enhances features in the snow production temperature zone
- EB middle cloud and convective activity; delineates thunderstorm turrets that penetrate the tropopause
- EC convective cloud tops in the cool season
- FB hydrology curve, for snow melt in spring and soil moisture content
- FC for Midwest snow melt and soil moisture content
- GC hurricane and severe storm cirrus canopies to measure cloud height, structure and precipitation
- HB low clouds and better definition in clouds above the freezing level
- HC frontal band cloudiness, CBS and tropical developments
- HD low clouds, freezing level, mid-tropospheric frontal
- JF identifies ocean currents, low cloud systems and freezing level; also estimates rainfall
- JG locates water mass boundaries, low stratus and coastal fog in winter

JH	cloud top temperature for summer convective storms in the subtropics and tropics for IR only
JI	IR enhancement in the Gulf Floater for the cold season
LA	visible enhancement for forecasting early morning fog dissipation
MB	defines low and mid clouds, thunderstorms and overshooting tops
NA	summer enhancement to depict sea surface temperature, low clouds, clouds near trade wind inversions, freezing level, and thunderstorm tops
PB	coastal upwelling along western U.S. from late spring to early fall
PC	coastal upwelling along western U.S. during late summer to early fall
SA	sea surface temperature detail during winter while maintaining landmark features
TA	land/water/low cloud contrast, precipitation estimates and tropical storm classification
ZA	standard general purpose enhancement for IR sectors; enhances low and upper level clouds
ZB	standard enhancement displaced towards colder temperatures for use in northern latitudes in winter

Remarks

The enhancements available in this command are taken from the 1983 GOES User's Guide, U.S. Department of Commerce, NOAA and NESDIS, J. Dane Clark, ed., Office of Satellite Data Processing and Distribution, Washington, D.C.

Examples**ENH**

This entry lists the 2-letter names of the available enhancement curves.

ENH PC

This entry applies the enhancement PC to the current image.

ET

Generates enhancements for image frame overlays.

Formats

ET NOR
 ET CUR *scale*
 ET TIN *scale ry yg gc cb bm*
 ET CON *vlo vhi irlo irhi scale ry yg gc cb bm*

Parameters

NOR coloring for false stereo which combines straight red with a straight green enhancement table

CUR uses the current enhancement of the IR image to color the overlay of the IR and visible images

TIN colors the visible sensor image with the information derived from the IR image; although the colors are predefined, you can select the breakpoints and saturation

CON colors the visible sensor image with information derived from the IR image; only brightness values falling within both thresholds are colored; the colors are predefined, but you can choose the breakpoints and thresholds

scale color depth, saturation, or scaling factor to apply; the smaller the number the darker the tint; the range is 1 to 10 (default=5)

ry the point in the opposite frame scale to change from a red to a yellow tint; the range is 0 to 63 for towers and 0 to 255 for WIDE WORD Workstations (WWW) (default=63 for towers and 255 for WWWs)

yg the point in the opposite frame scale to change from a yellow to a green tint; the range is 0 to 63 for towers and 0 to 255 for WWWs (default=63 for towers and 255 for WWWs)

gc the point in the opposite frame scale to change from a green to a cyan tint; the range is 0 to 63 for towers and 0 to 255 for WWWs (default=63 for towers and 255 for WWWs)

cb the point in the opposite frame scale to change from a cyan to a blue tint; the range is 0 to 63 for towers and 0 to 255 for WWWs (default=63 for towers and 255 for WWWs)

<i>bm</i>	the point in the opposite frame scale to change from a blue to a magenta tint; the range is 0 to 63 for towers and 0 to 255 for WWWs (default=63 for towers and 255 for WWWs)
<i>vlo</i>	lowest visible threshold; the range is 0 to 63 for towers and 0 to 255 for WWWs (default=0)
<i>vhi</i>	highest visible threshold; the range is 0 to 63 for towers and 0 to 255 for WWWs (default=63 for towers and 255 for WWWs)
<i>irlo</i>	lowest IR threshold; the range is 0 to 63 for towers and 0 to 255 for WWWs (default=1)
<i>irhi</i>	highest IR threshold; the range is 0 to 63 for towers and 0 to 255 for WWWs (default=64 for towers and 256 for WWWs)

Remarks

ET only works on tower and WIDE WORD workstations. It generates a 63 x 63 enhancement table on tower workstations and a 255 x 255 on WWWs for overlaying frames.

Use the N key to toggle the table in and out of the video refresh data path. When the table is in the data path, two video frames are combined pixel by pixel, and the combination is displayed on the TV monitor. The pixel value from the current frame is indexed into the rows of the table, while the pixel value from the frame opposite the current frame is indexed into the columns of the table. The value at the intersection contains the red-blue-green levels to display for this pixel. A common application is to tint clouds in varying colors according to height. In this case, the opposite frame displays an IR image complementing the current visible picture.

The table runs from pixel values 0 through 255. The 0-63 input values on the tower are scaled to 0-255 for display. A pixel with a level zero causes peculiar things to happen on the screen.

Deep Convection Enhancement

The CON (deep CONvection) enhancement is similar to the TIN method described below, except it also accepts IR and visible input thresholds. Assume a visible image is placed on a frame with the corresponding IR image on its opposite. The CON option lightly colors the visible image based on the IR data. It enhances only the image data that falls within both the visible and IR thresholds. The color scheme is based on five color breakpoints which may or may not fall within the IR threshold. The lowest shading of the IR is red. The color breakpoints are based on a data range from 0 to 63 on towers and 0 to 255 on a WWW. The visible input threshold enables you to differentiate between deep convection cloud tops and high cirrus, indistinguishable from the IR data alone.

Cloud Height Tinting

The TIN (cloud height TINting) enhancement sets up a special table to achieve the following effect. Assume the current frame contains a GOES image from the visible sensor and the opposite frame contains the corresponding image from the IR sensor. The TINT table lightly colors the visible sensor image with information derived from the IR image. The lowest values of IR tint the visible image with red, followed by yellow, green, cyan, blue and magenta. Since the brightness values in the IR correspond roughly to temperature, and temperature to height, the color tint of the visible image is an indication of cloud height.

You can control the color depth of the tint and the breakpoints of the *ry*, *yg*, *gc*, *cb* and *bm* changes in the IR brightness scale.

Examples

In all examples, press the N key to display the pseudocoloring frame overlay.

ET NOR

This entry applies red and green pseudocoloring to view the false stereo image with red and green glasses.

ET CUR 3

This entry uses the current pseudocoloring on the IR image to tint the visible image. The 3 lightens the color saturation.

ET TIN X 20 30 40 50 60

This entry uses the default saturation to tint the overlay, using brightness breakpoints of 20, 30, 40, 50 and 60 on the tower.

ET CON 20 220 21 221 4 42 84 126 168 210

This entry uses the convective enhancement method to tint the overlays, using brightness breakpoints of 42, 84, 126, 168 and 210, between visible brightnesses 20 and 220 and IR brightnesses 21 and 221.

FIND

Locates a city by name and state.

Format

FIND state "string"

Parameters

state

2-character state abbreviation

"string"

character string to search for the city; both double quotes are mandatory

Remarks

If only one match is found, the cursor will move to its location. When the string is entered without a space before the second set of quotes, all cities either partially or entirely matching the string are listed. If a space is included, the string must be a perfect match with the city in order to be listed. Counties and latitude and longitude locations are also listed.

FIND also works on graphics coordinates. FIND only works for the contiguous USA (48 states).

Examples

FIND WI "MAD"

This entry lists all Wisconsin cities beginning with MAD. They are Madison, Madison Truax Airport and Madsen.

FIND WI "MAD "

This entry (with one space following MAD) lists no exact matches.

FIND WI "MADISON "

This entry lists Madison only. Two spaces are necessary to distinguish it from Madison Truax Airport. The cursor moves to the location of Madison.

FRONT

Draws a front through path points.

Format

FRONT *option path [keywords]*

Parameters

<i>option</i>	COLD	draws a cold front
	OCL	draws an occluded front
	SPLI	draws a curve fitting only
	STA	draws a stationary front
	WARM	draws a warm front

<i>path</i>	path name generated by command PATH; FRONT's curve is fitted along the points generated by PATH
-------------	---

Keywords

ALTC=	height of the cold front barb, in pixels (default=15)
ALTW=	height of the warm front barb, in pixels (default=10)
BASE=	length of the cold or warm front barb, in pixels (default=15)
COLOR=	<i>curve cold warm</i> color of the curve, cold front and warm front; occluded front has a purple curve (default=blue blue red)
DASH=	YES plots a dashed line for the SPLI option NO does not plot a dashed line (default)
GRA=	graphics frame number (default=current)
ORIENT=	1 plots barbs on the right side of the front (default) -1 plots barbs on the left side of the front
SKIP=	number of pixels between barbs (default=12)
SYM=	COLD first barb on the front is a cold barb (default) WARM first barb on the front is a warm barb

Remarks

The front curve is generated as a cubic spline approximation based on the set of points collected in command PATH. If the curve is not as smooth as you want, correct your points with the PATH edit command. The frontal barbs can be modified in size and color with several FRONT keywords.

Examples**PATH MAKE WARMF**

This entry generates a path file named WARMF. After selecting the desired points along a warm front with the **PATH ADD** command, you are ready to draw the front.

FRONT WARM WARMF

This entry draws a warm front using the points from path file WARMF.

FRONT SPLI SETC COLOR=4

This entry fits a curve using the points in path file SETC in graphics color level 4.

FRONT STA FRONT1 SYM=WARM

This entry draws a stationary front using the points in path file FRONT1. The first barb is a warm barb.

GO

Generates an area statistics outline.

Remarks

Use command GO to outline the region on which the area statistics can be calculated. Before running GO, use the AX command to initialize the area statistics MD file. To execute GO,

Type: **GO**

Press: **Enter**

Then wait for the message shown below to appear on the screen.

HIT SPACE TO BEGIN, "." TO END

Place the cursor at the desired starting location and type a period and press Enter. Move the cursor and repeat this procedure to outline the region of data until the outline is closed. We suggest defining a single letter command or F key with a period to reduce this to a single keystroke. You can exit the program at any time by pressing two periods (..), but if you terminate the outline drawing before closing it, the outline is not stored.

Up to 500 outlines may be assigned to a workstation. Outline numbers are assigned sequentially.

See Also

Set keywords TINT, COLOR and LAG in command AX to adjust the line drawing parameters.

LF

Lists an image frame directory.

Format	LF <i>bframe eframe</i> [<i>keywords</i>]	
Parameters	<i>bframe</i>	beginning image frame number to list (default=current)
	ALL	lists all image frames
	<i>eframe</i>	ending frame number to list (default= <i>bframe</i>)
Keywords	FORM=	ALL lists an expanded directory
		STN lists the standard listing (default)
	TERM=	terminal number with the image frames to list (default=current)
Remarks	The number of the current frame is taken from User Common.	
Examples	LF This entry lists the current image frame directory.	
	LF 2 6 This entry lists the image frame directory for frames 2 through 6.	
	LF 5 FORM=ALL This entry lists an expanded image frame directory for frame 5.	
	LF ALL TERM=9 This entry lists the image frame directory for all frames on terminal 9.	

LP

Displays a line plot of an image line.

*The ADDE command **IMGPROBE** may be used in place of LP.
See the ADDE section of the **McIDAS-X** or **McIDAS-OS2 Users Guide**
for more information.*

Formats

LP CUR [keywords]

LP SEG [keywords]

Parameters

CUR draws a line plot the values of the entire TV line that passes through the cursor center (default)

SEG draws a line plot of a line segment

Keywords

BAND= band number; the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=current image band)

COLOR= graphics color level (default=3)

PLOT= any ASCII character

SLD plots with connecting line segments (default)

DOT plots only dots with no line segments

SCALE= *ymin ymax xmin xmax*

modifies the x and y scales to new values
(default=0 255 1 *max pixels*)

UNIT= calibration unit; use the D key to list choices
(default=original from area)

Remarks

A line plot of image data is drawn on the graphics.

Examples

LP

This entry draws a line plot using the values of the entire TV line passing through the cursor center.

LP CUR

This entry draws a line plot of the cursor center line.

LP SEG

This entry prompts you to position the cursor at the desired starting location. Type two periods, then move the cursor to the end of the segment and type two more periods. The line plot is drawn after typing the second set of periods.

The above command WINDOW may be used in place of LPLOT.
See the ADEE section of the McIDAS-MVS or McIDAS-001 Users Guide
for more information.

LPLOT (keyword)

Format

SCALE - the plot will be
redrawn the X and Y scales to new values
(default is 100 1 0.000000)

Keyword

A group of image data is drawn on the graphics. A maximum of 9999
points (data values) can be plotted. First numbers increase from left to
right and top to bottom inside the cursor.

Remarks

The command Q to list the data values in the cursor.

See Also

LPLOT

Examples

This entry draws a line plot of all data values inside the cursor.

LPLOT SCALE=60 170

This entry draws a line plot of data inside the cursor. The Y axis
(brightness) ranges from 60 to 170. The X axis (pixel number) ranges
from 1 to the cursor size.

LPLOTS

Displays a line plot of an image box.

The ADDE command IMGPROBE may be used in place of LPLOTS. See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide for more information.

Format	LPLOTS [keyword]
Keyword	SCALE= ylo yhi xlo xhi modifies the x and y scales to new values (default=0 255 1 max pixels)
Remarks	A graph of image data is drawn on the graphics. A maximum of 9999 points (data values) can be plotted. Pixel numbers increase from left to right and top to bottom inside the cursor.
See Also	Use command OD to list the data values in the cursor.
Examples	LPLOTS This entry draws a line plot of all data values inside the cursor. LPLOTS SCALE=60 170 This entry draws a line plot of data inside the cursor. The Y axis (brightness) ranges from 60 to 170. The X axis (pixel number) ranges from 1 to the cursor size.

MAKNAV

Generates a navigation codicil for an area.

Format	MAKNAV <i>area</i> [<i>keywords</i>]
Parameter	<i>area</i> area number to navigate (default=0)
Keywords	LAMB= <i>npl npe slat1 slat2 qlon size pole</i> Lambert conformal projection <i>npl</i> pole image line <i>npe</i> pole image element <i>slat1</i> first standard latitude (default=30) <i>slat2</i> second standard latitude (default=60) <i>qlon</i> normal or center longitude <i>size</i> size of one pixel, in km, at standard latitude <i>pole</i> N North Pole (default) S South Pole MERC= <i>eql eqe slat qlon size</i> Mercator projection <i>eql</i> equator image line <i>eqe</i> equator image element <i>slat</i> standard latitude (default=0) <i>qlon</i> normal or center longitude <i>size</i> size of one pixel, in km, at standard latitude PLANET= planet to navigate (default=EARTH) PS= <i>npl npe slat qlon size pole</i> polar stereographic projection <i>npl</i> pole image line <i>npe</i> pole image element <i>slat</i> standard latitude (default=60) <i>qlon</i> normal or center longitude <i>size</i> size of one pixel, in km, at standard latitude <i>pole</i> N North Pole (default) S South Pole RADR= <i>cenl cene clat clon size rot</i> radar projection <i>cenl</i> radar site center line <i>cene</i> radar site center element <i>clat</i> radar site latitude <i>clon</i> radar site longitude <i>rot</i> 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

Remarks

Specifying the *area* parameter assigns a ticketed codicil number to the area and enters it in the string table under the name NAVNUM. If *area* is not specified, use the CA command to attach the navigation to an area by entering either **CA area NAV=#NAVNUM** or **CA area NAV=ticket#**.

See Also

Use the REMAP command to remap into the map projection created by MAKNAV.

Example

The example below takes a current satellite image in area 112 and remaps into a Mercator projection in area 6000.

GA 6000 500 640

This entry creates area 6000 to be 500 lines by 640 elements.

CA 6000 30 85058 123000 1 1 8 8

This entry changes the area directory to get the satellite day, time, upper-left line, element and resolution.

MAKNAV 6000 MERC=2000 2000 0 90 1

This entry generates a Mercator projection codicil entry for area 6000.

REMAP 112 6000

This entry remaps area 112 into area 6000.

MAP

Displays a map and latitude/longitude lines on a graphics frame.

Format **MAP** *map color1 LALO color2 [keywords]*

Parameters	<i>map</i> DEF	draws a map in Mercator projection with latitude/longitude ranges that you specify; the map file is selected as in SAT below
	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=25 80, longitude=55 179; map file OUTLUSAM
	OUTLCONC	Northcentral USA county outlines
	OUTLCONE	Northeast USA county outlines
	OUTLCOPL	Great plains USA county outlines
	OUTLCOSC	Southcentral USA county outlines
	OUTLCOSE	Southeast USA county outlines
	OUTLCOW	Western USA county outlines
	OUTLHPOL	world political outlines
	OUTLHRES	world coastal outlines; high resolution
	OUTLSUPU	continental USA; high resolution
	OUTLSUPW	world coastal outlines; medium resolution
	OUTLUSAM	North America; medium resolution
	<i>PO abbreviation</i>	NY, for example; 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 in satellite projection using 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 Mercator projection; map file OUTLSUPW
	<i>color1</i>	graphics color level for the map (default=1)
	LALO	draws latitude/longitude lines with a map (default=does not draw lines)
	<i>color2</i>	graphics color level for latitude/longitude lines (default=2)
Keywords	ACC=	accuracy for latitude/longitude lines; the range is 1 to 10 (default=4)
	BOX=	YES <i>color</i> 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
	ELE=	<i>min max</i> TV element extents (default depends on frame size)
	GRA=	graphics frame number (default=current)
	IMA=	image frame number (default=current)
	INT=	<i>lat lon</i> intervals for latitude and longitude lines (default=computed)
	LABEL=	YES <i>clat clon</i> adds latitude/longitude line labels (default); specify the graphics color levels for latitude and longitude; use this keyword when LALO is specified; see the Labels section below
		NO does not add labels to latitude/longitude lines
	LAT=	<i>lat1 lat2</i> latitudes of the points at the lower-right and upper-left corners of the map
	LIN=	<i>min max</i> TV line extents (default depends on frame size)

LON=	<i>lon1 lon2</i>	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 that coordinate on the TV screen if only <i>lat1</i> and <i>lon1</i> are entered; in other cases, the point with coordinate <i>lat2</i> , <i>lon2</i> is placed in the upper-left corner; the other point is shifted or removed to create a map with a given scale; defaults for the SAT projection are the range taken from the image or map geographical limits; for CONF and MERC projections, defaults are latitude -90° to +90° and longitude -180° to +180°
NAME=	map file name; it overrides a default map file	
PAN=	panel number; the range is 0 to 4 (default=0, whole screen)	
PRO=	CONF	conformal projection; see the Projections section below
	MERC	pseudo-Mercator projection (default for all maps except H, VH, L or LALO)
	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=	standard latitude(s) for a CONF projection only; one value for a polar stereographic projection (default=60°); two values for general Lambert conformal projection	
SLON=	standard longitude, for a CONF projection only (default is computed)	
Remarks	To display a map on a satellite image, use L, H, VH or SAT (or X, since SAT is the default) as the map parameter. The BOX= keyword will not work with these map types.	

Projections

The MERC (pseudo-Mercator) projection has equidistant latitude lines; otherwise it is the same as a true Mercator projection. The CONF (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 aborts. 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.

Labels

In some cases, labels overlap. You can usually adjust this by changing the latitude/longitude line intervals and/or the accuracy.

Examples

The examples below are divided into four groups that include satellite, pseudo-Mercator projection, polar stereographic and general Lambert conformal projections. Command lines that won't fit on one line are continued on a second line that is indented.

Satellite Projection

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.

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 CA X LALO NAME=OUTLCOW

This entry draws a map of California from map file OUTLCOW instead of the default map file OUTLUSAM.

Polar Stereographic**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 1:200000000 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=-40**

This entry is the same map of Australia but rotated by 180°, with the South Pole at the lower-right corner of the screen.

**Lambert Conformal
Projection**

MAP PRO=CONF LAT=20 60 LON=70 165 SLAT=40 60

This entry draws a Lambert conformal map of the USA.

**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/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.

MDOA

Lists area statistics calculations.

Format	MDOA <i>outline image [keyword]</i>	
Parameters	<i>outline</i>	outline number for which to list statistics ALL lists statistics for all outlines
	<i>image</i>	image number to which the outline is applied; the range is 1 to 30
Keyword	MDF=	MD file number containing the statistics (default is from MDU SET file)
Remarks	The image number is not an image frame number, but the order in which the outline is applied to image data. Up to 30 image sectors can use one outline. Their numbering begins with one, where one is the first image used.	
Examples	MDOA ALL This entry lists the area statistics calculations for all outlines.	
	MDOA 50 5 MDF=5210 This entry lists statistics from the fifth image applied to outline 50 stored in area statistics MD file 5210.	

OD

Lists the data bounded by the cursor.

**The ADDE command IMGPROBE may be used in place of OD.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Format

OD mode data a b c [keyword]

Parameters

<i>mode</i>	C	contours data
	F	data frequency distribution
	I	data interval percentage
	L	lists data (default)
	S	lists data by sensor source; GOES visible only
<i>data</i>	A	values stored in the area (default)
	B	grayscale brightness conversion
	R	radiance
	T	temperature conversion, in Kelvin
<i>name</i>		any valid calibration name (BRIT, TEMP, RAD, etc.)
<i>a,b,c</i>		for mode I, specify <i>a</i> and <i>b</i> as the data range; for mode C, specify <i>a</i> as the contour interval, and <i>b</i> and <i>c</i> as the horizontal and vertical replicators

Keyword

BAND= band number (default=from the frame directory)

Remarks

Mode S lists brightness data by sensor source. Do not use the *data* positional parameter with the S mode.

Use the D command to determine the available data types in the area. If the data is not on disk, OD can't list it. The output is the same resolution as the area. Use system keyword DEV to send output to the line printer.

If you list data values for large cursor sizes, the output is divided into sets. A set is 50 lines by the number of elements that can fit on a text screen. This number depends on the data type, i.e., you can fit more brightness values on a line than IR radiance values. If there are too many elements for a line of data, the set is divided into parts. The set and part numbers are the x and y coordinates, respectively, of the data blocks relative to the upper-left corner of the cursor.

The default data parameter is the calibration type. To determine the calibration type, use the command: **LA area FORM=ALL.**

Any 2-byte IR or dwell sound GOES data converted to 1-byte data, via command SENAA or AA, assigns missing temperature or brightness values of zero. Brightness values of 255 also indicate missing values. This includes data off the earth edge or missing lines.

Examples

OD

This entry lists the data for the area bounded by the cursor.

OD F

This entry lists a histogram of the data inside the cursor. It is linearly scaled so that a small peak in the distribution is less than one level on the graph. Consequently, the peak is not displayed.

Suppose you've displayed a GOES VIS image and you want to list the default values in the cursor area. To do this, enter:

OD L

This entry lists the digital brightness values in the cursor area on the image, as the default calibration type for a GOES VIS image is BRIT.

OD L T

This entry lists the data for the area inside the cursor on the text screen. Use this entry with IR data.

Suppose you've displayed a GOES IR area at full resolution (4km). If the cursor size is 115 lines by 51 elements and you want to list digital radiance data on the text screen, enter:

OD L R

This entry lists 6 blocks of data by sets and parts like this:

Block	Set, Part
1	1,1
2	1,2
3	2,1
4	2,2
5	3,1
6	3,2

Since there are 115 lines of data to list, OD breaks the data into 3 sets. Sets 1 and 2 have 50 lines each; set 3 has 15 lines. Because there are 15 radiance values to list per line and the screen can only display 11, OD displays each set in 2 parts. Part 1 shows the first 11 values; part 2 shows the last 4 values.

To determine where the data blocks lie in relation to the cursor, paste the parts together sequentially from left to right for each set. Then paste the sets together sequentially from top to bottom. The result looks like this:

	Part 1	Part 2
Set 1	Block 1	Block 2
Set 2	Block 3	Block 4
Set 3	Block 5	Block 6

PATH

Displays a 2-dimensional path for object tracking.

Formats

```

PATH ADD name CUR [keywords]
PATH ADD name index CUR [keywords]
PATH ADD name index FILE [keywords]
PATH ADD name index station [keywords] "label
PATH ADD name index lat lon [keywords] "label
PATH DEL name CUR [keywords]
PATH DEL name index CUR [keywords]
PATH DEL name index1 index2 ... indexn FILE=
PATH DIR [keywords]
PATH EDIT name index [keywords] "label
PATH LIST name FILE=
PATH MAKE name FILE=
PATH PLOT name [keywords]
PATH QUIT name FILE=

```

Parameters

ADD	adds a segment to a path
CUR	interactively use the cursor to add or delete a path point
DEL	deletes a path segment
DIR	lists the directory of paths including path name, date created and user's initials (default)
EDIT	edits a latitude, longitude or path label
FILE	adds path points from an LW file; the file must have the same name as the path
LIST	lists the contents of a path; includes indices, latitudes, longitudes and labels
MAKE	generates a path
PLOT	plots the path on the graphics frame
QUIT	deletes a path
<i>name</i>	path name, 1 to 12 characters

<i>index</i>	number assigned to a point on the path; points are numbered sequentially beginning at one
<i>station</i>	3- or 4-letter station ID used as a point on the path
<i>lat</i>	latitude of the point
<i>lon</i>	longitude of the point
<i>"label"</i>	label plotted at the latitude and longitude of the point; 1 to 20 characters

Keywords

COLOR=	graphics color level of the path (default=2)
FILE=	source file of the path (default=PATHFIND)
LABEL=	YES plots labels on the path NO does not plot labels on the path (default)
LAT=	latitude for the point; valid with EDIT option only
LCOLOR=	graphics color level for labels (default=3)
LINE=	YES draws a line between points (default) NO does not draw a line between points
LON=	longitude for the point; valid with EDIT option only
LSIZE=	label height, in pixels (default=6)
NUM=	number of entries to list, starting at the top; valid with DIR option only (default=all entries)
USER=	user initials of the owner; valid with DIR option only (default=current) ALL lists paths for all owners

Remarks

PATH can be used to plot tracks of weather systems (e.g., hurricanes) or draw boundaries such as watch boxes.

Use the EDIT option to add labels or change latitude and longitude points.

To create or use paths from a file other than the system path file (PATHFIND), specify the source file with keyword FILE=.

When adding or deleting points from a path, all points are automatically renumbered with new index numbers. Adding a new point does not overwrite the existing point. When adding points with the interactive mode, you may either manually specify or use the cursor to determine which index number the new point receives. When using the cursor, the new point is assigned the index number that follows the index number of the point inside the cursor. Changing the cursor type to BOX or XBOX can help isolate points to delete or renumber.

LW files can be used to create a new path or add points to an existing path. Information for each point should be on a separate line in either of these formats:

indexnumber stationid label

indexnumber latitude longitude label

For example, if the LW file TRACK consists of the following 3 lines:

```
1 42:34:30 69:26:11 42N 69W
2 PVD Providence
3 42:22 71:02 Boston
```

the command **PATH ADD TRACK 1 FILE** will add the three points and labels to the path named TRACK. Points defined by the *stationid* format are converted to latitude and longitude when stored in the path.

Examples

PATH MAKE ANDREW

This entry generates a path named ANDREW.

PATH DIR

This entry lists all the paths for the current user stored in the default path file PATHFIND.

PATH ADD ANDREW 1 11:00 38:00 "8/16/92 22 UTC Position

This entry adds the first point in the path ANDREW. Nothing is plotted on the graphics.

PATH ADD ANDREW 2 14:30 47:10 "8/17/92 22 UTC Position

This entry adds the second point to the path ANDREW. Again, nothing is plotted on the graphics.

PATH PLOT ANDREW LABEL=YES COLOR=3 LSIZE=10 LCOLOR=4

This entry plots the points in path ANDREW in graphics color level 3 with labels in graphics color level 4, 10 pixels high.

PATH ADD ANDREW CUR LABEL=YES

This entry begins the interactive mode where the cursor is used to add one or more points to path ANDREW. Position the cursor at the desired location and then type and enter a period (two periods will appear). Repeat the process to add multiple path points. Labels can be added to the new points. For example, . "8/18/92 22 UTC Position will add the new point and its label. You must insert at least one space between the period and double quote. Because LABEL=YES was included with this entry, each new point and its label are plotted. Without it, the label is not plotted, although it is stored with the point in the path. To exit the interactive PATH command, type and enter two periods (three will appear). The end of the newly generated path will be plotted and the new points listed.

PATH LIST ANDREW

This entry lists all points in path ANDREW.

PATH ADD ANDREW 5 CUR LABEL=YES

This entry begins the interactive mode where the cursor is used to add one or more new points before point 5. Each new point and its label are plotted.

PATH DEL ANDREW 3 CUR

This entry deletes point 3 from the path and begins the interactive mode where additional points are deleted by placing the cursor over the point to delete. The corrected path is redrawn each time a point is removed.

PATH DEL ANDREW 1 4 6 7

This entry deletes points 1, 4, 6 and 7 from path ANDREW.

PATH EDIT ANDREW 1 LAT=11:10 LON=38:20

This entry changes the latitude and longitude of point 1 in path ANDREW to 11:10N and 38:20W, respectively.

PATH QUIT HUGO FILE=HURRICANE

This entry removes the path HUGO from the path file HURRICANE.

PATH ADD VT 5 BTV "BURLINGTON, VT

This entry adds BTV to the path VT and labels it BURLINGTON, VT.

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*
 PC G *line ele [keyword]*

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

G positions the cursor at the line and element graphics 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

Keyword

SCENE= virtual graphics scene number used with PC G

Remarks

The *station* parameter can be either a letter identifier, or a RAOB station number. Non-US stations are available.

Command PC disconnects the mouse from the cursor control on OS/2-based workstations. Use command P to regain cursor control. On McIDAS-X workstations, PC has no effect on the cursor control.

The image or graphics must have a frame directory on the mainframe when using options L, E and I, i.e., they will not work on images or graphics that reside on the workstation's disk.

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 MSN

This entry positions the cursor over Madison, WI.

PC T 100 356

This entry positions the cursor at TV raster 100, pictel 356.

PC G 200 300 SCENE=4

This entry positions the cursor at graphics coordinates 200 and 300 on the displayed virtual graphics scene 4.

PC L 72250

This entry positions the cursor over Brownsville, TX.

PLAX

Lists satellite parallax at the cursor position.

Formats

PLAX [*keywords*]

PLAX *height direction* [*keywords*]

Parameters

height cloud height, in kilometers

direction **CG** cloud to ground parallax (default)
 GC ground to cloud parallax

Keywords

LAT= latitude to position the cursor (default=current)

LON= longitude to position the cursor (default=current)

Remarks

Use keywords LAT and LON to position the cursor over the desired location.

Use PLAX without parameters to calculate delta latitude/longitude per km at the cursor position.

Examples

PLAX

This entry calculates satellite parallax at the cursor position.

PLAX 8 LAT=40 LON=90

This entry positions the cursor at 40°N and 90°W and calculates the cloud to ground parallax at 8 km above the earth.

PO

Restores the position of the area statistics outline.

Format	PO <i>boutline eoutline</i> [<i>keywords</i>]		
Parameters	<i>boutline</i>	beginning outline to restore; the range is 1 to 500	
	<i>eoutline</i>	ending outline to restore (default= <i>boutline</i>)	
Keywords	AREA=	area number of the image (default=current)	
	IMA=	image frame number (default=current)	
	MDF=	MD file number for the results (default=current)	
	NAV=	<i>pri sec</i>	primary and secondary navigation codicils stored in the area statistics MD file (default=image area codicils)
Remarks	One outline may be applied to a maximum of 30 different images.		
See Also	Use command GO to generate the outline.		
Examples	PO 20 This entry draws outline 20 over the displayed image.		
	PO 36 38 MDF=6512 This entry restores outlines 36 to 38 from MD file 6512.		

SEG

Updates a graphics frame loop with the current graphics.

Format	SEG <i>bframe eframe bvirt evirt option [keyword] "command</i>		
Parameters	<i>bframe</i>	beginning physical graphics frame number to search	
	<i>eframe</i>	ending physical graphics frame number to search	
	<i>bvirt</i>	beginning virtual graphics to search	
	<i>evirt</i>	ending virtual graphics to search	
	<i>option</i>	BOTH	writes on both the physical and virtual graphics
		PHYS	writes on the physical graphics frame only (default)
		VIRT	writes on the virtual graphics only
	<i>"command</i>	graphics command to execute	
Keyword	OPT=	ALL	displays the graphics command on each frame in the designated boundaries
Remarks	SEG automatically erases the physical and virtual graphics before writing to them. If BOTH is used, the physical and virtual starting points may differ. However, they must have the same length. Use SEG in the scheduler to update frames.		
See Also	Use command SEQG to update image and graphics frames.		
Examples	SEG 1 4 "SP T VT This entry plots the current surface temperatures for Vermont in the latest graphics frames 1 to 4.		
	SEG 1 4 1001 1004 BOTH "SHIPC T FL;SP WXS FL This entry contours the current temperatures for Florida and surrounding ship reports, and plots current weather symbols over Florida in the latest graphics frames 1 to 4 and virtual graphics 1001 to 1004.		

TOWNS

Lists the 20 towns closest to the cursor center.

Remarks

TOWNS only works on navigated images. The information below is listed for the 20 towns closest to the cursor position.

Column	Definition
1	city
2	county
3	state
4	latitude
5	longitude

MD Files

Chapter 7. MD Files

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LSCHE

Lists an MD file schema.

Formats

LSCHE *schema version* **HED**

LSCHE **FIND** *key*

Parameters

schema name of an MD file schema to list (no default)

ALL lists all schemas

version schema version number to list

ALL lists all schema version numbers
(default=latest version)

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 that contain the specified *key*

Remarks

Before using LSCHE, register the MD files using command SCHE which is documented in the *McIDAS-X* and *McIDAS-OS2 Users Guides*.

Use LSCHE to list the schema header and keys.

Examples

LSCHE IRAB

This entry lists the international upper air file schema.

LSCHE ISFC ALL DEV=P

This entry prints all versions of the international surface file schema.

LSCHE ISHP X HED

This entry lists the header only for the international ship file schema.

LSCHE FIND IDN

This entry lists all schemas that contain the key IDN (upper air station ID number).

MDC

Copies MD files.

*The ADDE command PTCOPY may be used in place of MDC.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.*

Format	MDC <i>sfile dfile [keywords]</i>	
Parameters	<i>sfile</i>	source MD file number
	<i>dfile</i>	destination MD file number (default= <i>sfile</i>)
Keywords	DC=	destination MD file column starting point; see the Remarks
	DR=	destination MD file row starting point (default=1)
	APPEND	appends data to the first row in the file
	SC= <i>min max</i>	source MD file column range (default=all)
Remarks	SR= <i>min max</i>	source MD file row range (default=all)
	To copy an entire file, supply only the MD file numbers. Use all the keywords when adding onto another file. If the size of the destination file is too small to contain the new data, generate a new destination file of the appropriate size with MDU MAKE .	
	If keyword DC is omitted and the row header contains the key CMAX, MDC begins copying into the first empty record. Otherwise, MDC begins copying into column one.	
Examples	MDC 30 6512 This entry copies MD file 30 into MD file 6512.	
	MDC 34 6514 SR=1 20 SC=1 50 DR=10 DC=1 This entry copies MD file 34 into MD file 6514, moving rows 1 to 20 and columns 1 to 50 into file 6514, beginning at row 10, column 1.	

MDCLAS

Classifies MD file data.

Format	MDCLAS <i>key min max [keywords]</i>
Parameters	<i>key</i> key from the MD file; use MDL to list keys <i>min</i> minimum value for a key <i>max</i> maximum value for a key
Keywords	COLOR = graphics color level of the plot (default=3) INT= group interval; NUM is calculated MDF= MD file number (default=from MDU SET file) NUM= number of classes; INT is calculated (default=10) XP= <i>min max div sdiv</i> x-axis plot parameters <i>min max</i> range values of the scale <i>div</i> number of divisions <i>sdiv</i> number of subdivisions YP= <i>min max div sdiv</i> y-axis plot parameters
Remarks	Any key found in the MD file may be used as a subset of the file (ROW, COL are valid). The MD file original units are used.
Example	MDCLAS T 243 303 INT=2 MDF=4 TIME=18 LAT=30 50 LON=80 110 This entry plots frequency of temperature in 2°C bins at 1800 UTC, from ISFC file 4, latitude 30 to 50, longitude 80 to 110, from 243K to 303K (i.e., -30°C to 30°C).

MDE

Edits MD files.

Formats

MDE *file* **KEYS=LIST**
MDE *file* **KEYS=DEL** *conditions*
MDE *file* **KEYS=REST** **ROW=** **COL=**
MDE *file* **INI** **SAVE** **KEYS=** **VALU=** **UNIT=** *conditions*

Parameters

file MD file number to edit (default is set by **MDU SET** or by the previously executed MDE command)

INI initializes the string table entries used by MDE (default=does not initialize)

SAVE saves keywords and values in the string table; all subsequent executions of MDE will recall the values saved in the string table (default=does not save)

Keywords

KEYS= keys in the MD file to edit
DEL deletes the records that meet 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=**

UNIT= units in which the new key values are entered

VALU= new value for the keys
MISS enters a missing data value

conditions search conditions to meet when searching for a record to edit; use any or all of the following options:

COL= *min max* column number or range of numbers (default=1)

ROW= *min max* row number or range of numbers (default=1)

schema keyword= *low high units*
 range and units of the schema keyword you're searching for; units are only necessary if the range is specified in units other than those native to the MD file

Remarks

Save keys, values, units and search conditions in a string table (see parameters INI and SAVE) so you don't have to reenter them for each MDE execution. Before editing system MD files, move them into your assigned file numbers with command MDC. If you delete a record accidentally, you can recover it with keyword **KEYS=REST** provided you have not repacked the file. Use **MDE KEYS=LIST** to list key names; MDE will only edit data keys.

See Also

Use command MDEX to edit row and column headers.

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 6512 INI SAVE KEYS=T VALU=32 UNIT=F ID=MSN
TIME=12**

This entry searches for MSN at 12 GMT in MD file 6512 and changes the temperature to 32°F. It initializes the string table and saves the new string values.

MDE KEYS=T TD VALUE=MISS ID=MSN TIME=12

This entry flags the temperature and dew point as missing for MSN at 12 GMT.

The following example edits a ship observation in MD file 31. Before editing data, move MD file 31 into your assigned file numbers (file 6512 in this example).

1. **MDC 31 6512**

This entry copies MD file 31 into MD file 6512.

2. **MDU SET 6512**

This entry sets the MD file pointer to MD file 6512. All subsequent MD file commands will be performed on this file.

3. **MDE KEYS=T UNIT=C VALU=20 ID=KWPR TIME=12**

This entry locates ship ID KWPR at 12 GMT. Once located, its temperature is changed to 20°C.

4. **MDE KEYS=DEL ROW=5 COL=10 15**

This entry deletes the records at row 5 and columns 10 to 15.

5. **MDE KEYS=REST ROW=5 COL=10**

This entry restores the record at row 5 and column 10.

MDEX

Modifies the row and column headers in an MD file.

Format	MDEX <i>file</i> KEYS= VALU= ROW= COL=		
Parameter	<i>file</i>	MD file number to edit (default=set by MDU SET or the previously executed MDU, MDE or MDEX command)	
Keywords	COL=	<i>min max</i>	column number or range of numbers to edit (default=0)
	KEYS=	MD file row and column header keys to edit	
	LIST	lists the keys in the MD file schema; the keys are listed as row and/or column header keys and data keys	
	ROW=	<i>min max</i>	row number or range of numbers to edit (default=0)
	VALU=	new values for the keys	

Remarks

Caution!

Be very careful when using MDEX. Any change made in a row header is reflected in all records in that row. The same is true with column headers. To determine which schema keys are in the row and column headers, use **MDEX KEYS=LIST**.

See Also

Use command MDE to edit the data keys.

Example

MDEX 6512 KEYS=TIME VALU=12 ROW=5 7

This entry changes the times in the row headers of rows 5 through 7 of MD file 6512 to 12 GMT.

MDFIX

Edits MD files using the cursor position or station ID.

Format	MDFIX <i>sfile dfile time station [keywords]</i>	
Parameters	<i>sfile</i>	source MD file with the bad data (default=current)
	<i>dfile</i>	destination MD file for the corrected data; use an X in place of <i>dfile</i> if you do not want to copy the entire MD file (default=current)
	<i>time</i>	time of the bad report, HH:MM:SS
	<i>station</i>	station ID or IDN (for example, LBB or 72451) with the bad report; if excluded, the cursor position is used
Keywords	LEV=	for IRAB data, specify vertical level
	PARM= <i>p1 p2</i>	MD file parameters in error
	TYPE=	0 hourly surface report (default)
		1 special report, see the MD file schema for this value
		2 special report, see the MD file schema for this value
	UNIT= <i>u1 u2</i>	units of the parameters if not the default unit
	VAL=	<i>v1 v2</i> corrected value of the parameter
		MISS enters the missing value
Remarks	You must specify values for keywords PARM and VAL. It is acceptable to specify only one parameter in error and one corrected value. Copy real-time MD files into scratch files before modifying them. You can change a maximum of two parameters at one time.	
Example	MDFIX 5 6512 18 MSN PARM=T VAL=25 This entry edits the ISFC data for station MSN, parameter T, to 25° C. It then copies the edited MD file into 6512 from real-time file 5.	

MDL

Lists MD file data.

**The ADDE command PTLIST may be used in place of MDL.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Format	MDL file ALL INI SAVE KEYS= UNIT= conditions	
Parameters	file	MD file number (default is set by MDU SET or the previously run MDL or MDE command)
	ALL	lists all occurrences that meet the search <i>conditions</i> (default=first occurrence)
	INI	initializes the string table entries used by MDL (default=does not initialize)
	SAVE	saves the MDL keywords in the string table (default=does not save)
Keywords	FWIDTH=	changes the default field widths for each variable; the practical maximum number of characters is 10
	KEYS=	keys to list from the MD file schema
	LIST	lists the keys in the MD file schema by row and/or column header keys and data keys
	UNIT=	units in which to list the values; specify this keyword if the units are different than those native to the MD file
	conditions	search conditions to meet when searching for a record to list; use any or all of the following options:
	COL=min max	column number or range of numbers (default=1)
	ROW=min max	row number or range of numbers (default=1)
	schema keyword=low high units	range and units of the schema keyword you're searching for; units are only necessary if the range is specified in units other than those native to the MD file

Remarks

Position the parameters for keyword UNIT in the same order as those listed in keyword KEYS.

