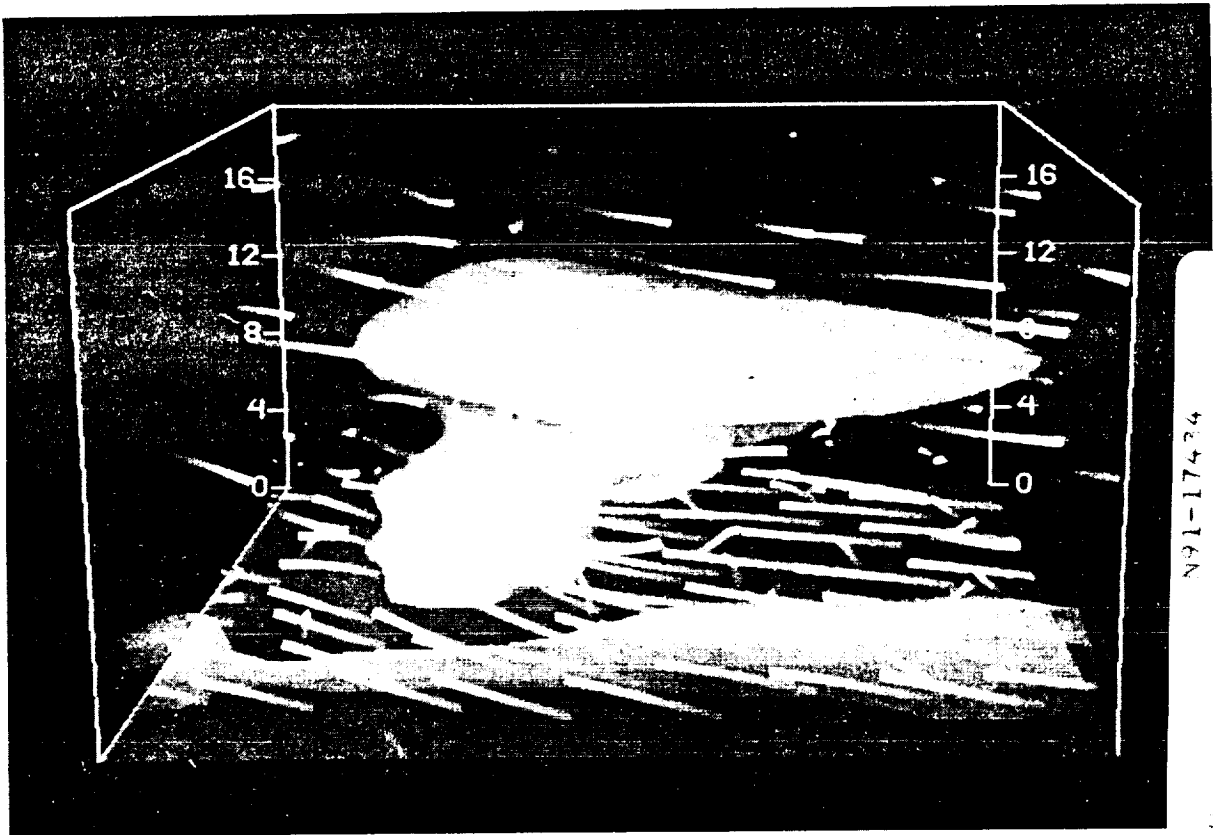


CR-184082

An Inventory of Four-dimensional Data Sets for the Earth Sciences



by Terri Gregory
Foreword, Professor Francis Bretherton
Preface, William Hibbard

Space Science and Engineering Center
University of Wisconsin-Madison

for NASA Contract NAS8-36292

February 1989

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FOUR-DIMENSIONAL DATA SETS FOR THE EARTH
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by Terri Gregory
Foreword, Professor Francis Bretherton
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Space Science and Engineering Center
University of Wisconsin-Madison
1225 W. Dayton St.
Madison, WI 53706

for NASA Contract NAS8-36292

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Contents

Foreword	v
Preface.....	vii
Introduction	ix
Acknowledgments	ix

I Data Sets

Introduction to Data Sets.....	I-1
Data Sets in the United States	I-3
Data Sets outside the United States	I-93