Use the letter X as a placeholder to list a key in its default unit.

You can store keys, units and search conditions in a string table; see parameters INI and SAVE. It is not necessary to type them for each MDL command.

See Also

Use command MDEX to edit the row and column headers. Use command MDE to edit the data keys.

Examples**MDL**

This entry lists the first record of the current MD file.

MDL 3 KEYS=ID TIME T TD ID=MSN TIME=12

This entry lists the station ID, time, temperature and dew point for Madison, WI, at 12 UTC from MD file 3.

**MDL 33 ALL KEYS=ID T TD TIME LAT LON T=20 21 C
UNIT=X C C TIME=12**

This entry lists the station ID, temperature, dew point, time, latitude and longitude from all reports in MD file 33 meeting the conditions TIME=12 UTC and the temperature is between 20° and 21° C.

**MDL INI SAVE KEYS=Z T TD DIR SPD UNIT=FT F F X
KT ROW=1 COL=5**

This entry lists the height (FT), temperature (F), dew point (F), wind direction, and wind speed (KT) for row 1, column 5.

**MDL 15 ALL KEYS=Z T TD DIR SPD UNIT=FT F F X KT
ROW=1 COL=5 FWIDTH=6 X X X 5**

This entry lists the height, temperature, dew point, wind direction and wind speed for row 1, column 5. The field widths for the height and wind speed are expanded to accommodate larger values while temperature, dew point and wind direction maintain their default field widths.

MDOX

Lists MD file records.

**The ADDE command PTLIST may be used in place of MDOX.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Format

MDOX *file* [*keywords*]

Parameter

file MD file number (default=from **MDU SET** *file*
or the previously run MDL or MDE command)

Keywords

COL= *min max* lists this range of column numbers
(default=all)

ROW= *min max* lists this range of row numbers
(default=all)

Remarks

Use ROW=0 to list column headers; use COL=0 to list row headers.

Unlike MDL, MDOX lists all records, even those flagged as missing or deleted. A record is considered missing if the first field in that record is missing.

Examples

MDOX

This entry lists all MD file records.

MDOX 1000 ROW=1 10 COL=1 50

This entry lists MD file 1000, rows 1 to 10 and columns 1 to 50.

MDPACK

Packs MD file data records.

Format	MDPACK <i>file</i> [<i>keywords</i>]	
Parameter	<i>file</i>	MD file number greater than 99 (default=current)
Keywords	COL=	last column to pack (default=entire row)
	CMAX	finds the last entry in each row; it is more efficient than allowing the default of the entire row
	ROW=	<i>min max</i> row range to pack (default=entire file)
Remarks	MDPACK will not pack system files 1 to 99, nor will it pack MD files that contain column headers.	
Examples	MDPACK This entry packs the current MD file and points at the file with MDU SET <i>file</i> .	
	MDPACK 1000 COL=CMAX This entry packs the entire MD file 1000.	

MDSCAT

Displays a scatter plot of MD file data.

Formats

MDSCAT *xparm yparm [keywords]*

MDSCAT *xparm1 oper1 xparm2 yparm1 oper2 yparm2 [keywords]*

Parameters

<i>xparm</i>	x-axis key from the MD file; use command MDL to list the keys
<i>yparm</i>	y-axis key from the MD file
<i>xparm1</i>	first x-axis key from the MD file
<i>oper1</i>	first arithmetic operator (+, -, *, /) for addition, subtraction, multiplication and division
<i>xparm2</i>	second x-axis key from the MD file
<i>yparm1</i>	first y-axis key from the MD file
<i>oper2</i>	second arithmetic operator (+, -, *, /) for addition, subtraction, multiplication and division
<i>yparm2</i>	second y-axis key from the MD file

Keywords

COLOR=	graphics color level of the plot (default=3)
ERASE=	YES erases the graphics frame before plotting (default) NO does not erase the graphics frame
GRA=	graphics frame number (default=current)
PAN=	specifies the graphics quarter panel, 0, 1, 2, 3, 4 (default=0, full screen)
MDF=	MD file number of the data (default=from MDU SET file)
SYMB=	plots any single alphanumeric character DOT plots a 1 x 1 box (default) SLD plots a line, no symbol

XP= *min max div sdiv* x-axis plot parameters
 min max range of values of the scale; must be used for
 xparm and *yparm*
 div number of divisions
 sdiv number of subdivisions

YP= *min max div sdiv* y-axis plot parameters

Remarks Any schema key found in the MD file may be used to set up search conditions. ROW and COL are valid. Use the MD file original units.

See Also Use command MDL to list the MD file data.

Examples

MDSCAT TD T

This entry plots temperature (T) versus dew point (TD) for the current hour. The MD file is from **MDU SET file**.

MDSCAT TD T MDF=4 ST=WI TIME=18

This entry plots temperature vs. dew point over Wisconsin at 1800 UTC. The data is from ISFC file 4. Temperatures are in Kelvin.

MDSCAT PCP T - TD MDF=2048

This entry plots dew point depression (T-TD) versus 6-hourly precipitation amounts (PCP) over all rows and columns. The data is from MD file 2048.

MDSCAT AV4T / AV5T AV4T - AV5T MDF=9435 ROW=1

This entry plots the ratio between channels 4 and 5 (AV4T/AV5T) versus the difference between these same two channels (AV4T-AV5T) for those values found in the first row. The collocated AVHRR brightness temperatures for each channel are from MD file 9435.

MDU

MD file utility.

The ADDE commands PTCOPY and PTLIST may be used in place of MDU COPY and MDU LIST respectively. See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide for more information.

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
<i>sfile</i>	source MD file number
<i>dfile</i>	destination MD file number
<i>bfile</i>	beginning MD file number
<i>efile</i>	ending MD file number (default= <i>bfile</i>)
<i>file</i>	MD file number
<i>id</i>	identification number, YYDDD (default=0 if used with the MAKE option; default=current ID if used with the DIR option)
<i>"comments"</i>	comments added to the file; double quote is mandatory
<i>schema</i>	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; lists according to created date, YYDDD

Examples

MDU COPY 34 6512

This entry copies MD file 34 into MD file 6512.

MDU DEL 6512 6514

This entry deletes MD files 6512 through 6514.

MDU DIR 6512 91290 "Ship and buoy data"

This entry changes the ID in the directory of MD file 6512 to 91290 and the comment to 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 2 X X 91300 "Ship data"

This entry creates MD file 1 of schema ISHP, version 2, using row and column defaults. It uses the ID of 91300 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, contours or grids data from MD files or grids.

The ADDE commands GRDDISP and PTDISP may be used in place of MDX SOU=GRID and MDX SOU=MDF OUT=PLO respectively. See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide for more information.

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 parameters as defined in the prefixed strings
<i>ugrid</i>	grid number containing the u component of the wind
<i>vgrid</i>	grid number containing the v component of the wind
<i>grid</i>	one or more grid numbers of parameters to plot or contour
<i>parm</i>	MD file keys or derived parameters; see the Remarks

Keywords

MDX has many keywords for fetching and displaying data. They are divided into these five groups.

- Parameter keywords control the display characteristics for individual parameters, e.g., color, size, units, 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.
- The 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)
	GWIDTH=	graphics width, in pixels (default=1)
	LSIZE=	label height, in pixels; if LSIZE=5, all data is plotted; numbers can overwrite each other (default=8) <i>u v</i> if parameter WNV is specified, a negative LSIZE plots vectors of constant length; if parameter WIN is specified, a positive LSIZE defines a relative length of the wind barb; specify <i>u</i> and <i>v</i> with the same value
	MISS=	missing data code (default=Z80808080)
	OFFSET=	operates on the data before output (default is DIVIDE=1, OFFSET=0); value = (data-OFFSET)/DIVIDE; the UNIT keyword uses the DIVIDE and OFFSET
	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 (default=MD file original units); the possible conversions are: K to C,F MB to INHG MPS, MPH, KT (any) KM, M, CM, MM, MI, NMI, YD, FT, IN (any) SYMB plots weather symbols (default=CHAR)
	SYMB	plots weather symbols (default=CHAR)
Output Keywords	GELE=	<i>beg end</i> graphics element extents (default=depends on screen size)
	GLINE=	<i>beg end</i> graphics line extents (default=depends on screen size)
	GRA=	graphics frame number (default=current)
	IMA=	image frame number (default=current)

	OUT=	PLO	plot (default)
		CON	grid and contour
	PANEL=		graphics panel quadrant; the range is 0 to 4 (default=0, full screen)
	PELE=	<i>beg end</i>	text screen/printer element extents (default=1 60 for the text screen; 1 120 for the printer)
	PLIN=	<i>beg end</i>	text screen/printer line extents (default=1 19 for the text screen; 1 60 for the printer)
	Grid/Contour Keywords	CINT=	grid contour interval (default=2)
		DER=	WNV plots wind vectors from 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=	<i>min max</i> minimum and maximum latitude extents
		LON=	<i>min max</i> minimum and maximum longitude extents
		MAP=	MID Midwestern USA NA North America USA USA <i>Post Office abbreviation</i>
		MCHAR=	map character for the text screen/printer output (default=...)
		MCOLOR=	graphics map color level (default=1) 0 for no map

Miscellaneous Keywords	PRO=	CONF	conformal projection for polar stereographic or Lambert conformal
		MERC	Mercator projection (default)
		SAT	satellite projection
	SCALE=		map scale ratio for PRO=CONF (default=not true to scale)
	SLAT=	<i>lat1 lat2</i>	standard latitude(s); for polar stereographic specify <i>lat1</i> ; for Lambert conformal specify <i>lat1 lat2</i> ; used with keyword PRO=CONF (default=60, polar projection)
	SLON=		specifies the normal longitude for polar stereographic or Lambert conformal; used with keyword PRO=CONF (default=centers longitude of the map limits)
	DERIVE=		use 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 <i>elevation</i> with sea level pressure; for SVCA or ISFC files use: DERIVE=T TD PSL ZS for RAOB or IRAB files use: DERIVE=T TD P
	GRIDF=		GRID file number to read (default is from IGU SET)
	MDF=		MD file number to read; you can combine up to six MD files using PREFIX= (default is from MDU SET)
	PREFIX=		MDX stores options and defaults in the system context file with a special prefix at the beginning of the string name; it can be any character except numeric or # (default=\$)
			If you set up two context files using PREFIX , you can execute 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 1 row can be operated on, for example: PREFIX=\$!

SORT= of the form: *keyword1 loval1 (hival1) keyword2 loval2 (hival2) . . . etc.*, 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 the IGTV command.

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 the PREFIX= keyword with any single character except a pound sign (#) or alphanumeric character.

The most basic command to display data is MDX *parm*, where *parm* is any key name in the MD file (use command MDL to list keys), or one of the following derived parameters: ABV, ADV, DVG, MIX, SPD, STR, THA, THAE, VOR, WIN or WNV. The command plots all of this parameter from the current MD file (from MDU SET) on the current graphics frame on a map 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 91250 at 12Z over the Midwest, you must know that the height, day, and time are referenced through parameters Z, DAY, and TIME in the MD file.

The command to enter (with upper air data in MD file 5000) is:

**MDX Z MAP=MID MDF=5000 SORT=P 500 DAY 91250 TIME
 12**

When the plus sign (+) is used as the last positional parameter, the command information is stored in the string table, but the data is not plotted. This allows execution of arithmetic operations on the data using the PLT option with the PREFIX= keyword.

4. Plot the temperature from the current surface data for 15Z for a lat/lon box. The MD file is the last digit of the Julian day (if zero, MD=10); today is 91322.

MDX T MDF=2 LAT=30 50 LON=90 105 SORT=TIME 15

The above entry doesn't specify only the hourlies (no specials) and degrees C. When MDX is done plotting, enter the command below.

EG; MDX T SORT=TIME 15 TYPE 0 UNIT=C

5. Plot a 1000-500 mb thickness over the USA, at 12Z, using 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. Take the winds from MD files 2020 and 2045 and grid them for streamlines.

MDX STR + MDF=2020 PREFIX=\$

MDX STR + MDF=2045 PREFIX=!

MDX PREFIX=\$-!

7. Use THAE, THA, and MIX. It is much 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 the 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 at 12 GMT.

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 use plot.

MDX PLT

11. Plot the *u* and *v* component vectors on the graphics from grids 1 and 2.

MDX PLT 1 2 SOU=GRID DER=WNV MAP=MID

12. Plot the weather symbols for 18 UTC on day 91301.

**MDX WX1 UNIT=SYMB MDF=1 MAP=MID SORT=TIME
18 TYPE 0 DAY 91301**

SENMD2

Sends a mainframe MD file to a workstation.

*The ADDE command PTCOPY may be used in place of SENMD2.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.*

Formats

SENMD2 *sfile dfile dschema NEW maxrow maxcol [keywords]*
SENMD2 *sfile dfile dschema APP maxrow maxcol [keywords]*
SENMD2 *sfile dfile dschema REP brow maxrow maxcol [keywords]*

Parameters

<i>sfile</i>	source MD file number on the mainframe (no default)
<i>dfile</i>	destination MD file number on the workstation (default= <i>sfile</i>)
<i>dschema</i>	destination MD file schema (default=source schema)
NEW	creates a new destination MD file or deletes the destination file if it exists (default)
APP	appends new data to the empty rows following the last filled row
REP	writes new data to <i>brow</i>
<i>maxrow</i>	maximum number of rows in the destination file; if not specified, the <i>search conditions</i> determine the number of rows in <i>dfile</i>
<i>maxcol</i>	maximum number of columns in the destination file; if not specified, the <i>search conditions</i> determine the number of columns in <i>dfile</i>
<i>brow</i>	row number to begin writing new data

Keywords

search conditions=low high may include any keys in the *sfile* schema
(default=ROW=1, COL=ALL)

Remarks

If you create a new destination file using the **NEW** option, you can use any combination of keys in the source MD file (*sfile*) as search conditions so the destination MD file (*dfile*) contains only needed data. For example, **SENMD2 5 10 X NEW TIME=12 T=273 300 TYPE=0 LAT=30 40 LON=80 120** creates workstation MD file 10 containing only the 12 UTC surface hourly data within the specified lat/lon range and temperatures between 273 and 300 K.

You cannot use **ADD** or **REP** to revise destination MD files created using non-header keys as search conditions, for example **T=**, without completely rewriting the file using the **NEW** option.

Use the **APP** and **REP** options only when *search conditions* include column and row header keys. For example, if mainframe MD file 5 is in the ISFC schema, **SENMD2 5 10 X REP 3 24 TIME=2 CO=CN TYPE=0** replaces the data in row 3 of workstation MD file 10 with Canada's 02 UTC surface hourly data.

Specify *maxrow* and *maxcol* with the **APP** and **REP** options when the scheduler is running the SENMD2 command. The scheduler creates the destination MD file if it does not exist; if it already exists, *maxrow* and *maxcol* are ignored. As data cannot be appended to a row greater than *maxrow* or to a column greater than *maxcol*, choose these parameters carefully when creating the destination MD file, especially if data will be appended later.

See Also

Use command **LSCHE** to list the keys in the *sfile* schema.

Examples**SENMD2 103**

This entry sends the first row in MD file 103 to a workstation in the current directory.

SENMD2 10 100 X NEW 72 1250 ROW=1 6

This entry sends rows 1 to 6 from mainframe MD file 10 to workstation MD file 100, which has 72 rows, with 1250 columns in each row.

SENMD2 24 24 IRSG NEW IDN=72000 72999 TIME=12

This entry sends the 12 UTC upper air significant level data for all U.S. stations from mainframe MD file 24 to the same workstation MD file.

SENMD2 4 4 X NEW 12 TIME=12 TYPE=0

This entry sends 12 UTC type zero data from mainframe MD file 4 to row 1 of the newly created workstation MD file 4. The new file has 12 rows and the same number of columns in each row as mainframe MD file 4.

SENMD2 4 4 X APP TIME=13 23 TYPE=0

This entry appends 13 to 23 UTC type zero data from mainframe MD file 4 to workstation MD file 4.

SENMD2 3 3 X REP 20 TIME=19 21 TYPE=0

This entry replaces workstation MD file 3 data with data from mainframe MD file 3. The new data (19 to 21 UTC type zero) is written in rows 20 through 22 and overwrites any data previously stored in them.

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CG

Defines the grid header description.

Format	CG <i>bgrid</i> <i>egrid</i> [<i>keywords</i>]
Parameters	<i>bgrid</i> beginning grid number <i>egrid</i> ending grid number (default= <i>bgrid</i>)
Keywords	DATE= new date, YYDDD (default=current) GRIDF= grid file number (default=current) LEVEL= new vertical level (default=current) NAME= new parameter name (default=current) SRC= new source program name (default=current) TIME= new time (default=current)

Examples

CG 10 15 DATE=94236

This entry changes the date in the grid header for grids 10 through 15 in the current grid file to day 94236.

CG 14 TIME=151000 NAME=TD GRIDF=3610

This entry changes the time to 1510 UTC and the parameter name to TD in the header for grid 14 in grid file 3610.

COMP GG

Compares grid values to collocated grid values.

Format	COMP GG <i>gridf1 grid1 gridf2 grid2</i> [<i>keywords</i>]		
Parameters	<i>gridf1</i>	grid file number containing <i>grid1</i> (default=current)	
	<i>grid1</i>	grid number 1; the x-axis variable (default=1)	
	<i>gridf2</i>	grid file number containing <i>grid2</i> (default= <i>gridf1</i>)	
	<i>grid2</i>	grid number 2; the y-axis variable (default= <i>grid1</i> + 1)	
Keywords	COL=	<i>min max</i>	column limits for <i>grid1</i> (default=full grid)
	COLOR=		color level of the plot (default=3)
	ERASE=	YES	erases the graphics frame before plotting (default)
		NO	does not erase the graphics frame before plotting
	FACTOR=	<i>sca1 sca2</i>	internal scaling factors for the grid values (default=1.0 1.0)
	FORM=	DIFF	produces a scatter plot display with a zero line and the <i>grid2</i> values along the x-axis, and the <i>grid2-grid1</i> differences along the y-axis
		NONE	does not plot (default)
		REGR	produces a scatter plot display with a line of slope equal to the linear regression results; displays the <i>grid2</i> values along the x-axis and the <i>grid1</i> values along the y-axis
		RESID	produces a scatter plot display with a zero line and the <i>grid2</i> values along the x-axis and the linear regression residuals along the y-axis
		SCAT	produces a scatter plot display with a line of slope=1 and the <i>grid2</i> values along the x-axis and the <i>grid1</i> values along the y-axis

GRA= graphics frame number (default=current)
LAT= *min max* latitude limits for *grid1* (default=full grid)
LON= *min max* longitude limits for *grid1* (default=full grid)
MAX= upper limit threshold (default=*grid1* maximum)
MIN= lower limit threshold (default=*grid1* minimum)
ROW= *min max* row limits for *grid1* (default=full grid)
SYMB= plot symbol; can be any single alphanumeric character
 DOT 1x1 box (default)
 SLD line, no symbol
XL= x-axis label; up to 12 characters (default=X)
XP= *min max div sdiv*
 x-axis (GD1 file) plot parameters; *div* is the number of
 divisions; *sdiv* is the number of subdivisions
YL= y-axis label; up to 12 characters (default=Y)
YP= *min max div sdiv*
 y-axis (GD2 file) plot parameters; *div* is the number of
 divisions; *sdiv* is the number of subdivisions

Remarks

The values of *grid2* are collocated relative to the values of *grid1*. Several different sets of comparison statistics representing descriptive (univariate), difference (bivariate), and correlation (regression) statistical measures are displayed to the text screen, regardless of the graphics display format section.

Examples**COMPGG**

This entry compares the grid values of the first and second grids in the current grid file. It does not plot the values.

COMPGG 2048 34 2049 34 FORM=SCAT

This entry compares the grid values from the thirty-fourth grid in grid file 2048 and the thirty-fourth grid in grid file 2049. A full set of descriptive (univariate), difference (bivariate), and correlation (regression) statistics are displayed on the text screen, while a scatter plot of the two sets of grid values are displayed on the current graphics frame along with a line representing a "perfect" correlation (slope=1). Data values are plotted with a small square symbol.

```
COMPGG 216 70 13 1 FORM=REGR SYMB=* ROW=20 30  
COL=1 20 MIN=230 MAX=280 XP=220 300 5 10  
YP=220 300 5 10 GRA=15
```

This entry compares the grid values of an NGM model 500 mb temperature 12 UTC forecast from the 12 UTC run in grid file 216, grid 70 to a radiosonde observation of 500 mb temperature in grid file 13, grid 1. It plots a scatter plot with a line of slope equal to the linear regression result. The values compared are limited to those grid points between rows 20 to 30 and columns 1 to 20 from the NGM 500 temperature 12 UTC forecast grid, and the collocated grids in the RAOB observation. The lower limit value threshold is set to 230° K; the upper limit threshold is set to 280° K. Data values are plotted with the asterisk (*) symbol. X- and y-axis values plotted between 220 and 300° K are divided into 5 intervals with 10 subdivisions. The comparison statistics are displayed on the text screen. The scatter plot is displayed on graphics frame 15.

COMPMG

Compares MD file values to collocated grid values.

Format	COMPMG <i>parm level mdf gridf grid [keywords]</i>		
Parameters	<i>parm</i>	MD file variable parameter, e.g., T, TD, SPD, DIR, Z, etc.	
	<i>level</i>	MD file level parameter, e.g., SFC, TRO, 1000, 850, 700, etc.	
	<i>mdf</i>	MD file number (default=current)	
	<i>gridf</i>	grid file number (default=current)	
	<i>grid</i>	grid number (default=1)	
Keywords	COLOR=	color level of the plot (default=3)	
	ERASE=	YES	erases the graphics frame before plotting (default)
		NO	does not erase the graphics frame before plotting
	FACTOR=	internal scaling factor for grid values (default=1.0)	
	FORM=	DIFF	produces a scatter plot display with a zero line and the grid values along the x-axis and the MD file minus the grid differences along the y-axis
		NONE	does not plot (default)
		REGR	produces a scatter plot display with a line of slope equal to the linear regression results; displays the grid values along the x-axis and the MD file values along the y-axis
		RESID	produces a scatter plot display with a zero line and the grid values along the x-axis and the linear regression residuals along the y-axis
	SCAT	produces a scatter plot display with a line of slope=1 and the grid values along the x-axis and the MD file values along the y-axis	
	GCOL=	<i>min max</i>	grid column limits (default=full grid)

GRA= graphics frame (default=current)
GROW= *min max* grid row limits (default=full grid)
MAX= upper limit grid value threshold (default=grid max)
MIN= lower limit grid value threshold (default=grid min)
SYMB= plot symbol; can be any single alphanumeric character
 DOT 1x1 box (default)
 SLD line, no symbol
XL= x-axis label; up to 12 characters (default=GDF//TYPE//LEVEL)
XP= *min max div sdiv*
 x-axis (GDF file) plot parameters; *div* is the number of
 divisions; *sdiv* is the number of subdivisions
YL= y-axis label; up to 12 characters (default=MDF//TYPE//LEVEL)
YP= *min max div sdiv*
 y-axis (MDF file) plot parameters; *div* is the number of
 divisions; *sdiv* is the number of subdivisions

Remarks

Grid values are collocated relative to MD file station locations. Several different comparison statistics representing descriptive (univariate), difference (bivariate), and correlation (regression) statistical measures are displayed on the text screen, regardless of the graphics display format selection. MD file *parm* values are quality controlled for bad data by establishing thresholds of $\pm 33\%$ of the grid min/max values.

Examples

**COMPMG T 500 2048 2048 34 FORM=REGR ROW=5
COL=1 100**

This entry compares the 500 mb temperature radiosonde data from MD history file 2048 contained in its fifth row and between columns 1 and 100 to the grid values from the thirty-fourth grid of grid file 2048. A full set of descriptive (univariate), difference (bivariate), and correlation (regression) statistics are displayed. The scatter plot of values is displayed on the current graphics frame along with a line of slope equal to the linear regression coefficient between the two sets of values.

**COMPMG T 500 18 208 70 FORM=SCAT TIME=0
XL=0UTC 12VT NGM YL=0UTC RAOB GRA=15**

This entry compares 0 UTC 500 mb temperature radiosonde data from MD file 18 to an NGM model (500 mb temperature) 12 UTC forecast from the 0 UTC run. It produces a scatter plot with the x-axis labeled 0 UTC 12VT NGM and the y-axis labeled 0 UTC RAOB. The scatter plot is displayed on graphics frame 15. The comparison statistics are displayed on the text screen.

GMOVIE

Generates a streamline graphics movie.

Format **GMOVIE** *grid interval map [keywords]*

Parameters

<i>grid</i>	u-component grid number
<i>interval</i>	contour interval (default=2)
<i>map</i>	DEF define your map boundaries using keywords LAT and LON SAT satellite projection NONE no map US region NTE for Northeast, STE for Southeast, NTC for North central, STC for South central, W for Wisconsin, etc. <i>State Post Office abbreviation</i>

Keywords

ELE=	<i>min max</i>	graphics TV element limits
GRA=		graphics frame number to draw on (default=current)
GRAY=	<i>low high</i>	graphics color levels to use
GRIDF=		grid file number containing the grid (default=current)
GWIDTH=		graphics width, in pixels (default=current)
LAT=	<i>min max</i>	latitude limits; use with DEF <i>map</i>
LIN=	<i>min max</i>	graphics TV line limits
LON=	<i>min max</i>	longitude limits; use with DEF <i>map</i>
PAN=		panel number; the range is 1 to 4
RANG=	<i>low high</i>	range of grid values for use with keyword SLEN
SLEN=	<i>min max</i>	line segment lengths based on keyword RANG (default=2 40)

Remarks

Use command GU to change graphics color levels. Use command GMOVIE to generate a streamline graphics movie. Use command CM in the local mode to run (step through) the graphics movie created by GMOVIE. This series of commands allows you to convert gridded data to graphics levels, load them into the current frame (or the frame you specify), and run them as a streamline graphics movie.

If parameter *map* is DEF, you must specify keywords LAT and LON.

Examples**GMOVIE 25 X USA**

This entry creates a streamline graphics movie using the u-component grid 25 in the USA map projection. The V-grid is number 26.

Use the three commands below to change the graphics color level and generate and run a streamline graphics movie. Run command CM in the local mode.

GU MAKE 5 RED

This entry defines graphics color level 5 as red.

GMOVIE 14 4 DEF LAT=30 50 LON=80 110

This entry generates a streamline graphics movie using grid 14, with an interval of 4. It defines the map boundaries with latitudes ranging from 30° to 50° North and longitudes ranging from 80° to 110° West.

CM 1 6 INT=12

This entry steps through a streamline graphics movie, coloring graphics levels 1 to 6, with a timing interval of 12 milliseconds between each level.

GRDDIR

Grid directory utility.

Format	GRDDIR <i>file grid [keywords]</i>		
Parameters	<i>file</i>	grid file number (default=current)	
	<i>grid</i>	grid number (default=1)	
Keywords	COL=	<i>beg end</i>	beginning and ending column limits (default=1 <i>maximum column</i>)
	FORM=	EXP	lists the grid header directory in expanded format (default)
		ALL	lists all 64 words of the grid header
		NO	suppresses the grid header directory listing
	HIST=	YES	lists a grid point value histogram analysis
		NO	suppresses a grid point value histogram analysis (default)
	ROW=	<i>beg end</i>	beginning and ending row limits (default=1 <i>maximum row</i>)
	STAT=	YES	lists grid point summary statistics (default)
		NO	suppresses grid point summary statistics
	VAL=	YES	lists individual grid point values
		NO	suppresses the list of individual grid point values (default)
Remarks	The statistics, histogram and value options are exercised only over the specified row and column bounds. GRDDIR accesses the grid header and/or grid point values in text form. It is meant to supplement IGG LIST, not supersede it. GRDDIR lists grid point statistics and/or histogram analysis of the grid point value's distribution.		

Examples**GRDDIR**

This entry lists the grid header directory in expanded format for grid 1 of the current grid file. It also lists the grid value summary statistics for all grid points on grid 1 of the current grid file.

GRDDIR 30 16 VAL=YES ROW=1 5 COL=1 10

This entry lists the grid header directory in expanded format for grid 16 of grid file 30. It lists grid point summary statistics and individual grid point values for rows 1 through 5 and columns 1 through 10 in grid 16 of grid file 30.

GRDDIR X X FORM=ALL HIST=YES

This entry lists all 64 words of the grid header for grid 1 of the current grid file. It lists a grid point value histogram for all points in grid 1 of the current grid file.

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*

specifies the range of grid and brightness values

lowal 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 COL if an error results.

Examples

GRDIMG 11 360

This entry uses grid 11 data to generate area 360 using the minimum and maximum grid values to determine the pixel brightness range. All other values are stretched within this range.

GRDIMG 1 5000 RANGE=270 300

This entry uses grid 1 data to generate area 5000. The temperatures from 270° to 300° K take on values ranging from 0 to 255. All values below 270 are 0; those above 300 are 255.

IGG

Grid utility.

The ADDE commands GRDCOPY and GRDLIST may be used in place of IGG GET and IGG LIST respectively. See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide for more information.

Formats

```
IGG DEL bgrid egrid [keywords]
IGG LIST bgrid egrid [keywords]
IGG GET sgridf bgrid egrid dgridf bgrid
IGG MAKE grid1 option1 ... gridn optionn [keywords] "comment
IGG PACK sgridf
IGG DIR bgrid egrid "comment
```

Parameters

DEL	deletes grids
LIST	lists grids
GET	copies grids from one file to another or within the same file
MAKE	arithmetic operations performed on grids; see <i>option</i> below
PACK	sequentially rennumbers the grids
DIR	creates a grid directory
<i>bgrid</i>	beginning grid number
<i>egrid</i>	ending grid number
<i>sgridf</i>	source grid file number (default=terminal number or from IGU SET <i>gridf</i>)
<i>dgridf</i>	destination grid file number
<i>grid1 ... n</i>	a grid number
<i>"comment"</i>	comment appended to the grid directory; up to 48 characters
<i>option1 ... n</i>	ABV creates a grid of vorticity when the grid is u-comp (grid + 1 = v-comp) with the coriolis force; the second grid in the command is not used; units are 10^{-5}sec^{-1} ; see keyword V

ADD	adds grids on a point-by-point basis, or adds a constant to a grid; see the Remarks
ADV	advects the parameter specified as the second grid by the wind of the first grid; u-comp assumes grid + 1 = v-comp; see keyword V
AVG	averages grids
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 points with 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 the threat score, the second grid should be followed by two numbers that specify the range of values to include e.g., MAK 12 COM 18 -500 500
COR	creates a grid of the coriolis force using the boundaries of <i>grid 1</i>
DIV	divides a grid by another grid or a constant; see the Remarks
DSH	for deformation shear when the grid is u-comp (grid + 1 = v-comp); the second grid is not used; see keyword V
DST	for deformation stretch when the grid is u-comp (grid + 1 = v-comp); the second grid is not used; see keyword V
DVG	creates a grid of divergence when the grid is u-comp (grid + 1 = v-comp); units are 10^{-6} sec^{-1} ; if you specify a second grid, the divergence of that parameter is computed; if the second grid is zero, type ZERO for that grid; see keyword V

FIL	creates a grid with the specifications of the first grid but fills it with the constant value specified for the second, e.g., MAK 12
GEO	creates u and v component grids of the geostrophic wind; <i>grid1</i> must be a height grid
MPY	multiplies a grid by another grid or a constant; see the Remarks
RMS	computes RMS and bias differences of two named grids
SPD	creates a grid of wind speed; grid input is u-comp (grid + 1 = v-comp); the second grid is not used; it is not linked to u and v grids; it can be used with any two successive grids to reproduce a grid of the square root of the sum of the squares; see keyword V
SQR	for square root; only applies to the first grid
SUB	subtracts a grid from another grid or a constant; see the Remarks
VOR	creates a grid of vorticity when the grid is u-comp (grid + 1 = v-comp); units are 10^{-6} sec^{-1} ; the second grid in the command is not used; see keyword V
Keywords	
ADD=	YES corrects for meridional flow; only works with the derived options DVG and DST (default) NO does not correct for meridional flow
DAY=	sorts the list by day(s); use with the LIST parameter
DGRID=	destination grid number for the MAKE option (default=next available grid)
FORM=	ALL lists the grid header and directory; allows an individual directory explanation for each grid; use with the LIST parameter
GRIDF=	grid file to work on (default=from IGU SET <i>gridf</i>)
LAB=	labels the resulting grid (default depends on operation)
LEV=	sorts the list by level(s); use with the LIST parameter

NAME= sorts the list by parameter; use with the LIST parameter

SMO= YES smoothes the resulting grid; only works with the derived options ABV, DVG, VOR, ADB, DST and DSH (default)

NO does not smooth the resulting grid

SRC= sorts the list by data source; use with LIST parameter

TIME= sorts the list by time(s); use with LIST parameter

V= number of the v grid to input if it does not follow the u grid (default=u grid + 1)

VT= sorts the list by valid time(s); use with LIST parameter

Remarks

To apply a constant to an arithmetic function (ADD, SUB, MPY, DIV), 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 grid 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.

A sample output of command IGG LIST is shown below followed by the column definitions.

GRID FILE: 114 **										** SPACE UNUSED:8377986	
#	YYDDD	HHMMSS	NAME	LEVEL	SRC	VT	NR	NC	LLNW	ROWINC	COLINC
1	92353	170000	T	SFC	MDX	0	17	22	50/104	1.0000	1.0000
END OF LISTING											

Column	Definition
#	grid number
YYDDD	year, Julian day
HHMMSS	hours, minutes, seconds of the grid
NAME	name of the gridded parameter
LEVEL	description of the atmospheric level and units
SRC	name of the program that generates the grid
VT	hours that the forecast grid is valid after generation
NR	number of rows in the grid
NC	number of columns in the grid
LLNW	latitude and longitude of the upper-left corner
ROWINC	row grid spacing, in degrees
COLINC	column grid spacing, in degrees

See Also

See commands IGTV and MDX to plot and contour grid point values.

Examples**IGG LIST**

This entry lists all the grids in your workstation's current grid file.

IGG DEL

This entry deletes grid one in the current grid file.

IGG DIR 1 "Dew Point Depression Field"

This entry attaches the grid description Dew Point Depression Field to grid 1.

IGG GET 10 5 7 20 1

This entry moves grids 5 to 7 from grid file 10 into grid file 20, beginning at grid 1.

IGG LIST 1 10 FORM=ALL

This entry lists the first 10 grids from the current grid file including the grid directory.

IGG LIST 1 20

This entry lists all grids from 1 to 20.

IGG MAKE 2 SUB 1

This entry makes a new grid by subtracting grid 1 from 2.

IGG MAKE 2 MPY -4 ADD 5 DIV -60

This entry multiplies each grid point in grid 2 by the constant 4, adds them to grid 5 and divides by the constant 60. The new grid number is generated in the next available location.

IGG MAKE 3 ADV 1 "Temperature Advection"

This entry makes an advection field from u and v grids 3 and 4 with grid 1 and places the result in the first empty grid with the comment field in the directory.

IGG LIST SRC=NGM VT=12 36 LEV=500 850 GRIDF=201

This entry lists all the 500-850 mb grids in grid file 201 for the 12 through 36 hour forecasts for the NGM model.

IGG LIST LEV=SFC TIME=15 18 DAY=91020 GRIDF=9630

This entry lists all the surface grids in grid file 9630 for the time period 15 through 18 UTC.

IGG MAKE 100 CHLT 273

This entry creates a new grid by checking each grid point value in grid 100 and changing all the grid points with values less than 273 to 273. The grid points with values greater than 273 are not changed.

IGTV

Generates contours and streamlines from grids.

**The ADDE command GRDDISP may be used in place of IGTV.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Format IGTV grid interval map output [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)

output if DEV=C or P, use 1 to displays contours, 2 to display the grid and contours, or 3 to display grid points on the text screen or printer

Keywords

CMAPI= graphics color level for the map (default=1)

COLOR= graphics color level for the 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 (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)
PAN= graphics frame panel number; the range is 1 to 4
PRO= **MERC** Mercator projection
CONF conformal projection
 (default is the grid projection)
SCALE= map scale for a **CONF** projection; values up to 1000 are multiplied by 1,000,000 (default=no scale)
SLAT= *lat1 lat2* standard latitude; for polar stereographic specify *lat1*; for Lambert conformal specify *lat1 lat2* (default=60, polar projection)
SLON= *lon* normal longitude; for polar stereographic and Lambert conformal, e.g., **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
DIR prints the grid text label and directory information
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 up to 10^8 . Values entered should be integers less than 1000. The scale value is this integer multiplied by 1,000,000, so 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 lat/lon domain as missing values. Since the contouring routine will not draw to a missing value, if the lat/lon limits are not defined as exact multiples of the grid lat/lon increments offset from the NW corner lat/lon, the contours may not be drawn to the edges of the map domain, but only to the last available grid point.

Examples

IGTV 7

This entry contours grid 7 and displays it with a contour interval of 2.

IGTV 5 X X 3 DEV=P

This entry prints the grid points from grid 5.

IGTV 2 X MID 2 DEV=C

This entry displays the grid points and contours from grid 2 over the Midwest.

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.

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, using 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 one-hundredths of an inch. The MAG=2 allows IGTV to contour the values to one-hundredth of an inch by magnifying the data by 10**2. Therefore, a data value of 0.04 inches is contoured on the screen as a 4; a data value of 0.08 inches is contoured as an 8, etc.

Create the following string called LEV:

TE LEV "30 50 60 65 80

Then use IGTV to contour the grid:

IGTV 1 LEV MID UNIT=F

This 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, i.e., #LEV.

IGU

Grid file utility.

The ADDE command GRDCOPY may be used in place of IGU COPY and IGU MAKE. The ADDE command GRDLIST may be used in place of IGU LIST. See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide for more information.

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 screen
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
<i>bgridf</i>	beginning grid file number
<i>egridf</i>	ending grid file number
<i>gridf</i>	grid file number
<i>sgridf</i>	source grid file number
<i>dgridf</i>	destination grid file number
<i>maxgrd</i>	maximum number of grids in the grid file (default=159)
<i>date</i>	date the grid file was generated (default=current)
<i>project</i>	your project number (default=current)

"text" identification text for the 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 practical limit to the number of grids that can be stored in a grid file. *Maxgrd* defaults to 159 and could be much larger.

Default grid files (those matching the terminal number) can only be deleted from terminal 0.

Examples

IGU LIST

This entry lists grid file 1.

IGU DEL

This entry deletes grid file 1.

IGU SET

This entry sets the current grid file number.

IGU LIST 1000 1020 DAY=92100

This entry lists the grid files from 1000 to 1020 for day 100 in 1992.

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 unless another **IGU SET** is run.

IGU MAKE 7000 200 "Test Grids"

This entry generates grid file 7000 and allocates space for 200 grids. The grid file is labeled Test Grids. Use **IGG GET** to copy grids from another grid file.

IMGGRD

Grids image data.

Format	IMGGRD <i>frame dgridf [keywords] "text"</i>	
Parameters	<i>frame</i>	source frame number (default=current)
	<i>dgridf</i>	destination grid file number (default=current)
	<i>"text"</i>	identifying label in the grid directory words 43-50; 32-character maximum (no default)
Keywords	AREA=	area number to grid; enables the command to run in the background in a batch job (default=area number in the image frame directory)
	BAND=	band number to grid (default=from the frame directory; if an area number is specified, the band number is the lowest numbered band)
	FACTOR=	internal scaling factor appropriate for the calibration type (default=10.0 for TEMP and 1.0 for all others)
	FORM=	AVG averages the pixel values in a grid box centered on the grid points (default) SUM sums the same subsets of pixel values STD generates standard deviations of these same subsets of pixel values; any or all values may be used regardless of their order
	INC=	latitude/longitude grid increment, real value (default=1.0)
	LAT=	<i>min max</i> latitude grid limits (default=current frame; when keyword AREA is used, default=frame directory)
	LON=	<i>min max</i> longitude grid limits (default=current frame; when keyword AREA is used, default=frame directory)
	UNIT=	BRIT output calibration-type brightness values (default) TEMP temperature values RAD radiance values RAW raw values; typically has an associated calibration codicil for image display

ZERO= DATA assigns zero pixel values as data and includes them in the analysis
MISS assigns zero pixel values as missing and excludes them from the analysis (default)
a nonzero numeric value identifies that pixel value to represent the missing value flag

Remarks

Command IMGGRD objectively analyzes an area and stores the results, with navigation parameters, in a grid. This grid can be displayed and/or further manipulated using the appropriate McIDAS gridded data file commands.

IMGGRD can be costly to run on large areas due to the many calculations. To reduce CPU time, use the REMAP command to reduce the image resolution. Reducing a 1 KM image to 4 KM (8 KM) resolution reduces the CPU time by a factor of 16 (or 64) without significantly altering the representation of a 1 x 1 degree grid.

Images stored in a MERC projection are processed much faster by the program. Use the REMAP command to convert an image to a MERC projection.

The maximum allowable grid size is 60 K grid points. Grid points off the image are assigned missing values.

Multiple IMGGRD commands can be run using a higher grid resolution to cover a large area.

A pseudo-Mercator projection is used for GOES imagery and ascending and descending POES orbital imagery. A polar stereographic projection is used for POES orbital imagery over the North or South Pole.

Grid analyses of area data are poor near earth edge boundaries. IMGGRD cannot process areas that have data surrounded by areas of no data, i.e., a 200-line by 200-element section of good data centered in a 540 by 600 area. Use the LAT and LON keywords to avoid this situation.

Examples**IMGGRD**

This entry grids brightness counts from the area displayed on the current image frame onto a 1 x 1 degree grid which covers the latitude and longitude range of the displayed image. The analyzed grid of average brightness counts is stored in the first available grid of the current grid file. The grid file can be set using command: *IGU SET gridf*.

IMGGRD 11 2048

This entry is similar to the first example, except the image currently displayed on frame 11 is gridded and stored in the first available grid of grid file 2048.

IMGGRD 11 2048 INC=0.5 LAT=-15 1 LON=40 85

This entry is similar to the second example, except the grid domain is defined to cover a region between (15° S, 40° W) and (1° N, 85° W) with a 0.5 degree increment.

**IMGGRD X 2048 AREA=2060 BAND=10 INC=0.5 LAT=-15 1
LON=40 85**

This entry is similar to the above example, except it grids band 10 from area 2060.

**IMGGRD 11 2048 FORM=AVG STD UNIT=TEMP INC=0.1
LAT=44 45 LON=89 90**

This entry grids a very small region of the image displayed on frame 11 with high resolution in temperature units and stores both the analyzed pixel temperature averages and standard deviations in grid file 2048.

SENGRD

Sends a grid from a mainframe to your workstation or another mainframe.

The ADDE command GRDCOPY may be used in place of SENGRD. See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide for more information.

Formats

SENGRD *sgridf* ALL *dgridf* *dgrid* [*keywords*]

SENGRD *sgridf* *bgrid* *egrid* *dgridf* *dgrid* [*keywords*]

Parameters

sgridf source grid file number (no default)

ALL sends all grids in the grid file

bgrid beginning grid to send (no default)

egrid ending grid to send (default=*bgrid*)

dgridf destination grid file number on the workstation or mainframe (no default)

dgrid destination grid number in the workstation or mainframe grid file (default=1)

Keywords

APPEND= YES appends grids onto *dgridf* (default)
NO overwrites existing grids in *dgridf* beginning at *dgrid*

DEL= YES deletes *dgridf* prior to transfer of the data
NO doesn't delete *dgridf* (default)

MAXGRD= maximum number of grids in the grid file on the workstation or mainframe (default=159)

Remarks

Command SENGRD reads a McIDAS grid from a McIDAS-MVS grid file, compresses the data, and sends the grid file header, grid header (uncompressed), and gridded data (compressed) via SENOUT calls, to a workstation or another mainframe.

Run SENGRD on the mainframe containing the source grid.

Examples**SENGRD 3610 ALL 1000**

This entry copies all grids in the McIDAS-MVS grid file 3610 to the workstation grid file 1000.

SENGRD 4960 3 12 2000 5

This entry copies grids 3 to 12 in the McIDAS-MVS grid file 4960 to the workstation grid file 2000, beginning at grid 5.

SENGRD 201 1 300 50 1 MAXGRD=500

This entry sends grids 1 to 300 from grid file 201 to destination grid file 50 on the workstation. When the grid file is created on the workstation, it allocates slots for 500 grids.

Chapter 9. Weather Analysis

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0-33	Plots upper air data	WVPL19
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0-38	Plots upper air data	WVPL24
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0-43	Plots upper air data	WVPL29
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0-47	Plots upper air data	WVPL33
0-48	Plots upper air data	WVPL34
0-49	Plots upper air data	WVPL35
0-50	Plots upper air data	WVPL36
0-51	Plots upper air data	WVPL37
0-52	Plots upper air data	WVPL38
0-53	Plots upper air data	WVPL39
0-54	Plots upper air data	WVPL40
0-55	Plots upper air data	WVPL41
0-56	Plots upper air data	WVPL42
0-57	Plots upper air data	WVPL43
0-58	Plots upper air data	WVPL44
0-59	Plots upper air data	WVPL45
0-60	Plots upper air data	WVPL46
0-61	Plots upper air data	WVPL47
0-62	Plots upper air data	WVPL48
0-63	Plots upper air data	WVPL49
0-64	Plots upper air data	WVPL50
0-65	Plots upper air data	WVPL51
0-66	Plots upper air data	WVPL52
0-67	Plots upper air data	WVPL53
0-68	Plots upper air data	WVPL54
0-69	Plots upper air data	WVPL55
0-70	Plots upper air data	WVPL56
0-71	Plots upper air data	WVPL57
0-72	Plots upper air data	WVPL58
0-73	Plots upper air data	WVPL59
0-74	Plots upper air data	WVPL60
0-75	Plots upper air data	WVPL61
0-76	Plots upper air data	WVPL62
0-77	Plots upper air data	WVPL63
0-78	Plots upper air data	WVPL64
0-79	Plots upper air data	WVPL65
0-80	Plots upper air data	WVPL66
0-81	Plots upper air data	WVPL67
0-82	Plots upper air data	WVPL68
0-83	Plots upper air data	WVPL69
0-84	Plots upper air data	WVPL70
0-85	Plots upper air data	WVPL71
0-86	Plots upper air data	WVPL72
0-87	Plots upper air data	WVPL73
0-88	Plots upper air data	WVPL74
0-89	Plots upper air data	WVPL75
0-90	Plots upper air data	WVPL76
0-91	Plots upper air data	WVPL77
0-92	Plots upper air data	WVPL78
0-93	Plots upper air data	WVPL79
0-94	Plots upper air data	WVPL80
0-95	Plots upper air data	WVPL81
0-96	Plots upper air data	WVPL82
0-97	Plots upper air data	WVPL83
0-98	Plots upper air data	WVPL84
0-99	Plots upper air data	WVPL85
1-00	Plots upper air data	WVPL86

FASTXT

Fast listing for weather text and observations.

**The ADDE command WXTLIST may be used in place of FASTXT.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Formats

```
FASTXT ADD product [keywords] "text"
FASTXT DEL product [keywords]
FASTXT EDIT product [keywords]
FASTXT LIST product [keywords]
FASTXT group1 [keywords]
FASTXT group2 [keywords]
FASTXT group2 id [keywords]
FASTXT group3 id dtime [keywords]
```

Parameters

ADD	adds a product code
DEL	deletes a product code
EDIT	edits search conditions for an existing product code
LIST	lists all system and current user defined product codes, AFOS headers and alias names (default)
<i>product</i>	3-character product code
<i>"text"</i>	text describing the product
<i>group1</i>	3-character AFOS header or alias name for any of the following national products: EON, EPD, ERD, HMD, HSD, NWX, PMD, PWO, SCS, SWO
<i>group2</i>	3-character AFOS header or alias name for any of the following local, state or regional products: CCF, CLI, EFP, LFP, NOW, RER, RNS, RWS, SFD, SFP, SPS, STO, STP, SVS, SWR, SWS, ZFP
<i>group3</i>	3-character AFOS header or alias name for any of the following time-dependent products: ADM, FFW, FLW, LSR, SCC, SVR, TOR
<i>id</i>	station ID or 2-letter state abbreviation (default differs between <i>group2</i> and <i>group3</i> ; see the Remarks)

	<i>dtime</i>	number of hours back from the current time to search (default=1)
Keywords	ALIAS=	alias name for the product code
	DAY=	Julian day to begin the search, YYDDD (default=current)
	DELWMO=	deletes the specified WMO header from the product description
	DTIME=	number of hours before the current hour to search
	FIL=	LW file name containing the product code descriptions (default=FASTXTINFO)
	ID=	station ID in the WMO header line
	IND=	index file to use for defining new products
	MAT=	secondary match string for the search
	NUM=	number of matches to find; not valid with <i>group3</i> (default=1)
	OWNER=	lists or deletes products created by the specified user (default=system and current user defined products)
	WMO=	5- or 6-character WMO headers to search; used with the ADD and EDIT options

Remarks

FASTXT uses data decoded by the sequential index filing system (SIFS).

FASTXT has a limited number of product options, whereas the TEXT command is more flexible. The main benefits of FASTXT include its ease of use and its ability to return results much faster because it uses the filing system more efficiently than the TEXT command.

You can add product codes to the existing list of system defined product codes. To do this, you must know the complete WMO (World Meteorological Organization) header of the product. The WMO header is the first 5 or 6 characters of a product displayed with the TEXT command using the HEAD=YES option. You can edit and delete only the product codes that you create. To list your product codes, use the OWNER keyword with your initials. Product codes created by other users can also be listed with this keyword.

User created product codes that include a search value for keyword ID and do not have a value for keyword DTIME are listed under *group1*, national products. Product codes that have no search values for ID or DTIME are listed under *group2*, local products. Any product that has a search value for DTIME is listed under *group3*, time dependent products.

If no ID is specified with *group2*, FASTXT matches the most recent report issued. If no ID is specified with *group3*, FASTXT lists all reports issued during the last *dtime* hours.

FASTXT limits its search to the line containing the WMO header. For example, you cannot make a product code such as SAO which scans for surface hourly reports for a specific station. This is because the station ID on the WMO header line is not the ID of the reporting station.

Examples

FASTXT

This entry lists all currently defined product options, AFOS headers and alias names.

FASTXT LFP

This entry lists the most recent local forecast on the system.

FASTXT LFP MSN NUM=3

This entry lists the last three local forecasts issued for Madison, Wisconsin.

FASTXT LOCAL AZ

This entry lists the last local forecast issued for each forecast station in Arizona.

FASTXT SVR X 6

This entry lists all severe thunderstorm warnings issued during the last six hours.

FASTXT FLASH TUL 4

This entry lists all flash flood warnings issued during the last four hours for Tulsa, Oklahoma.

FASTXT LIST SCC

This entry lists the search conditions for product code SCC.

FASTXT ADD FRF ALIAS=FRUIT WMO=FXUS81 "Fruit Frost Forecast"

This entry creates product code FRF, alias name FRUIT, which searches for the Fruit Frost Forecast. FASTXT searches for WMO header FXUS81.

**FASTXT ADD REC ALIAS=RECREATION WMO=FWUS1
FWUS11 "Recreation**

This entry creates product code REC which searches for WMO headers FWUS01 and FWUS11.

**FASTXT ADD SEL ID=KMKC DTIME=2 WMO=WWUS9
"Severe Local Storm Watch**

This entry creates product code SEL which searches for WMO header WWUS9. The default station is KMKC, and the default amount of time to look back is 2 hours.

**FASTXT ADD HMD WMO=FXUS3 MAT=FXUS03 "Hemi Map
Discussion**

This entry adds a product code to list the Hemispheric Map Discussion. FASTXT searches for WMO headers of FXUS3 and does a secondary match for FXUS03. The secondary match condition is added so WMO header FXUS3, the 500 mb Type Correlations, is not listed.

FASTXT EDIT NWX DELWMO=ABUS2 ABUS3

This entry deletes WMO headers ABUS2 and ABUS3 from the product code listing the National Weather Summary.

FASTXT EDIT TOR DTIME=3

This entry changes the number of hours to search back in time for tornado warnings to 3 hours.

FASTXT LIST OWNER=ALL

This entry lists all product codes currently defined for FASTXT.

FASTXT LIST

This entry lists all product codes defined by the operators plus any created by the current user.

FASTXT LIST OWNER=JSP

This entry lists the product codes created by JSP.

FASTXT DEL OWNER=JSP MAL

This entry deletes all product codes created by JSP and MAL. Only persons logged on as OPER can delete products for multiple users.

FASTXT DEL FRF

This entry deletes product code FRF.

FC

Lists short-range TAF forecasts.

Formats

FC *id1 id2...idn nfor [keywords]*
 FC LIST *option*
 FC LIST REG=
 FC LIST CO=
 FC DEFINE REG= ID=
 FC DELETE REG=

Parameters

LIST lists IDs in a region or country

DEFINE defines a new station or region

DELETE deletes a station or region

id station or region identifier

nfor number of forecasts to list; the maximum is 12
 (default=most recent)

option **REGIONS** lists all currently defined region IDs
COUNTRIES lists all currently defined country IDs

Keywords

CO= country ID, 4 characters maximum

ID= station ID

REG= region ID, 4 characters maximum

Remarks

If a station reports in a 4-character format even though it is a 3-character station, you must request it as a 4-character station. For example, the FC for London Heathrow comes in as EGLL. To list the FC for EGLL, you must enter: FC EGLL.

FC (6-9 HOUR TAFs) are primarily made for European stations.

If you define a region for the FC command, it is also defined for the TAF and FTL commands.

Example

FC LIST REGIONS
 This entry lists all currently defined regions.

FOUSL

Lists FOUS14 data.

Formats

FOUSL LIST

FOUSL *station time [keywords]*

Parameters

LIST lists the valid FOUS14 stations (default)

station 3-letter station ID

time model run time, 0 or 12 (default=current day's latest)

Keywords

DAY= forecast run day, YYDDD (default=current)

MDF= FOUS14 MD file number (default=current)

Remarks

FOUS14 data is Model Output Statistics (MOS) based on multiple linear regression analysis of forecasts from the Nested Grid Model (NGM).

Examples

FOUSL

This entry lists the valid FOUS14 stations.

FOUSL MSN

This entry lists the latest forecast for Madison.

FOUSL MSN 12 MDF=1000

This entry lists the 12 UTC forecast for Madison from MD file 1000.

FOUSP

Plots or contours FOUS14 data.

Formats

FOUSP LIST

FOUSP *parm map time [keywords]*

Parameters

LIST lists the valid parameters that can be plotted (default)

parm FOUS14 parameter to be plotted or contoured

map **USA** USA (default)
MID Midwestern USA
SAT satellite projection
DEF define a map with keywords LAT and LON
State Post Office abbreviation

time hours past the run time for the forecast, HH (default=6)

Keywords

CINT= contour interval (default=5)

COLOR= graphics color level (default=3)

DAY= day of the FOUS14 data, YYDDD (default=current)

GRA= graphics frame number for the output (default= current)

GRIDF= destination grid file number (default=current)

LAT= minimum and maximum latitude bounds to plot or contour

LON= minimum and maximum longitude bounds to plot or contour

LSIZE= plotting height of the characters, in pixels (default=6)

MDF= FOUS14 MD file number (default=current)

OUT= **PLO** plots data
CON contours data

PAN= graphics panel number; the range is 1 to 4 (default=full screen)

TIME= model run time, 0 or 12 (default=current day's latest)

UNIT= parameter units for the plot or contour; valid for T, TD, TMIN, TMAX (default=F) and SPD (default=MPS) only

Remarks

FOUS14 data is Model Output Statistics (MOS) based on multiple linear regression analysis of forecasts from the Nested Grid Model (NGM).

If your FOUSP command entry produces a blank plot, the *time* may be set to a invalid value for that FOUS14 parameter. Use command FOUSL to list a station forecast and check the valid *time* entries for the FOUS14 parameter.

Examples**FOUSP**

This entry lists and describes the valid parameters that can be plotted and the default units.

FOUSP CC

This entry plots cloud cover for 6 hours past the latest run time for the current day over a map of the United States.

FOUSP CC MDF=9663 DAY=93063

This entry plots cloud cover as above except it uses history file 9663.

FOUSP TMAX SAT 24 OUT=CON GRIDF=1001

This entry contours the maximum temperature for 24 hours past run time over the satellite image on the current frame. The output grid file is 1001.

FT

Lists terminal aviation forecasts.

Format

FT *station time day*

Parameters

station ISFC station ID or state post office abbreviation (lists all stations in the state)

time lists the valid forecast time (default=current)
ALL lists all forecast times; use only when *day* is set to its default

day valid forecast day, YYDDD (default=current)

Remarks

This command converts the FT forecast into an easily readable format.

Examples

FT MSN

This entry lists the current forecast for Madison, Wisconsin.

FT KS 12

This entry lists the 12 UTC forecast for all stations reporting in Kansas.

FT DSM ALL

This entry lists all forecasts for Des Moines, Iowa.

FTL

Lists U.S. and Canadian terminal forecasts.

Formats

FTL *id1 id2 ... idn nfor [keywords]*

FTL LIST *option*

FTL LIST REG=

FTL LIST CO=

FTL DEFINE REG= ID=

FTL DELETE REG=

Parameters

LIST lists IDs in a region or country

DEFINE defines a new station or region

DELETE deletes a station or region

id station or region identifier

nfor number of forecasts to list; the maximum is 12
(default=most recent)

option **REGIONS** lists all currently defined region IDs
COUNTRIES lists all currently defined country IDs

Keywords

CO= country ID, 4 characters maximum

ID= station ID

REG= region ID, 4 characters maximum

Remarks

If you define a region for the FTL command, it is also defined for the TAF and FC commands.

Examples

FTL MSN MKE SEA 2

This entry lists the last two terminal forecasts for Madison, Milwaukee and Seattle.

FTL LIST REG=IA

This entry lists the stations currently defined for Iowa.

FTL DEFINE REG=FRED ID=EGLL MSN RJTT

This entry defines a region called FRED which contains Madison, London Heathrow and Tokyo.

HGTSUR

Interpolates an upper air sounding to standard altimeter settings.

Format	HGTSUR <i>time</i> [<i>keywords</i>]	
Parameter	<i>time</i>	time of the upper air observation (default=latest time)
Keywords	DAY=	year and Julian day of the data, YYDDD (default=current)
	DMDF=	destination MD file for the height data (default=current)
	OPT=	LOW obtains data from 1000 to 18,000 feet
	SIG=	history MD file for the significant data
	SMDF=	source MD file containing the upper air data (default=current day's file)
Remarks	HGTSUR interpolates upper air soundings to produce an MD file containing data for every 1000 feet between 18,000 and 29,000 feet and for every 2000 feet between 31,000 and 45,000 feet. The output data and units are pressure (mb), temperature (K), dew point (k), wind direction (degrees), wind speed (mps), and height (ft). If you don't specify keyword OPT, you will receive data from 18,000 feet up including the TRO1, TRO2 and MAXW levels. If keyword SIG is not used for history data, the significant file is assumed to immediately follow the mandatory file.	
Examples	HGTSUR This entry interpolates an upper air sounding to standard altimeter settings using the current data and storing the results in the current MD file. HGTSUR 0 DMDF=4612 This entry interpolates 0 UTC upper air soundings for the current day to standard altimeter settings and stores the results in MD file 4612.	

HGTSUR 12 DAY=86023 SMDF=2317

This entry interpolates 12 UTC upper air soundings for day 23 of 1986 and stores the results in the current MD file. The mandatory upper air data used for the calculations is in MD file 2317; the significant data is in MD file 2318.

HGTSUR 0 DMDF=7392 OPT=LOW

This entry interpolates the 0 UTC upper air sounding from the current day's mandatory upper air data for 1000 to 18,000 feet only and stores the results in MD file 7392.

HODO

Plots a wind sounding hodograph.

Format	HODO <i>station time day [keywords]</i>	
Parameters	<i>station</i>	5-digit station ID (default=none)
	<i>time</i>	time of the observation, 0 or 12 UTC (default=current)
	<i>day</i>	year and day of the data, YYDDD (default=current)
Keywords	GRA=	graphics frame number (default=current)
	INIT=	NO does not initialize the graphics color palette YES initializes the color palette (default)
	MDF=	history MD file number; specify <i>day</i> when using this keyword (default=real-time MD file)
	SINC=	speed increment between circles (default=calculated by using maximum wind speed)

Remarks

A hodograph is a vertical profile of a wind sounding representing the changing wind shear with height. On the hodograph chart, wind direction is the azimuth from the origin of the coordinate system; wind speed (plotted in knots) is the radial distance from the origin. Each wind of the sounding is plotted at the appropriate distance along the direction azimuth; the line segment intersections represent significant or mandatory levels. The curve, or hodogram, between any two plotted points gives the shear between the two levels.

Wind directions are plotted such that a north wind is from top to bottom and west is from left to right. The plot is color coded as follows:

- boxes are level 1
- 1050 mb to 700 mb line segments are cyan
- 699 mb to 300 mb line segments are yellow
- 299 mb to 0 mb line segments are white

Graphics are automatically erased before each plot.

Examples**HODO 72374**

This entry plots the most current sounding for station 72373, Winslow, Arizona.

HODO 72655 12 VIRT=10

This entry plots a hodogram of station 72655 at 12 UTC and saves the plot in virtual graphics 10.

HODO 72357 00 92183 SINC=20 INIT=NO MDF=2103

This entry plots a hodogram of station 72357 at 00 UTC on 92183. The data is stored in history MD file 2103 and plotted with set speed increments of 20 knots. The graphics color palette is not initialized.

ISC

Grids and contours isentropic data.

Format	ISC <i>parm level map file time [keywords]</i>		
Parameters	<i>parm</i>	DELP	pressure difference between the current theta level and the next higher theta level, mb
		MIX	mixing ratio, g/kg
		P	pressure, mb
		SY	Montgomery streamfunction, (cm/sec)*E7
	<i>level</i>		theta level, in Kelvin, previously generated by the ISENT command
	<i>map</i>	MID	Midwestern USA
		NA	North America
		SAT	satellite projection
		USA	USA
			<i>State Post Office abbreviation</i>
	<i>file</i>		MD file containing the isentropic data generated by the ISENT command
	<i>time</i>		time of the isentropic data, HH (default=current)
Keywords	CINT=	grid 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=	year and day of the data, YYDDD (default=current)	
	GRIDF=	grid file number (default=terminal number)	
	LAT=	<i>min max</i>	latitude bounds
	LON=	<i>min max</i>	longitude bounds
Remarks	If keywords COLOR, CINT, LAT and LON are not specified in the command, the string table is searched for the keywords. If the results are unexpected, use TL to list the string table. A grid file is generated and its pointer set (same as the terminal number).		

Examples**ISC P 310 MID 1000**

This entry contours pressure on a 310 Kelvin isentropic surface for the current day and time over a Midwest map, from MD file 1000.

ISC P 310 MID 1000 12 DAY=92114

This entry contours pressure on a 310 Kelvin isentropic surface for 12 UTC, day 92114 over a Midwest map, from MD file 1000.

**ISC SY 290 X 11280 00 LAT=25 37 LON=93 107 GRIDF=33
CINT=5 COLOR=-4**

This entry contours Montgomery streamfunction over the state of Texas at 00 UTC as defined by the LAT and LON keywords, and stores the results in grid file 33. The contour interval is $5\text{m}^2/\text{s}^2$. Contours are dashed in graphics color level 4.

ISENT

Calculates theta surface levels for upper air data.

Format	ISENT <i>sfile dfile day time btha etha inctha [keyword]</i>	
Parameters	<i>sfile</i>	source MD file number (default=current mandatory RAOB or IRAB file)
	<i>dfile</i>	destination MD file number; must not exist before running ISENT (no default)
	<i>day</i>	year and day of the upper air data, YYDDD (default=current)
	<i>time</i>	time of the upper air observation, HH (default=0 UTC)
	<i>btha</i>	beginning theta value (default=280 K)
	<i>etha</i>	ending theta value (default=350 K)
	<i>inctha</i>	increment of the theta value (default=10 K)
Keyword	SIG=	history MD file number for significant data
Remarks	A maximum of 20 theta levels can be calculated. Theta levels contain pressure (mb), mixing ratio (g/kg), Montgomery streamfunction (m^2/s^2), pressure change (mb) and u and v wind components (m/s).	
	When using history data, the significant data file should follow the mandatory data file or be specified by keyword SIG.	
	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 Also	Use command MDX, ISC or ISP to plot or contour data.	

Examples**ISENT 250 1050**

This entry calculates the theta surface levels for all data in MD file 250 and stores the results in MD file 1050.

ISENT 15 4000 92065 12 290 320 10

This entry calculates isentropic surfaces from MD file 15 and stores the results in MD file 4000, day 065, 1992, at 12 UTC. It begins with theta surface 290 and ends at 320 using 10° increments.

ISENT 2550 200 93010 00 X X 5 SIG=2551

This entry calculates isentropic surfaces from history data stored in MD files 2550 and 2551, the mandatory and significant data, respectively. The default theta range is specified (280-350K) but the theta values are computed every 5K.

ISP

Plots isentropic data.

Format	ISP parm level map file time [keywords]		
Parameters	parm	DELP	plots the pressure difference between the current theta level and the next lower level, mb
		IDN	plots the station identification
		MIX	plots mixing ratio, g/kg
		P	plots pressure, mb
		PLOT	plots pressure, pressure change, wind, mixing ratio and ID numbers
		SY	plots Montgomery streamfunction, (m ² /s ²)
		U	plots the u wind component, m/sec
		V	plots the v wind component, m/sec
		WIN	plots winds, m/sec
		level	theta level, in Kelvin, previously generated by the ISENT command
	map	MID	Midwestern USA
		NA	North America
		SAT	satellite projection
		USA	USA
		State Post Office abbreviation	
file	MD file containing the isentropic data generated by the ISENT command		
time	time of the isentropic data, HH (default=current)		
Keywords	COLOR=	graphics color level (default=3)	
	DAY=	year and day of the data, YYDDD (default=current)	
	LAT=	min max	latitude bounds
	LON=	min max	longitude bounds
Remarks	If keywords COLOR, LAT and LON are not used in the command, the string table is searched for values. If the results are unexpected, use command TL to list the string table.		

Examples**ISP P 310 WI 1000**

This entry plots the pressure on a 310 Kelvin surface at stations in Wisconsin using the current day and time. The data is from MD file 1000.

ISP PLOT 310 MID 1000 12 DAY=92124

This entry plots the pressure, change in pressure, wind, mixing ratio and ID numbers in the Midwest on a 310 Kelvin isentropic surface. The data is from MD file 1000, 12 UTC, day 92124.

ISP MIX 290 NC 11500 0 DAY=93002 COLOR=3

This entry plots the mixing ratio values at upper air stations on the 290 theta level centered over North Carolina in graphics color level 3. The data is taken from MD file 11500 and is for 2 January 1993.

LIST4D

Lists the contents of the 4-D trajectory analyses.

Remarks

LIST4D lists the contents of the analyses generated by the VAS4D command.

MDR

Grids manually digitized radar data.

Format **MDR** [*keywords*]

Keywords

DATA= **ALL** places zeros in a 125 nm radius around each reporting radar site (default=missing value code)

GRID= grid number to write the decoded MDR data into (default=next available)

GRIDF= grid file number to store the MDR data (default=current)

Remarks

MDR searches the weather text file and decodes the current hour's MDR data. VIP levels 1 to 6 are written into an 85 x 115 grid. If you enter DATA=ALL, VIP levels of 0 are written for areas reporting no echoes. VIP levels of 0 are only included for sites that report echoes or no echoes (N.E.).

MDR data can only be decoded for the current hour.

See Also

Commands MDRPLT and MDRIMG call MDR if the current hour's data was not previously decoded into the real-time MDR grid file or current grid file.

Examples

MDR

This entry decodes the current hour's MDR data and writes it to the next available grid in the current grid file.

MDR GRID=29 GRIDF=1892 DATA=ALL

This entry decodes the current hour's radar data and writes the VIP levels to grid 29 in grid file 1892. VIP levels of 0 are written to echo free regions within a 125 nautical mile radius of the radar site.

MDR GRID=39

This entry decodes the current hour's radar data and writes the VIP levels to grid 39 in the current grid file.

MDRIMG

Displays a U.S. image from manually digitized radar data.

Format	MDRIMG <i>area frame [keywords]</i>	
Parameters	<i>area</i>	area number for the image (no default)
	<i>frame</i>	frame number for display; if not specified, the image is not displayed
Keywords	GRID=	grid number to plot (no default for real-time grid file; default=next available for any other grid file number)
	GRIDF=	grid file number (default=real-time grid file if available; otherwise the terminal number)
	SAT=	<i>sarea darea frame</i> generates a polar stereographic satellite image projection that can be displayed on the opposite frame and viewed with the N key
	<i>sarea</i>	satellite area on the disk
	<i>darea</i>	scratch area number to remap <i>sarea</i> into a polar stereographic projection
Remark	<i>frame</i>	image frame number for display
	OPP	displays the image on the opposite frame
Example	MDRIMG 3000 1 GRID=15 SAT=101 3001 33 This entry generates a radar image from real-time MDR grid 15 in area 3000 and displays this image on frame 1. It uses satellite image 101 to create a polar stereographic image in area 3001 corresponding to the MDR image and displays this image on frame 33. If frame 33 is opposite 1, you can view both images by pressing the N key.	

MDRPLT

Plots manually digitized radar data.

Format

MDRPLT *map* [*keywords*]

Parameter

map **MID** Midwestern USA
 NA North America
 SAT satellite projection
 USA USA polar stereographic projection (default)
 State Post Office abbreviation

Keywords

COLOR= graphics color level (default=3)

DATA= **ALL** places zeros in a 125 nm radius around a
 reporting radar site (default=missing value code)

DAY= year and day of the data, YYDDD (default=current)

GRA= graphics frame number (default=current)

GRID= grid number to plot (default=search on current day
 and hour)

GRIDF= grid file number (default=real-time file, if available,
 otherwise the terminal number)

GWIDTH= graphics line width, in pixels (default=1)

HOURL= hour of the data, HH (default=current)

ID= plots a map centered on a station ID (no default)

LAT= *min max* minimum and maximum latitude extents

LON= *min max* minimum and maximum longitude extents

LSIZE= label height, in pixels (default=8)

PANEL= graphics panel quadrant; the range is 1 to 4
 (default=full screen)

Remarks

When requesting current data, MDRPLT grids the most current hour's data. For old data, MDRPLT searches the grid file for the requested day and time. If no grid is found, MDRPLT makes a grid for the most current hour's data.

Use the DATA=ALL keyword to determine which radars across a region actually reported.

Grids can only be created with the current hour's data.

You can use keywords LAT and LON to specify the map projection.

Examples**MDRPLT**

This entry plots the current MDR on a USA polar stereographic projection.

MDRPLT USA HOUR=12

This entry plots MDR values on a USA polar stereographic projection for the current day at 12 UTC.

MDRPLT LAT=35 45 LON=90 100

This entry plots MDR values on the specified map for the current day and hour.

MDRPLT USA DATA=ALL GRIDF=44

This entry plots current hour MDR values with zeros on a USA map and files that information in the next available grid in grid file 44.

MDRPLT ID=MSN

This entry plots the current hour MDR values reported around Madison.

MG

Plots a 24-hour surface meteorogram.

Format

MG *station time day [keywords]*

Parameters

station 3- or 4-character station ID

time hour of the last data plotted on the graph; the range is 0 to 23 (default=current)

day year and day of the data, YYDDD (default=current)

Keywords

INIT= NO does not initialize the graphics colors
 YES initializes the graphics colors (default)

MDF= history MD file number; specify parameter *day* when using this keyword; if the string table for the schema type is empty, MDF defaults to SYSKEY; if you don't specify an MD file number, MDF defaults to the current real-time MD file number specified by SYSKEY

Remarks

MG initializes the graphics color levels and erases the graphics before plotting. It plots temperature, dew point, altimeter setting, wind speed and direction, weather, and cloud cover for a 24-hour period.

The cloud cover symbols are:

- scattered - 1 small cloud
- broken - 2 clouds
- overcast - 1 large cloud
- clear - no clouds

Wind speed and direction indicators are:

- direction - wind barb's angle
- speed - sustained and gust speeds are listed below the barb
- calm - diamond shaped symbol

The altimeter setting is plotted with its range labels, depending on the minimum and maximum altimeter setting for a given day and time period.

Examples**MG MSN**

This entry plots data for the past 24 hours for Madison, Wisconsin.
The day and time default to the current data.

MG MSN 0 91331

This entry plots data from 91330 0 UTC to 91331 0 UTC for Madison.

MG SEGU 12 93014 INIT=NO MDF=22114

This entry plots data from 12 UTC 93013 to 12 UTC 93014 for Guayaquil, Ecuador. MD file 22114 is searched for the data; the graphics colors are not initialized when the meteorogram is drawn.

MGXS

Plots a meteorogram cross section.

Format	MGXS <i>bid eid time day [keywords]</i>	
Parameters	<i>bid</i>	3-letter station ID of the beginning station to plot
	<i>eid</i>	3-letter station ID of the ending station to plot
	<i>time</i>	hour of the data to display, HH (default=current)
	<i>day</i>	year and day of the data, YYDDD (default=current)
Keywords	GRA=	graphics frame number (default=current)
	ID=	list of the station IDs to plot
	INIT=	NO does not initialize the graphics color palette YES initializes the palette with GU REST (default)
	MDF=	history MD file number; you must specify the <i>day</i> parameter when using this keyword (default=real-time MD file)
	WID=	width of the corridor used to select a station between <i>bid</i> and <i>eid</i> , in miles; if you specify keyword ID , a corridor width is not used (default=30 miles)
Remarks	The number of plotted stations will vary due to the proportional spacing between stations.	
	The wind direction is designated by the angle of the barb. Speed is designated by the length of the barbs.	
	MGXS plots the altimeter setting in millibars.	
	The cloud cover symbols are:	
	• scattered - 1 small cloud • broken - 2 clouds • overcast - 1 large cloud • clear - no clouds	

Examples**MGXS DFW BRO**

This entry uses the current day and time for the plot, stations DFW through BRO. It initializes the color palette and selects stations from a 30-mile corridor.

MGXS MSN DET 14 92120

This entry plots 14 UTC data for day 92120, stations MSN through DET. The stations plotted between MSN and DET are selected from a 30-mile corridor according to their spacing.

MGXS ID=JFK DCA GSB ATL MIA

This entry plots all the listed stations for the current time and day.

MKMAND

Derives upper air mandatory levels from significant levels.

Format `MKMAND id1 id2...idn [keywords]`

Parameters	<i>id1 . . . n</i>	5-digit station ID
	ALL	all stations in the MD file

Keywords	DAY=	Julian day of the data (default=current)
	DMD=	destination MD file, schema RAOB or IRAB (default=SMD+1)
	SMD=	source MD file, schema RSIG or IRSG (default=from MDU SET)
	TIME=	time of the data (default=0 UTC)

Remarks	If <u>all</u> mandatory level observations for a station are missing, MKMAND creates a new MD file containing computed mandatory level data using the existing significant level observations. All mandatory level observations for the station must be missing (no mandatory level data available). The destination file must have a column header.
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Examples **MKMAND 72451 72456 SMD=21 DMD=2466 DAY=90031 TIME=0**
This entry calculates missing 0 UTC mandatory level data for station
72451 (Dodge City, Kansas) and 72456 (Topeka, Kansas) from the
significant level data found in MD file 21.

MKMAND ALL SMD=21 DMD=2465 TIME=12 DAY=90031
This entry calculates mandatory levels from the significant level data for all stations found in MD file 21 and places the results in MD file 2465.

MR

Plots a 4-day upper air meteorogram.

Format

MR *station time day [keywords]*

Parameters

station 5-digit station ID

time observation time, 0 or 12 UTC; the four previous days
are plotted (default=current)

day year and day of the data, YYDDD (default=current)

Keywords

GRA= graphics frame number (default=current)

INIT= **NO** does not initialize the graphics color palette
 YES initializes the graphics color palette with
 GU REST (default)

MDF= *md1 md2 md3 md4 md5*
MD file numbers (in any order) for each day in the
5-day period; you must specify the *day* parameter
(default=real-time MD files)

Remarks

MR erases the graphics before plotting and initializes the graphics color levels. The time and day entered are plotted on the lower right of the screen. MR plots include the following for a 4-day period at 850, 700, 500 and 300 mb.

- temperature in Celsius
- dew point in Celsius, 850 and 700 mb, dashed line
- height of the mandatory pressure levels, in meters
- wind speed in mps
- wind direction indicated by barb angles

Graphics are automatically erased before each plot.

Examples**MR 72451**

This entry plots a meteorogram for station 72451 beginning with the current time.

MR 72645 12 92200 MDF=7488 7489 7490 7491 7492

This entry plots upper air data for station 72645 (Green Bay) from 12 UTC, day 92196 to 12 UTC, day 92200.

MR 72645 0 91192

This entry plots a meteorogram for station 72645 from 0 UTC, day 91188, to 0 UTC, day 91192.

NMCL

Lists NMC grids.

**The ADDE command GRDLIST may be used in place of NMCL.
See the ADDE section of the *McIDAS-X* or *McIDAS-OS2 Users Guide*
for more information.**

Formats

NMCL LIST

NMCL *parm level time vt model [keywords]*

Parameters

LIST lists available models and their grid file locations

parm parameter to list
ALL lists every product (default)

level pressure level; for example, 880
ALL all levels (default)
MAXW maximum wind
MSL mean sea level pressure
SFC surface
TRO tropopause

time **ALL** for 0 and 12 UTC model run time (default)
0 for 0 UTC model run time
12 for 12 UTC model run time

vt valid time for the run: 0, 6, 12, 18, 24, etc. (default=ALL)

model **ALL** searches all models (default)
ECMF European Center for Medium Range Weather Forecasting
ETA ETA coordinate model
MRF medium range forecast model with GFDL physics
NGM nested grid model
ROI regional optimum interpolation analysis
SST sea surface temperature analysis

Keywords

DAY= year and day of the model run, YYDDD (default=current)

GRIDF= grid file number to search (default=real-time NMC grid file)

Remarks

Two days of data are stored on the SSEC McIDAS-MVS system.

Examples**NMCL**

This entry lists every NMC grid for the current day. This command entry's output may be thousands of lines long.

NMCL T 850 12 12 MRF

This entry lists the real-time medium-range forecast NMC temperatures at 12 UTC, for 12 hours.

NMCL Z X 0 24 NGM

This entry lists the 24-hour forecast height grids for all levels from today's 0 UTC nested grid model.

NMCL ALL 500 0 0 ROI MDF=16015 DAY=93015

This entry lists all analyses available for the regional optimum interpolation analysis (ROI) at 500 mb for the 0 UTC run. The data is stored in history MD file 16015 for day 93015.

NMCX

Contours or plots NMC grids.

**The ADDE command GRDDISP may be used in place of NMCX.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.**

Format

NMCX *parm level time vt model option parm2 level2 time2 vt2
model2 [keywords]*

Parameters

<i>parm</i>	parameter to plot; all standard NMC parameters or one of the following derived parameters: ABV, DSH, DST, DVG, GEO, SPD, STR, VOR, WNF, WNV (no default)
<i>level</i>	pressure level; for example, 850 (no default) MAXW maximum wind level MSL mean sea level pressure SFC surface TRO tropopause
<i>time</i>	0 for 0 UTC model run time 12 for 12 UTC model run time (no default)
<i>vt</i>	valid time for the run: 0, 6, 12, 18, 24, etc. (no default)
<i>model</i>	ECMF European Center for Medium Range Weather Forecasting ETA ETA coordinate model MRF medium range forecast model with GFDL physics NGM nested grid model ROI regional optimum interpolation analysis SST sea surface temperature analysis (no default)
<i>option</i>	derived parameters option: ADD, AVG, DIV, MPY, RMS, SUB (no default)
<i>parm2</i>	second parameter for the derived option; all standard NMC parameters or one of the following: ABV, DSH, DST, DVG, GEO, SPD, STR, VOR (no default)
<i>level2</i>	any mandatory level (default= <i>level</i>) MAXW maximum wind level MSL mean sea level pressure SFC surface TRO tropopause

<i>time2</i>	0	for 0 UTC model run time, HH
	12	for 12 UTC model run time, HH (default= <i>time</i>)
<i>vt2</i>		valid time for the run: 0, 6, 12, 18, 24, etc. (default= <i>vt</i>)
<i>model2</i>	ECMF	European Center for Medium Range Weather Forecasting
	ETA	ETA coordinate model (default= <i>model</i>)
	MRF	medium range forecast model with GFDL physics
	NGM	nested grid model
	ROI	regional optimum interpolation analysis
	SST	sea surface temperature analysis (default= <i>model</i>)

Keywords

CINT=	contour interval (default=2)
CMAP=	graphics color level for the map (default=1)
COLOR=	graphics color level for the contours; use positive numbers for solid, negative numbers for dashed (default=2)
DASH=	NEG dash negative contours only POS dash positive contours only
DAY=	year and day to plot, YYDDD (default=current)
ELE=	<i>min max</i> graphics TV element bounds
GOUT=	output grid file number for the derived parameters (default=terminal number)
GRA=	graphics frame number (default=current)
GRIDF=	grid file number to search (default=real-time NMC grid file)
IMA=	image frame number (default=current)
LAT=	<i>min max</i> latitude bounds
LIN=	<i>min max</i> graphics TV line bounds
LINT=	contour label interval (default=1)
LON=	<i>min max</i> longitude bounds
LSIZE=	height of the contour labels, in pixels (default=8)
MAG=	descaling factor that multiplies the plotted values by $\frac{1}{10}$ MAG (default=grid extents)

MAP= MID, USA, NA, State Post Office abbreviation, SAT, NONE, DEF (default=grid extents)

PAN= graphics frame panel number; the range is 0 to 4 (default=0, full screen)

PLOT= YES plots grid point values (default for *parm* WNF or WNV)
NO plots contours (default for *parms* other than WNF or WNV)

PRO= MERC Mercator projection (default)
CONF polar stereographic or Lambert conformal projection

SCALE= conformal projection scale, a ratio or number of TV lines (default=*linmax linmin*)

SLAT= *lat1 lat2* standard latitudes for conformal projections (default=60)

SLON= standard longitude for conformal projections (default=computed)

UNIT= units in which to plot or contour the parameter (default is parameter dependent)

See Also

See *Appendix C* for the definitions of the meteorological parameters used by this command. VOR and ABV units are 10**-5/sec.

Examples

NMCX T 700 12 24 NGM

This entry contours the 24-hour 700 mb temperature forecast from the 12 UTC NGM run.

NMCX Z 500 0 18 MRF SUB Z 1000 MAP=MID CINT=60

This entry contours the 18-hour 1000 to 500 mb thickness forecast from the 0 UTC MRF run, centered over a map of the Midwest.

NMCX VOR 500 12 24 ETA ADV MAP=USA CINT=50

This entry contours the 24-hour 500 mb vorticity advection forecast from the 12 UTC ETA run over a USA map.

SAO

Lists SA data.

Formats

SAO DEFINE REG= ID=
 SAO DELETE REG=
 SAO LIST *option*
 SAO LIST REG=
 SAO RENAME *oldname newname*
 SAO *id1 id2...idn nhours type [keywords]*

Parameters

DEFINE defines a new station or region
DELETE deletes a station or region

LIST lists IDs

RENAME renames a region
idl . . . n station or regional identifier; for regional identifiers,
 enter: **SAO LIST REGIONS**

nhours number of hours of the observations; maximum is 48
 (default=3)

type C civil format
 D decoded
 R remarks
 T text (default)

option **COUNTRIES** lists all currently defined country IDs
REGIONS lists all currently defined regional IDs

oldname ID of the region to rename; maximum of 4 characters

newname new ID of the region; maximum of 4 characters

Keywords

CAT= C clouds
 F frozen
 P pressure
 R rain
 T thunder
 W wind
 (default=ALL)

CEIL= lists stations with a ceiling less than or equal to CEIL, in feet

CO= country ID; maximum of 4 characters

DAY= year and Julian day, YYDDD (default=current)

ID= station ID; maximum of 4 characters

REG= region ID; maximum of 4 characters

TIME= time of the last observation (default=current)

VIS= lists stations with visibility less than or equal to VIS, in miles

WIND= lists stations with wind speed greater than or equal to WIND, in knots

Remarks

Use keyword CAT only with the R (remarks) option.