II Sources

Introduction to Sources.....	II-1
Sources	II-3

III Future Data

Introduction to Future Data	III-1
Future Data	III-3

IV Appendixes

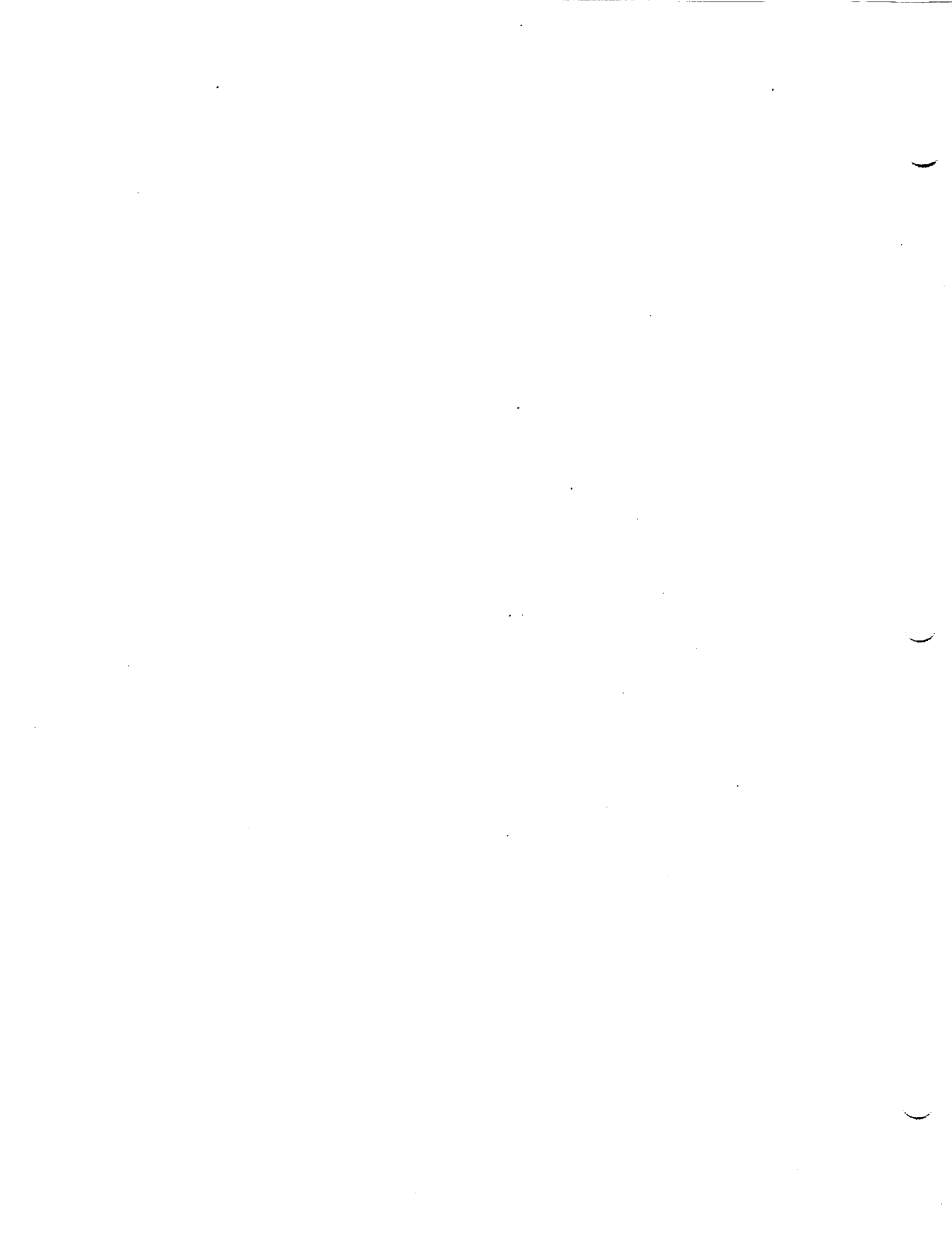
Earth Science Data Directory Information Sheet	App. A
European Centre for Medium Range Weather Forecasts: Products on the WMO/GTS and Order Forms	App. B
National Environmental Data Referral Service (NEDRES)	App. C
National Geophysical Data Center	App. D
National Oceanic Data Center	App. E
SPAN: Ocean Network Information Center (SONIC)	App. F
Foreign Satellites: Present and Future	App. G
LAMPS Model History Tape.....	App. H
FIRE Data Sets at NCDS	App. I
Proposed Eos Instruments	App. J
Acronyms	App. K