Examples

SAO MSN X X

This entry lists the past three hours of SAs for Madison in a text format.

SAO WI FL TX 20 D

This entry lists the past 20 hours of SAs for all station IDs in Wisconsin, Florida and Texas in a decoded format.

SAO LIST COUNTRIES

This entry lists the country abbreviations.

SAO DEFINE REG=MIDW ID=WI IL MN MI IA

This entry defines a region to include all ID stations in Wisconsin, Illinois, Minnesota, Michigan and Iowa.

SAO DELETE REG=MIDW

This entry deletes the region MIDW from the regions file.

SAO MSN ORD HOU 24 D WIND=10

This entry lists the decoded SAs for Madison, Chicago and Houston for the past 24 hours where the winds are greater than 10 knots.

SAO TN MO 1 R CAT=R F

This entry lists all the remarks issued in the past hour from Tennessee and Missouri that have information about rain or fog.

SAO LBB CDS AMA ABI WIND=20 CEIL=20000 VIS=10

This entry lists only those SAs from Lubbock, Childress, Amarillo and Abilene in which the winds are greater than or equal to 20 knots, the ceiling is 20,000 feet or less and the visibility is 10 miles or less.

SC

Grids and contours surface data.

Formats

SC *parm map time [keywords]*

SC *p1-p2 map t1-t2 [keywords]*

Parameters

<i>parm</i>	ABV	absolute vorticity
	ADV	advection
	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 (mb); for ISFC only
	PSL	altimeter setting converted to millibars
	SNO	snow cover (inches)
	SPD	wind speed (meters/second)
	STR	streamline
	T	temperature ($^{\circ}\text{C}$)
	TD	dew point ($^{\circ}\text{C}$)
	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)
<i>map</i>	MID	Midwestern USA
	NA	North America
	SAT	satellite projection
	USA	USA
	<i>State Post Office abbreviation</i>	
<i>time</i>	hour; 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

GRIDF= destination grid file number (default=terminal number)

LAT= $min\ max$ latitude extents (default=from *map* parameter)

LON= $min\ max$ longitude extents (default=from *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 values in American units
M contours values in metric units
 (default determined by SYSKEY word 900)
 This keyword is valid for temperature and dew point only.

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 of the same names. If those strings exist, SC uses their values. If keyword or string MDF is used, its value is stored and accessed in the string named SVCA. If the command gives unexpected results, use command TL to list the string table or **TD ALL** to delete it.

Parameter advection (ADV) or divergence (DVG) is done by appending ADV or DVG, e.g., TADV, SPDDVG.

See Also

Use the SP command to plot surface data. Use command IGTV to replot grids created by SC.

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 in graphics color level 2 for the current day and time.

SC PCP GRA=5 COLOR=7 LAT=20 40 LON=85 105

This entry contours precipitation in graphics color level 7 on graphics frame 5. It uses a map with limiting latitudes of 20° and 40° N and longitudes of 85° and 105° W.

SC PSL MID 18-18 MDF=7500-7501 DAY=90010-90009

This entry contours the 24-hour sea level pressure change from 18 UTC, day 90009, to 18 UTC, day 90010.

To generate derived parameters such as vorticity advection (VORADV), first create a vorticity grid as follows:

SC VOR USA

Watch the text screen for the location of the U and VOR grids, then enter this command substituting the correct grid numbers for *u-grid* and *vor-grid*.

IGG MAKE *u-grid* ADV *vor-grid*

SHEAR

Calculates vertical shear.

Format	SHEAR <i>time</i> [<i>keywords</i>]
Parameter	<i>time</i> time of the upper air observation (default=latest time)
Keywords	DAY= year and Julian day of the data, YYDDD (default=current) DMDF= destination MD file for the height data (default=current) SIG= history MD file for the significant data SMDF= source MD file containing the upper air data (default=current)
Remarks	SHEAR calculates the vertical shear at 1000-foot intervals for all upper air stations. If the keyword SIG is not used for history data, the significant file is assumed to immediately follow the mandatory file. Output data and units are pressure (mb), shear (kts/ft), direction (degrees) and height (ft).
Examples	SHEAR This entry calculates the vertical shear at 1000-foot intervals using the current data and stores the results in the current MD file. SHEAR 0 DMDF=6842 This entry calculates the vertical shear for 0 UTC data for the current day and stores the results in MD file 6842. SHEAR 12 DAY=92063 SMDF=4961 This entry calculates the vertical shear for 12 UTC for day 92063 and stores the results in the current MD file. The mandatory data used for the calculations is in MD file 4961; the significant data is in MD file 4962.

SHIPC

Grids and contours ship and surface data.

Format

SHIPC *parm map time [keywords]*

Parameters

<i>parm</i>	MIX	mixing ratio (g/kg)
	PSL	altimeter setting at sea level and/or sea level pressure (mb)
	SPD	wind speed (meter/sec)
	STI	sea surface temperature
	STR	streamline
	T	temperature
	TD	dew point temperature
<i>map</i>	MID	Midwestern USA
	NA	North America
	SAT	satellite projection (default)
	USA	USA
		<i>State Post Office abbreviation</i>
<i>time</i>		hour or HH:MM:SS; time defaults to the previous hour's if the current time is less than 10 minutes past the hour (default=current)

Keywords

CINT=	contour interval (default=parameter dependent)
COLOR=	graphics color level, negative for dashed lines (default=2)
DAY=	year and Julian day, YYDDD (default=current)
GRA=	graphics frame number (default=current)
GRIDF=	grid file number (default=terminal number)
LAT=	<i>min max</i> minimum and maximum latitude bounds
LON=	<i>min max</i> minimum and maximum longitude bounds
SHIP=	ship MD file number, ISHP schema (default=current)
SURF=	SVCA MD file number, ISFC or SVCA schema (default=current)
UNIT=	A American units M metric units (default taken from SYSKEY)

Remarks

Parameter advection (ADV) or divergence (DVG) is done by appending ADV or DVG, e.g., TADV, PSLDVG.

If you do not specify keywords COLOR, CINT, LAT, LON, SVCA, UNIT, DAY and SHIP in the command, the string table is searched for them. If the results are unexpected, use command TL to list your string table or TD ALL to delete it. All *parm* parameters without units default to SYSKEY. When using history files, you can only use files with ISHP, ISFC and SVCA schemas.

SHIPC contours the altimeter setting at sea level for land reports and sea level pressure for ship reports.

Examples**SHIPC T NC**

This entry contours temperatures covering North Carolina and the adjacent course in graphics color level 2 for the most recent hour.

**SHIPC T X 19 CINT=4 COLOR=-2 GRA=5 LAT=31 48
LON=85 108 UNIT=A**

This entry contours temperatures at 19 UTC with contour intervals every 4° F in dashed lines on graphics frame 5 for the area 31° to 48° N and 85° to 108° W.

SHIPP

Plots surface and ship data.

Format *SHIPP parm map time [keywords]*

Parameters

parm

CLD cloud cover; the range is 0 to 3 for surface data where 0 is clear and 3 is overcast, and 0-9 for ship data where 0 is clear and 9 is obscured

ID station identification

MIX mixing ratio (g/kg)

PLOT plots station model: T PSL

WX

*

TD	CLD
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
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90	90
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92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

PSL altimeter setting at sea level and/or sea level pressure (mb)

SPD wind speed (m/s)

STI sea surface temperature

T temperature

TD dew point temperature

WIN wind, DDFF, FF (m/s) meteorological flags

Barb = 5 m/s (~10 kts)

Flag = 25 m/s (~50 kts)

map

MID **Midwestern USA**

NA North America

SAT satellite projection (default)

USA USA

State Post Office abbreviation

time

hour or HH:MM:SS; defaults to the previous hour if the current time is less than 10 minutes past the hour (default=latest major synoptic time: 0, 6, 12 or 18 UTC)

Keywords

COLOR= graphics color level (default=3)

DAY= year and Julian day, YYDDD (default=current)

GRA= graphics frame number (default=current)

LAT= *min max* latitude extents

LON= *min max* longitude extents

SHIP= ship MD file number, ISHP schema (default=current)

SURF= surface MD file number, ISFC or SVCA schema
(default=current)

UNIT= **A** American units
M metric units
(default taken from SYSKEY)

Remarks

SHIPP only plots ship data from the ISHP schema; surface data from both the ISFC and SVCA schemas can be used.

If you don't specify keywords COLOR, LAT, LON, DAY, UNIT and GRA, the string table is searched for the keywords. If unexpected results occur, use command TL to list the string table. All *parm* parameters without units default to SYSKEY. When using history files, you can only use files with ISHP, ISFC and SVCA schemas.

SHIPP plots the altimeter setting at sea level for land reports and sea level pressure for ship reports.

Examples**SHIPP TD**

This entry plots the dew point temperature for the most recent hour in graphics color level 3.

SHIPP STI X 18 LAT=0 40 LON=30 70

This entry plots sea surface temperatures at 18 UTC covering the area from 0° to 40° N and 30° to 70° W.

SHIPP T SAT 14 COLOR=1 GRA=5 UNIT=A

This entry plots the temperature on a satellite image at 14 UTC in graphics color level 1 on graphics frame 5 with the temperature in American units.

**SHIPP MIX WI 12 COLOR=2 UNIT=A SHIP=2493 SURF=2494
DAY=90270**

This entry plots the mixing ratio over Wisconsin in graphics color level 2 at 12 UTC for day 90270 in American units.

SKEWT

Plots a sounding on a skew T thermodynamic diagram.

Formats	SKEWT <i>station time [keywords]</i> SKEWT OUTL <i>[keywords]</i>	
Parameters	<i>station</i> 5-digit station ID (e.g., 72645 is Green Bay) or a sequence number in a satellite retrieval file <i>time</i> 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) 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 draws an overlay NO no overlay (default) PTOP= top pressure level on the diagram rounded to multiples of 50 mb (default=100) RANGE= <i>min max</i> Celsius temperature range of the diagram (default=-90 40) ROW= row number of the data in RAWI schema (default=first occurrence of the data) SIG= MD file number of significant level data (default=current) TYPE= RAWI uses rawinsonde schema VAS uses VAS created data UNIT= FT plots height in feet on the left axis MB plots pressure in millibars on the left axis (default) M plots height in meters on the left axis	

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.

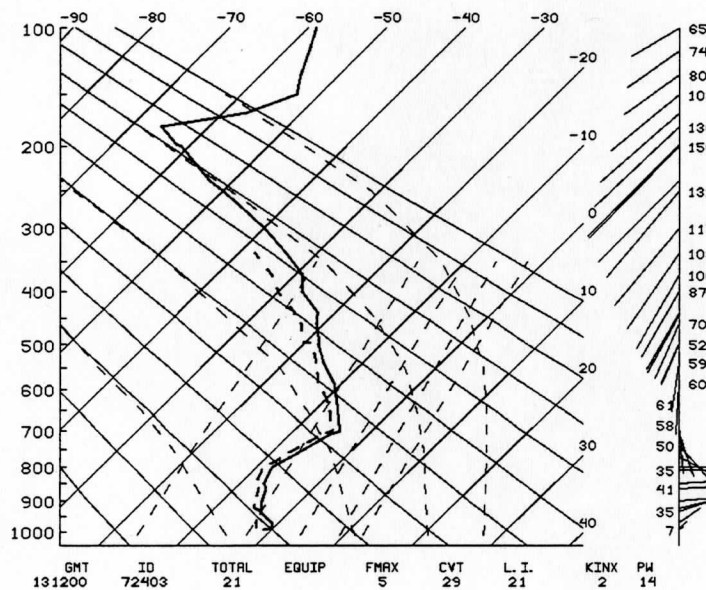
Dew point temperature is not plotted when dew point depression (temperature minus dew point temperature) rounds to a whole number that exceeds 30.

Examples**SKEWT 72645**

This entry plots a skew T diagram for Green Bay, WI, for the current time and day, erasing the graphics before plotting.

SKEWT 72403 12

This entry plots a skew T diagram for station 72403 (Washington/Dulles) at 12 UTC. A sample output is shown below.



Sample SKEWT Diagram

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 D* for the stability parameter definitions.

This entry plots a skew T diagram without the station plot, from -40° to 25° Celsius.

SKEWT 72655 X PTOP=400

This entry plots a skew T diagram for station 72655 at the current time. The highest pressure plotted is 400 mb.

This entry plots a skew T diagram for station 72655 at 3 UTC on the same diagram in graphics color level 4.

SL

Lists surface station data.

Formats

SL *units station btime etime inc [keywords]*
 SL *btime etime inc*
 SL *btime etime*
 SL SET MDF= DAY=
 SL RESET

Parameters

units **A** lists values in American units
 M lists values in metric units; see the Remarks (default)

station 3- or 4-character station ID or state Post Office abbreviation;
 can be one or more stations

btime beginning observation time of the station (default=current),
 or the beginning time of the available data information
 listed (default=lists the current time's data availability)

etime ending observation time of the station, or the ending
 time of the available data information listed (default=*btime*)

inc time increment for the time range, HH (default=1)

SET directs SL to read from the specified history MD file and
 day; see the Remarks

RESET resets the MD file to use a real-time MD file; do this
 after using a history MD file; see the Remarks

Keywords (General)

DAY= year and Julian day, YYDDD (default=current)

DIR= wind direction; 0 to 360°

GUS= wind gusts

MDF= surface history MD file number
 (default=last digit of the current day)

PCP= precipitation total

PSL= altimeter setting in millibars

SNO= snow cover

SPD= wind speed

T= temperature

TD= dew point temperature

VIS= visibility

WX= weather, 1 to 8 characters

Keywords
(ISFC schema only)

CC1= first non-ceiling cloud coverage; the range is 0 to 3 where 0 is clear, 1 is scattered, 2 is broken, 3 is overcast

CC2= second non-ceiling cloud coverage; the range is 0 to 3

CIGC= ceiling cloud coverage; the range is 0 to 3

CIGH= ceiling cloud height

CO= 2-letter country code; lists all reporting stations in the selected country; command CCODE lists the codes

PRE= sea level pressure, in mb

PTYPE= PRE listing of sea level pressure
PSL listing of altimeter setting (default)

ZCL1= height of the first non-ceiling cloud deck

ZCL2= height of the second non-ceiling cloud deck

Keywords
(SVCA schema only)

CCH= high cloud coverage; the range is 0 to 3 where 0 is clear, 1 is scattered, 2 is broken, 3 is overcast

CCL= low cloud coverage; the range is 0 to 3

CCM= middle cloud coverage; the range is 0 to 3

ZCH= high level cloud height

ZCL= low level cloud height

ZCM= middle level cloud height

Remarks

If you use keyword CO, data from all reporting stations in that country is listed. It works only with the ISFC schema MD files.

For information on history files and output, enter: **SL HELP**. If SL does not work on your workstation, clear your string table with **TD ALL**.

The output units of the parameters are shown below.

Parameters	American	Metric
wind speed	knots	m/s
wind gusts	knots	m/s
visibility	miles	km
cloud height	feet	meters
precipitation, snow	inches	cm
temperature	°F	°C
dew point	°F	°C

When you specify *units*, its value is stored in a string named SLUNIT. The SET option creates strings named SVCA and DAY which are set to the values specified by keywords MDF and DAY. Since subsequent SL commands read these three string values, you only need to specify them when changing their values. The RESET option deletes strings SVCA and DAY, and resets string SLUNIT to its default value so that subsequent SL commands use the default MD file, day and units.

You can specify a range of values for all keywords except CO, DAY, MDF, PTYPE and WX.

When search keywords (e.g., DIR and TD) are used, the units of the specified values are determined by the unit's parameter. Only reports matching the search keyword values are listed. For example, **SL A X 0 23 T=-50 -10 GUS=30 60 CO=CN** lists all Canadian reports with temperatures between -50° and -10° Fahrenheit and wind gusts between 30 and 60 miles per hour.

Examples

SL

This entry lists the current time's data availability.

SL MSN 12 18 2

This entry lists the surface station data for Madison, Wisconsin, from 12 to 18 UTC at 2-hour increments.

SL SET MDF=1000 DAY=94300

This entry points to history MD file 1000 and lists its data for day 94300. All SL commands run now will access MD file 1000 until an **SL RESET** is entered.

SL ORD 15 10 DAY=94001 94002

This entry lists the surface data for Chicago's O'Hare Airport from 15 UTC, day 94001, to 10 UTC, day 94002.

SL A WI

This entry lists surface data in American units for all Wisconsin stations for the current time.

SL 12 23 WX=TRW

This entry lists all stations for the current day with thunderstorms between 12 and 23 UTC.

SL M MSN DSM 12 15

This entry lists the reports for Madison and Des Moines between 12 and 15 UTC in metric units.

SL 12 15

This entry lists surface data availability from 12 to 15 UTC.

SL 6 :

This entry lists surface data availability from 6 UTC to the current time.

SL 18 CO=AU MDF=7500 DAY=93100

This entry lists the surface data for all reporting stations in Australia at 18 UTC, day 93100. MD file 7500 must be ISFC schema.

SP

Plots surface data.

Formats

SP *parm map time [keywords]*SP *p1-p2 map t1-t2 [keywords]*

Parameters

<i>parm</i>	CIGH	height of the ceiling, 100 feet; ISFC only
	CLD	cloud cover; the range is 0 (clear) to 3 (overcast)
	GUS	wind gust, in m/s
	ID	station identification
	MIX	mixing ratio (g/kg)
	PCP	precipitation, in inches
	PLOT	plots station model in the format:
		T PSL WX * (wind flag) T CLD ID
	PRE	sea level pressure, in mb; ISFC only
	PSL	altimeter setting, in millibars
	SNO	snow cover, in inches
	SPD	wind speed, in m/s
	T	temperature (°C)
	TD	dew point temperature (°C)
	THA	theta (K)
	THAE	theta E (K)
	VIS	visibility, in miles
	WIN	wind, DDFF, FF (m/s) meteorological flags Barb = 5 ms ⁻¹ (~10 kts); Flag = 25 ms ⁻¹ (~50 kts)
	WX	weather text
	WXS	weather symbols
	ZCH	ceiling height, 100 feet; SVCA only
	ZCL	first non-ceiling cloud deck height, 100 feet; SVCA only
	ZCL1	first non-ceiling cloud deck height, 100 feet; ISFC only
	ZCL2	second non-ceiling cloud deck height, 100 feet; ISFC only
	ZCM	second non-ceiling cloud deck height, 100 feet; SVCA only
	ZS	station elevation, in meters
<i>map</i>	MID	Midwestern USA
	NA	North America
	SAT	satellite projection
	USA	USA
	<i>State Post Office abbreviation</i>	
<i>time</i>	hour; 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 (default=3)

DAY= $d1 - d2$ year and day, YYDDD; use two values when plotting differences (default=current)

GRA= graphics frame number (default=current)

LAT= $min\ max$ minimum and maximum latitude extents

LON= $min\ max$ minimum and maximum longitude extents

LSIZE= label size for the parameter plotted (default=8)

MDF= $f1 - f2$ ISFC or SVCA surface history MD file number; use two values when plotting differences (default=last digit of the current Julian day)

UNIT= **A** displays values in American units
M displays values in metric units
 (default is determined by SYSKEY word 900)

Remarks

If you do not specify keywords COLOR, DAY, GRA, LAT, LON and MDF in the command, the string table is searched for strings of the same names. If those strings exist, SP uses their values. If keyword or string MDF is used, its value is stored and accessed in the string named SVCA. If the command gives unexpected results, use the command TL to list the string table or TD ALL to delete it.

Examples

SP T MID

This entry plots temperatures (°C) over the Midwest for the current day and time in graphics color level 3.

SP WIN LAT=20 40 LON=80 100 COLOR=1

This entry plots winds in graphics color level 1 with latitude bounds 20° to 40° N, longitude bounds 80° to 100° W, for the current day and time.

SP PLOT SAT 18 DAY=94300

This entry plots a station model over a satellite projection at 18 UTC, day 94300.

SP T-TD WI

This entry plots the current dew point depression for Wisconsin.

SP T WI 12-12 MDF=2-1 DAY=93102-93101 UNIT=A

This entry plots the 24-hour temperature change in degrees Fahrenheit from 12 UTC day 93101, to 12 UTC day 93102.

SP SNO MN 12 UNIT=M

This entry plots the snow depth over the state of Minnesota on the current day in cm.

STAB

Generates stability indices.

Format	STAB <i>sfile dfile time day</i> [<i>keywords</i>]	
Parameters	<i>sfile</i>	source MD file number of the mandatory data
	<i>dfile</i>	destination MD file number for the computed stability parameters
	<i>time</i>	time of the observation, 00, 06, 12, 18 UTC only (default=latest observation)
	<i>day</i>	year and Julian day of the observation, YYDDD
Keywords	SIGMDF=	MD file number for the significant data
	TYPE=	CTF use for <i>sfile</i> created from NMC CTF files
Remarks	STAB generates and saves stability indices for all stations in an MD file. The units for precipitable water are in millimeters.	
See Also	Use command STABIL or MDX to plot parameters. Any of the keys listed with command MDL can be plotted or contoured.	
Examples	STAB 1000 1001 This entry generates stability indices from MD file 1000 and stores the results in MD file 1001, using the current day and time.	
	STAB 34 6512 0 93216 SIGMDF=6516 This entry generates stability indices from the mandatory upper air data in MD file 34 and the significant data in MD file 6516 and stores the results in MD file 6512. The time is 0 UTC; the day is 93216. To plot the Lifted Indices over the U.S., enter: MDX LI SORT=DAY 93216 TIME 0 MAP=USA OUT=PLO SOU=MDF MDF=6512	

STABIL

Plots stability indices.

Formats

STABIL MAKE *sfile dfile time day*

STABIL PLOT *map file*

Parameters

MAKE generates an MD file to hold the stability indices

PLOT plots the stability indices on the graphics

sfile source MD file number with input data
(default=current IRAB MD file)

dfile destination MD file number for the stability indices

time time of the observation; use 00, 06, 12 or 18 UTC
(default=12)

day year and day of the observation, YYDDD (default=current)

map **MID** Midwestern USA
USA USA
NA North America
SAT satellite projection
State Post Office abbreviation

file MD file number containing the stability indices

Remarks

STABIL plots stability indices in a station model format with the Lifted Index plotted in the upper-left corner, the Total Totals in the lower-left corner, precipitable water in the upper-right corner and SWEAT index in the lower-right corner. The units for precipitable water are in millimeters.

See Also

The UL command lists additional stability indices.

Examples

STABIL MAKE 2000 2001

This entry generates the stability parameters for the current day and time using the observations in RAOB file 2000, and places the results in MD file 2001.

STABIL PLOT MID 2001 DEV=C

This entry plots the stability parameters over the Midwest on the text screen and stores the results in MD file 2001.

STG

Plots an 8-hour space-time graph.

Format	STG <i>bid eid time day [keywords]</i>	
Parameters	<i>bid</i>	3-letter station ID of the beginning station to plot
	<i>eid</i>	3-letter station ID of the ending station to plot
	<i>time</i>	hour of the latest data to plot, HH (default=current)
	<i>day</i>	year and day of the data, YYDDD (default=current)
Keywords	GRA=	graphics frame number (default=current)
	ID=	list of the station IDs to plot
	INIT=	NO does not initialize the graphics color palette YES initializes the palette with GU REST (default)
	MDF=	MD file number
	WID=	width of the corridor used to select stations between <i>bid</i> and <i>eid</i> , in miles; if keyword ID is used, a corridor width is not used (default=30)
Remarks	Command STG plots surface hourly observations, i.e., temperature, dew point, pressure, wind, wind gust and weather for an 8-hour period for multiple stations.	
	The number of plotted stations will vary due to proportional spacing between stations. The practical limit is 11 or 12. If too few stations are plotted, increase the corridor width using keyword WID. If too many stations are plotted, decrease the corridor width.	
	The wind direction is designated by the angle of the barb, and wind speed by the length of the barbs. Calm winds are designated by a plus sign (+).	
	Graphics are automatically erased before each plot.	
	STG plots the altimeter setting in millibars.	

Examples**STG DFW BRO**

This entry selects stations from a 30-mile wide corridor between DFW and BRO using the current day and time, and initializes the color palette.

STG MSN CLE 6

This entry plots data from 23 UTC of the previous day to 6 UTC of the current day. The stations plotted between MSN and CLE are automatically selected using a 30-mile wide corridor.

STG ID=MSN MKE ORD CLE

This entry plots eight hours of data up to the current day and time for the four stations MSN, MKE, ORD and CLE.

STUVE

Plots a Stuve thermodynamic diagram.

Formats

STUVE OUTL [*keywords*]
STUVE *station time* [*keywords*]

Parameters

OUTL displays a Stuve diagram without sounding

station 5-digit station identification number or a sequence number within a satellite retrieval file

time RAOB time; enter 0, 03, 06, 09, 12, 15, 18 or 21 UTC (default=0 or 12)

Keywords

COLOR= graphics color level of the plotted data

DAY= year and Julian day, YYDDD (default=current)

GRA= graphics frame number (default=current)

MDF= MD file number (default=current RAOB MD file)

MIX= YES draws mixing ratio lines (default)
 NO does not draw lines

OLAY= YES overlays a sounding on the existing Stuve diagram
 NO no overlay (default)

PTOP= top pressure level on the diagram, rounded to multiples of 50 mb (default=100 mb)

RANGE= *min max* minimum and maximum Celsius temperature range of the diagram (default=-70° to 30° C)

ROW= row member of the data in RAWI schema (default=first occurrence of the data)

SIG= MD file number containing the corresponding significant level data (default=current day's file)

TYPE= VAS uses VAS created data
 RAWI uses rawinsonde schema

UNIT= MB plots pressure in millibars on the left axis (default)
M plots pressure in meters on the left axis
FT plots pressure in feet on the left axis

Remarks

Graphics are automatically erased before each plot. Heights are recomputed for hydrostatic consistency.

You can plot any number of overlays, but each successive wind bar and header will overwrite the previous overlay's wind bar and header due to space limitations.

Dew point temperature is not plotted when dew point depression (temperature minus dew point temperature) rounds to a whole number larger than 30.

Examples**STUVE 72645**

This entry plots a Stuve diagram for station 72645 for the current day and time, erasing the graphics before plotting.

STUVE OUTL RANGE=-40 25

This entry plots a Stuve diagram without a station plot, from -40° to 25° Celsius, using the current MD file and time.

To plot two soundings on one diagram, enter the two commands below.

STUVE 72655 12

This entry plots a Stuve diagram at 12 UTC from the current MD file.

STUVE 72655 0 OLAY=Y COLOR=5

This entry plots a Stuve diagram at 0 UTC from the current MD file over the same diagram and changes the color to red.

TAF

Lists 24-hour TAF (Aerodrome) forecasts.

Formats

TAF *id1 id2...idn nfor [keywords]*

TAF LIST *option*

TAF LIST REG=

TAF LIST CO=

TAF DEFINE REG= ID=

TAF DELETE REG=

Parameters

LIST lists IDs in a region or country

DEFINE defines a new station or region

DELETE deletes a station or region

id station or region identifier

nfor number of forecasts to list; the maximum is 12
(default=most recent)

option **REGIONS** lists all currently defined region IDs
COUNTRIES lists all currently defined country IDs

Keywords

CO= country ID, 4 characters maximum

ID= station ID

REG= region ID, 4 characters maximum

Remarks

If a station reports in a 4-character format even though it is a 3-character station, you must request it as a 4-character station. For example, the TAF for Milwaukee comes in as KMKE. To list the TAF for MKE, you must enter: TAF KMKE.

If you define a region for the TAF command, it is also defined for the FTL and FC commands.

Example

TAF LIST CO=IY

This entry lists the stations currently defined for Italy.

TEXT

Lists weather text and observations.

*The ADDE command WXTLIST may be used in place of TEXT.
See the ADDE section of the McIDAS-X or McIDAS-OS2 Users Guide
for more information.*

Formats

TEXT *name matchstring [keywords] "second match*
TEXT DIR *matchstring*
TEXT AFOS *matchstring*
TEXT LIST *circuit header*

Parameters

DIR lists a directory of WMO headers and their definitions that match *matchstring* (default=all WMO headers)

AFOS lists AFOS headers that match *matchstring* and known WMO headers (default=all AFOS headers)

LIST lists group names, headers and alias names

name WMO header, group name or alias name to search

matchstring primary matchstring to search for, 12-character limit; if prefixed with @, searches for the string in the first column; if prefixed with *, searches for the string in the header (default=most recent block)

"second match secondary matchstring to search for; 79-character limit; this string may contain blanks

circuit name of the circuit; for example, DDS, IDS, PPS

header 2-character WMO header name (default=all)

Keywords

BLOCK= YES prints the entire data block
 NO does not print the data block (default)

CIR= circuit to search (default=all)

DAY= Julian day to begin the search, YYDDD (default=current)

HEAD= YES lists the WMO header with the observation
 NO does not list the WMO header (default)

NUM= number of matches to list (default=1)

TIME= header time, in whole hours, of the last observation to list (default=current)

Remarks

WMO data can be accessed by specifying a group name, alias name, WMO header name or text string. System operations manages the assignment of group names, alias names and filing WMO headers. The TEXT LIST option lists your system's organization of groups, alias names and WMO headers.

A group name is two characters (typically a WMO header contained in that group). The group name is incorporated into the LW file name containing the WMO data. You can assign common names to groups by specifying an alias name, such as TORNADO for WMO header WF.

A group name may contain one or more WMO headers. For example, all WMO RAOB headers might be grouped under one name to organize searching. To assure you're listing the most recent reports, search for data using the group name or alias name rather than the header, since similar observations can be filed under more than one header.

If the LIST option finds a header under alias MISC, the search is faster if you specify the header rather than the group name (ZZ) or alias name (MISC). See the example below.

TEXT LIST DDS SF

This entry lists the group and alias name that the SF header is filed under on the DDS circuit. In this case, SF is filed under MISC. TEXT runs faster if you enter TEXT SF rather than TEXT MISC SF.

Examples

This example is valid for files defined at SSEC. Your site may be different.

Suppose you want to look at part A radiosonde data for Green Bay, Wisconsin (station 72645). To find the data, first find its WMO header. Enter the commands below, in order.

TEXT DIR RAOB

This entry lists the WMO headers whose definitions contain the string RAOB. Choose a header, UJ in this case, that stores the desired data. Use this header and matchstrings to access the data.

TEXT UJ TTAA "72645

This entry lists the most recent part A radiosonde observations (TTAA) for Green Bay, Wisconsin.

Another way to find the data is to use the extended WMO header as the primary matchstring. For example:

TEXT FP FPUS5 "KMKE

This entry lists the most recent zone forecast (FPUS5) for Milwaukee.

TEXT DIR WH

This entry lists the header information for WH.

TEXT DIR WARNING

This entry lists all headers that list warning data.

TEXT AFOS AQI

This entry lists the AFOS catalog name and the known WMO headers for Air Quality Indices.

TEXT AFOS RIVER

This entry lists all AFOS catalog names with RIVER information and the known WMO headers.

TEXT MISC *UZ NUM=3

This entry lists the first three matches in the MISC file containing the string UZ in its header.

TEXT SA @TOP TIME=15 NUM=4

This entry lists the four most recent SAs, starting at 15 UTC, that contain the string TOP beginning in the first column. In most cases, the output will list the 12, 13, 14 and 15 UTC SAs from Topeka, Kansas.

TEXT SYNOPTIC 72641

If the WMORTE command has set the SM WMO header alias to SYNOPTIC, this entry lists the first occurrence of 72641 in the SM index.

TEXT SM

This entry lists the most recent match filed under the SM header (a primary index). A match may be found in any of the following WMO headers since they are all secondary indices: SI, SM, SN, SS.

TEXT SS

This entry lists the most recent match found in the WMO header SS because SS is a secondary index.

UC

Grids and contours upper air data.

Formats

UC *parm level map time [keywords]*

UC *p1-p2 l1-l2 map t1-t2 [keywords]*

Parameters

<i>parm</i>	ABV	absolute vorticity (10^{-6}sec^{-1})
	DVG	divergence (10^{-6}sec^{-1})
	MIX	mixing ratio (g/kg)
	P	pressure (mb)
	SPD	wind speed (m/s)
	STR	streamline
	T	temperature ($^{\circ}\text{C}$)
	TD	dew point temperature ($^{\circ}\text{C}$)
	THA	theta (K)
	THAE	theta-E (K)
	VOR	vorticity (10^{-6}sec^{-1})
	Z	height (m)
	ZS	station elevation (m); use only with SFC level
<i>level</i>	MAXW	maximum wind
	SFC	surface
	TRO1	tropopause 1
	TRO2	tropopause 2
	1000 - 100	mandatory levels in mb
<i>map</i>	MID	Midwestern USA
	NA	North America
	SAT	satellite projection
	USA	USA
	<i>State Post Office abbreviation</i>	
<i>time</i>	hour (default=0 UTC if the current time is between 0 UTC and 1315 UTC; otherwise, default=12 UTC)	
<i>p1-p2</i>	parameter difference used in contouring; subtract <i>p2</i> from <i>p1</i>	
<i>l1-l2</i>	level difference used in contouring; subtract <i>l2</i> from <i>l1</i>	
<i>t1-t2</i>	time difference used in contouring; subtract <i>t2</i> from <i>t1</i>	

Keywords

CINT= grid 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; use two values to contour differences, YYDDD (default=current)

GRA= graphics frame number (default=current)

GRIDF= destination grid file number (default=terminal number)

LAT= *min max* minimum and maximum latitude extents

LON= *min max* minimum and maximum longitude extents

MDF= *f1-f2* upper air history file number; use two values to contour differences (default=last digit of the current Julian day plus 10)

Remarks

Parameter advection (ADV) or divergence (DVG) is done by appending the parameter with ADV or DVG, e.g., TADV, ZDVG.

If you do not specify keywords COLOR, CINT, LAT, LON and MDF in the command, the string table is searched for them. If the results are unexpected, use command TL to list the string table. A grid file is generated and its pointer set to your terminal number.

The 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.

Examples**UC T 850 MID**

This entry contours 850 mb temperatures over the Midwest for the current day and time in graphics color level 2.

**UC TD-TD 850 SAT 12-12 DAY=93021-93020 MDF=11-20
COLOR=-3 CINT=2**

This entry draws dew point temperature differences between 12 UTC on 93020 and 12 UTC on 93021. The dew point temperatures on 93020 are subtracted from those on 93021. The keyword MDF lists the order of the respective MD files. The data is contoured in graphics color level 3 (dashed), with a contour interval of 2 over the current satellite image.

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.

Below is an example of vorticity advection.

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 in the current grid file. Assume U is in grid 1 and VOR is in grid 3.

Enter the following two commands.

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.

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 the upper air data availability (default)
 ANL lists the 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 containing the history data
 (default=the last digit of the current Julian day plus 10)
 OPT= 0 lists the 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 heights; 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 the potential temperature and mixing ratio
 for each level
 NO does not compute (default)

SIG= significant MD file number (default=10 plus the value of MDF if MDF is between 10 and 19; otherwise, default=1 plus the value of MDF)

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. This means 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, the temperature and dew point at the wind level are interpolated. For no interpolation, use OPT=3.

The three keys in the significant level MD file schema (IRSG) are P1, P2 and P3. They are 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.

The 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.

Examples**UL**

This entry lists the available upper air data for the entire day.

UL LIST 72645 12 OPT=3

This entry lists the mandatory and significant levels for station 72645, at 12 UTC on the current day. Temperature, dew point and wind data are not interpolated; OPT=3 displays the raw data from the RAOB code.

UL AVA MDF=6512 DAY=94250

This entry lists the available upper air data in MD file 6512, day 94250.

UL LIST 72747 0 DAY=90111 MDF=7550 SIG=7551

This entry lists the mandatory and significant levels for station 72747 at 0 UTC on day 90111. The mandatory level data is in MD file 7550, while the significant level data is in MD file 7551. Data is interpolated for significant levels.

UP

Plots upper air data.

Formats

UP *parm level map time [keywords]*

UP *p1-p2 l1-l2 map t1-t2 [keywords]*

Parameters

<i>parm</i>	IDN	5-digit station ID; the first two digits are dropped in the PLOT option; IDs are plotted only for the surface level
	MIX	mixing ratio (g/kg)
	PLOT	plots station model in the format below; only the last three digits of the height and station ID are plotted
	T Z	* (wind flag)
	IDN	IDN
	TD	TD
	SPD	wind speed, in m/s
	T	temperature (°C)
	TD	dew point temperature (°C)
	THA	theta (K)
	THAE	theta E (K)
	WIN	wind, DDFF, FF(m/s) meteorological flags Barb = 5 ms ⁻¹ (~10 kts); Flag = 25 ms ⁻¹ (~50 kts)
	Z	surface height, in meters
	ZS	station elevation, in meters
<i>level</i>	MAXW	maximum wind
	SFC	surface
	TRO1	tropopause 1
	TRO2	tropopause 2
	1000 - 100	mandatory levels, in mb
<i>map</i>	MID	Midwestern USA
	NA	North America
	SAT	satellite projection
	USA	USA
	<i>State Post Office abbreviation</i>	
<i>time</i>	hour (default=0 UTC if the current time is between 0 UTC and 1315 UTC; otherwise, default=12 UTC)	
<i>p1-p2</i>	parameter difference used in plotting; subtract <i>p2</i> from <i>p1</i>	
<i>l1-l2</i>	level difference used in plotting; subtract <i>l2</i> from <i>l1</i>	
<i>t1-t2</i>	time difference used in plotting; subtract <i>t2</i> from <i>t1</i>	

Keywords

COLOR= graphics color level (default=3)

DAY= *d1-d2* year and day; use two values when plotting differences, YYDDD (default=current)

GRA= graphics frame number (default=current)

LAT= *min max* minimum and maximum latitude extents

LON= *min max* minimum and maximum longitude extents

MDF= *f1-f2* history 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, LAT, LON and MDF in the command, the string table is searched for them. If the results are unexpected, use command TL to list the string table. The 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.

Examples**UP T 850 MID**

This entry plots the current temperatures at 850 mb over the Midwest in graphics color level 3.

UP IDN SFC USA COLOR=4

This entry plots station numbers over the USA 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 USA.

UP T-TD 850 USA

This entry plots the current dew point depression over the USA.

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.

VAS4D

Analyzes VAS data for a 4-D display of trajectories and moisture.

Format

VAS4D *itraj file nframe mix [keywords]*

Parameters

itraj index of the trajectory analysis to make, the range is 1 to 10; use command LIST4D to list the indices

file source MD file of the VAS data to analyze (default=1441)

nframe number of frames in the sequence (default=4)

mix value of the mixing ratio surface, in g/kg (default=5.0)

Keywords

FREQ= Barnes analysis frequency (default=30)

HGT= *bottom top* height extents, in meters (default=0.0 12000.0)

LAT= *south north* latitude extents (default=26.0 49.0)

LON= *east west* longitude extents (default=75.0 112.0)

THA= *bottom top* theta extents (default=290.0 340.0)

Remarks

VAS4D analyzes VAS data for a time sequence display of wind trajectories and moisture surfaces. The display includes a topographical map (TOPO3D) and can be viewed in stereo.

Examples

VAS4D 5

This entry analyzes the VAS data in MD file 1441 and prepares a 4-frame sequence of trajectories and moisture, using a 5.0 g/kg mixing ratio surface.

VAS4D 4 1610 5 4.0

This entry analyzes the upper air data from MD file number 1610 in index number 4 for 5 images of wind trajectories and the 4.0 g/kg mixing ratio surface.

WWLIST

Lists weather watches.

Format	WWLIST <i>bwatch ewatch</i> [<i>keyword</i>]		
Parameters	<i>bwatch</i>	beginning watch number to list (default=lists all active numbers)	
	<i>ewatch</i>	ending watch number to list	
Keyword	FORM=	ALL	lists all portions of the watch (default=status only)
		PRE	lists the pre-watch information
		PRI	lists the primary watch description
		UP	lists the watch update
Remarks	If you do not specify keyword FORM, only the status (active, inactive or has not been issued) and the states/regions affected by the watch are listed.		
Examples	WWLIST This entry lists the status of all active watches.		
	WWLIST 521 532 FORM=PRE This entry lists the pre-watch statements of watch numbers 521 through 532.		

WWPLOT

Plots weather watch boxes on a satellite image or polar stereographic map.

Format	WWPLOT <i>map</i> [<i>keyword</i>]
Parameter	<i>map</i> map to plot watches on; valid maps are USA or state Post Office abbreviation (default=SAT)
Keyword	WATCH= range of watches to plot (default=current active)
Remarks	Active watch boxes are plotted in solid lines; expired boxes are dashed. If you specify a P.O. abbreviation and the entire box outline cannot be plotted on the screen, none of the watch is drawn.
Examples	WWPLOT This entry plots all active watch boxes using the image frame for navigation. WWPLOT USA WATCH=501 510 This entry draws a polar stereographic map of the U.S. and plots watch boxes 501 through 510 on the map.

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 Remarks)
 COLOR= *l1 ... ln* contour color level (default=see 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, m/s
 SPDE derived wind speed projected normal to the cross section axis and enhanced by thermal information through the geostrophic wind equation, m/s
 SPDN derived wind speed normal to the cross section axis, m/s; see the Remarks
 SPDS derived wind speed tangential to the cross section axis, m/s
 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, m/s
 V derived v-component of the reported wind speed, m/s
 WIN wind barbs of the reported winds, kt
 Z reported heights, m

GCOLOR=		background border and interior grid color level (default=1)
GRA=		graphics frame (default=current)
IDN=	<i>id1 . . 25</i>	station ID numbers for the cross section
LABEL=	YES NO	displays parameter labels (default) does not display parameter labels
LAT=	<i>end beg</i>	latitude limits for the cross section (default= <i>eid bid</i>)
LDASH=	<i>l1 . . . ln</i> -2 -1 0	contour dashing; used with keyword FORM all contours are dashed only negative contours are dashed no dashing (default=see the table in the Remarks)
LINT=		label interval of the contours (default=see the Remarks)
LON=	<i>end beg</i>	longitude limits for the cross section (default= <i>eid bid</i>)
LSIZE=		label size of the contours (default=see the Remarks)
MAP=	NO YES	does not plot a map showing the cross section location (default) plots a map showing the cross section location
MDF=	<i>mand sig</i>	mandatory and significant level MD file numbers; set <i>sig</i> to 0 if only mandatory levels are needed; giving <i>sig</i> a value is only valid when <i>mand</i> is specified (default= see the Remarks)
PAN=		graphics quarter panel number: 0, 1, 2, 3, 4; specifying this keyword automatically sets keyword ERASE to NO (default=0)
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 the 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/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 is affected. Altering the order may also impact the intermediate station selections as stations are included/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 using *bid* and *eid* and LAT/LON, 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 blank.

The MDF keyword has two parameters. The second parameter is only valid when the first parameter refers to an IRAB MD file. The second parameter is assumed to be its corresponding IRSG MD file. When only the mandatory IRAB levels are included in the vertical contouring, the second parameter must be set 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.

If you use the PAN keyword, the keyword ERASE is set to NO unless you specify otherwise.

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 (4 for SDA)	-1	2	6	20	C
TD	5	4	-1	2	6	20	C
THA	5	5 (4 for SDA)	-1	2	6	20	K
U	5	2	-1	2	6	20	MPS
V	5	3	-1	2	6	20	MPS
WIN	NA	7 (2 for SDA)	NA	NA	8	NA	Kt
Z	1000	1	-1	5	6	20	M

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, but it also displays a map in the upper-right corner which indicates 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, but 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 second 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 LAT=30 55 LON=100 FORM=SPD WIN UNIT=KT
PBOT=500 PTOP=100 MAP=Y**

This entry displays a cross section of wind speed in knots from 500 to 100 mb along 100° W from 30° to 55° N. Wind barbs are also displayed. Station selection occurs automatically.

**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.

Chapter 10. TOVS and VAS Retrievals

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BSVA

Compares a grid of computed brightness temperatures with an MD file of observed brightness temperatures.

Format	BSVA channel [keywords]		
Parameter	<i>channel</i>	V01 to V12, for VAS channels 1-12	
Keywords	ADD=	1 adds to the RGCOMP file 0 initializes a RGCOMP file (default)	
	ALL=	1 uses all MD file reports 0 uses the retrievals not flagged (default)	
	ERR=	gross error check; if the difference between observed and calculated TBBs is greater than the entered value, TBBs are not used in calculating the bias factor	
	GRID=	grid number (no default)	
	GRIDF=	grid file number (default=VASTEXT)	
	LAT=	<i>min max</i>	minimum and maximum latitude (default=VASTEXT)
	LON=	<i>min max</i>	minimum and maximum longitude (default=VASTEXT)
	MDF=	MD file number (default=VASTEXT)	
	NCD=	1 avoids cloudy retrievals 0 includes cloudy retrievals (default)	
	ROW=	MD file row number (default=VASTEXT)	
	TBB=	1 writes the bias vector as brightness temperature 0 writes the bias vector as radiance (default)	
Remarks	Bias values are stored in the VASTEXT file. MD linkage is through VASTEXT or keyword MDF. Grid file linkage is through VASTEXT or keyword GRIDF.		

Examples**BSVA V02 GRID=2 TBB=1**

This entry obtains the grid file and MD file numbers from VASTEXT, compares grid 2 with the MD file, and writes the resulting bias vector as brightness temperatures.

BSVA V08 GRID=15 NCD=1

This entry obtains the grid file and MD file numbers from VASTEXT, compares grid 15 with the MD file, and writes the resulting bias vectors as radiances. It avoids cloudy retrievals.

CGVA

Compares values in two grids.

Format	CGVA <i>grid1 grid2</i> [<i>keywords</i>]	
Parameters	<i>grid1</i>	first grid number
	<i>grid2</i>	second grid number
Keywords	ADD=	1 adds to the RGCOMP file 0 initializes the RGCOMP file (default)
	BIAS=	0 subtracts bias from the observations at gridpoint locations in <i>grid1</i> 1 adds bias to the observations at gridpoint locations in <i>grid1</i> (default=0)
	COLOR=	graphics color level (default=1)
	ERROR=	nonzero sets the gross error check to use in comparing values from two grids (default=999999)
	GOUT=	1 writes output grid, size same as <i>grid1</i> 0 does not write output grid (default)
	GRIDF=	grid file number (default=current)
	INC=	increment for skipping grid points in the first grid (default=1, skips all points)
	LAT=	<i>min max</i> minimum and maximum latitudes (default=0; latitudes from <i>grid1</i>)
	LON=	<i>min max</i> minimum and maximum longitudes (default=0; longitudes from <i>grid1</i>)
	LSIZE=	height of the plotted digit, in pixels (default=6)
	OFF=	<i>lat lon</i> latitude and longitude offset (default=0)
	PLOT=	1 plots comparisons between grids at <i>grid1</i> gridpoints 0 does not plot (default)

Remarks

CGVA makes statistical comparisons between two grids and displays the results on the text screen or plots them. Grids do not have to be the same size.

Individual values for *grid1* and *grid2* are saved in the file RGCOMP. If you do not set the grid file with keyword GFILE, use IGU SET before executing CGVA. If *grid2* is not used, only values from *grid1* are plotted.

Examples**CGVA 2 5**

This entry compares the values in grid 5 to the values in grid 2 and displays the result on the text screen.

CGVA 1 3 GRIDF=4100 PLOT=1

This entry plots the differences between grids 1 and 3, both of which are in grid file 4100, on the graphics. The statistics are also displayed on the text screen.

CMMD

Compares values in an MD file.

Format

CMMD *option level [keywords]*

Parameters

option any parameter in the MD file schema (default=Z)
WIN wind vector comparison

level any mb level (default=500 when *option* is Z)
SFC surface level for parameters

Keywords

ADD= **ON** adds matches to the RGCOMP file
OFF initializes the RGCOMP file (default)

COLOR= graphics color level of the plotted digit (default=1)

DATA= **ALL** accepts all data
FLAG accepts only flagged data (default)

DELP= pressure interval for matching the second (WIND) MD file row, in mb (default=matches the nearest mandatory pressure)

DIST= distance spacing for matching reports, in degrees (default=.2)

ERR= gross error maximum for accepting the match (default=999999)

GRA= graphics frame number for the plot (default=current)

LAT= *min max* minimum and maximum latitude extents (default=VASTEXT)

LEV2= second level for thickness, *level* minus LEV2

LON= *min max* minimum and maximum longitude extents (default=VASTEXT)

LSIZE= height of the plotted digit, in pixels (default=6)

MDF= *file1 file2* retrieval MD file numbers; the first file is the verification standard; both files default to VASTEXT

NRPT=	number of repeat groups for VWIN files (default=1)	
PAR=	a different parameter for the second MD file (default=WIN)	
PLOT=	ON	plots on the graphics frame
	OFF	does not plot (default)
ROW=	<i>row1 row2</i>	retrieval MD file row number from the respective MDNR; <i>row2</i> defaults to VASTEXT; <i>row1</i> has no default
SHR=	minimum vertical shear for the wind match, in mps (default=0)	
SOURCE=	TOVS	McIDAS TOVS processing (default=VAS or CIMSS TOVS, depending on User Common)
WTYPE=	<i>type1 type2</i>	wind type for the respective MD file
	SP	single pixel
	CC	correlation

Remarks

CMMD compares data at coincident locations. For example, it can compare satellite retrievals with radiosondes or cloud wind vectors with rawinsondes. A particular parameter (e.g., 500 temp) from two MD file rows is compared over an area specified by latitude/longitude limits. Each data in the first row serves as the standard against which any data in the second row within a match distance is compared. Many values in the second row may be compared with a single value in the first. Statistics relevant to the set of comparisons are printed on the text screen. Use keyword PLOT to plot individual comparisons. The set is saved in a terminal-dependent file named RGCOMP which permits the concatenation of sets, e.g., for more than one time period.

See Also

Use command VPVA to set the VAS file pointer and command TXVA to make the VAS text available. Use command PTVA to obtain statistics for the concatenated set, plot a scatter diagram, and edit the sample to remove unrepresentative values, thereby improving your results.

Examples**CMMD ROW=2**

This entry compares the values of 500 mb heights between MD file row 2 and the MD row in the VASTEXT file. Both MD file rows are in the VASTEXT MD file. This entry also initializes RGCOMP and stores the comparison values there.

CMMD SPD 300 MDF=16 16 ROW=5 0 PLOT=ON COLOR=3

This entry compares 300 mb wind speeds at 12 GMT to those at 00 GMT for MD file 16. The 12-hour change in wind speed is plotted on the graphics frame in graphics color level 3.

CMMD T 500 ROW=1 6 ADD=ON

This entry compares 500 mb temperatures in row 1 to those in row 6 for the MD file named in the VASTEXT file. The values are added to the existing data in the RGCOMP file.

CMVA

Compares MD file values to grid and plot differences.

Format	CMVA <i>option level [keywords]</i>	
Parameters	<i>option</i>	any parameter in the MD file schema (default=Z)
	<i>level</i>	any mb level (default=500 mb if <i>option</i> is Z) SFC surface level for the parameters
Keywords	ADD=	1 adds the data comparison to the RGCOMP file 0 initializes the RGCOMP file (default)
	ALL=	1 uses all MD file reports 0 does not use all reports (default)
	BIAS=	if < 0, adds the bias value to the observed MD file value; if > 0, subtracts the bias value (default=0)
	COLOR=	graphics color level (default=2)
	CSORT=	parameter to sort on
	DELP=	pressure tolerance around LEV; for the VWIN file (default=0)
	EDIT=	TOSS edits the values in the MD file if the value differs from grid by TOSS; TOSS is limited to 2.5 RMS difference of all reports (default=sigma of MD-NGNG value)
	ERR=	gross error check used when comparing MD and grid file values (default=999999)
	GRID=	grid number (default=0)
	GRIDF=	grid file number (default is from IGU SET)
	LAT=	<i>min max</i> minimum and maximum latitudes for the MD file reports (default=VASTEXT file)
	LEV2=	upper pressure level for the thickness difference plot; this value is subtracted from <i>level</i> (default=0)

LON= *min max* minimum and maximum longitudes for the
 MD file reports (default=VASTEXT file)

LSIZE= height of the plotted digit, in pixels (default=6)

MDF= MD file number (default=VASTEXT file)

MESS= **YES** plots all records else do not clutter (default)
 NO does not plot all records

NRPT= number of the repeat group for VWIN files (default=1)

PAN= panel for data plotting; the range is 1 to 4

PLOT= **1** plots differences on the graphics
 0 does not plot (default)

ROW= MD file row number (default=VASTEXT file)

SOURCE= **TOVS** McIDAS TOVS processing (default=VAS
 or CIMSS TOVS, depending on User
 Common)

STA= **YES** plots the statistics on the graphics; you must
 choose the location
 AUTO plots the statistics on the current cursor
 location
 NO does not plot statistics (default)

VSORT= *lower upper* sorts value limits

WGT= weight value (NGNG+1) above which the comparison is
 made (default=0, does not read the weight grid)

Remarks

Before starting, set the grid file using **IGU SET**.

CMVA compares parameter values of a specified level between an MD file and a grid file. It displays the statistical comparison on the text screen and can plot the difference on a graphics frame.

Values are saved in the file RGCOMP. MD linkage is through VASTEXT file keywords. Grid linkage is through IGU SET or keywords. MD file values (ID number, MOD flag, latitude, longitude, retrieval type) are selected through MD file keys sort.

If you are plotting MD file and grid thicknesses, the second positional parameter should be the lowest pressure to assure MD thickness > 0.

Examples**CMVA**

This entry compares the height at 500 mb between the VASTEXT MD file and the VASTEXT grid file and displays the statistics on the text screen.

CMVA T 350 PLOT=1

This entry plots the 350 mb temperature differences between the VASTEXT MD file and the default grid file.

CMVA Z 500 GFILE=4110 GRID=12 ADD=1 PLOT=1

This entry plots the 500 mb height differences between the retrievals and grid 12 of grid file 4110. It stores the ID numbers and height values from both the retrieval and grid in the RGCOMP file, adding this information after any previously stored data.

CMVA T 500 LEV2=850 MDF=4181 ROW=13 GRID=22 PLOT=1

This entry plots the 850 to 500 mb thickness differences between MD file 4181, row 13, and grid 22 of the default grid file. The RGCOMP file is initialized using thickness values from each data source and the MD file ID number (ID number meaning report 10, report 51, etc.).

CSVA

Fills the surface MD file for VAS processing.

Format	CSVA <i>file</i> [<i>keywords</i>]	
Parameter	<i>file</i>	MD file number for the data output
Keywords	ADD=	row number to add data to in the RSVC file (default=0, use new row with number corresponding to keyword TIME)
	AUTO=	1 use the first valid row of the input MD file (default=0)
	BUOY=	YES uses a buoy data MD file as the input MD file NO does not use the file (default)
	DAY=	Julian day of the input surface data, YYDDD (default=VASTEXT file)
	ISFC=	YES goes to the current ISFC data NO does not go the current ISFC data (default)
	ISHP=	YES goes to the current ISHP data NO does not go the current ISFC data (default)
	LAT=	<i>min max</i> minimum and maximum latitude extents, in whole degrees (default=VASTEXT file)
	LON=	<i>min max</i> minimum and maximum longitude extents, in whole degrees; West is positive, East is negative (default=VASTEXT file)
	MDF=	MD file number of the data source (default=current SVCA file)
	SHIP=	YES uses a ship data MD file as the input file NO does not use the ship data MD file (default)
	SOURCE=	TOVS to process TOVS data (default=VAS or CIMSS TOVS, depending on User Common)
	SVCA=	YES goes to the current SVCA data NO does not go the current SVCA data (default)

SYN=	YES	goes to the current SYN data
	NO	does not go to the current SYN data (default)
TIME=	hour of the input surface data (default=VASTEXT file time, truncated)	

Remarks

CSVA fills an MD file (schema RSVC) with special parameters (1000 mb height, mean sea level temperature and surface dew point depression) from conventional surface data (schema SVCA) for use in VAS. The status flag in the VASTEXT file must be set to 1 (see SWVA).

Examples**CSVA 2000**

This entry calculates the 1000 mb height, mean sea level temperature and surface dew point from the current SVCA file and stores the results in MD file 2000.

CSVA 1112 TIME=13

This entry loads MD file 1112 with surface data at 1300 GMT appropriate to the area defined by the VASTEXT file.

DELFG

Interpolates values between two grids.

Format	DELFG <i>grid1 grid2 dgrid ngrid [keywords]</i>								
Parameters	<table><tr><td><i>grid1</i></td><td>first grid number (default=0)</td></tr><tr><td><i>grid2</i></td><td>second grid number (default=0)</td></tr><tr><td><i>dgrid</i></td><td>destination grid number (default=next available)</td></tr><tr><td><i>ngrid</i></td><td>number of grids to interpolate (default=1)</td></tr></table>	<i>grid1</i>	first grid number (default=0)	<i>grid2</i>	second grid number (default=0)	<i>dgrid</i>	destination grid number (default=next available)	<i>ngrid</i>	number of grids to interpolate (default=1)
<i>grid1</i>	first grid number (default=0)								
<i>grid2</i>	second grid number (default=0)								
<i>dgrid</i>	destination grid number (default=next available)								
<i>ngrid</i>	number of grids to interpolate (default=1)								
Keywords	<table><tr><td>DEL=</td><td>increment for interpolating ($grid1 + DEL * (grid2 - grid1)$) (default=0)</td></tr><tr><td>GRIDF=</td><td><i>in out</i> input and output grid file numbers (default=LUC(6))</td></tr></table>	DEL=	increment for interpolating ($grid1 + DEL * (grid2 - grid1)$) (default=0)	GRIDF=	<i>in out</i> input and output grid file numbers (default=LUC(6))				
DEL=	increment for interpolating ($grid1 + DEL * (grid2 - grid1)$) (default=0)								
GRIDF=	<i>in out</i> input and output grid file numbers (default=LUC(6))								
Remarks	Values are written into a third grid.								
Examples	DELFG This entry interpolates the current grid's values. DELFG 4129 4130 4140 DEL=.5 This entry interpolates to the midpoint between grids 4129 and 4130 and writes the values into grid 4140.								

ESVA

Edits a surface report at the cursor location.

Format

ESVA [keywords]

Keywords

DD= surface dew point depression value, Kelvin * 100
1 deletes the value

MDF= retrieval MD file number (default=VASTEXT or CIMSS
TOVS)

PSL= altimeter setting, in mb (default=0)
1 deletes the value

ROW= retrieval MD row number (default=VASTEXT or CIMSS
TOVS)

SIZE= size of the plotted value

TSFC= converts this surface temperature to sea level, Kelvin * 100
(default=0)
1 deletes the value

TSL= temperature value at mean sea level, Kelvin * 100
1 deletes the value

Z100= 1000 mb height value, in meters (default=0)
1 deletes the value

Remarks

ESVA only works on retrieval surface MD files, schema RSVC.

To delete values, make the keyword value 1. Otherwise, the values of keywords are substituted. If no report exists in the cursor, one is added; all reports within the cursor are affected, so make the cursor small.

Examples**ESVA TSL=1**

This entry deletes all TSL values within the cursor.

ESVA TSL=28300 DD=1 Z100=85

This entry deletes all DD values within the cursor. It changes the TSL values to 283°K and the Z100 values to 85 meters.

ESVA PSL=1010 MDF=6713 ROW=1

This entry changes the value of PSL in row 1 of retrieval surface MD file 6713 to 1010 mb.

EXVA

Displays a VAS retrieval profile.

Format	EXVA <i>retrieval-1 retrieval-2 [keywords]</i>	
Parameters	<i>retrieval-1</i>	number of the first retrieval (default=0)
	<i>retrieval-2</i>	number of last retrieval (default=0)
Keywords	DIST=	search radius for finding the retrieval MD file report, in degrees latitude (default=0.50)
	MDF=	MD file number (default=VASTEXT file)
	PAR=	T temperature profile TD dew point profile (default=temperature and dew point)
	ROW=	MD file row number (default=VASTEXT file)
	SOURCE=	TOVS for McIDAS TOVS processing (default=VAS or CIMSS TOVS, depending on User Common)
Remarks	This program examines retrieval profiles in terms of temperatures and temperature differences between the retrieval and first guess profile. Either the cursor location on the satellite image is used to find the nearest retrieval, or the number (or range of numbers) of specific retrievals is used for selection from the retrieval MD file (schema VRET). Final retrieval temperatures, from surface to 200 mb, as well as the differences between the retrieval and first guess temperatures are displayed in Kelvin*100 on the text screen for levels from the surface to 200 mb. Retrieval MD file and row numbers are linked through the VASTEXT file.	

Examples**EXVA**

This entry displays the temperature and dew point profile for the cursor location.

EXVA 135 137

This entry lists the temperature and dew point profiles for retrieval numbers 135, 136 and 137.

EXVA 67 MDF=6880 ROW=2 SOURCE=TOVS

This entry lists the temperature and dew point profiles for retrieval number 67 using row 2 of MD file 6680, which contains TOVS retrieval data.

FGRID

Generates RFVA grids from an MD file.

Format

FGRID [*keywords*]

Keywords

EX= array to indicate channel usage, 11 entries (default=0)
INC= increment (default=VASTEXT)
LAT= *min max* latitude range (default=VASTEXT)
LON= *min max* longitude range (default=VASTEXT)
MDF= function MD file (default=VASTEXT)
RF= RF factor (default=1.0)
ROW= MD file row number (default=VASTEXT)
TEM= nonzero means do not do temperature grids (default=0)

Remarks

Use FGRID to generate derived product imagery.

Examples

FGRID

This entry generates RFVA grids using the VASTEXT parameters.

FGRID TEM=1

This entry generates RFVA grids using the VASTEXT parameters; it does not generate temperature grids.

FGRID MDF=3129 ROW=7 LAT=25 35 LON=80 90

This entry generates RFVA grids from row 7 of MD file 3129 covering 25° to 35°N and 80° to 90°W.

GACTOV

Generates GAC TOVS retrievals.

Format	GACTOV <i>harea marea rfile row gfile sgridf zgrid tgrid dgrid</i> [keywords]		
Parameters	<i>harea</i>	HIRS area number (no default)	
	<i>marea</i>	MSU area number (no default)	
	<i>rfile</i>	retrieval MD file number (no default)	
	<i>row</i>	retrieval MD row number (no default)	
	<i>gfile</i>	guess MD file; required only if GSS=G (no default)	
	<i>sgridf</i>	surface grid file number; required only if SFC=0 (no default)	
	<i>zgrid</i>	surface z grid number; required only if SFC=0 (no default)	
	<i>tgrid</i>	surface t grid number; required only if SFC=0 (no default)	
	<i>dgrid</i>	surface d grid number; required only if SFC=0 (no default)	
Keywords	BEG=	<i>line ele</i>	beginning line and element (default=cursor position, except in the background)
	BOX=		square retrieval box size, must be an odd number; maximum is 7 (default=3)
	BUG=	1	text screen for debugging diagnostics
		2	printer for debugging diagnostics (default=0)
	CLOUD=	1	does not calculate cloud height
		0	calculates cloud height (default)
	COEF=		coefficient file option for GSS=R; any valid coefficient file, up to 8 characters (default=synthetic)
	DMS=		MSU/HIRS search radius, in degrees (default=3)

FIX= 1 fixed retrieval location, no call to PICCLR
 0 no fixed retrieval location (default)

FOV= 1 single sample retrieval (default=0)

GAM= matrix conditioning parameter (default=1)

GSS= C uses climatology as the guess data
 R uses regression as the guess data
 G uses grid as the guess data (default)

HIMA= Y raises the highest permissible ground level
 N does not raise the ground level (default)

IRF= 1 initializes the row header and zero retrieval counter
 0 does not initialize the row header and zero retrieval counter (default)

MWO= 1 output MSU and HIRS retrieval, channels 1-3
 (default=0)

OFF= maximum difference in seconds between HIRS and MSU
 start times (default=60)

PLT= Z plots 500 mb heights
 S SFC skin temperature
 T total of totals
 O total ozone
 NO does not plot (default)

SFC= 1 no surface data input
 0 includes surface data input (default)

SIZ= *line ele* line and element extent of the RTVL area
 (default=1040 56)

SPC= *line ele* line and element spacing of the retrievals
 (default=BOX BOX)

TOP= L low topography resolution
 H high topography resolution (default)

TUNFIL= root name of the tuning file (default=TOVTUN)

Remarks

Run this procedure in the background with REGION=4000k. The foreground version is TOVRET.

The last four positional parameters may be omitted if SFC=1.

The fifth positional parameter may be omitted if GSS=C or R.

Example

**GACTOV 6672 6673 6681 2 6687 6703 1 2 3 GSS=G SFC=0
TOP=L PLT=Z**

This entry generates sounding retrievals from HIRS area 6672 and MSU area 6673. It uses retrieval MD file 6681, row 2, guess MD file 6687, and surface grid file 6703, grids 1, 2 and 3. It reads the low resolution topography file and plots 500 mb heights.

GFUN

Generates coefficients for retrieval estimates.

Format

GFUN [*keywords*]

Keywords

BIAS= if nonzero, uses the bias vector in VASTEXT (default=0)

ESFC= *t m* noise estimates for surface temperature and moisture (default=2 1)

EX= *n1...n11* noise estimates for each of the 11 bands

GMDF= guess MD file number (default=VASTEXT)

INC= analysis grid increment, degrees*10 (default=1)

LAG= LAG angle for sunrise, in degrees (default=20°)

LAT= *min max* minimum and maximum latitudes (default=VASTEXT)

LON= *min max* minimum and maximum longitudes (default=VASTEXT)

MDF= MD file number (default=VASTEXT)

ROW= MD row number (default=VASTEXT)

SAT= satellite number, McIDAS GOES convention (default=VASTEXT)

SFC= 1 does not use surface analysis
0 uses surface analysis (default)

TERM= terminal number (default=local)

Remarks

GFUN computes coefficients required to produce retrieved estimates of temperature and precipitable water. Coefficients are written to an MD file with schema VSIM. A VAS first guess MD file is required.

See Also

See commands LOVA and SPVA for inspecting and setting VASTEXT file pointers.

Examples**GFUN**

This entry generates the coefficients for retrieval estimates using the VASTEXT parameters.

GFUN INC=10 SFC=1

This entry generates coefficients using VASTEXT parameters and 1 degree increments, without surface analysis.

GPVA

Displays a VAS guess profile.

Formats

GPVA C *surface lat lon file [keywords]*
 GPVA P *surface lat lon file [keywords]*
 GPVA X *surface lat lon file [keywords]*

Parameters

C displays the climatology guess profile

P displays a particular profile, such as Green Bay radiosonde

X displays the MD file guess profile as defined in *file*; if *file* is not defined, the VASTEXT file profile is used (default)

surface **X** uses the surface grids defined in the VASTEXT file (default)
1 does not use surface analysis

lat latitude of the guess * 100 (default=cursor location)

lon longitude of the guess * 100 (default=cursor location)

file MD file number for the guess; do not use this parameter for the C and P options (default=VASTEXT file)

Keywords

GRID= *z t d* 1000 mb geopotential height grid number; sea level temperature grid number; dewpoint depression grid number (default=VASTEXT)

SGRIDF= surface grid file number (default=VASTEXT)

TERM= terminal number for reading the VASTEXT file (default=local)

Remarks

This program displays the VAS guess profiles of temperature, dew point and mixing ratio at one position on the text screen.

For option X, this program accesses the guess profile MD file (schema VGSS) created by GSVA. Alternative options are to display a climatological guess or a radiosonde profile to be used as a guess. Information necessary to provide the radiosonde profile is linked through VASTEXT entries.

Examples**GPVA**

This entry displays the current VASTEXT guess MD file profile on the text screen using the cursor location.

GPVA P X 4000 9000

This entry displays the radiosonde profile from the radiosonde station closest to 40°N latitude, 90°W longitude.

GVVA

Lists a grid value at the cursor location.

Format

GVVA *grid* [*keyword*]

Parameter

grid grid number to examine

Keyword

GRIDF= grid file number (default set by MDU SET)

Example

GVVA 7 GRIDF=1024

This entry lists the values in grid 7 of grid file 1024.

GWVA

Generates geostrophic winds for an MD file.

Format	GWVA <i>grid level [keywords]</i>	
Parameters	<i>grid</i>	grid number
	<i>level</i>	pressure level of the winds if they are written into the MD file, in mb (default=0, no winds saved)
Keywords	COLOR=	graphics color level of the wind barb (default=1)
	DELT=	number of hours between <i>grid</i> and NGOLD (default=0)
	GRID=	grid number of the previous analysis; used for isallobaric or ageostrophic option (default=0)
	MDF=	MD file number (default=VASTEXT file)
	PLOT=	1 plots ship wind barbs 0 does not plot barbs (default)
	ROW=	MD file row number (default=VASTEXT file)
	TYPE=	AG ageostrophic G geostrophic GR gradient (default) IS isallobaric

Remarks GWVA generates dynamic winds from gridded geopotential data. For isallobaric or ageostrophic estimates, enter two grids separated by DELT number of hours.

Wind vectors are generated at retrieval locations using a previously generated height grid (see BNVA). Wind results (if LEV≠0) are stored in the retrieval MD file currently listed in the VASTEXT file. The old grid is used only for the isallobaric and ageostrophic options.

Examples**GWVA 35**

This entry generates the gradient winds from grid 35 but does not store the results.

GWVA 19 850 COLOR=2 PLOT=1

This entry generates the 850 mb gradient winds from grid 19 in graphics color level 2 and stores them in a retrieval MD file.

GWVA 29 X TYPE=G

This entry generates the geostrophic winds from grid 29, but does not store them.

HIRTBA

Displays HIRS area information.

Format

HIRTBA *area line ele*

Parameters

area HIRS area number

line HIRS image line number, 1-based (default=0)

ele HIRS image element number, 1-based (default=0)

Remarks

If the line and/or element number is zero, the cursor position is used. The displayed information consists of line, element, latitude, longitude, local and solar zenith angle, low and high resolution land/sea tags and topography, channel 1-19 brightness temperatures and channel 20 radiance.

Examples

HIRTBA 6673 29 47

This entry displays information on line 29, element 47 of HIRS area 6673.

HIRTBA 6676

This entry displays information on area 6676 using the pixel indicated by the cursor.

IDVA

Initializes the VASTEXT documentation file and VRET MD file row header.

Format

IDVA *file row [keywords]*

Parameters

file MD file number (default=0)
row MD file row number; the range is 1 to 16 (default=0)

Keywords

AUTO= 1 runs without a corresponding TV image
 0 does not run without a corresponding TV image
 (default)
IBOX= *line ele* line and element size of the retrieval box
 (default=5 5 for 16 km resolution data; 11 11
 for 8 km resolution data)
LAT= *min max* minimum and maximum latitude extents, in
 whole degrees (no default)
LON= *min max* minimum and maximum longitude extents;
 West is positive; East is negative (no default)

Remarks

Set the VAS pointer to select VAS or TOVS processing, as well as the appropriate sounder area if necessary. If MDRR is specified, the row header is initialized to zero.

Examples

IDVA

This entry initializes the VASTEXT file using the values from the currently displayed image.

IDVA 1101 1

This entry initializes MD file 1101 (schema VRET), row 1 header, and writes the VASTEXT file entries using the currently displayed image.

IDVA 1101 5 LAT=25 55 LON=70 110 AUTO=1

This entry initializes MD file 1101 (schema VRET), row 5 header. It determines the beginning and ending points within the specified lat/lon bounds for which data exists and writes them to the VASTEXT file in both satellite and earth coordinates. It also writes the other words of the VASTEXT file.

IUMCRP

Sets an MSU calibration reference parameter file.

Format	IUMCRP <i>ss date type (loc value loc value ...) [keywords]</i>		
Parameters	<i>ss</i>	sensor source number	
	<i>date</i>	year and day, YYDDD (default=current)	
	<i>type</i>	CAVG	average of the instrument counts for a channel
		CLIM	lower and upper limits of the instrument counts for a channel
		CSIG	standard deviation of the instrument counts for a channel
		LOOK	examines the record only; does not update the file
	<i>loc</i>	TARG	brightness temperature of the calibration target
	<i>value</i>	new value for the parameter; none for the LOOK option	
Keywords	MORE=	YES	if making more changes to the same new record
		NO	if not making more changes (default)
	NULL=	record number to delete; positional parameters are ignored (no default)	
	SORT=	YES	sorts the updated file (default); if MORE=YES, you must enter SORT=YES
		NO	does not sort the updated file
Remarks	The calibration reference parameter file contains limits on certain parameters used to calibrate MSU data. These limits are kept for each satellite. If the satellite's parameters tend to drift over time, many time-stamped records may be created for one satellite.		

IUMCRP should only be used if, when running the TIPTI command, many messages are issued warning that limits are being exceeded. These messages refer to the *type*, *loc* and *value* parameters in IUMCRP.

Example

In running TIPTI for NOAA-11 (McIDAS satellite 61), the message below appears repeatedly.

```
CL: .15213E+4 .GT.CLIM(2): .15E+4
```

This indicates that a calibration parameter has drifted higher than it used to be. To examine the appropriate record, enter:

IUMCRP 61 X LOOK

This entry displays all the parameter values for that record. To set a new upper limit, enter:

IUMCRP 61 X CLIM 2 1600

This entry changes the second CLIM value from 1500 to 1600.

LOVA

Lists the VASTEXT documentation file.

Format

LOVA

See Also

Use command VPVA to select the VAS data pointer before executing LOVA.

Example

VPVA 4180

This entry sets the VAS pointer to sounder area 4180.

LOVA

This entry lists the current options for processing sounder area 4180 on the text screen.

MAKVPE

Generates a color enhancement for VAS derived imagery.

Format

MAKVPE *type bk1 bk2 bk3 bk4 [keywords]*

Parameters

type 1 VAS precipitable water vapor label (default)
 2 VAS lifted index label
 3 VAS total totals index label
 4 VAS sea surface temperature scale label
 <0 standard IR temperature scale label

bk1 breakpoint between beige and blue pseudocolors
 (default=10)

bk2 breakpoint between blue and yellow pseudocolors
 (default=17)

bk3 breakpoint between yellow and red pseudocolors
 (default=24)

bk4 end of the red range breakpoint (default=31)

Keywords

BW= 0 color image enhancement (default)
 1 black and white image enhancement

COLOR= graphics color level (default=-1, blank)

GRA= graphics frame number (default=current)

LINE= TV line for the graphics label (default=465)

Remarks

Macro MAKVPE is designed for use with VAS derived imagery such as precipitable water vapor or stability index. Gray levels 1 to 36 are pseudocolored; all other levels (37 to 63) are black and white cloud images.

Examples**MAKVPE**

This entry generates a color enhancement for VAS precipitable water vapor sounding imagery.

MAKVPE 1 6 12 18 24 COLOR=4

This entry generates a color enhancement for VAS precipitable water vapor sounding imagery, with breakpoints at gray levels 6, 12, 18 and 24. The water vapor scale is plotted over a background in graphics color level 4.

MAKVPE -1 LINE=20

This entry generates a standard IR temperature scale at the top of the screen.

MSUL

Generates a limb corrected MSU area.

Format MSUL *sarea darea*

Parameters

<i>sarea</i>	source MSU area without limb correction applied
<i>darea</i>	destination MSU area with limb correction

Remarks MSUL immediately images MSU data for meteorological nowcasting. Areas without limb correction are used for sounding retrievals.

See Also For MSU areas created by TIPTI and converted by MSUL, use command AAMAP or a similar remapping tool to create images with North up and East to the right.

Example MSUL 6672 6681
This entry reads MSU area 6672, applies limb correction to the data and stores the results in area 6681.

MSUTBA

Displays MSU area information.

Format	MSUTBA <i>area line ele [keyword]</i>		
Parameters	<i>area</i>	area number	
	<i>line</i>	image line number, 1-based (default=0)	
	<i>ele</i>	image element number, 1-based (default=0)	
Keyword	HEAD=	YES	displays area header data
		NO	does not display area header data (default)
Remarks	If an element number is not specified, information on the entire line is displayed. If neither line nor element is specified, the cursor position is used.		
	The displayed information includes line, element, time, latitude, longitude, surface type and elevation, and temperatures in bands 1 to 4. If a limb corrected MSU area is used, the data for band 5 (surface only contribution) is also displayed.		
Examples	MSUTBA 6674 9 6 HEAD=YES		
	This entry displays information on the pixel in line 9, element 6 of area 6674. It also displays the header information in area 6674.		
	MSUTBA 6677		
	This entry displays information on area 6677 using the pixel indicated by the cursor.		

PLVA

Plots VAS retrievals or surface data over a GOES satellite image.

Format

PLVA *option level [keywords]*

Parameters

option parameter name (Z, T, etc.) to plot; use MDO to list VRET or RSVC schema MD file parameters (default=Z)

level mb level of the parameter (default=500 if *option* is Z)
SFC surface
DIFF TBB differences

Keywords

ALL= 1 plots all MD file values including the rejected values
 0 does not plot all values (default)

COLOR= graphics color level (default=1)

CSORT= parameter to sort on; cannot be a repeated parameter

CTYPE= wind types to sort on (RAOB, GRID, IR, etc.)
 MDF uses the VWIN schema

DELP= pressure tolerance around *level* for the VWIN file
 (default=0)

DIST= latitude/longitude spacing of degrees for matching
 reports in time (default=0.2)

GRA= plots on this graphics frame (default=current)

LAT= *min max* minimum and maximum latitudes for
 plotting (default=VASTEXT file)

LEV2= uses the second level if a thickness plot is desired; it
 should a be lower mb level (default=0)

LON= *min max* minimum and maximum longitudes for
 plotting (default=VASTEXT file)

LSIZE= height of the letters, in pixels (default=6)

MDF= retrieval or surface MD file number; schema VRET or RSVC (default=VASTEXT file)
NRPT= number of the repeat group for VWIN files
PAN= graphics panel; the range is 1 to 4
PRO= **SAT** satellite projection
 MERC Mercator projection
RANGE= *first last* first to last report to plot (default=every report)
ROW= MD file row number (default=VASTEXT file)
ROW2= second (early) MD file row number for forming differences in time (default=VASTEXT file)
SCALE= integer scaling, 10 ** scale (default=2)
SOURCE= **TOVS** for McIDAS TOVS processing (default=VAS or CIMSS TOVS, depending on User Common)
VSORT= *lower upper* lower and upper limits to sort on

Remarks

If MD keywords are not used, MD linkage is set through VASTEXT file entries.

LAT/LON extents, if not entered via keywords, are taken from the VASTEXT file. Change the values with command IDVA.

Examples**PLVA**

This entry plots the height at 500 mb over the current satellite image using the VASTEXT file for MD file and row numbers.

PLVA T 500

This entry plots retrieval 500 mb temperature values with the VASTEXT file and other defaults.

PLVA RH3 X MDF=2615 ROW=1

This entry plots upper level (band 10) layer relative humidity values from MD file 2615, row 1.

PLVA TDIF 700

This entry plots the difference of retrieval minus first guess values for 700 mb temperatures.

PLVA V06 DIFF

This entry plots the difference of calculated (from retrieval) brightness temperature minus observed brightness temperature values for band 6, with the VASTEXT file and other defaults.

PLVA Z 300 LEV2=500

This entry plots retrieval thicknesses between 300 and 500 mb with VASTEXT and other defaults. Note that the higher elevation is the second positional parameter; otherwise negative thicknesses are plotted.

PTVA

Plots a scatter diagram of a data file.

Format

PTVA *option interval square [keywords]*

Parameters

option **0** plots a scatter diagram on the graphics without editing (default)
 1 edits the points in a scatter diagram

interval axis interval; must be divisible by 5 (default=50)

square **1** uses the same interval extents on the x and y axes to make the graph square (default=0)

Keywords

RANGE= *n1 n2* first and last records for the plot

TERM= nonzero forces no terminal dependence

XVAL= record position of the x parameter; the range is 2 to 5 (default=2)

YVAL= record position of the y parameter; the range is 2 to 5 (default=3)

Remarks

PTVA displays the regression equation for the best fit line as well as the mean, TMS and correlation coefficient relating to the data on the text screen.

To edit data, run PTVA twice. First run it with *option*=0, so data to be plotted is taken from the statistics file RGCOMP and written into the data file VRTEMP. Then to delete some data, run PTVA with *option*=1. Deletions are made only on VRTEMP, not the original data set.

For *option*=1, data is edited with the cursor. To edit, press the space bar to delete each report, and type **R END** to end the process. You can edit up to 200 reports at a time. Once the points are deleted and **R END** typed, a new point plot and best fit line are drawn. *Option* 1 can be repeated to continue editing, but results are destroyed by the first execution with *option* 0.

Examples**PTVA**

This entry plots a scatter diagram and best fit line of the data file RGCOMP on the graphics without editing.

PTVA 1

This entry edits the desired data points with the cursor, after which the VRTEMP file is updated. A new scatter diagram and best fit line are drawn on the screen.

QUIKTI

Examines a raw TIP area in HRPT, LAC or GAC format.

Format	QUIKTI <i>area [keyword]</i>
Parameter	<i>area</i> raw TIP area number
Keyword	TIME= <i>start stop</i> time to start and stop reading the TIP area lines (default=reads all lines)
Remarks	Use this command to decide where to start command TIPTI. QUIKTI does not perform parity checking; TIPTI does.
Example	QUIKTI 783 This entry examines raw TIP area 783 for good data.

RFVA

Generates retrieval grids with recursive filter analysis.

Format	RFVA <i>parm level [keywords]</i>	
Parameters	<i>parm</i>	parameter to grid; Z, T, etc.
	<i>level</i>	any mb level SFC surface DIFF TBB differences
Keywords	ALL=	1 nonzero, includes edited reports
	BIAS=	value to subtract from the observations
	CSORT=	parameter to sort on; cannot be a repeat parameter
	CTYPE=	wind types to sort on, e.g., RAOB, GRAD, IR, VIZ, etc.; maximum of 6
	DELP=	pressure tolerance around <i>level</i> (default=0)
	EDIT=	removes quality control 0 flags record in the MD file
	ERR=	gross error check (real units); fit to first pass $\sigma < \text{err} < 999999$
	GGRIDF=	guess grid file number (default=VASTEXT sounder area)
	GMDF=	guess MD file number (default=VASTEXT)
	GRID=	guess grid number (default=0, for no first guess)
	GRIDF=	output grid file (default=current)
	GSS=	G uses VGSS MD file for first guess
	INC=	increment in degrees*10
	LAT=	<i>min max</i> minimum and maximum latitude extents (default=VASTEXT)
	LEV2=	second level for thickness (<i>level</i> minus LEV2)

Examples**RFVA TD 850 INC=10 GSS=G**

This entry generates grids for the dew point at 850 mb.

**RFVA T SFC LAT=40 50 LON=75 105 MDF=6672 ROW=1
GSS=G GMDF=6677 SOURCE=TOVS**

This entry generates grids for surface temperatures in a box bounded by 40° and 50° North latitude, 75° and 105° West longitude. It uses the TOVS retrieval data in row 1 of MD file 6672, and the guess data in MD file 6677.

SCLG

Smooths grids with a selected wavelength filter.

Format	SCLG <i>grid wavelength [keywords]</i>	
Parameters	<i>grid</i>	grid number to smooth
	<i>wavelength</i>	wavelength to be filtered, in km (default=2000 km)
Keywords	GRID=	smoothed output grid number (default=first available grid)
	GRIDF=	grid file number (default=User Common value set by IGU SET)
	RSDL=	convergence residual in whole units (default=0.1*SIGMA)
	SD=	1 saves the residual field in the next grid available after the smoothed grid, as well as the smoothed field 0 does not save the residual field (default)
Remarks	The grid is smoothed into a "smoothed" and residual component. Residual is all wavelengths less than the <i>wavelength</i> indicated.	
Examples	SCLG 10 This entry smooths grid 10 using a wavelength of 2000 km for filtering.	
	SCLG 25 500 This entry smooths grid 25 in the grid file set by IGU SET, using a 500 km wavelength for filtering.	

SFVA

Generates grids of surface parameters.