Foreword

A most important determinant of scientific progress in the Earth Sciences is the availability of suitable observational data. Finding appropriate data sets can be frustrating and time consuming for an individual investigator. This inventory is a modest contribution to making such a laborious task easier. It is offered as part of the Space Science and Engineering Center's role in disseminating data and information for meteorological and earth sciences research.

Professor Francis P. Bretherton
Director, SSEC



Preface

This inventory of four-dimensional environmental data sets is produced in partial fulfillment of NASA contract NAS8-36292. The overall purpose of this contract is to create tools for managing and accessing multivariate four-dimensional environmental data. The purpose of this inventory is to understand what data exists and how to obtain it. At the Space Science and Engineering Center, we have worked with data sets from about twenty of the inventoried sources, managing them and producing graphic visualizations from them. These data sets have guided us in the development of appropriate data management and visualization tools for multivariate four-dimensional environmental data sets.

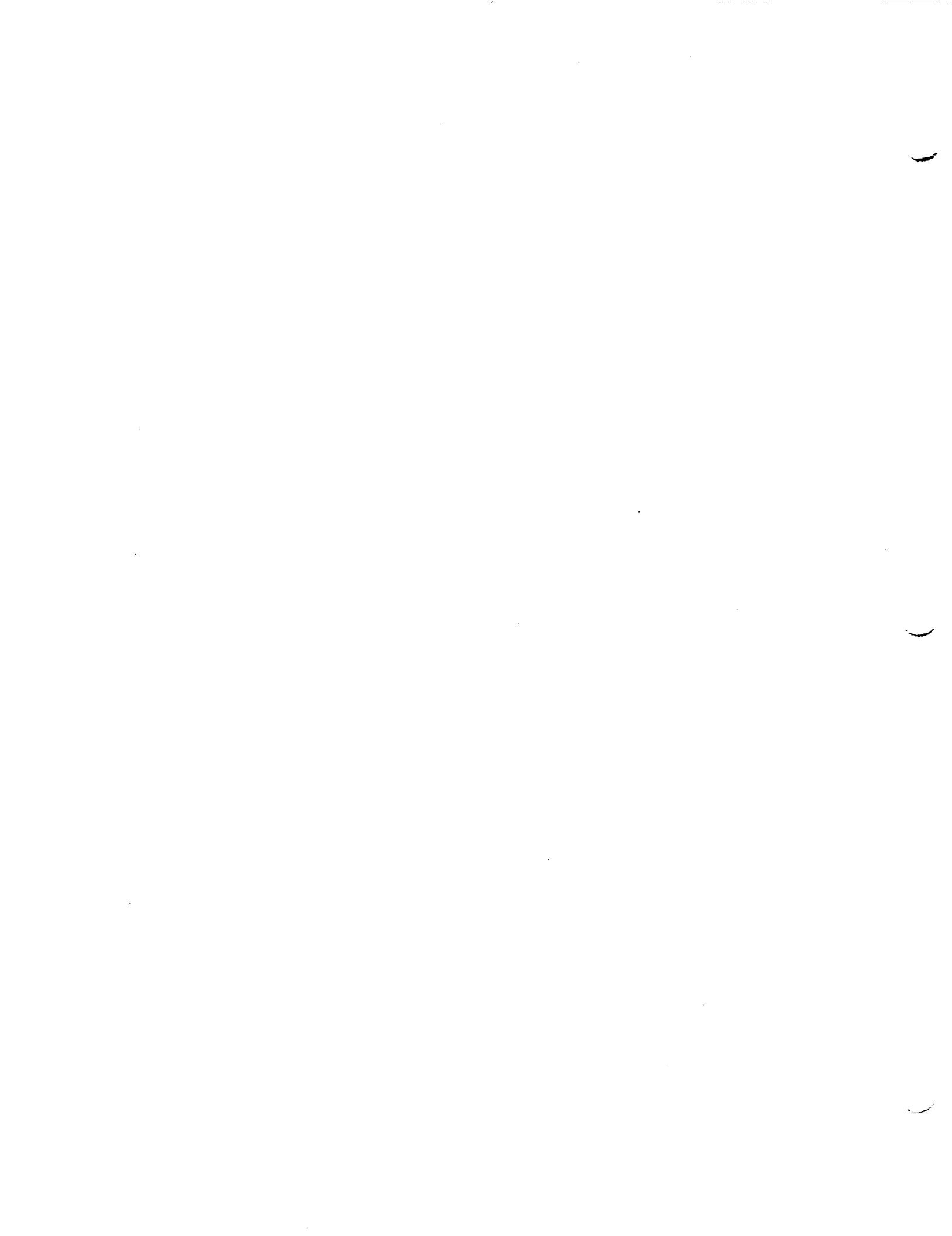
We have generally restricted this inventory to four-dimensional data sets, which span three spatial dimensions and time. That is, they have non-trivial extents horizontally, vertically and temporally. Our primary emphasis has been on meteorological data, although we have included data from other earth sciences. We have found these data sets from references in published catalogs and in journal articles, and by referrals. We have tried to be as thorough as possible--we believe we succeeded most closely in meteorology--although it is inevitable that we have missed many interesting data sets. We also allowed individuals to opt out of our inventory, if they were not willing to supply their data to outside users.