Format

SFVA *parm file [keywords]*

Parameters

<i>parm</i>	DD	dew point temperature
	PSL	sea level pressure
	TSK	surface temperature
	TSL	temperature at mean sea level
	U	u wind component
	V	v wind component
	Z100	1000 mb heights

file output grid file for the surface data

Keywords

EDIT= does not automatically edit the final gridded surface data
0 flags edited data in the the data MD file (default)

ERROR= gross error tolerance (default=twice the standard deviation)

GGRIDF= guess grid file number (default=VASTEXT)

GINC= increment for selecting guess reports, in grid lengths

GMDF= guess MD file number for the surface data
 (default=VASTEXT)

GRID= guess grid number (default=0, no first guess)

GSS= **G** use the guess MD file, schema VGSS, as the first
 guess grid

INC= grid increment, in degrees * 10 (default is determined
 by LAT and LON extents)

LAT= *min max* minimum and maximum latitude extents
 (default=VASTEXT file)

LON= *min max* minimum and maximum longitude extents
 (default=VASTEXT file)

NODAT= 1 stores the guess grid as the final surface grid; no analysis was made using the surface MD file (default=0)

R0= large scale smoother (default=500 km)

RF= subdensity fit factor (default=1)

RL= small scale smoother (default=10 km)

ROW= row number in the surface MD file for TOVS (no default)

RS= R0 to RL reduction factor (default=0.5)

SMDF= surface MD file number for TOVS (no default)

WGS= weight to give guess, relative to data (default=1 equal weight)

See Also

See command CSVA to fill the VAS surface MD file (schema RSVC).
See commands IGU, IGG and IGTV for accessing, listing and contouring grids.

Examples**SFVA DD 1050**

This entry generates a grid of dew point temperatures and stores it in grid file 1050.

SFVA Z100 1111 GSS=G

This entry generates a grid 1000 mb heights using the guess MD file first guess option, and places it in grid file 1111.

SFVA Z100 1111

This entry is the same as the one above, except no first guess is used for the Barnes analysis.

SMOOTH

Smooths an image by averaging it with a 3 x 3 pixel block size.

Format **SMOOTH** *sarea darea [keywords] "text*

Parameters

sarea source area to smooth (no default)

darea destination area for the smoothed data (default=*sarea*)

"text text to replace the memo portion of the area directory; displayed with command **LA AREA FORM=EXP**

Keywords

NP= number of passes for smoothing; the practical range is 1 to 3 (default=1)

RAN= *v1 v2* range of pixel values to include in smoothing (default=1 50)

Remarks

MAKVPE is designed for VAS-derived images such as precipitable water or lifted indexes. Values in the range 1 to 150 are assumed to be derived values; 151 to 255 are assumed to be clouds.

Area size cannot exceed 1500 elements. When NP=2, the result is center-weighted 5 x 5 block size. When NP=3, the result is center weighted 7 x 7 block size. Pixels out of range (keyword RAN=) are not changed or included in the weights.

The weights are listed below. The center point = (sum of (weight*value))/(sum of weights).

Weights for 1 pass:

0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	1	1	1	0	0	0
0	0	1	1	1	0	0	0
0	0	1	1	1	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

Weights for 2 passes:

0	0	0	0	0	0	0	0
0	1	2	3	2	1	0	0
0	2	4	6	4	2	0	0
0	3	6	9	6	3	0	0
0	2	4	6	4	2	0	0
0	1	2	3	2	1	0	0
0	0	0	0	0	0	0	0

Weights for 3 passes:

1	3	6	7	6	3	1
3	9	18	21	18	9	3
6	18	36	42	36	18	6
7	21	42	49	42	21	7
6	18	36	42	36	18	6
3	9	18	21	18	9	3
1	3	6	7	6	3	1

Examples**SMOOTH 5000 "SMOOTHED IMAGE**

This entry smooths the image in area 5000, replacing the memo portion of the area directory with the message SMOOTHED IMAGE.

SMOOTH 5710 5721 NP=2 "SMOOTHED VERSION OF AREA 5710

This entry smooths the image in area 5710 with two passes and places it in area 5721. The message SMOOTHED VERSION OF AREA 5710 is placed in the memo portion of the area directory.

SMOOTH 5711 RAN=1 255

This entry smooths the image in area 5711 and writes it back to area 5711 using the entire range of data.

SNDVA

Generates an energy analysis of a vertical sounding.

Format

SNDVA *file1 file2 time date [keywords]*

Parameters

file1 upper air MD file number
file2 ENGY MD file number
time time of the sounding data, HH:MM:SS or HHMMSS
day year and day of the sounding data, YYDDD

Keywords

COL= number of the column to process (default=ALL)
IROW= row number of the input to override the *day-time* search
OROW= row number for the output (default=MDRR)
SIG= significant level MD file associated with *file1*
TYPE= CTF CTF type file

Remarks

Various thermodynamic parameters, such as buoyant energies and stability parameters, are calculated from vertical profiles (satellite or radiosonde) and stored in MD file ENGY.

SNDVA uses a one-dimensional updraft model to compute or plot the following information from sounding data.

- (u,v) components of the horizontal wind at each level
- saturation vapor pressure and relative humidity at each level
- virtual temperature of the environment and of a lifted parcel at each level
- value of the minimum wet-bulb potential temperature, height at which it is reached, and wind direction and speed at that height
- average magnitude of the shear vector and average turning of the wind in two layers: surface to 3 km and 3 to 10 km

- mean wind from 3 to 10 km
- height, pressure, temperature and mixing ratio at the lifting condensation level
- density, potential temperature and wet-bulb potential temperature at each level
- mixing ratio of liquid water for the parcel at each level
- height at which the wet-bulb temperature is 0°C
- lifted index
- vertical velocity profile for the convective cloud
- mean Richardson number between the cloud base and 10 km

Example SNDVA 13 83 12 86203 SIG=23

This entry analyzes the vertical sounding in MD files 13 and 83 at 12 GMT for day 86203. The significant level data is in MD file 23.

SPVA

Edits a VASTEXT documentation file.

Format

SPVA [*keywords*]

Keywords

AREA= visible area number; corresponds to a sounder file

DAY= sensor source, year and Julian day, SSYYDDD

DGRID= grid number of the surface dew point depression analysis

GMDF= number of the VAS first guess MD file, schema VGSS

GRIDF= number of the grid file for the VAS first guess fields

GROW= number of the wind first guess file

LAT= *min max* minimum and maximum latitude range
(no default)

LON= *min max* minimum and maximum longitude range
(no default)

MDF= number of the VAS retrieval MD file, schema VRET

NRET= number of retrievals; NRET is reset in the retrieval MD file row header (default=0)

PGRID= grid number of the sea level pressure analysis

ROW= row number of the VAS retrieval MD file

SGRIDF= number of the grid file for VAS surface analysis

SMDF= number of the VAS retrieval surface MD file, schema RSVC

SROW= row number of the VAS retrieval surface MD file

TGRID= grid number of the mean sea level temperature analysis (TSL)

TIME= hour*10000

WGMDF= row number of the wind first guess MD file
WMDF= number of the wind MD file
WROW= row number of the wind MD file
ZGRID= grid number of the 1000 mb height analysis (Z100)

Remarks Command SPVA enters values into the VASTEXT documentation file.
Use it to set or change keyword values.

See Also To check the current VASTEXT file, see command LOVA.

Examples

SPVA ROW=4

This entry sets the VAS retrieval surface MD file row number to 4.
The MD file number stays the same.

**SPVA GMDF=1121 SMDF=1111 SROW=13 SGRIDF=1111
ZGRID=4 TGRID=5 DGRID=6**

This entry sets the VAS first guess MD file to 1121, the VAS retrieval surface MD file to 1111, row 13, and the surface analysis to grids 4 through 6 in grid file 1111.

SVRG

Loads or saves the RGCOMP file.

Formats

SVRG IN *file*
SVRG OUT *file*

Parameters

IN receives a file

OUT saves a file

file name of the saved file

Remarks

SVRG loads or saves the RGCOMP file used for statistical comparisons.

Example

SVRG IN CMH1
This entry returns the file CMH1 into the terminal dependent group.

TIPTI

Prepares raw data in a TIP area for TOVS processing.

Format	TIPTI <i>sarea harea marea [keywords]</i>		
Parameters	<i>sarea</i>	source TIP area number	
	<i>harea</i>	destination area for processed HIRS data	
	<i>marea</i>	destination area for MSU data	
Keywords	DATA=	HRPT	<i>sarea</i> contains HRPT data
		GAC	<i>sarea</i> contains GAC data
		LAC	<i>sarea</i> contains LAC data (default=determined internally)
	LINE=	<i>beg end</i>	line extents to examine in the TIP area (default=determined internally)
	PARITY=	OFF	does not perform parity error checking (default)
		ON	performs parity error checking
	SS=	sensor source number for the NOAA satellite (default=determined internally)	
	TIME=	<i>start stop</i> time to start and stop reading TIP area lines (no default)	
YEAR=	year of the data (default=year of the raw TIP data)		
Remarks	TIME= and LINE= are mutually exclusive; use one or the other. If no beginning line or starting time is specified, processing begins with the first line. Similarly, if no ending line or stopping time is specified, processing ends with the last line.		
	The normal procedure for TOVS retrievals is: TIPTI, PREPTI, LIMBTI, RETATI.		

Example**TIPTI 783 6672 6673 TIME=23:45 00:15**

This entry processes raw TIP area 783 from 23:45 of the starting day to 00:15 the following day (30 minutes of coverage). It places the HIRS data in area 6672, and the MSU data in area 6673.

TOON

Calculates the VAS radiance bias from keywords MDF and GMDF.

Format	TOON <i>gridf file [keywords]</i>	
Parameters	<i>gridf</i>	grid file to store the grids of TBB; it is deleted, then recreated (no default)
	<i>file</i>	VAS context file number (VASTEXT); it is read, then altered (no default)
Keywords	BAND=	flag array for bands to tune (default=0,1,1,1,1,1,0,0,0,1,0)
	EDIT= 99	avoids editing
	EDIT	allows editing (default)
	INC=	increment of the analysis (default=20)
	LAT=	<i>min max</i> minimum and maximum latitude range (default=VASTEXT)
	LON=	<i>min max</i> minimum and maximum longitude range (default=VASTEXT)
	MDF=	MD file number containing the TBB observation to use (default=VASTEXT)
	NCH=	upper limit on the channel number to analyze (default=6)
	ROW=	<i>in out</i> MD file row numbers containing the TBB observations, input and output (default=VASTEXT)
Remarks	TBB= 1	determines the bias in Kelvin
	0	determines the bias with radiance values
TBB is the observed brightness temperature. TBC is the calculated brightness temperature. TOON assumes that TBC is calculated. The bias vector is written into VASTEXT and printed.		

Examples**TOON 1001 38**

This entry calculates the VAS radiance bias from keywords MDF and GMDF, VASTEXT file 38, and stores it in grid file 1001.

TOON 2800 26 MDF=1108 GMDF=1000

This entry calculates the VAS radiance bias from VASTEXT file 26, MD file 1108, and MD guess file 1000 and stores it in grid file 2800.

TOON 6721 16 LAT=30 50 LON=70 110

This entry calculates the VAS radiance bias from the VASTEXT MDF and GMDF file 16 using the area from 30° to 50° North latitude and 70° to 110° West longitude and stores the result in grid file 6721.

TOVRET

Generates TOVS sounding retrievals.

Format	TOVRET <i>harea marea rmd row gmd gridf zg tg dg [keywords]</i>	
Parameters	<i>harea</i>	HIRS area created by command TIPTI
	<i>marea</i>	MSU area created by command TIPTI
	<i>rmd</i>	retrieval MD file number
	<i>row</i>	retrieval MD row
	<i>gmd</i>	guess MD file number; required only if GSS=G
	<i>gridf</i>	surface grid file number
	<i>zg</i>	geopotential height grid number
	<i>tg</i>	temperature grid number
	<i>dg</i>	dew point depression grid number
Keywords	BEG=	<i>line ele</i> line and element of the starting position (default=0 in background, cursor position in foreground)
	BOX=	square retrieval box size, must be odd number; maximum of 7 (default=3)
	CLOUD=	0 performs cloud height calculation (default) 1 does not perform cloud height calculation
	COEF=	LW file of regression coefficients when GSS=R (no default)
	DMS=	MSU/HIRS search radius, in degrees (default=3)
	FIX=	0 no fixed retrieval location (default) 1 fixed retrieval location, no call to PICCLR
	FOV=	0 multiple sample retrieval (default) 1 single sample retrieval
	GAM=	matrix conditioning parameter (default=1)

GSS= **C** climatology guess
 R regression guess
 G guess grid (default)

HIMA= **Y** raise to the highest permissible ground level
 N does not raise the ground level (default)

IRF= **1** initializes the row header and zero retrieval counter
 0 does not initialize (default)

MWO= **1** outputs MSU and HIRS bands 1-3 retrieval
 0 suppresses output (default)

OFF= maximum difference between HIRS and MSU start times,
 in seconds (default=60)

PLT= **Z** plots 500 mb heights
 S plots surface skin temperature
 T plots total of totals
 O plots total ozone
 (default=does not plot)

SFC= **1** no surface data input
 0 surface data input (default)

SIZ= *line ele* line and element size of the retrieval area
 (default=108 56)

SPC= *line ele* line and element spacing of the retrievals
 (default=BOX BOX)

TOP= **L** low resolution topography
 H high resolution topography (default)

TUNFIL= root name of the tuning file (default=TOVTUN)

Remarks

If SFC=1, you can omit keywords GAM, IRF, HIMA and CLOUD.

Example

TOVRET 6673 6674 6689 1 6687 6686 1 2 3 BEG=2 2
 GSS=G PLT=Z IRF=1

This entry generates TOVS retrievals using HIRS area 6673 and MSU area 6674, and places the results in row 1 of MD file 6689. It uses guess MD file 6687 and surface grid 6686, in which grid 1 contains 1000 mb geopotential heights, grid 2 contains sea level temperatures, and grid 3 contains sea level dewpoint depressions. The process starts at line 2, element 2, plots 500 mb heights, and initializes the MD row header and retrieval counter.

TOVS1B

Converts TOVS 1-B archive data to a raw TIP area.

Format TOVS1B *HIRSfile* *MSUfile* *area*

Parameters *HIRSfile* input LW file of the HIRS 1-B data

MSUfile input LW file of the MSU 1-B data

area output area of the raw TIP data

Remarks If no HIRS file is specified, no HIRS data goes in the TIP area. Similarly, if no MSU file is specified, no MSU data goes in the TIP area. Be aware of this when using these TIP areas to create HIRS and/or MSU areas with command TIPTI.

Examples

TOVS1B HIRS87261 X 6672

This entry creates TIP area 6672 from HIRS LW file HIRS87261.

The next step is to run:

TIPTI 6672 6673 X

Note that no MSU area is created by command TIPTI.

TOVS1B X MSU85138 6674

This entry creates TIP area 6674 from MSU LW file MSU85138. The next step is to run:

TIPTI 6674 X 6675

This entry creates MSU area 6675, but does not create a HIRS area.

TOVS1B HIRSIBIN MSUSIBIN 6675

This entry creates TIP area 6675 from both a HIRS LW file and MSU LW file. Use command TIPTI to create a HIRS area or MSU area, or both.

TXVA

Copies VASTEXT documentation to or from a VASTEXT file.

Formats

TXVA *bfile efile*

TXVA *file* IN

TXVA *file* OUT

Parameters

bfile beginning VASTEXT number to list

efile ending VASTEXT number to list

file VASTEXT file number

IN brings the VASTEXT *file* to the terminal from inventory

OUT writes text from the terminal to the VASTEXT *file*

Remarks

The inventory is a large file containing many VASTEXT files. Check the inventory file contents before writing text to make sure nothing is overwritten. For example, if you intend to use TXVA 10 OUT, first do TXVA 10 IN to see if a previous user stored a VASTEXT file there.

Examples

TXVA 1 IN

This entry brings text (VASTEXT) 1 to the terminal from inventory; this text replaces the original VASTEXT for that terminal.

TXVA 5 OUT

This entry stores the text (your current VASTEXT) in position 5 of the inventory.

TXVA 1 6

This entry displays a brief inventory of entries 1 through 6 of the large inventory file on the text screen .

UGVAS

Updates VAS guess grids and MD files.

Format	UGVAS <i>row</i> [<i>keywords</i>]	
Parameter	<i>row</i>	row number that corresponds to the time period used for the update; for example, if row is 4, data from row 4 or before is used for the update
Keywords	GMDF=	MD file number containing the guess (default=1442; 1445)
	GRIDF=	grid file to store the first guess grids (default=1442 or 1445; 1442 for rows 1 to 5 of the MD file for VAS data, 1445 for rows 6 to 10)
	INC=	grid increment for the analyses, *10; for example, INC=20 specifies a grid increment of 2 (default=10)
	LAT=	<i>min max</i> latitude bounds (default=25 45)
	LON=	<i>min max</i> longitude bounds (default=60 95)
	MDF=	MD file number containing the VAS data (default=1441)
Remarks	The latitude and longitude bounds used are 5 degrees larger than the input bounds. Grid file 1440 is a scratch file.	
Examples	UGVAS 5 This entry updates VAS guess grids and MD files from row 5 or before. UGVAS 4 MDF=1441 GMDF=1442 GRIDF=1445 LAT=25 45 LON=60 95 INC=10 This entry generates grids in grid file 1445 from the latest retrievals (in MD file 1441, row 4) and first guess MD file 1442. The grids are used as the first guess for row 5 of the VAS retrieval. This entry uses a box with latitude 25 45, longitude 60 95, and a grid increment of 1 degree.	

VDVA

Lists all channels within the cursor.

Format	VDVA <i>option line ele diag</i>	
Parameters	<i>option</i>	B brightness temperature and navigation parameters (default)
		F filters in use
		N navigation parameters only
		R radiance and navigation parameters
		S spin budget
	<i>line</i>	line number (default=cursor location)
	<i>ele</i>	element number (default=cursor location)
	<i>diag</i>	nonzero gives additional information on calibration and raw data counts
Remarks	This command can check an individual sounding for unreasonable brightness temperatures or other values.	
See Also	Set the sounder area pointer with command VPVA before invoking VDVA.	
Examples	VDVA	
	This entry lists on the text screen all available brightness temperatures (Kelvin*100) and navigation information at the cursor location.	
	VDVA S 0 0 1 DEV=P	
	This entry prints the spin budget, calibration, and raw data count values at line and element 0,0.	

VL

Lists a single VAS retrieval.

Formats

VL [keywords]

VL AVA [keywords]

Parameter

AVA lists the data available for the specified MD file

Keywords

ALL= 1 includes edited soundings in the search

GRA= graphics frame number (default=current)

LAT= latitude of the retrieval to list (default=cursor center)

LON= longitude of the retrieval to list (default=cursor center)

MDF= MD file number with VAS data (default from MDU SET)

PTOP= lowest pressure level to list (default=100)

ROW= row number in the MD file; when AVA is used, ROW takes two values to specify a range of MD file rows (default=last row in the file)

SKEW= 1 plots a Skew T instead of listing data
OL plots a Skew T with overlay (OLAY) option

SLOP= search radius in degrees latitude to find report (default=1.0)

Remarks

The latitude and longitude are determined by the cursor position if you don't enter them as keywords.

Examples

VL

This entry lists VAS retrieval data from a preset MD file for within 1.0 degree of the cursor location.

VL MDF=1101 ROW=2

This entry lists the data from MD file 1101, row 2, searching for the data closest to the cursor lat/lon position within 1 degree.

VL MDF=5703 ROW=1 LAT=40.5 LON=89.3 SLOP=2.2

This entry lists the data from MD file 5703, row 1, searching for the data closest to the specified lat/lon within 2.2 degrees.

VL SKEW=1

This entry plots the Skew T from the last available row in the current MD file, with the data closest to the cursor position (1 degree slope).

VL AVA MDF=5696

This entry lists the data availability for all rows in MD file 5696.

VPVA

Sets the file pointer for VAS processing.

Format

VPVA area

Parameter

<i>area</i>	> 0	sounder area file number for VAS processing (default=current)
	0	lists the current pointer
	-1	turns off the pointer and resets for TOVS processing

Examples

VPVA

This entry sets the pointer to the current VAS sounder area file number.

VPVA 1305

This entry sets the pointer to sounder area 1305 for VAS processing.

VRVA

Retrieves VAS temperature/moisture profiles and image products.

Format

VRVA [*keywords*]

Keywords

ARA= *wv li tot* area numbers for product images, water vapor, lifted index and totals (default=0 0 0)

AUTO= runs without image using the parameters from VASTEXT (default=0)

BEG= *line ele* beginning of the retrieval area (default=upper-left corner of the image)

BIAS= **1** if nonzero, uses the bias vector in VASTEXT
99 uses the bias and gamma in the DARA statement

BOX= square retrieval box size, in SFOV units (default=11)

END= *line ele* end of the retrieval area in image coordinate units (default=VASTEXT values)

GAM= value*100 to stabilize the matrix before inversion (default=100)

GAUSS= **99** overrides the Gaussian water vapor basis functions

GSS= **G** gridded first guess (default)
C climatology first guess

ICB= **1** file calculated brightness temperature from the first guess; file dwell sound; does not perform retrieval

IMCL= image threshold for the cloud (default=6 K)

ITEM= sets the temperature basis function numbers; the range is 1 to 11 (default=2 3 4 5 6)

IWAT= sets the water vapor basis function numbers; the range is 1 to 11 (default=4 5 7)

SFC= **1** does not use surface analysis
0 uses surface analysis (default)

SKIN= skin temperature change permitted (default=4.0 K)

SPC= line ele retrieval spacing, in SFOV units (default=BOX BOX)

TERM= terminal number (default=current)

Remarks

This program generates the VAS retrievals from the appropriate setups, e.g., surface data, first guess surface T, TD, PSL, and first guess from GSVA.

See Also

See commands LOVA and SPVA for inspecting and setting the VASTEXT file pointers.

VRVF

Generates VAS image products for the MSI mode.

Format

VRVF [*keywords*]

Keywords

ARA= *wv li tot* area numbers for water vapor, lifted index and totals (default=0 0 0)

AUTO= runs without image using the parameters from VASTEXT (default=0)

BEG= *line ele* beginning of the retrieval area

BIAS= if nonzero, uses the bias vector in VASTEXT (default=0)

BOX= square retrieval box size, in SFOV units (default=11)

END= *line ele* end of the retrieval area (default=VASTEXT)

FGRIDF= function grid file (no default)

IMCL= image threshold for the cloud used in the derived image (default=8 K)

INVER= temperature inversion tolerance in the cloud filter (default=-4)

NGRID= initial grid number (default=1)

SKIN= skin temperature change permitted (default=4.0 K)

SPC= *line ele* retrieval spacing, in SFOV units (default=BOX BOX)

TERM= terminal number (default=local)

Examples

VRVF

This entry generates VAS image products using the current settings.

VRVF AUTO=1 AREA=4384 4385 FGRIDF=5923 NGRID=15

This entry retrieves the VAS profiler without an image using the parameters from VASTEXT. The original coefficients are from grid file 5923, starting with grid 15. It writes the precipitable water image into area 4384 and the lifted index into area 4385.

XRVA

Edits values in the MD file at the cursor location.

Formats

XRVA *parm level*
XRVA [*keywords*]

Parameters

parm parameter name from the MD file schema
 (default=entire record)

level pressure level to delete, in mb (default=all levels)

Keywords

MDF= MD file number (default=VASTEXT)

NRET= retrieval number (default=0)

ROW= MD row number (default=VASTEXT)

Remarks

Use keyword NRET to edit a single retrieval; otherwise, reports within the cursor are edited. Only reports with MOD=0 are deleted. To edit within the cursor, press the spacebar to delete, then type **R END** to terminate the execution. Cursor size may vary between deletions, i.e., after XRVA responds with GO.

Use of this command is restricted to VAS retrieval and surface MD files (schemas VRET and RSVC). Linkage is through MDU SET and the VASTEXT file.

Keywords MDF and ROW are required for McIDAS TOVS processing.

Examples

XRVA

This entry prompts a GO response on the text screen. Now, locate report(s) in the cursor and press the spacebar as many as 40 times to edit values; wait for a GO message between each spacebar press.

R END

This entry displays red Xs on the image where reports were deleted. The MD file is packed.

XRVA NRET=10

This entry deletes all data for report number 10.

XRVA Z100

This entry deletes all values of Z100 within the cursor.

XRVA T 500

This entry deletes all 500 mb temperature values within the cursor.

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11-10	11-10	11-10	11-10
11-11	11-11	11-11	11-11
11-12	11-12	11-12	11-12
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11-95	11-95	11-95	11-95
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11-97	11-97	11-97	11-97
11-98	11-98	11-98	11-98
11-99	11-99	11-99	11-99
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AUTTAR

Automatically selects targets for automatic motion vector tracking.

Format

AUTTAR [*keywords*]

Keywords

ADD= nonzero to add targets to the LW file (default=0)

ALL= **YES** gets every possible target
 NO does not get every possible target (default)

AREA= area number for target selections (default is from WSAUTO)

COLOR= graphics color level to plot target locations if PLOT is not zero (default=3)

ESIZ= element size of the target selector box (default is from WSAUTO)

LSIZ= line size of the target selector box (default is from WSAUTO)

MAX= maximum acceptable brightness value (default is from WSAUTO)

MIN= minimum acceptable brightness value (default is from WSAUTO)

PLOT= nonzero to plot the target locations (default=1)

Examples

AUTTAR

This entry uses the current AUTOWINDCO parameter file for default values and initializes the target file before writing.

AUTTAR ALL=YES ADD=1

This entry finds all possible targets and adds them to the already existing target file. All other parameters are read from the current parameter file.

AUTWIN

Automatically performs wind calculations from an AUTOWINDCO target file.

Format

AUTWIN *[keywords]*

Keywords

ALL= **YES** gets every possible target
 NO does not get every possible target (default)

ARA1= first input area number

ARA2= second input area number

ARA3= third input area number

CH= cloud height assignment type (default=AFG)

ELAG= element lag size, in pixels (default=15)

ESIZ= element size of the target selector box (default=2)

GMD= first guess temperature MD file

GSS= first guess temperature profile (default=G)

HARA= area number for the height assignment

INIT= **YES** initializes the output wind MD file (default)
 NO does not initialize the output wind MD file

INPT= **YES** inputs reference target selections
 NO does not input reference target selections (default)

LIST= **YES** lists the output directory (default)
 NO does not list the output directory

LLAG= line lag size (default=15)

LSIZ= line size of the target selector box (default=2)

MAX= maximum acceptable brightness value (default=24)

MF= output wind MD file

MIN= minimum acceptable brightness value (default=9)

OUT= YES outputs vector information at the end of the job
NO does not output vector information at the end of the job (default)

PCB= pressure at cloud bottom

PCT= pressure at cloud top, mb

PLOT= YES plots wind vectors on the graphics
NO does not plot wind vectors on the graphics (default)

PMAX= maximum acceptable cloud pressure (default=5)

PMIN= minimum acceptable cloud pressure (default=1)

PW= wind level pressure

QCU= quality control u criterion (default=5 mps)

QCV= quality control v criterion (default=5 mps)

ROW= destination row number from the output wind file (default=1)

STAT= 0 does not output vector statistics (default)
1 outputs statistics to the text screen
2 outputs statistics to the printer

TC= cloud temperature, K

TH= cloud thickness setting, mb

WGMD= first guess wind MD file

WM= CC tracks clouds using cross-correlation
EN tracks clouds using Euclidian normal correlation
LP tracks clouds using correlation (default)
SP tracks clouds using single pixel

ZCB= height at cloud bottom

ZCT= height at cloud top

See Also

Before starting the job, use command AUTTAR or SELTAR to select targets and command WSAUTO to check the automatic motion vector status file.

Examples**AUTWIN**

This entry calculates winds using the parameters in the current data set but does not plot wind vectors or print statistics.

AUTWIN OUT=YES STAT=2 PLOT=YES LLAG=20 ELAG=20

This entry calculates wind vectors, outputs vector information and statistics, and plots vectors on the graphics screen using lag values of 20.

**AUTWIN PLOT=YES ARA1=4064 ARA2=4065 ARA3=4066
HARA=4067**

This entry calculates wind vectors and plots them on the graphics screen using areas 4064 through 4065 for input, and area 4067 for the height assignment. Values for all other parameters are read from the current data set parameter file.

CLOUDH

Calculates cloud heights.

Format

CLOUDH *file*

Parameter

file VAS first guess MD file number (default=climatological data)

Remarks

Place the cursor over the cloud and type **CLOUDH** for estimated cloud heights. If the current frame contains a visible image, load the corresponding IR on the opposite frame; heights are estimated from IR temperatures or VAS guess MD file data.

See Also

If command MW is running, type a plus (+) to list cloud heights. In McIDAS-OS2, type: Alt +. In McIDAS-X, type a plus (+) and press Enter.

Examples**CLOUDH**

This entry calculates the cloud height inside the cursor using IR temperatures and climatological or forecast/analysis data.

CLOUDH 6512

This entry calculates cloud heights using the temperature profile data from MD file 6512.

DELTAR

Deletes or lists AUTOWINDCO targets at the cursor location.

Formats

DELTAR DEL [keyword]
DELTAR LIST [keyword]

Parameters

DEL deletes the selected target (default)
LIST lists the selected target

Keyword

DSN= data set name of the target file to use (default=current)

Remarks

This program allows you to manually delete AUTOWINDCO targets from the current data set target file.

Example

DELTAR
This entry deletes the target at the cursor location from the current data set.

DV

Deletes or changes the wind vector in a motion vector file.

Formats

DV CHA *[keywords]*
DV DEL *[keywords]*

Parameters

CHA changes the values assigned to a wind; you can use any keyword from schema VWIN (see the first example)
DEL deletes the wind from the wind file (default)

Keywords

COL= *beg end* column range to edit from the raw input (default=1 to the maximum)
FLAG= quality control error flag number (see QCWIND); only vectors with this error flag are deleted
LEV= *high low* pressure level range to delete (default=0 to 1050)
LSIZE= size of the plotted vector/flag, in pixels (default=8)
MDF= wind MD file number (default=current)
ROW= row number to edit

Remarks

Winds are selected by the cursor position. Move the cursor to the wind location and type a period (.) to delete or change the vectors within the cursor. Press two periods to exit DV.

Examples

DV

This entry deletes the vectors within the cursor from the wind file.

DV CHA PW=500 TC=245 PCT=450 TH=100

This entry changes the wind level pressure to 500 mb, cloud top temperature to 245° K, cloud top pressure to 450 mb and thickness to 100 mb.

DV LEV=180 210

This entry deletes the winds within the pressure interval 180 to 210.

GESWIN

Sets up data files for use with command MW.

Format

GESWIN *wfile gfile wgfile [keywords]*

Parameters

wfile wind file to write generated winds into with command MW (default=VASTEXT)

gfile VGSS LFM guess MD file number for temperature profile predictions (default=VASTEXT)

wgfile WGSS LFM guess MD file number for wind predictions (default=VASTEXT)

Keywords

FCST= 0 uses the 0Z LFM forecast analysis for wind guess
 12 uses the 12Z LFM forecast for wind guess (default)

GRIDF= grid file number for the temperature profile
 (default=VASTEXT)

WGRIDF= grid file number for the first guess wind profile
 (no default)

Remarks

Use the macro GESWIN when you have VAS data available for cloud drift winds. This program is optional for tracking clouds.

Examples

GESWIN

This entry deletes and regenerates the specified MD files, and writes wind vectors into an MD file using the VASTXT defaults and the 12Z LFM forecast for the wind guess.

GESWIN 6512 WGRIDF=6500 FCST=0

This entry writes wind vectors into MD file 6512, using the VASTEXT defaults, grid file 6500 as the guess wind profile grid file, and the 0Z LFM forecast for wind guess.

GSVA

Reformats guess grids into an MD file.

Format *GSVA gfile grid file inc tgrid tinc [keywords]*

Parameters	<i>gfile</i>	guess grid file number (no default)
	<i>grid</i>	first grid of the guess grids (default=1)
	<i>file</i>	MD file number of the output array (no default)
	<i>inc</i>	latitude and longitude increment, in degrees * 10 (default=20)
	<i>tgrid</i>	first grid of the earlier set for time interpolation (default=0)
	<i>tinc</i>	fractional time increment from the earlier time, e.g., for interpolating between 12Z and 00Z respectively, 18Z uses a value of .5 (default=0)

Keywords	LAT=	<i>min max</i> latitude range (default=VASTEXT)
	LON=	<i>min max</i> longitude range (default=VASTEXT)
	SOURCE=	TOVS for McIDAS TOVS processing (default=VAS or CIMSS TOVS, depending on User Common)
	TYPE=	N northern hemisphere grid type (default) S southern hemisphere grid type

Remarks GSVA fills an MD file (schema VGSS) with guess temperatures and moisture profiles from grids of guess temperatures and moisture; these may be analyses, forecasts, etc. Grids in the grid file need not be in a specific order or form a complete set. If you perform time interpolation (e.g., between two forecast grids), check that earlier and later grids are both in the same grid file and not interleaved.

Examples**GSVA 1250 X 2500**

This entry fills MD file 2500 with the data from file 1250 beginning with grid 1.

GSVA 1121 23 2610 LAT=25 40 LON=80 100

This entry establishes the guess profiles in MD file 2610 using the grids in file 1121 and beginning with grid 23. It generates profiles every degree from 25 to 40°N and 80 to 100°W. These bounds will change if the guess grid dimensions are less than 25 to 40°N and 80 to 100°W.

GSVA 1122 23 2611 X 1 .5

This entry establishes the guess profiles in MD file 2611 using time interpolation. It starts with grid 1 (e.g., valid at 1200 GMT) for the earlier set and grid 23 (e.g., valid at 00Z GMT) for the later set. Thus, MD file 2611 is valid at 1800 GMT.

IW

Initializes the motion vector status file.

Remarks

Use command WS to modify the values initialized by IW. If command MW is running, use a minus sign (-) to edit keyword values. In McIDAS-OS2, type: Alt -. In McIDAS-X, type a minus sign (-) and press Enter.

The table below lists the default values of the keywords.

Keyword	Default	Definition
CH	A	cloud height assignment type
ELAG	5	element lag size
GMD	OFF	first guess temperature MD file
GSS	CLIM	first guess temperature profile
LLAG	5	line lag size
LSIZ	8	size of the wind vector
OUT	ON	vector output information
PCB	OFF	pressure cloud bottom
PCT	OFF	pressure setting
PW	OFF	pressure wind level
QCU	5	quality control u criterion
QCV	5	quality control v criterion
TC	OFF	temperature setting
TH	OFF	thickness setting
TYPE	VIS	spectral band
VG	FLAG	vector graphics plot
WGMD	OFF	first guess wind MD file
WM	LP	tracking metric
ZCB	OFF	height at the bottom of the cloud
ZCT	OFF	height at the top of the cloud

IWAUTO

Initializes an AUTOWINDCO status file.

Formats

IWAUTO INIT *dataset* R
IWAUTO RESTORE *dataset*

Parameters

INIT	initializes the data set with the default values
RESTORE	uses the specified data set for subsequent commands
R	overwrites the existing data set for the INIT option (default=no overwrite)
<i>dataset</i>	LW file containing the AUTOWINDCO parameters; must be 11 characters or less

Remarks

The data set name is stored in the string table as AUTOWIND; it is used to create the AUTOWINDCO parameter and target LW files. The parameter file name is the data set name with the number 1 appended to it. The target file name is the data set name with the number 2 appended to it. Thus, a data set named WINDS has its parameters stored in the LW file WINDS1 and its targets stored in the LW file WINDS2.

See Also

The IWAUTO command is the first command performed in the AUTOWINDCO program. The second is WSAUTO.

Examples**IWAUTO INIT JETSTREAM**

This entry sets the data set name to JETSTREAM and initializes the parameter file with the default values.

IWAUTO RESTORE WESTWIND

This entry makes the WESTWIND data set current. All subsequent AUTOWINDCO commands use this data set.

LISTAR

Lists targets from the current data set target file.

Format	LISTAR <i>beg end [keyword]</i>
Parameters	<i>beg</i> beginning record to list (default=1) <i>end</i> ending record to list (default=2000)
Keyword	DSN= name of the data set containing the targets (default=current)
Remarks	Targets are for AUTOWINDCO. If <i>beg</i> is less than or equal to zero, only the number of targets is returned.
Examples	LISTAR This entry lists the targets in the current target file. LISTAR 20 40 DSN=JETSTREAM This entry lists records 20 through 40 of data set JETSTREAM.

LISWIN

Lists winds from a motion vector MD file.

Format	LISWIN CUR ALL <i>[keywords]</i>
Parameters	CUR lists the contents within the cursor only ALL lists vector pairs, triples, etc.
Keywords	COL= <i>beg end</i> column range to list MDF= wind MD file number (default=current) ROW= <i>beg end</i> row range to list
Remarks	You must exit command MW before using LISWIN. Use LISWIN to list vectors from a motion vector MD file, schema VWIN.
Examples	LISWIN This entry lists all single vector pairs in the current MD file on the text screen. LISWIN CUR ALL ROW=6 12 This entry lists all vector pairs within the cursor that are in rows 6 to 12 of the current MD file.

MW

Computes cloud drift winds and heights.

Format

MW [keywords]

Keywords

CH= **A** assigns cloud heights automatically using climatology (default)
 AFG assigns cloud heights automatically using first guess grids
 M assigns cloud heights manually

ELAG= cursor element lag size, in pixels (default=5)

GMD= temperature profile from the NMC first guess retrieval MD file, schema VGSS; use with CH=AFG for automatic cloud tracking (default=VASTEXT)

GSS= **CLIM** climatology is first guess (default)
 G temperature and/or wind profile is first guess

LLAG= cursor line lag size, in pixels (default=5)

LSIZE= size of the plotted flag/arrow, in pixels (default=8)

MDF= MD file number to write wind measurements into, schema VWIN (default=MD file selected in the last MW execution)

OUT= **ON** lists wind computations on the text screen while tracking clouds (default)
 OFF does not list winds

PCB= pressure at cloud bottom (default=0)

PCT= pressure for cloud tops, mb

PW= wind pressure, mb (default=0)

QCU= u-component quality control criterion (default=5 mps)

QCV= v-component quality control criterion (default=5 mps)

TC= temperature for cloud tops, K

TH= thickness for clouds, mb

PLTTAR

Plots targets from the current data set target file.

Format `PLTTAR color [keywords]`

Parameter `color` graphics color level for plotting targets (default=1)

Keywords `DSN=` name of the data set containing the targets
(default=current)

`LAT= min max` minimum and maximum latitudes
(default=all)

`LON= min max` minimum and maximum longitudes
(default=all)

Remarks Targets are for AUTOWINDCO.

Examples `PLTTAR`

This entry plots the current targets on a graphics frame in graphics color level 1.

`PLTTAR 5 LAT=37:00:00 40:00:00 LON=94:36:36 102:00:00`

This entry plots the targets from the current data set using graphics color level 5, bounded roughly by the borders of Kansas.

PLTWIN

Plots wind speed and direction from the VWIN MD file.

Format

PLTWIN *file option type [keywords]*

Parameters

file MD file number containing the winds (default=current)

option

ID	plots the wind ID number or station
P	plots pressure
T	plots temperature
W	plots winds (default)

type

ALL	plots all winds (default)
CO2	plots carbon dioxide winds
FG	plots first guess winds
IR	plots IR winds
VIS	plots visible winds
WV09	plots band 9 water vapor winds
WV10	plots band 10 water vapor winds

Keywords

ALL=

1	plots all records or wind barbs (default for W option)
0	does not clutter records; does not work for W option (default for options P, T, ID)

COL= *beg end* column range for the plot (default=1 50)

COLOR= graphics color level of the plotted digit (default=1, 2, 3, which correspond to the default pressure level ranges for keyword LEV)

FLAG= plots winds with the appropriate QC flag (default=0)

LEV= *top bottom* pressure level range for the plot (default=1 to 399 mb, 400 to 699 mb, and 700 to 1050 mb, which correspond to the three default colors for keyword COLOR)

LSIZE= height of the plotted digit, in pixels (default=8)

PLOT=

0	lists winds on the text screen (default)
1	plots wind <i>dddss</i> on the graphics; see the Remarks
2	plots wind barbs on the graphics
-2	plots wind vectors on the graphics

PRO= **SAT** satellite projection (default)
 MERC Mercator projection
 CONF conformal projection

ROW= *beg end* row number or range for the plot (default=1 20)

SIG= significant level wind MD file

SPEED= 1 plots winds in mps
 2 plots winds in knots (default)

ST= state or station identifier for the ISFC or IRAB data
 (default=ALL)

TIME= time for the ISFC or IRAB data (default=image time)

UNIT= **C** temperature in Celsius
 F temperature in Fahrenheit (default)
 K temperature in Kelvin

Remarks

PLTWIN plots wind speed, direction, pressure and temperature from motion vector files (schema VWIN) or any MD file containing winds. The output on the graphics is in the form *dddss* (direction and speed).

Examples**PLTWIN**

This entry plots all winds in the current MD file on the graphics frame. Wind speed is plotted in knots.

PLTWIN 6512 ROW=1 2 COL=1 10

This entry plots all winds in MD file 6512, rows 1 and 2, columns 1 to 10. Both pairs are plotted.

PLTWIN 6513 COLOR=5 LEV=300 800

This entry plots the winds in MD file 6513 between 300 and 800 mb, in graphics color level 5.

PLTWIN 6514

This entry lists all winds in MD file 6514.

POSTAR

Positions the cursor at the target location.

Format

POSTAR *target*

Parameter

target target number (default=1)

Remarks

Target numbers are from AUTOWINDCO target files.

Example

POSTAR

This entry positions the cursor at the first target of the current data set.

QCWIND

Lists quality control statistics for winds.

Format **QCWIND** [*keywords*]

Keywords

COL= column range (default=from key CMAX)

DEV= C displays output on the text screen (default)
 N no output
 P displays output on the local printer
 S displays output on the system printer

MDF= destination MD file (default=current)

QCU= u component maximum error, in m/s (default=5)

QCV= v component maximum error, in m/s (default=5)

ROW= row number (default=1)

Remarks

This program compares each sequence of winds for user-selected quality specifications. Winds not meeting these criteria are flagged with one of the error codes below.

Error Code	Definition
10	u acceleration error
20	v acceleration error
30	u and v acceleration error
40	cloud height error
50	height and u acceleration error
60	height and v acceleration error
70	height and u, v acceleration error
100	overflow error
200	maximum correlation on boundary of image match surfaces
300	overflow and boundary error

Example

QCWIND

This entry lists the quality control statistics for all winds in the current MD file using the defaults set with command IW.

R

Plots displacement of the first guess wind vector.

Remarks

To plot the first guess wind displacement vector while command MW is running,

Type: **R**

Press: **Enter**

or

Press: **Alt R**

The squares plotted on the graphics indicate the proper cursor position for generating a wind matching the guess wind. To force the manual measurement to match the guess wind, follow the squares with the cursor center and press the space bar while in single pixel. The first guess wind is stored in the wind MD file along with the measured wind.

SELTAR

Manually selects targets for AUTOWINDCO.

Format	SELTAR <i>[keywords]</i>
Keywords	COLOR= graphics color level of the target indicator (default=1) INIT= nonzero to initialize the current target file (default=0)
Remarks	This program also allows you to augment targets selected with the program AUTAR.
Example	SELTAR This entry adds the current cursor location to the current target file.

WGVA

Reformats guess wind grids into an MD file.

Format

WGVA *gfile grid file nw se inc tgrid tinc*

Parameters

<i>gfile</i>	u and v wind profile guess grid file number
<i>grid</i>	first grid of the latest set of guess grids (default=1)
<i>file</i>	u and v wind profile MD file number
<i>nw</i>	latitude and longitude of the northwest corner of the MD file; the range is 0 to 360 (default=VASTEXT)
<i>se</i>	latitude and longitude of the southeast corner of the MD file; the range is 0 to 360 (default=VASTEXT)
<i>inc</i>	latitude and longitude increment, in degrees * 10 (default=20)
<i>tgrid</i>	first grid of earlier guess grids for time interpolation
<i>tinc</i>	fractional time increment from earlier time, e.g., for interpolating between 12 and 0Z respectively, 18Z uses a value of .5

Remarks

Parameters *gfile*, *grid* and *file* are used by macro GESWIN.

See Also

Use command GSVA to reformat temperature profiles.

Examples

WGVA

This entry reformats the guess wind grids from the current grid file using the first grid of the latest grid set. The VASTEXT file defaults are used for latitude and longitude which increment by 10 degrees; the time increment is .5.

WGVA 9410 6 4400

This entry reformats guess wind grids from grid file 9410, starting with grid 6, into MD file 4400.

WINC

Contours streamlines from MD file schema VWIN.

Format **WINC** *tpress bpress [keywords]*

Parameters	<i>tpress</i>	top atmospheric pressure, mb (default=0)
-------------------	---------------	--

bpress bottom atmospheric pressure, mb (default=1050)

Keywords COLOR= graphics color level (default=1)

FLAG= number of a quality control flag, e.g., 100, 200, 300, etc.
(default=0)

MAP=	MID	Midwestern USA
	NA	North America
	SAT	satellite projection (default)
	USA	United States
		<i>Post Office abbreviation</i>

TIME= vector time, HH:MM:SS (default=current)

Remark To point to an MD file, use: **MDU SET file.**

Examples WINC

This entry contours all nonflagged winds from the VWIN MD file over the satellite image in graphics color level 1.

WINC 100 300 COLOR=2 MAP=USA

This entry contours the streamlines of 100 to 300 mb winds in graphics color level 2, over the USA in a Mercator projection.

WINDS

Sets up data inputs for AUTOWINDCO.

Format

WINDS *area1 area2 area3 harea [keywords]*

Parameters

area1 first input area (no default)
area2 second input area (no default)
area3 third input area (no default)
harea input area for the height assignment (default=*area1*)

Keywords

DARA= *a1 a2 a3* destination subareas for *area1*, *area2*, *area3*,
harea (default=WSAUTO file)
 FCST= 0 uses the 0Z analysis for the forecast
 12 uses the 12Z analysis for the forecast (default)
 GMDF= VGSS LFM guess MD file number (default=WSAUTO file)
 GRIDF= grid file for the temperature profile (default=VASTEXT)
 INIT= YES YES deletes and generates a new wind MD file
 and initializes the guess MD files (default)
 YES NO deletes and generates a new wind MD file
 NO YES initializes the guess MD files
 NO NO does not delete or generate a new wind
 MD file or initialize the guess MD files
 LLNW= *lat lon* latitude and longitude of the northwest corner of
 of the image (default=VASTEXT)
 LLSE= *lat lon* latitude and longitude of the southeast corner of
 the image (default=VASTEXT)
 MDF= wind MD file number (default=WSAUTO file)
 MOVE= YES moves source areas to destination areas (default)
 NO does not move source areas to destination areas
 OVER= nonzero to write into TERMFILE (default=0)
 PART= part of the image to begin with (default=1)

ROW= destination row for the wind input (default=WSAUTO file)

WGMDF= WGSS LFM guess MD file number (default=WSAUTO file)

WGRIDF= grid file for the first guess wind profile (no default)

Remarks

This program uses a combination of command line parameters and the current data set and VASTEXT parameters to set up areas and guess MD files for an AUTOWINDCO run. It is especially useful when using large areas or the background AUTOWINDCO method.

Example

WINDS 4816 4817 4818 4816 ROW=2 INIT=NO YES

This entry copies areas 4816 through 4818 into the default destination subareas, and sets up new guess MD files and WSAUTO variables to put new wind calculations into an existing wind MD file starting with row 2.

WS

Lists and changes the status of motion vector keywords.

Formats

WS CHA [keywords]

WS LIST [keywords]

Parameters

CHA changes the keyword values

LIST lists the motion vector status (default)

Keywords

CH= A assigns cloud heights automatically using climatology (default)
 AFG assigns cloud heights automatically using first guess grids
 M assigns cloud heights manually

ELAG= cursor element lag size, in pixels (default=5)

GMD= temperature profile from the NMC first guess retrieval MD file, schema VGSS; use with CH=AFG for automatic cloud tracking (default=VASTEXT)

GSS= CLIM uses climatology as first guess (default)
 G uses temperature and/or wind profile as first guess

LLAG= cursor line lag size, in pixels (default=5)

LSIZE= size of the plotted flag/arrow, in pixels (default=8)

MDF= MD file number to write wind measurements into, schema VWIN (default=MD file selected in the last MW execution)

OUT= ON lists wind computations on the text screen while tracking clouds (default)
 OFF does not list winds

PCT= pressure for cloud tops, mb

QCU= u-component quality control criterion (default=5 mps)

QCV= v-component quality control criterion (default=5 mps)

TC= temperature for cloud tops, K

TH= thickness for clouds, mb

VG= **ARRO** arrows represent wind speed and direction
FLAG wind barbs represent wind speed and direction
 (default)

WGMD= u and v wind profile from the NMC first guess wind MD
 file, schema WGSS; use with CH=AFG for automatic cloud
 tracking (default=VASTEXT)

WM= **CC** tracks clouds using cross-correlation
EN tracks clouds using Euclidian normal correlation
LP tracks clouds using correlation (default)
SP tracks clouds using single pixel

Remarks Do not use WS while command MW is running; your keyword values
 will not change. Use the minus (-) command.

See Also Command IW initializes the motion vector status file.

Examples **WS**
 This entry lists the wind motion vector system status.

WS CHA CH=M TH=180 PCT=500 TC=255

This entry changes the status to manual cloud tracking, thickness to
 180 mb, cloud pressure to 500 mb and cloud temperature to 255K.

WSAUTO

Checks the motion vector status.

Formats

WSAUTO CHA [keywords]
WSAUTO LIST [keywords]

Parameters

CHA changes the keyword values
LIST lists the motion vector status (default)

Keywords

ALL= YES gets every possible target
NO does not get every possible target (default)

ARA1= first input area number
ARA2= second input area number
ARA3= third input area number

CH= A assigns cloud heights automatically using
climatology (default)
AFG assigns cloud heights automatically using first
guess grids
M assigns cloud heights manually

ELAG= element lag size, in pixels (default=15)

ESIZ= element size of the target selector box (default=15)

GMD= first guess temperature MD file

GSS= G first guess temperature profile (default)
CLIM climatology

HARA= input area number for the height assignment

INIT= YES initializes the output wind MD file (default)
NO does not initialize

INPT= YES inputs reference target selections
NO does not reference target selections (default)

LIST= YES lists the output directory (default)
NO does not list the output directory

LLAG= line lag size (default=15)

LSIZ= line size of the target selector box (default=20)

MAX= maximum acceptable brightness value (default=240)

MDF= output wind MD file

MIN= minimum acceptable brightness value (default=90)

OUT= YES outputs vector information at the end of the job
NO does not initialize the output wind MD file (default)

PCB= pressure at cloud bottom

PCT= pressure at cloud top, mb

PMAX= maximum acceptable cloud pressure (default=500)

PMIN= minimum acceptable cloud pressure (default=100)

PW= wind level pressure

QCU= quality control u criterion (default=5 mps)

QCV= quality control v criterion (default=5 mps)

ROW= destination row number from the output wind file (default=1)

TC= temperature for cloud tops, K

TH= cloud thickness setting, mb

WGMD= first guess wind MD file

WM= CC tracks clouds using cross-correlation
EN tracks clouds using Euclidian normal correlation
LP tracks clouds using correlation (default)
SP tracks clouds using single pixel

ZCB= height at cloud bottom

ZCT= height at cloud top

Remarks

All defaults are the present values from the motion vector status file.
To see these values,

Type: **WSAUTO**

Press: **Enter**

The output will halt halfway through the list. To continue, press the space bar. To suppress the halt, use **STOP=1**.

When you finish this command function, you can run the target selector programs (AUTTAR, SELTAR) and utility programs (DELTAR, LISTAR, PLTTAR, POSTAR), and run the wind generation program (AUTWIN) as a background job. Each command is documented in this chapter.

Examples**WSAUTO**

This entry lists the current parameters if the AUTOWINDCO system is initialized, or the system defaults if AUTOWINDCO is not initialized.

**WSAUTO CHA ARA1=2929 ARA2=2930 ARA3=2931
HARA=2929 MDF=1301**

This entry changes the default parameters for the current data set to the specified values.

- (Minus)

Lists and changes the status of motion vector keywords while command MW is running.

Format

- [keywords]

Keywords

CH=	A	assigns cloud heights automatically using climatology (default)
	AFG	assigns cloud heights automatically using first guess grids
	M	assigns cloud heights manually
ELAG=		cursor element lag size, in pixels (default=5)
GMD=		temperature profile from the NMC first guess retrieval MD file, schema VGSS; use with CH=AFG for automatic cloud tracking (default=VASTEXT)
GSS=	CLIM	uses climatology as the first guess (default)
	G	uses temperature and/or wind profile as the first guess
LLAG=		cursor line lag size, in pixels (default=5)
LSIZE=		size of the plotted flag/arrow, in pixels (default=8)
MDF=		MD file number to write wind measurements into, schema VWIN (default=MD file selected in the last MW execution)
OUT=	ON	lists wind computations on the text screen while tracking clouds (default)
	OFF	does not list winds
PCT=		pressure for cloud tops, mb
QCU=		u-component quality control criterion (default=5 mps)
QCV=		v-component quality control criterion (default=5 mps)
TC=		temperature for cloud tops, K
TH=		thickness for clouds, mb

VG= **ARRO** arrows represent wind speed and direction
 FLAG wind barbs represent wind speed and direction
 (default)

WGMD= u and v wind profile from the NMC first guess wind MD file,
 schema WGSS; use with CH=AFG for automatic cloud
 tracking (default=VASTEXT)

WM= **CC** tracks clouds using cross-correlation
 EN tracks clouds using Euclidian normal correlation
 LP tracks clouds using correlation (default)
 SP tracks clouds using a single pixel

Remarks

Use the minus sign to modify motion vector system keywords while command MW is running.

DO NOT use command WS to change keywords! The keywords are those listed by WS.

Examples

-

This entry lists the current status of the motion vector system. Command MW must be running; otherwise use command WS. If entering this command in McIDAS-OS2, use Alt -. In McIDAS-X, type the minus sign (-) and press Enter.

- CH=M TH=300 TC=285 PW=850

This entry changes the cloud tracking to manual height assignments, the thickness to 300 ms, the temperature to 285°K and the pressure level to 850 mb.

- WM=SP TH=800 PCT=850

This entry changes the cloud tracking mode to single pixel, the thickness to 800 mb and the cloud top pressure to 850 mb.

; (Semicolon)

Lists motion vector numbers.

Remarks

When you set up the motion vector system with command MW, press the semicolon (;) key to list the row and column number of the current wind measurement.

(Semicolon) ;

1. Standard is vector, horizontal.

When you set up the motion vector system with one hand MW, press
the semicolon (;) key to set the row and column number of the
vector wind measurement.

Remarks

Command
Schedulers

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ESKE

Enters an event in the event scheduler.

Format **ESKE** [*keywords*] "*expression*" "*command*"

Parameters "*expression*" an event expression consisting of operators, event flag numbers, integer constants, and hexadecimal constants from those listed below.

Boolean: ~ (NOT), & (AND), V (OR), | (XOR)

Relational: >, <, =, ≥, ≤, <>

Arithmetic: +, -

Flag numbers are preceded by F, hexadecimal constants by Z. When the expression takes the value of one (i.e., when it is true) the "*command*" is run.

Expressions may be parenthesized. Otherwise, relational operators get highest priority, arithmetic second highest, Boolean lowest.

Example: "F22=1&(F23=5VF23=10)&F813=1"

"*command*" the McIDAS command to run when the *expression* takes the value 1

Keywords **END=** *day time* ending day (YYDDD) and time (HH:MM:SS) to run the entry (default=99365 23:59:59)

ID= 4-digit number to identify the command in the event scheduler (default=system assigned 3-digit number)

PROJ= project number charged to run the command (default=current)

START= *day time* starting day (YYDDD) and time (HH:MM:SS) the schedule entry is activated (default=current day, 0 UTC)

TERM= terminal number to run the command on (default=current)

Remarks

ESKE allows you to schedule commands based on the occurrence of events that you define. Defining an event consists of creating an expression of event flags, values of the flags and operators. When the expression is evaluated as true (i.e., 1) the associated command is run.

Event flags are flags with values indicating the current status of an event. For example, all satellite image data on McIDAS is input via ingestors which reformat real-time or recorded data so the system can access it readily. Each ingestor accepts input from one source at a time (e.g., GOES). Associated with each ingestor is an image spool that contains messages regarding the current state of the image being ingested. Most of the event flags set by the system are for the ingestor image spools. They contain information such as the satellite ID, current scan line and image nominal time and date.

There are 6999 event flags available for use on McIDAS. Flags 1 through 799 have integer values; flags 800 through 6999 have Boolean values.

Event flags currently in use are listed in edit member DNEFLAGS. This list includes flags set by system software and known user set flags. Contact the operators to determine which flag numbers are available.

Event flags can also be included in the command. Parameter substitution is done when the command is run. Any string of the form \$F*n* in the command field is replaced by the current value of flag number *n*. This makes it possible to pass parameters whose values cannot be known in advance.

Caution!

Do not use SETF with other commands (separated by semicolons) in the "command parameter.

See Also

See the online text files DNESKED, DNEFLAGS and DNIMASPL for more information about the event scheduler.

Examples

**TE EXP "F22=1&(F27>550VF23=5)&(F40≥140000&F40≤232900)
&F5000=0**

This entry defines the values for the string EXP.

ESKE #EXP "EG 1;SF 1;DF \$F29 1 EC 36 90;MAP

This entry loads a visible image every time a new image reaches scan line 550 or a frame end code is received on ingestor spool 1 during daylight hours (between 1400 UTC and 2329 UTC).

ESKE #EXP "SETF F5000 1

This entry sets flag 5000 to 1 at the same time the DF command is run to prevent the command from repeatedly running.

ESKE "F22=1&F23=1 "SETF F5000 0

This entry sets flag 5000 back to 0 every time a new frame starts.

ESKL

Lists the event scheduler entries.

Format

ESKL *bid eid [keywords]*

Parameters

bid beginning event scheduler entry ID number to list;
the range is 1 to 9999 (default=lists all entries)

eid ending ID number to list (default=*bid*)

Keywords

PROJ= *min max* project number or range of numbers in the
scheduler to list (default=1000 to 9999)

SORT= **TERM** lists entries by ascending terminal numbers
(default)

TIME lists entries by ascending start times

TERM= *min max* terminal number or range of terminal numbers
to list the schedule of (default=current)

Remarks

The output format is defined below.

Field	Definition
T#	terminal number
ID	command identification number
XS	S suspends the scheduled command; X disables your terminal's schedule
START	day (YYDDD) and time (HHMMSS) to start the schedule entry
END	day and time to end the schedule entry
NAME	user who created the entry
PROJ	project number
EXPRESSION TEXT ...	expression to evaluate
COMMAND TEXT ...	command to run

Examples**ESKL**

This entry lists the current terminal's event scheduler entries.

ESKL 2000 2020 SORT=TIME

This entry lists the event scheduler entries between 2000 and 2020 on the current terminal in the order of ascending times.

ESKL TERM=66

This entry lists all event scheduler entries for terminal 66.

ESKU

Event scheduler utility functions.

Formats

ESKU CHA *bid eid [keywords]*
ESKU DEL *bid eid [keywords]*
ESKU REL *bid eid [keywords]*
ESKU SUS *bid eid [keywords]*

Parameters

CHA changes the keyword TERM, PROJ or NAME field

DEL deletes an entry

REL releases an entry

SUS suspends an entry

bid beginning event scheduler entry ID number

eid ending ID number (default=*bid*)

Keywords

NAME= *old new* changes the old user name to the new user name (default=current)

PROJ= *old new* replaces the old project number with the new project number

TERM= terminal number on which to run the entry (default=current)

Examples

ESKU SUS 1001 1009 TERM=0

This entry suspends schedule entries with IDs 1001 through 1009 at the operator's terminal.

ESKU CHA 1001 1009 PROJ=7000 5630

This entry changes the schedule entries with IDs 1001 through 1009 that run at the user's terminal and under project 7000 to run under project 5630.

ESKU REL 1001 1009

This entry releases scheduled entries 1001 through 1009.

LRAD

Lists Kavouras radar sites.

Formats

LRAD *station1 . . . stationn [keywords]*

LRAD *state*

LRAD *[keywords]*

Parameters

station 3- or 4-letter radar station IDs

state 2-letter state Post Office abbreviation

Keywords

LAT= *min max* minimum and maximum latitude range

LON= *min max* minimum and maximum longitude range

Example

LRAD FL

This entry lists the Kavouras radar sites for Florida.

RSKL

Lists the Kavouras radar schedule entries.

Format

RSKL *bentry eentry [keywords]*

Parameters

bentry beginning entry number (default=lists the entire schedule directory)

eentry ending entry number (default=*bentry*)

Keywords

DAY= day of the entry, YYDDD

FORM= ALL generates an expanded listing

ID= station ID to list

TIME= time of the entry, HH:MM:SS

Examples

RSKL

This entry lists all scheduled Kavouras entries.

RSKL 2 6

This entry lists the Kavouras entries from numbers 2 through 6.

SETF

Modifies event scheduler flags.

Format SETF *flag value*

Parameters *flag* event flag number preceded by the letter F

value event flag value; can be an integer or a flag number preceded by the letter F

Remarks SETF is often used to synchronize a command. By setting the value of user event flags, you can control when commands run in the event scheduler. See the example for command ESKE.

If a SETF command appears as the *command* in an ESKE command, it is handled specially by the scheduler; the scheduler sets the flag itself without starting a SETF command. Because of this special handling do NOT include other commands (separated by semicolons) with a SETF command in an ESKE command field.

To display the current value of a flag, use the command below, replacing *n* with the flag number.

Type: GETF F*n*

Examples

SETF F10 123

This entry assigns the value 123 to event flag number 10.

SETF F10 F12

This entry assigns the current value of event flag 12 to flag 10.

SKE

Enters a command in the system time scheduler.

Format	SKE <i>day time repeat interval [keywords] "command"</i>	
Parameters	<i>day</i>	day to start the command, YYDDD
	<i>time</i>	time to start the command, HH:MM:SS; colons are mandatory (default=0 UTC)
	<i>repeat</i>	number of times to run the command; if you enter 999999, the word MANY replaces it in the header (default=1)
	<i>interval</i>	time interval between commands, DDDHH:MM:SS; colons are mandatory; for 1 day, enter 24:00:00 or 100:00:00 (default=1 hour)
	<i>"command"</i>	command to run; it can be up to 160 characters (including spaces) minus the preceding positional parameters; the double quote is mandatory
Keywords	ID=	4-digit number to identify the command in the scheduler (default=system assigned, 3-digit number)
	PROJ=	project number charged to run the command (default=logged on project number)
	TERM=	number of the terminal on which to run the command (default=current)
	TOL=	late tolerance, HH:MM:SS; if McIDAS-MVS 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 is entered in the header; three seconds is the minimum acceptable time (default=1 hour)
Remarks	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 enter a #command from the string table, enter: "####command".	

If you schedule TV loads for a McIDAS-OS2 or McIDAS-X workstation, use the workstation auto logon option to ensure the workstation is logged on.

The maximum number of McIDAS-MVS scheduler entries that can be scheduled is 800.

The maximum number of local scheduler entries that can be scheduled per workstation is 100.

See Also

List DNSKED for further information.

Type: **SHOWME DNSKED ALL DEV=P**

Examples

SKE 94340 13:30: 2 24:00: ID=3003 TERM=10 "SS

This entry runs command SS at 1330 UTC on each of two consecutive days (94340, 94341) on terminal 10. The assigned ID for reference is 3003.

SKE 90100 00:00:01 999999 PROJ=7777 "DF 101 1 EC MSN

This entry runs the DF command every day once an hour (999999 is listed as MANY by SKL), beginning with day 90100 at one second after 0 UTC. Project 7777 is charged for the computer time.

SKE 93071 "DF 101 1 EC MSN

This entry runs the DF command on day 93071 starting at 0 UTC with a 1-hour interval.

SKL

Lists time scheduler entries.

Format	SKL <i>bid eid [keywords] "matchstring</i>		
Parameters	<i>bid</i>	beginning ID number to list; the range is 1 to 9999 (default=lists all entries)	
	<i>eid</i>	ending ID number to list (default= <i>bid</i>)	
	<i>"matchstring</i>	lists only the entries containing this string; 40 characters maximum (default=no match performed)	
Keywords	FORM=	ALL	uses as many lines of output as needed to list the entire command
	PROJ=	<i>min max</i>	project number or range of numbers in the scheduler to list (default=1000 9999)
	SORT=	ID	sorts entries by ID number
		PROJ	sorts entries by project number
		RAW	lists in the order of occurrence in the schedule (unsorted)
		TERM	lists entries by ascending terminal numbers (default)
	TERM=	TIME	lists entries by ascending start times
		<i>min max</i>	terminal number or range of numbers of the schedule to list (default=current)
Remarks	The maximum number of McIDAS-MVS scheduler entries that can be scheduled is 800.		
	The maximum number of local scheduler entries that can be scheduled per workstation is 100.		

The output format is defined in the table below.

Field	Definition
T#	terminal number
ID	command identification number
XS	S suspends the scheduled command; X disables your terminal's schedule
NEXT EXECUTN	next day (YYDDD) and time (HHMMSS) to run the command
#REM	number of remaining commands; if SKE repetitions is a 6-digit number, this will say MANY
INTERVAL	day and time interval between commands; the format is DDHH:MM:SS, entered by SKE <i>interval</i> where <i>interval</i> is 1 hour; if <i>interval</i> is 24, this output is listed as 1000000 (1 day)
TOL	late tolerance time, HH:MM:SS; any entry over 9 hours is listed as BIG
NAME	user who created the entry
PROJ	project number
COMMAND TEXT	command to run

Examples

SKL

This entry lists all time scheduler entries for the current terminal.

SKL 420 430 PROJ=7000

This entry lists the scheduled commands on the current terminal for project 7000 between 420 and 430.

SKL TERM=70

This entry lists all schedule entries for terminal 70.

SKU

Time scheduler utility.

Formats

SKU *option bid eid [keywords]*
 SKU CHA *bid eid [keywords]* "*command*"
 SKU DOIT *bid eid*

Parameters

<i>option</i>	DEL	deletes an entry from the schedule
	REL	releases an entry so the command runs at the next scheduled time
	SUS	suspends an entry so the command will not run; this does not delete the entry from the scheduler
	CHA	changes an entry; depends on the keyword used
	DOIT	runs a schedule entry without decrementing the counters
<i>bid</i>		beginning time scheduler entry ID number
<i>eid</i>		ending ID number (default= <i>bid</i>)
<i>"command"</i>		new command or text to replace the current command

Keywords

NAME=	<i>old new</i>	changes the old user ID to the new user ID
PROJ=	<i>old new</i>	replaces the old project number with the new project number
TERM=		terminal number containing the schedule (default=current)

Remarks

To change a schedule entry, you must be logged on to the project number listed in the entry.

Use the DOIT option to test schedule entries.

The maximum number of McIDAS-MVS scheduler entries that can be scheduled is 800.

The maximum number of local scheduler entries that can be scheduled per workstation is 100.

Examples**SKU SUS 1001 1009 TERM=10**

This entry suspends schedule entries with IDs 1001 to 1009 at terminal number 10.

SKU CHA 1001 1009 PROJ=7000 5630

This entry changes schedule entries with IDs 1001 to 1009, running at your terminal under project 7000, to run under project 5630.

SKU DOIT 239

This entry runs the command scheduled in ID number 239. It neither changes the run time nor decreases the counter.

Example:
SKU SUB 1001 1000 THRM-13
This entry says the scheduled entries will be 1001 to 1000 at terminal
number 10.

SKU CDA 1001 1000 PROJ-1000 0000
This entry changes scheduled entries with ID's 1001 to 1000, running at
your terminal under project 1000, to run under project 0000.

SKU DOIT 338
This entry runs the command scheduled in ID number 338. It will first
change the run time not decrease the counter.

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1-2	Process a navigation file to obtain from the system navigation file	NE
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1-6	Calculate a navigation parameter from navigation file	NT
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1-9	Copy a control from one file to another	NCOY

ND

Deletes data from a navigation file.

Format

ND *option ssyyddd time code [keyword]*

Parameters

<i>option</i>	ALL	deletes all day and image dependent data (default)
	BLEG	deletes all B, L, E and G data
	B	deletes betas
	E	deletes earth edge
	G	deletes gamma
	L	deletes landmark
<i>ssyyddd</i>	sensor source, year and Julian day of the navigation, SSYYDDD or SSYY/MM/DD (default=ALL)	
<i>time</i>	time of the data (default=ALL)	
<i>code</i>	landmark code for deleting landmarks (default=ALL)	
	1	deletes the first beta
	2	deletes the second beta

Keyword

NAVF= navigation file to delete data from (default=current)

Remarks

You cannot specify NAVF=1, as file 1 is the system navigation file and cannot be altered.

Use this command with GOES and POES data only.

See Also

Use NVU SET to point to a different navigation file.

Examples

ND ALL

This entry deletes all data from the current navigation file.

ND B 2892265 12:30 1 NAVF=4

This entry deletes the first beta for sensor source 28, day 92265 at 1230 UTC from navigation file 4.

ND ALL 1892100

This entry deletes all navigation from the current navigation file for sensor source 18, day 92100.

NK

Creates a navigation codicil from the system navigation file.

Format

NK *ssyyddd time type [keywords]*

Parameters

ssyyddd sensor source, year and Julian day, SSYYDDD

time image time, HH:MM:SS; do not specify with keyword SENS

type **T** creates a ticketed navigation codicil (default)
M creates a master navigation codicil

Keywords

AREA= area number to assign to the codicil; you must specify this number when using keyword SENS

NAVF= navigation file number

SENS= **AVHRR** POES AVHRR sensor data (default)
ERB POES ERB sensor data
HIRS POES HIRS sensor data
MSU POES MSU sensor data

UPDATE= *bday btime eday etime tinc*
 creates master navigation codicils only; do not specify with keyword SENS

bday beginning day, SSYYDDD
 (default=original SSYYDDD)

btime beginning time, HH:MM:SS (no default)

eday ending day, SSYYDDD

etime ending time, HH:MM:SS (no default)

tinc time increment (default=:30)

Remarks

The current system navigation file, set by command NVU, is the source file. If type T is specified, the string NAVNUM is filled with the ticket value assigned to the navigation codicil and placed in your string table. POES navigation parameters are also read from the current system navigation file. Keyword AREA is mandatory for POES, but the image time and keyword UPDATE are not used.

Use this command with GOES and POES data only.

Examples**NK 3092255 11:30**

This entry generates a ticketed navigation codicil for sensor source 30, day 92255 at 11:30 UTC. The data is from the current system navigation file.

NK 6090030 AREA=2500 SENS=MSU

This entry generates a ticketed navigation codicil for area 2500 containing MSU data, sensor source 60, day 90030. The data is from the current system navigation file.

NKAREA

Assigns a navigation codicil to areas.

Format **NKAREA** *barea earea [keyword]*

Parameters *barea* beginning area number (no default)

earea ending area number (default=*barea*)

Keyword **MAX=** maximum number of areas (default=16)

Remarks You cannot specify the navigation file. Use **NVU SET** to point to the file. Areas that do not exist in sequence are skipped.

Keyword **MAX** is a safety feature to prevent unintentional overwriting of navigation codicils.

Use this command with **GOES** and **POES** data only.

Examples

NKAREA 5000

This entry files a navigation codicil for area 5000.

NKAREA 6530 6540

This entry files navigation codicils for areas 6530 through 6540.

NL

Lists the data in a navigation file.

Format

NL *option ssyyddd eptime [keywords]*

Parameters

option **ALL** lists day and image dependent data (default)
 B lists betas
 DAY lists orbital information
 E lists earth edge
 G lists gammas
 L lists landmarks

ssyyddd sensor source number, year and Julian day to list,
 SSYYDDD

eptime epoch time to list, HH:MM:SS (default=0)

Keywords

NAVF= navigation file number (default=current)

TIME= *beg end* range of times to list, HH:MM:SS (default=0)

Remarks

Use this command with GOES and POES data only.

Examples

NL ALL

This entry lists all the data in the current navigation file.

NL DAY 3290200

This entry lists the orbital information in the current navigation file for sensor source 32, day 90200.

NL B 3290200 TIME=12 15

This entry lists the betas in the current navigation file from 12 UTC to 15 UTC for sensor source 32, day 90200.

NLC

Lists navigation parameters from a navigation codicil.

Formats

NLC *ssyyddd time* **CHEB**

NLC *ticket* **0**

Parameters

ssyyddd sensor source, year and Julian day, SSYYDDD

time time, HH:MM:SS

CHEB lists Chebyshev codicils

ticket **0** ticket number of the codicil parameters to list; the zero is mandatory

Remarks

Use this command with GOES and POES data only.

To list codicil ticket numbers, enter: **LA area FORM=ALL**. The number is listed after **PRIMARY=**.

Examples

NLC 2892365 12:01

This entry lists the navigation parameters for sensor source 28, day 92365 at 1201 UTC.

NLC 62543 0

This entry lists the navigation parameters for ticketed codicil number 62543.

NT

Calculates a navigation transformation from the system navigation files.

Formats

NT ANG *ssyyddd time lat lon [keywords]*
 NT ES *ssyyddd time lat lon [keywords]*
 NT ROT *ssyyddd time*
 NT SE *ssyyddd time line ele [keywords]*
 NT SP *ssyyddd time*

Parameters

ANG zenith angle transformation

ES earth to satellite transformation

ROT satellite rotation transformation

SE satellite to earth transformation

SP sub-satellite position transformation

ssyyddd sensor source, year and Julian day, SSYYDDD

time time, HH:MM:SS

lat latitude

lon longitude

line line coordinate

ele element coordinate

Keywords

N= *n1 n2* *n1* is number of calculations between lines or latitudes; *n2* is the number of calculations between elements or longitudes

THRU= *elat elon* calculates the conversion through this ending latitude and longitude; use with parameters ANG and ES

eline eele calculates the conversion through this ending line and element; use with parameter SE

Remarks

Command NT uses the system navigation file. The keywords allow you to make transformations over a whole grid of points rather than just one.

The beginning points of the range are given by positional parameters *lat*, *lon*, *line* and *ele*. The ending points of the range are specified with keyword THRU. The number of calculations is specified with keyword N.

Use this command with GOES data only.

Example

NT ES 3093006 0 45 -89 THRU=50 99 N=6 3

This entry calculates earth to satellite transformations using the system navigation file data from sensor source 30 for day 93006 at 0 UTC. It makes 18 (3 x 6) transformations: 6 between latitudes 45 and 50 (every degree) and 3 between longitudes 89 and 99 (every 5 degrees).

NTC

Calculates a transformation from a navigation codicil.

Formats

NTC ES *primary secondary lat lon*

NTC SE *primary secondary line ele*

Parameters

ES earth to satellite transformation

SE satellite to earth transformation

primary sensor source, year and Julian day, SSYYDDD, or the codicil ticket number; see the Remarks

secondary time of the data, HH:MM:SS
0 for a ticketed codicil

lat latitude

lon longitude

line line coordinate

ele element coordinate

Remarks

This command can be used on any projection, e.g., SAT, PS, Mercator, etc.

To list codicil ticket numbers, enter: LA *area* FORM=ALL. The number is listed after PRIMARY=.

Commands NTC and NT calculate navigation transformations. NTC calculates transformations from a navigation codicil; NT calculates them from the system navigation file.

Examples

NTC ES 2893100 12 36 90

This entry calculates an earth to satellite transformation using codicil data from sensor source 28 for day 93100, 12 UTC at 36°N and 90°W.

NTC SE 74769 0 10010 20000

This entry calculates a satellite to earth transformation using codicil ticket number 74769 data at line 10010 and element 20000.

NVU

Navigation file utility.

Formats

NVU LIST *[keywords]*

NVU SET *file*

Parameters

LIST lists the navigation file entries (default)

SET sets the navigation file pointer

file navigation file number to set

Keywords

SS= sensor source number

YY= year of the navigation contained in the file

Remarks

Users cannot generate or delete navigation files on McIDAS-MVS.

Examples

NVU

This entry lists the navigation file entries in the current navigation file.

NVU LIST SS=20

This entry lists the navigation entries in the current navigation file for sensor source 20.

NXCOPY

Copies a codicil from one type to another.

Format

NXCOPY *intype inkey1 inkey2 outtype outkey1 outkey2*

Parameters

intype **AREA** input area codicil
 GRAF input graphics codicil
 GRAV input virtual graphics codicil
 NAV input navigation codicil

inkey1 primary key for the input codicil; see the Remarks for the formats

inkey2 secondary key for the input codicil; see the Remarks for the formats

outtype output navigation codicil type; same options as *intype*

outkey1 primary key for the output codicil
 T ticketed codicil; do not enter *outkey2*

outkey2 secondary key for the output codicil; not used for ticketed codicils

Remarks

The formats for *inkey1* and *inkey2* are shown below.

Codicil Type	Primary Key	Secondary Key
AREA	area number	CALB (calibration type)
AREA	area number	CDnn (card image) nn=1 to 99, allowing for 99 card codicils
GRAF	ttffff (terminal and frame number)	scene
GRAV	ttffff (terminal and frame number)	scene
NAV	SSYYDDD	HHMMSS
NAV	ticket number	0

For ticketed navigation codicils, the ticket number is a number from 1 to 99999 that guarantees uniqueness.

See Also

Use command NXU to list and modify codicils. Use command NK to create navigation codicils.

Examples

NXCOPY NAV 3292300 120100 NAV T

This entry creates a ticketed navigation codicil from a master navigation codicil for sensor source 32, day 92300 at 12:01 UTC.

Use the series of examples below to copy a graphics codicil to a ticketed navigation codicil for use with an area.

EG

This entry erases the graphics.

MAP MID

This entry draws a map of the midwestern USA.

LG

This entry finds the graphics codicil keys.

NXCOPY GRAF ttffff 1 NAV T

This entry copies a graphics codicil as a ticketed navigation codicil, so the navigation can be assigned to an area. The *inkey1* value, entered in the format *ttffff* is taken from the LG output display in the previous command.

CA 5728 NAV=#NAVNUM

This entry changes the area 5728 parameters in the directory to the copied parameters of the ticketed navigation codicil. The ticket number is filed in the string NAVNUM.

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Appendix A

Data Storage and File Allocation

SSEC's McIDAS-MVS can have 32,000 areas and 32,000 grid files and MD files. The actual maximum allowed is a site tailored option; contact your operators to request your system's maximum permitted area, MD file and grid file numbers. Typically, a block of 16 numbers is assigned to a project number or user for data storage. Do not attempt to store data in numbers other than your own, as you may ruin another user's data. The computer operators can assign protection for your numbers.

Numbers 1 to 1999 are reserved for system operations. The location of real-time area, MD file and grid file numbers on SSEC's McIDAS-MVS changes periodically. SSEC operations maintains a set of LW files that describe the data and its location. The set of LW files is listed in the daily logon message. To see the daily logon message, enter: **.SEE LOGON**.

Bands for Satellite Areas

The bands for real-time satellite areas are described below. 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 Image

Satellites	GOES-8 and GOES-9
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
Area Type
Instrument
Resolution

GOES-8 and GOES-9
Sounding
Sounder
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 ₂ O	733	850	Sounding; mid-level temperature
5	13.4	CO ₂ ; H ₂ O	748	900	Sounding; low-level temperature
6	12.7	H ₂ O	790	Surface	Sounding; total precipitable water
7	12.0	H ₂ O	832	Surface	Surface temperature and moisture
8	11.0	H ₂ O	907	Surface	Surface temperature
9	9.7	O ₃	1030	25	Total ozone
10	7.4	H ₂ O	1345	725	Low-level moisture
11	7.0	H ₂ O	1425	550	Sounding; mid-level moisture
12	6.5	H ₂ O	1535	350	Sounding; upper-level moisture
13	4.6	N ₂ O	2188	1000	Temperature; low-level temperature
14	4.5	N ₂ O	2210	950	Sounding; mid-level temperature
15	4.4	CO ₂ ; N ₂ O	2248	650	Sounding; upper-level temperature
16	4.1	CO ₂	2420	Surface	Sounding; boundary layer temperature
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
Area Types
Instrument
Resolution

GOES-6 and GOES-7
VIS, IR, MSI, Dwell Sounding
VAS
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 ₂ O	850	Temperature sounding
7	12.7 (IR)	H ₂ O	1000	Water vapor detection
8	11.2 (IR)	Window	Surface	Nighttime cloud detection, surface temp
9	7.3 (IR)	H ₂ O	600	Water vapor detection
A(10)	6.7 (IR)	H ₂ O	400	Water vapor detection
B(11)	4.4 (IR)	CO ₂ , N ₂ O	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 14 (currently NOAA-12 and 14)
 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.

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 ₂ O	800	Temperature sounding
7	13.3 (IR)	CO ₂ , H ₂ O	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 ₂ O	900	Water vapor detection; NOAA-6 through 10 and 12
	12.5 (IR)	H ₂ O	Surface	Water vapor detection; NOAA-11 and 14
11	7.3 (IR)	H ₂ O	700	Water vapor detection
12	6.8 (IR)	H ₂ O	500	Water vapor detection
13	4.57 (IR)	N ₂ O	1000	Temperature sounding
14	4.52 (IR)	N ₂ O	950	Temperature sounding
15	4.47 (IR)	CO ₂ , N ₂ O	700	Temperature sounding
16	4.4 (IR)	CO ₂ , N ₂ O	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

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 115 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-5 (currently M-3, M-4 and M-5)
 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 SS 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
1	11.5 (IR)	*** Raw Ingest Bands *** Nighttime cloud detection, surface temperatures Not displayed; ingest documentation Daytime cloud detection
4	Documentation	
14	0.63 (VIS)	
1	0.63 (VIS)	*** Converted Bands *** Daytime cloud detection Nighttime cloud detection, surface temperatures
8	11.5 (IR)	

Satellites GMS-4 through GMS-8 with SS numbers 82 through 86
 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 temperatures
3	12.0 (IR)	Sea surface temperatures, soil moisture
4	6.8 (IR)	Water vapor detection
5	Documentation	Not displayed; ingest documentation

Terms

Term	Definition
absorbing gases	primary gases which 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
sounding level	average level where most of the radiant energy sensed by the satellite originates, assuming a cloud-free atmosphere
uses	examples of how a band is used in physical applications
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 B

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
41	TIROS-N (POES)
42	NOAA-6
43	NOAA-7
44	NOAA-8
45	NOAA-9
46	Venus
47	Voyager 1
48	Voyager 2

Number	Sensor Source
49	Galileo
50	Hubble ST
54	METEOSAT 3
55	METEOSAT 4
56	METEOSAT 5
60	NOAA-10
61	NOAA-11
62	NOAA-12
63	NOAA-13
64	NOAA-14
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
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

Appendix C

Meteorological Parameters

The parameters below are primarily used in Chapter 9, *Weather Analysis*, and other applications.

Parameter	Definition
ABV	absolute vorticity
ADV	advection
CLD	cloud cover
DSH	deformation due to shear
DST	deformation due to stretching
DVG	divergence
GEO	geostrophic wind
GUS	wind gusts
ID	3-letter identification
IDN	5-digit identification
MIX	mixing ratio
P	pressure
PCP	precipitation total
PLOT	plot station model
PSL	surface pressure
SND	snow cover
SPD	wind speed
STR	streamlines
T	temperature
TD	dew point
THA	theta
THAE	theta-E
VIS	visibility
VOR	vorticity
WIN	wind
WNF	wind flags
WNV	wind vector
WX	weather
Z	height
ZCH	high cloud height
ZCL	low cloud height
ZCM	middle cloud height
ZS	station elevation

Append ADV or DVG to any parameter for advection or divergence.

Appendix D

Stability Indices

Below are the indices calculated by commands STAB, STABIL, STUVE and SKEWT, which are documented in Chapter 9.

Indices	STAB and STABIL Schema Names	STUVE	SKEWT	UNITS
convective temperature	TCON	CONV-T	CVT	K x 100
equilibrium pressure level	PEQU	EQUIP	EQUIP	mb x 100
forecast maximum temperature	FMAX	FMAX	FMAX	K x 1000
K index	KINX		KINX	x100
lifted index	LI*	LI	LI	x100
parcel dew point	TDP	Kx100		
parcel equivalent potential temperature	THEP			K x 100
parcel mixing ratio parcel potential	MIXP			K x 100
temperature	THAP			K x 100
precipitable water	WV*	PW	PW	mm
sweat index	SWET*			x100
totals index	TOT*	TOTALS	TOTAL	x100

* plotted by STABIL in a station model

Stability Parameters

TOTAL

TOTAL is the Total Totals Index. It is the sum of the Vertical Totals (VT) and Cross Totals (CT). $TOTAL = \text{Vertical Totals} + \text{Cross Totals} = (850 \text{ mb TEMP} + 850 \text{ mb DEW POINT}) - 2 (500 \text{ mb TEMP})$.

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 temperature difference between the parcel and the 500 mb temperature is the LI.

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. $KINX = (850 \text{ TEMP} - 500 \text{ TEMP}) + 850 \text{ DEW POINT} - 700 \text{ DEW POINT DEPRESSION}$.

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 **UL LIST station OPT=7**.

Appendix E

Julian Day Numbers

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

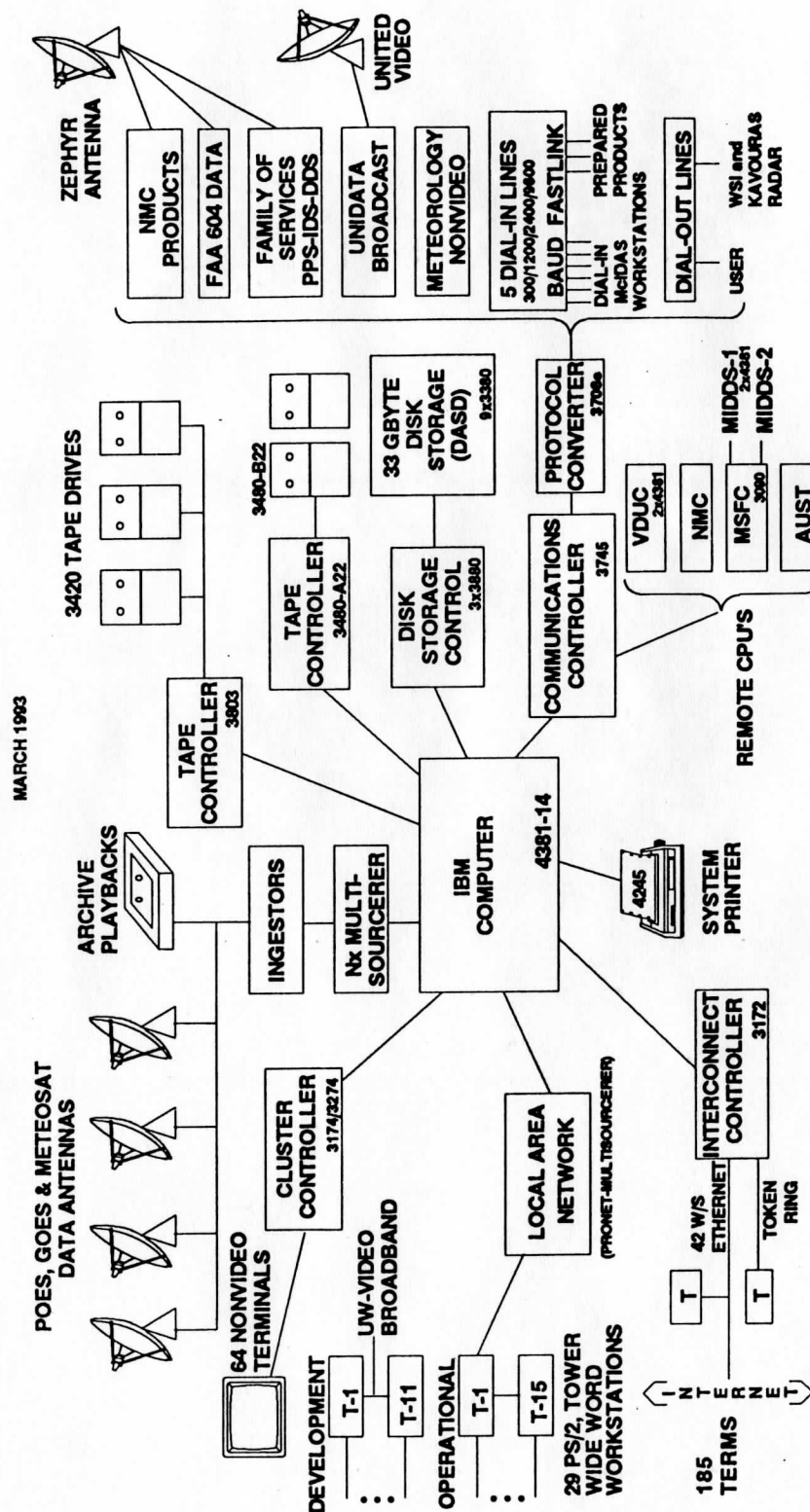
Appendix E Julian Day Numbers

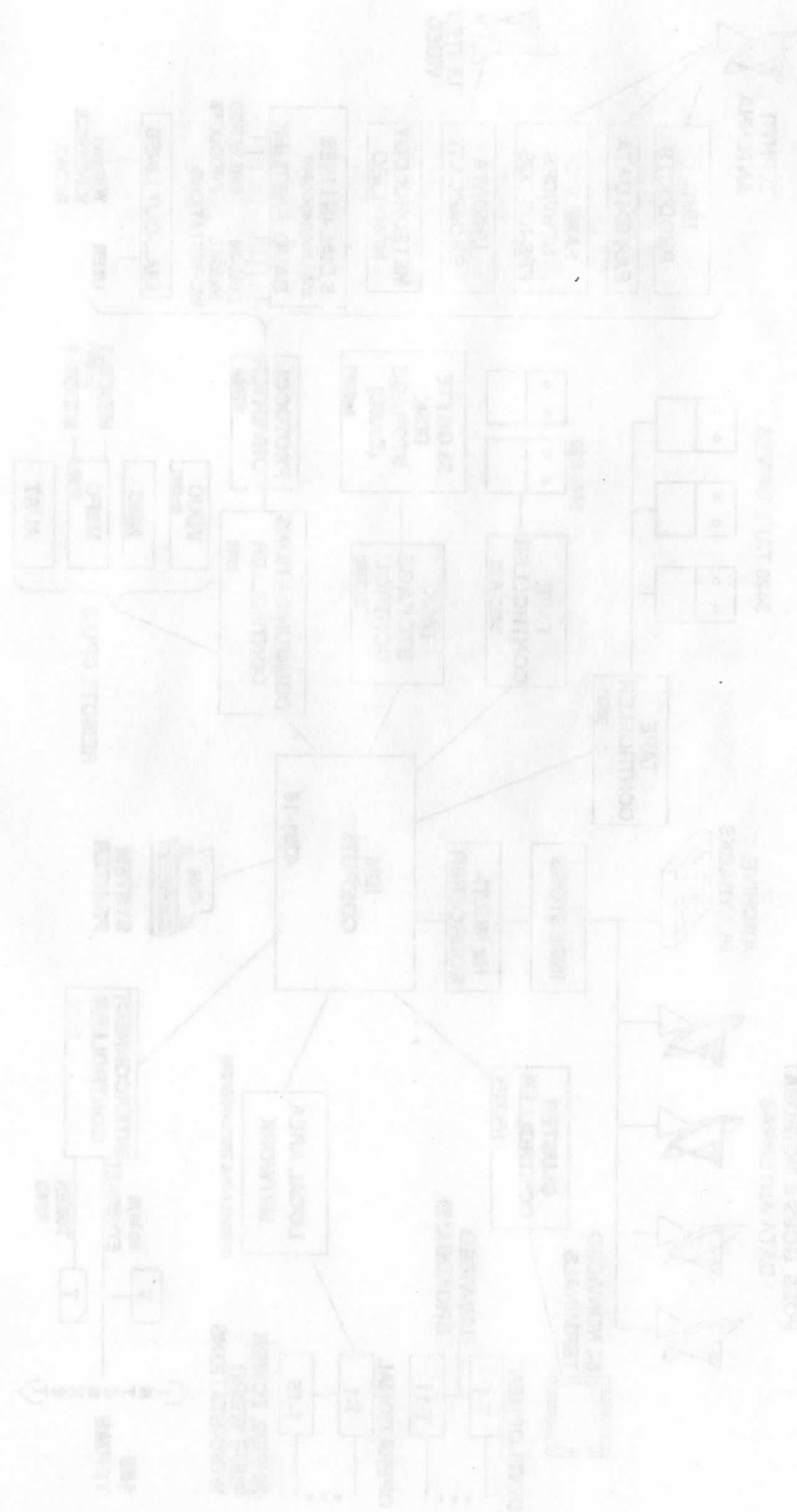
The chart below shows the conversion from calendar date to Julian Day Number (JDN) and vice versa.

Year	Month	Day	JDN	Year	Month	Day	JDN
1970	1	1	2400000.5	1970	12	31	2400000.5
1970	1	2	2400001.5	1970	12	30	2399999.5
1970	1	3	2400002.5	1970	12	29	2399998.5
1970	1	4	2400003.5	1970	12	28	2399997.5
1970	1	5	2400004.5	1970	12	27	2399996.5
1970	1	6	2400005.5	1970	12	26	2399995.5
1970	1	7	2400006.5	1970	12	25	2399994.5
1970	1	8	2400007.5	1970	12	24	2399993.5
1970	1	9	2400008.5	1970	12	23	2399992.5
1970	1	10	2400009.5	1970	12	22	2399991.5
1970	1	11	2400010.5	1970	12	21	2399990.5
1970	1	12	2400011.5	1970	12	20	2399989.5
1970	1	13	2400012.5	1970	12	19	2399988.5
1970	1	14	2400013.5	1970	12	18	2399987.5
1970	1	15	2400014.5	1970	12	17	2399986.5
1970	1	16	2400015.5	1970	12	16	2399985.5
1970	1	17	2400016.5	1970	12	15	2399984.5
1970	1	18	2400017.5	1970	12	14	2399983.5
1970	1	19	2400018.5	1970	12	13	2399982.5
1970	1	20	2400019.5	1970	12	12	2399981.5
1970	1	21	2400020.5	1970	12	11	2399980.5
1970	1	22	2400021.5	1970	12	10	2399979.5
1970	1	23	2400022.5	1970	12	9	2399978.5
1970	1	24	2400023.5	1970	12	8	2399977.5
1970	1	25	2400024.5	1970	12	7	2399976.5
1970	1	26	2400025.5	1970	12	6	2399975.5
1970	1	27	2400026.5	1970	12	5	2399974.5
1970	1	28	2400027.5	1970	12	4	2399973.5
1970	1	29	2400028.5	1970	12	3	2399972.5
1970	1	30	2400029.5	1970	12	2	2399971.5
1970	1	31	2400030.5	1970	12	1	2399970.5
1970	2	1	2400031.5	1970	11	30	2399969.5
1970	2	2	2400032.5	1970	11	29	2399968.5
1970	2	3	2400033.5	1970	11	28	2399967.5
1970	2	4	2400034.5	1970	11	27	2399966.5
1970	2	5	2400035.5	1970	11	26	2399965.5
1970	2	6	2400036.5	1970	11	25	2399964.5
1970	2	7	2400037.5	1970	11	24	2399963.5
1970	2	8	2400038.5	1970	11	23	2399962.5
1970	2	9	2400039.5	1970	11	22	2399961.5
1970	2	10	2400040.5	1970	11	21	2399960.5
1970	2	11	2400041.5	1970	11	20	2399959.5
1970	2	12	2400042.5	1970	11	19	2399958.5
1970	2	13	2400043.5	1970	11	18	2399957.5
1970	2	14	2400044.5	1970	11	17	2399956.5
1970	2	15	2400045.5	1970	11	16	2399955.5
1970	2	16	2400046.5	1970	11	15	2399954.5
1970	2	17	2400047.5	1970	11	14	2399953.5
1970	2	18	2400048.5	1970	11	13	2399952.5
1970	2	19	2400049.5	1970	11	12	2399951.5
1970	2	20	2400050.5	1970	11	11	2399950.5
1970	2	21	2400051.5	1970	11	10	2399949.5
1970	2	22	2400052.5	1970	11	9	2399948.5
1970	2	23	2400053.5	1970	11	8	2399947.5
1970	2	24	2400054.5	1970	11	7	2399946.5
1970	2	25	2400055.5	1970	11	6	2399945.5
1970	2	26	2400056.5	1970	11	5	2399944.5
1970	2	27	2400057.5	1970	11	4	2399943.5
1970	2	28	2400058.5	1970	11	3	2399942.5
1970	2	29	2400059.5	1970	11	2	2399941.5
1970	2	30	2400060.5	1970	11	1	2399940.5
1970	2	31	2400061.5	1970	10	31	2399939.5
1970	3	1	2400062.5	1970	10	30	2399938.5
1970	3	2	2400063.5	1970	10	29	2399937.5
1970	3	3	2400064.5	1970	10	28	2399936.5
1970	3	4	2400065.5	1970	10	27	2399935.5
1970	3	5	2400066.5	1970	10	26	2399934.5
1970	3	6	2400067.5	1970	10	25	2399933.5
1970	3	7	2400068.5	1970	10	24	2399932.5
1970	3	8	2400069.5	1970	10	23	2399931.5
1970	3	9	2400070.5	1970	10	22	2399930.5
1970	3	10	2400071.5	1970	10	21	2399929.5
1970	3	11	2400072.5	1970	10	20	2399928.5
1970	3	12	2400073.5	1970	10	19	2399927.5
1970	3	13	2400074.5	1970	10	18	2399926.5
1970	3	14	2400075.5	1970	10	17	2399925.5
1970	3	15	2400076.5	1970	10	16	2399924.5
1970	3	16	2400077.5	1970	10	15	2399923.5
1970	3	17	2400078.5	1970	10	14	2399922.5
1970	3	18	2400079.5	1970	10	13	2399921.5
1970	3	19	2400080.5	1970	10	12	2399920.5
1970	3	20	2400081.5	1970	10	11	2399919.5
1970	3	21	2400082.5	1970	10	10	2399918.5
1970	3	22	2400083.5	1970	10	9	2399917.5
1970	3	23	2400084.5	1970	10	8	2399916.5
1970	3	24	2400085.5	1970	10	7	2399915.5
1970	3	25	2400086.5	1970	10	6	2399914.5
1970	3	26	2400087.5	1970	10	5	2399913.5
1970	3	27	2400088.5	1970	10	4	2399912.5
1970	3	28	2400089.5	1970	10	3	2399911.5
1970	3	29	2400090.5	1970	10	2	2399910.5
1970	3	30	2400091.5	1970	10	1	2399909.5
1970	3	31	2400092.5	1970	9	30	2399908.5
1970	4	1	2400093.5	1970	9	29	2399907.5
1970	4	2	2400094.5	1970	9	28	2399906.5
1970	4	3	2400095.5	1970	9	27	2399905.5
1970	4	4	2400096.5	1970	9	26	2399904.5
1970	4	5	2400097.5	1970	9	25	2399903.5
1970	4	6	2400098.5	1970	9	24	2399902.5
1970	4	7	2400099.5	1970	9	23	2399901.5
1970	4	8	2400100.5	1970	9	22	2399900.5
1970	4	9	2400101.5	1970	9	21	2399899.5
1970	4	10	2400102.5	1970	9	20	2399898.5
1970	4	11	2400103.5	1970	9	19	2399897.5
1970	4	12	2400104.5	1970	9	18	2399896.5
1970	4	13	2400105.5	1970	9	17	2399895.5
1970	4	14	2400106.5	1970	9	16	2399894.5
1970	4	15	2400107.5	1970	9	15	2399893.5
1970	4	16	2400108.5	1970	9	14	2399892.5
1970	4	17	2400109.5	1970	9	13	2399891.5
1970	4	18	2400110.5	1970	9	12	2399890.5
1970	4	19	2400111.5	1970	9	11	2399889.5
1970	4	20	2400112.5	1970	9	10	2399888.5
1970	4	21	2400113.5	1970	9	9	2399887.5
1970	4	22	2400114.5	1970	9	8	2399886.5
1970	4	23	2400115.5	1970	9	7	2399885.5
1970	4	24	2400116.5	1970	9	6	2399884.5
1970	4	25	2400117.5	1970	9	5	2399883.5
1970	4	26	2400118.5	1970	9	4	2399882.5
1970	4	27	2400119.5	1970	9	3	2399881.5
1970	4	28	2400120.5	1970	9	2	2399880.5
1970	4	29	2400121.5	1970	9	1	2399879.5
1970	4	30	2400122.5	1970	8	31	2399878.5
1970	4	31	2400123.5	1970	8	30	2399877.5
1970	5	1	2400124.5	1970	8	29	2399876.5
1970	5	2	2400125.5	1970	8	28	2399875.5
1970	5	3	2400126.5	1970	8	27	2399874.5
1970	5	4	2400127.5	1970	8	26	2399873.5
1970	5	5	2400128.5	1970	8	25	2399872.5
1970	5	6	2400129.5	1970	8	24	2399871.5
1970	5	7	2400130.5	1970	8	23	2399870.5
1970	5	8	2400131.5	1970	8	22	2399869.5
1970	5	9	2400132.5	1970	8	21	2399868.5
1970	5	10	2400133.5	1970	8	20	2399867.5
1970	5	11	2400134.5	1970	8	19	2399866.5
1970	5	12	2400135.5	1970	8	18	2399865.5
1970	5	13	2400136.5	1970	8	17	2399864.5
1970	5	14	2400137.5	1970	8	16	2399863.5
1970	5	15	2400138.5	1970	8	15	2399862.5
1970	5	16	2400139.5	1970	8	14	2399861.5
1970	5	17	2400140.5	1970	8	13	2399860.5
1970	5	18	2400141.5	1970	8	12	2399859.5
1970	5	19	2400142.5	1970	8	11	2399858.5
1970	5	20	2400143.5	1970	8	10	2399857.5
1970	5	21	2400144.5	1970	8	9	2399856.5
1970	5	22	2400145.5	1970	8	8	2399855.5
1970	5	23	2400146.5	1970	8	7	2399854.5
1970	5	24	2400147.5	1970	8	6	2399853.5
1970	5	25	2400148.5	1970	8	5	2399852.5
1970	5	26	2400149.5	1970	8	4	2399851.5
1970	5	27	2400150.5	1970	8	3	2399850.5
1970	5	28	2400151.5	1970	8	2	2399849.5
1970	5	29	2400152.5	1970	8	1	2399848.5
1970	5	30	2400153.5	1970	7	31	2399847.5
1970	5	31	2400154.5	1970	7	30	2399846.5
1970	6	1	2400155.5	1970	7	29	2399845.5
1970	6	2	2400156.5	1970	7	28	2399844.5
1970	6	3	2400157.				

Appendix F

SSEC McIDAS Configuration





Appendix G

WSI Radar

Weather Services International (WSI) provides radar data (NOWrad) for McIDAS. WSI collects data from National Weather Service radar sites and combines these data into a composite image.

Composite Radar Images Available

WSI produces the nine composite radar images described below. WSI takes 5 to 10 minutes after it collects the data to create a composite radar image.

- 4-bit data, which is available for operational use, is generated at 15-minute intervals (0, 15, 30 and 45 minutes past the hour). The image has a 4 km resolution and is 240 lines by 378 pixels.
- 8-bit data, which is also available for operational use, is generated at 5-minute intervals. The image has a 2 km resolution and is 480 lines by 756 pixels.
- USA national precipitation summaries are generated every 30 minutes. The image has a 16 km resolution and is 240 lines by 378 pixels.
- GOES IR satellite photos with superimposed radar echoes are generated 25 to 30 minutes past the time data is collected. They have an 8 km resolution and are 480 lines by 756 pixels.
- The precipitation summary for the current day since 12Z has a 16 km resolution and is 240 lines by 378 pixels.
- Yesterday's 12Z to 12Z precipitation summary includes the current day's precipitation since 12Z, has a 16 km resolution and is 240 lines by 378 pixels.
- The precipitation composite for the last 7 complete days (week) has a 16 km resolution and is 240 lines by 378 pixels.
- Month-to-date precipitation composite images have a 16 km resolution and are 240 lines by 378 pixels.
- Year-to-date precipitation composite images have a 16 km resolution and are 240 lines by 378 pixels.

Image Display

WSI data uses the 32 color levels defined below. They are listed in the output from command D under column RAW.

Color level	Definition
0	water
1	land
2	borders
3	special basemap borders
4	airport identifiers
5	warning boxes
6 and 7	reserved or not used
8	missing indicators and warning box borders
9	site present indicators and radar site identifiers
10 to 15	reserved or not used
16 to 31	precipitation levels 0 to 15, which correspond to scaled dBZ values from < 5 to 75

WSI calibration modules modify color levels 16 to 31 into the standard 7 precipitation levels (VIPs 0 through 6). The table below lists the VIP levels corresponding to the 0 to 75 dBZ precipitation ranges and the 0 to 255 McIDAS gray levels. WSI color levels 0 to 15 are assigned VIP level 0.

Feature/VIP level	dBZ values	McIDAS gray level (8-bit data)
water	-----	0
land	-----	16
basemap borders	-----	32
interstate highways	-----	48
site missing	-----	96
radar IDs	-----	112
site present	-----	112
1	1-29	136-168
2	30-40	176-184
3	41-45	192
4	46-49	200
5	50-57	208
6	> 57	213-255
annotation line		~232

Use commands DF, AA, AAMAP, etc., to display WSI data. If you specify maps and borders for the 4- and 8-bit regional composites in the scheduler program RADE, they become part of the image and are subject to shading and enhancing with commands such as EU and EB. You are encouraged to develop enhancement tables for WSI images to highlight map features and precipitation echoes.

Appendix H

McBASl Editor and Interpreter for McIDAS-MVS

Use the McBASI Editor to edit card-image format (80 characters/line) LW files and McBASI files from a McIDAS workstation.

Editor instructions begin with a backslash (\) to distinguish them from McIDAS commands. Assigned line numbers permit you to direct commands to a specific line.

McBASl also has an online BASIC language Interpreter. The Editor and Interpreter are easily accessible. You can switch between them without specifying a program. If the Editor can't execute a command, it sends it to the Interpreter.

This appendix contains:

- McBASI Interpreter commands and reserved words
- McBASI Editor commands
- McBASI sample programs
- a McBASI practice session

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 and syntax. Some have examples.

CLOSE

Frees the I/O table entry for the specified *unit* (LW file). A maximum of 10 files are active at once.

Syntax: **CLOSE *unit***

where *unit* is any valid numeric expression associated with an LW file by a previous OPEN command.

Example: **CLOSE 10**

where 10 is the *unit* number associated with an LW file by a prior OPEN command.

GOSUB

Changes the normal downward flow of control. This command is like GOTO, except control may be returned to the statement following the GOSUB by executing a RETURN statement.

Syntax: **GOSUB *x***

where *x* is any valid numeric expression.

Example: **100 GOSUB 1000**

**.
. .
.**

**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***

where *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, e.g., **IF X+13>Y-9 GOTO 310**. If several statements are used, either all are done (if the relationship is true) or none are done (if the relationship is false). To compare character strings, use only the = and < > relational operators. If statement is a let statement, i.e., a replacement statement, use the command LET.

Syntax: **IF** *expr* *relop* *expr* *statement*

where: *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

Example: **IF X=8 LET Y=13:LET J=9:GOTO 890**

In this example, if X=8 is true, both LET statements and the GOTO statement are executed.

INPUT

Allows data to be gathered from either an LW file or RUN statement. The input statement for LW files is restricted; only one character variable may be designated and an entire 80-character record from the file will be read into this variable. The syntax of this LW file input is shown below.

Syntax: **INPUT** @*u*(*r*) , *A\$*

where: *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

This form of INPUT is useful for reading output produced by commands that use the DEV=F (device=file) keyword to direct their output into an LW file. To set the LW file pointer to the top of the file, rather than continuing down the file, use: **DEV=F file R**.

The syntax of the INPUT statement used to obtain values from the RUN statement is shown below.

Syntax: **INPUT** *a,b,c*

where *a,b,c* are the variables.

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.

Example: **INPUT @3, A\$**
IF MID\$(A\$,1,4)=EOF\$ GOTO xxx

This example tests for an end-of-file, using the pseudovisible EOF\$.

KEYIN

Submits a McIDAS command to be executed. The syntax is the same as the PRINT statement.

Syntax: **KEYIN list**
where *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 you've entered another KEYIN statement.

Example: **LET A\$="MSN"**
LET T= 12.0
KEYIN "SL A ";
KEYIN A\$;
KEYIN " ";T

This example submits the command: **SL A MSN 12**

LET Creates a replacement statement in a McBASI program.

Syntax: **LET** *var* = *expr*

where: *var* variable for numeric quantities; 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., pseudovvariable TIMES\$

The hexadecimal constant \$nnnn is available, e.g., \$FE equals 254. A single array is also available; ten 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.

OPEN

Logically equates a *unit* number with the name of an LW file for INPUT and OUTPUT. 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.

When using the OPEN statement to read the output from a command created with a DEV=F keyword, use the pseudovvariable TFILE\$ in place of the *filename*.

Syntax: **OPEN** *filename,unit*

where: *filename* valid string expression, less than 13 characters
unit any valid numeric expression

Example: **OPEN** "YYEXPLE",10

PRINT

Displays command text on your workstation. When developing programs that generate commands, use the PRINT statement for testing. This allows you to see the would-be command text on your workstation. The PRINT statement is identical in structure to the KEYIN statement.

Syntax: **PRINT** *list*

where *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.

Output may be directed to an LW file in card image format (80 characters per record). If the print line is less than 80 characters, it is blank padded. If it is more than 80, it is truncated. This file directed form of the PRINT statement has the following syntax.

Syntax: **PRINT** @*u*(*r*),*list*

where: *u* numeric expression for the unit number; @ is required
r numeric expression used to specify the record number which begins with zero; parentheses are required; 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 (*for do not print this yet*), the @*u*(*r*) clause is ignored

Example: **LET X=123**
LET A\$="MSN"
LET T= 12.0
PRINT "this is a test ";X;
KEYIN "SL A ";
PRINT " of the ",
KEYIN A\$;
PRINT " print statement"
KEYIN " ";T

This example produces the following print line:

this is a test 123 of the	print statement
---------------------------	-----------------

It also submits the command: **SL A MSN 12.**

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.

Example: **LPRINT list**

This entry sends output directly to the local printer

The question mark (?) may be used in place of the PRINT statement. For example, these two statements are equivalent:

? "A=";A

PRINT "A=";A

REM

Adds comments or inserts a help into your program. Remarks (REMs) do not affect the flow of the program.

Syntax: **REM comment**

Examples: **REM ?**

REM?

Use one of these examples to begin a help line, which can be listed using the standard McIDAS HELP command.

RETURN

Returns from a subroutine call; also see GOSUB.

Syntax: **RETURN**

RUN

Executes your McBASI program. Enter RUN without the backslash (\). RUN stands alone or can be used with a list of *parameters*. The RUN statement can be abbreviated; see the examples below.

Syntax: **RUN parameters FILE= CLEAR= VAR=**

where:	<i>parameters</i>	parameter values
	FILE=	runs a BSAVED program from a different file
	CLEAR=	suppresses initialization of all variables
	NO	variables retain previous values
	VAR=	variable's source
	SHARE	shares variables when one
		McBASl program RUNs another
	x	LW file to store the variables
		(different from the default
		assigned by terminal number)

Examples: **RUN parameters FILE=xxxxxx**

'xxxxxx parameters

where xxxxxx is the file name (limited to 6 characters). These two RUN statements are interchangeable.

STOP

Stops your program; also stops by "falling off the end," completing the last line of a program.

Syntax: **STOP**

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)	trigonometric functions; x is an angle in radians;
TAN(x), ASIN(y)	the arc functions return values in radians
ACOS(y), ATAN(y)	
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)	locates 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)
TIMES	a pseudostring variable of length 6 which has the current time in the format HH:MM:SS
DATES	a pseudostring variable of length 5 which has the current date in the format YYDDD
DAYS	a pseudostring variable of length 6 which has the current date in the format YYMMDD
TFILE\$	a pseudostring variable of length 9; a temporary LW file named during execution of a BASIC program; it is deleted (via LWD) when the program terminates
EOF\$	a pseudostring variable; contains the universal value Z80808080
PEEK(x)	returns a value from User Common (UC) location x

Function	Meaning
PEEK\$(<i>x</i>)	returns a character string; PEEK assumes the UC word is integer and converts it to REAL*4; use command SHOWME DNUC ALL to list McIDAS User Common values
BIN(<i>string</i> \$())	the real number equivalent of the binary integer value in <i>string</i> \$(); assumes the first four bytes are an integer value (in binary)
CHR\$(<i>x</i>)	returns a string of length one which is equivalent to the EBCDIC code value <i>x</i>
KSYS(<i>x</i>)	returns the value from the System KeyTable location <i>x</i> ; the value in SYSKEY is assumed to be an integer and is converted to REAL*4
KSYS\$(<i>x</i>)	returns the value from the System KeyTable location <i>x</i> ; the value in SYSKEY is assumed to be a character string of length 4

McBASl Editor Commands

Use the following McBASI Editor commands to edit card-image LW files and BASIC files on a McIDAS workstation. They are listed alphabetically. The backslash preceding each command distinguishes McBASI Editor commands from McIDAS commands.

Each description contains the command's function and syntax. Some descriptions also provide examples.

\BLOAD

Copies the contents of BASIC file *filename* into the terminal buffer.

Syntax: \BLOAD *filename*

\BSAVE

Saves a BASIC format program by copying the contents of your terminal buffer to a special file for BASIC programs. BASIC programs can be run directly from this file.

Syntax: \BSAVE *filename*

If *filename* already exists, use the form: \BSAVE (D) *filename*.

\DELETE

Deletes a line or range of lines. \DELETE can be abbreviated to \DEL.; the period (.) is mandatory.

Syntax: **\DELETE line**
\DELETE bline,eline
\DELETE ,eline
\DELETE bline,
\DELETE

Examples: **\DEL . 25**

This entry deletes line 25.

\DEL . 10,45

This entry deletes lines 10 through 45.

\DELETE ,50

This entry deletes the current line through line 50.

\DELETE 1000,

This entry deletes from line 1000 to the end of the file.

\EDIT

Changes a string of characters into another string of characters. If you omit the line number specifications, the changes are made to every line in the file. EDIT is abbreviated as "\E."; see the examples.

Syntax: **\EDIT line /oldstring/newstring/**
\EDIT bline,eline /oldstring/newstring/
\EDIT ,eline /oldstring/newstring/
\EDIT bline, /oldstring/newstring/

Examples: **\E. 10,100 /SA/FT/**

This entry changes all occurrences of SA in lines 10 through 100 to FT.

\E. 50,150 /A/AAA/ALL

In this example, ALL changes all occurrences of *oldstring* in lines 50 through 150. If ALL is not specified, only the first occurrence is changed.

\E. 20 'HELLO'

This statement searches line 20 for occurrences of HELLO. If *newstring* is omitted, the command searches for *oldstring*.

\EC.

This entry edits only the current line.

\FILES Lists your LW and BASIC program files. At SSEC, the LW file list is purged each month and may not reflect the presence of an LW file. BASIC programs currently on file are listed.

Syntax: **\FILES**

\HELP Displays an on-screen summary of Editor commands. Use the McIDAS HELP command to display the online help message for a specific McBASI command.

Syntax: **\HELP**

\KILL Stops a BASIC language program running on your workstation. The variable table is saved so values may be displayed with direct commands.

Syntax: **\KILL**

\LIST Lists all or part of your terminal buffer; abbreviated as "\L".

Syntax: **\LIST**
\LIST line
\LIST bline,eline
\LIST ,eline
\LIST bline,

Examples: **\LIST 30**
This entry lists line 30.

\L 10,150
This entry lists lines 10 through 150.

\L 100,
This entry lists line 100 through the end of the file.

\LC.
This entry lists the current line.

\LISTP Sends a list to the local printer; abbreviated as "LP".

Syntax: **\LISTP** (line specifications are the same as LIST)

\LISTS Sends a list to the system printer; abbreviated as "\LS".

Syntax: **\LISTS** (line specifications are the same as LIST)

\LW. This variation of the LIST command sets a list window of *n* lines on each side of the current line anytime a line is entered or changed.

Syntax: **\LW. *n***

Example: **\LW. 3**

When you edit line 60, lines 30, 40, 50, 60, 70, 80, and 90 are displayed on the screen (if lines are numbered in increments of 10).

\LOAD

Copies the contents of an LW file into your terminal buffer. If this file was not created by McBASI, line numbers are assigned in increments of 10; otherwise, the previously assigned line numbers are intact.

Syntax: **\LOAD *filename***

\NEW

Clears your terminal buffer. Each terminal has a 500-line buffer assigned to it. Use the NEW command to begin a new BASIC program. Do not simply delete all the lines in an old program.

Syntax: **\NEW**

\REMOVE

Deletes a BASIC program from the BSAVE area. All programs are protected by user initials only. LW files may be deleted using the LWU DEL command. After deletion, their names may continue to appear in the \FILES list.

Syntax: **\REMOVE *filename***

\RENUMBER

Renumbers the lines in the range specified, beginning with the line number specified. For an increment other than 10, use **BY increment**.

Syntax: **\RENUMBER *bline,eline,start* BY *increment***

Example: **\RENUMBER 10,100,5 BY 5**

This command renumbers lines 10 through 100, starting with line number 5 and incrementing line numbers by 5.

\SAVE

Copies the contents of your terminal buffer to an LW file. You specify *filename*. If *filename* is already in use, McBASI does not permit you to overwrite it with \SAVE.

Syntax: **\SAVE filename**

To delete the file, use either the **LWU DEL** command or:
\SAVE (D) filename, where (D) means first delete the file. You must include the parentheses.

\SIZE

Determines how many lines of text are in your terminal buffer area. The absolute limit is 500 lines.

Syntax: **\SIZE**

\linenumber

Inserts the specified *text* (or replaces it if *linenumber* already exists) into the terminal buffer file, sorted by increasing line number. If you don't enter any *text* following *linenumber*, one of two things will happen. If *linenumber* already exists, it is deleted. If it doesn't exist, a blank line is inserted.

Syntax: **\linenumber**
\linenumber text

Example: **\15 PRINT A**

//text

Inserts *text* after the last line referenced in the file, at line number 10 greater. If the line 10 greater exists, McBASI won't execute the command. The last line referenced is the last line entered, listed, or edited. After a **LOAD**, it is the last line in the file.

Syntax: **//text**

\anything else

Submits a direct execution BASIC language statement.

Example: **\?SQRT(13.45)**

This command displays the square root of 13.45.

McBASl Sample Programs

1. In this program, parameters are read from the RUN command until the list is exhausted. DEV=CNN suppresses the normal DONE message from YA. This sends the standard output to the workstation, but does not send the error or debug output. Use **RUN MSN MKE CLE BOS DCA** or **RUN MEM ORD** for this example. A step-by-step practice session with this example follows.

```
\10 INPUT A$
\20 IF LEN(A$) < 3 GOTO 100
\30 KEYIN "YA SA ";A$;" DEV=CNN"
\40 KEYIN "YA FT ";A$;" DEV=CNN"
\50 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. A step-by-step practice session with this example follows. No parameters are necessary in the RUN statement.

```
\10 LET A=0
\20 LET B=0
\30 LET A=A+B
\40 LET B=B+1
\50 IF NINT(B)=101 GOTO 30
\60 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 workstation 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 workstation while **RUN ABC DEFABCGHI** produces NOT EQUAL plus BUT ABC IS WITHIN DEFABCGHI.

```
\10 INPUT A$,B$
\20 IF A$=B$ PRINT "EQUAL": GOTO 100
\30 IF A$ < > B$ PRINT "NOT EQUAL"
\40 IF INDEX(A$,B$) < > 0/ PRINT " BUT "B$" IS WITHIN "A$"
\50 IF INDEX(B$,A$) < > 0/ PRINT " BUT "A$" IS WITHIN "B$"
\100 STOP
```

4. To illustrate file manipulation, the name of a city or state is taken from the RUN statement and used for an SL command. The output from this command is sent to the file FPWI, via the DEV=F (device = file) clause. After this command is done, line 20 opens the same file (FPWI). Lines are read (line 40), checked for an end-of-file (line 45), and then printed (line 50). This repeats until an end-of-file is detected. Try this RUN statement: **RUN MSN**

```
\5  INPUT B$
\10 KEYIN "SL A ";B$;" DEV=F FPWI R"
\20 OPEN "FPWI",3
\40 INPUT @3,A$
\45 IF MID$(A$,1,4)=EOF$ GOTO 100
\50 PRINT A$
\60 GOTO 40
\100 STOP
```

5. Here is an extended example which seeks only the current temperature at the city specified in the RUN statement. In addition, the pseudovvariable file name TFILE\$ is used. Try the following RUN statement: **RUN MSN**

```
\5  INPUT B$
\7  IF B$="HELP" GOTO 200
\8  IF B$=" " GOTO 200
\9  IF MID$(B$,3,1)=" " GOTO 200:REM BE SURE IT IS A CITY
\10 KEYIN "SL A ";B$;" DEV=FNN ";TFILE$
\20 OPEN TFILE$,3
\40 INPUT @3(1),A$
\45 IF MID$(A$,1,4)=EOF$ GOTO 100
\50 LET A=VAL(MID$(A$,18,3))
\60 PRINT "THE TEMPERATURE AT ";B$;" IS ";A
\100 STOP
\200 PRINT "RUN <STATION-ID>"
```

McBASl Editor Practice Session

The first two sample programs from the previous section are entered and edited here in a detailed, step-by-step description, demonstrating the use of many of the Editor and Interpreter commands.

1. Log on to a McIDAS terminal.
2. Enter the NEW command to clear your workstation's buffer.

Type: \NEW
Press: Enter

The following lines appear on the screen:

```
\NEW  
MCBASl - - DONE...
```

3. To see an online summary of the Editor commands,

Type: \HELP
Press: Enter

4. Now enter your program (or macro) as text, using the McBASI Editor. You may enter your own line numbers, using \# (where # is a specific line number) for each line, incrementing them as you like. Or you can enter two backslashes (\) before each line of text and the Editor will automatically assign line numbers in increments of ten.

This program reads parameters from the RUN statement until the list is exhausted. DEV=CNN, for device = CRT (C), error (N), and debug (N), suppresses the normal "done" message from the YA command which lists weather data and information text.

To correct an error before you enter a line, use the backspace key, then type the new text. Or, use Editor commands to correct errors. To create the following program, type it exactly as it is printed below.

Type: \10 INPUT A\$
 \20 IF LEN(A\$) GOTO 1000
 \30 KEYIN "YA SA ";A\$;"DEV=CNN"
 \40 KEYIN "YA FT ";A\$;"DEV=CNN"
 \50 GOTO 2
 \1000 REM FINISHED...

where A\$ is the character variable string A, LEN is the length of the string, and REM is a remark.

5. LIST your program file to check for errors.

Type: **\LIST**
Press: **Enter**

This command lists the contents of your program file, line by line. Check to be sure there are no typing errors.

6. In line 50, you entered "GOTO 20". Change this to "GOTO 10" using the EDIT command before running the program.

Type: **\EDIT 50 /20/10/**
Press: **Enter**

This sequence changes the characters in line 50 that read 20 (old string) to 10 (new string). Enter the old string first, followed by the delimiter, then the new string. This version of EDIT changes only the first occurrence of the old string. To change every occurrence of an old string in a line or group of lines, add "ALL" to the end of the statement. For example: **\EDIT 50 /20/10/ALL**.

List the program file again to verify the change was made.

7. After making all necessary changes, use the RUN statement to execute the program file. Here is an example:

Type: **RUN MSN MKE CLE BOS DCA**
Press: **Enter**

The Interpreter runs the program, outputting, for example:

MSN SA 1751 20SCT 6H 132/21/8/2108/011

8. Return to editing the program file and make a few more changes. For example, exchange SA and FT (SA = surface observation, FT = terminal forecasts). "E." is an abbreviation for the EDIT command.

Type: **\E. 30 /SA/FT/**
Press: **Enter**
Type: **\E. 40 /FT/SA/**
Press: **Enter**

Also insert a print statement by adding line 45.

Type: \45 PRINT A\$
Press: Enter

The A character variable string (cities) is displayed on your screen when you run the program. This prints the city (MKE, MSN...) before the data for that city. List your program file to be sure the changes were made correctly. The abbreviation of the LIST command is "L".

Type: \L
Press: Enter

9. Check to see that you've entered the changes correctly, then save your BASIC program file in a special file set up for BASIC language programs. Your program file can be run directly from this storage area. Use the \BSAVE *filename* command. Assign any name to your program file, following the rules listed on pages 7-3 and 7-4 of the Editor document. The prefix "XX" indicates a temporary file. For example:

Type: \BSAVE XXQAZDOC
Press: Enter

10. List the BASIC program files.

Type: \FILES
Press: Enter

The list should include your LW and BASIC program files, including the BASIC program you just saved.

11. Use the BLOAD command to load your newly saved file.

Type: \BLOAD XXQAZDOC
Press: Enter

If, instead, you had logged off, you must log on and then enter the BLOAD command to regain access to your McBASI program file. The BLOAD command, with the McBASI file name, is all that's necessary to access the McBASI program. BLOAD copies the contents of your BASIC program file into your terminal buffer. Your line numbers should remain intact.

12. Now go back and reedit your program, returning it to its original state. Edit lines 30 and 40, switching SA and FT, and remove line 45.

Type: \E. 30 /FT/SA/

Press: Enter

Type: \E. 40 /SA/FT/

Press: Enter

Type: \DEL. 45

Press: Enter

Once again, list your program file to verify your changes.

Type: \L.

Press: Enter

13. Use \BSAVE(D) *filename* again, to save the most recent version of your file.
14. Now practice with another example that demonstrates a method of looping.

Type: \NEW

Press: Enter

This clears your terminal buffer. Use two backslash characters (\\) for automatic line numbering and enter the lines as follows:

Type: \\ LET A=0

\\ LET B=0

\\ LET A=A+B

\\ LET B=B+1

\\ IF NINT(B)=101 GOTO 30

\\ PRINT A

15. Now run the program.

Type: RUN

Press: Enter

The following appears on your screen:

0

16. Make a few changes to improve the program. First, add a PRINT statement for B.

Type: \45 PRINT B

Press: Enter

Change the IF statement in line 5 from "=" to "<=".

Type: \E. 50 /=<=/

Press: Enter

17. List your program file to verify the changes. Then run the program.

Type: RUN

Press: Enter

The following appears on the screen:

```
0
1
2
.
.
.
100
101
102
5151
```

The result is a list of the "b" outputs, 0-102, and "a", 5151.

18. Turn to the sample program files and try a few more. If you have questions or problems with any of these commands or sample programs, contact McIDAS User Services.

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