Our inventory includes sets of raw observational data, sets analyzed from observations, and output data sets from numerical simulation models. The observational data may be in the form of images, soundings along vertical columns of atmosphere, and non-uniformly located measurements. Observations may be generated by satellites, radars, lidars, instruments on balloons, ships and aircraft, and by manual measurements. Analysis of observed data may result in images, vertical soundings and uniformly gridded variables.

Model output data generally consists of uniformly gridded variables, although trajectory paths and images are often generated from model output. One important message we hope our inventory delivers is that environmental data comes from an enormous variety of sources and exists in an enormous variety of formats.

We believe this inventory will be useful to anyone developing tools for scientific visualization. We also hope that it will be useful to earth scientists, giving them a quick look at what data is available and how to obtain it.

William Hibbard
Program Manager
4-D Analysis Project



Introduction--A Note on Organization

One thing this inventory surely does is emphasize the wide variety of data available to the diligent researcher and the myriad paths to obtaining it. This inventory is an attempt to make accessible much of the four-dimensional data available in the world. In this quick-look catalog are listed separate data sets (Data Sets section), sources of data including centers and large data bases (Sources section), and some data expected to be available in the future (Future Data section).

In the Data Sets section, individual data sets are arranged alphabetically by institution, with those archived in the U.S.A. listed first, followed by those found elsewhere. Section 2, the Sources section, includes large data bases, centers and directories. Sources is arranged alphabetically by country. This section is followed by a Future Data section, a collection of data sets and experiments and other future developments of which we are cognizant. The last section is the Appendixes, a collection of further information and order blanks provided by some of the archiving institutions.

Acknowledgments

First I must thank all contributors to this catalog, including many people who provided referrals but whose names do not appear as contacts. They all, whether individual researchers, user support people or agency directors, were invariably patient, kind and informative.

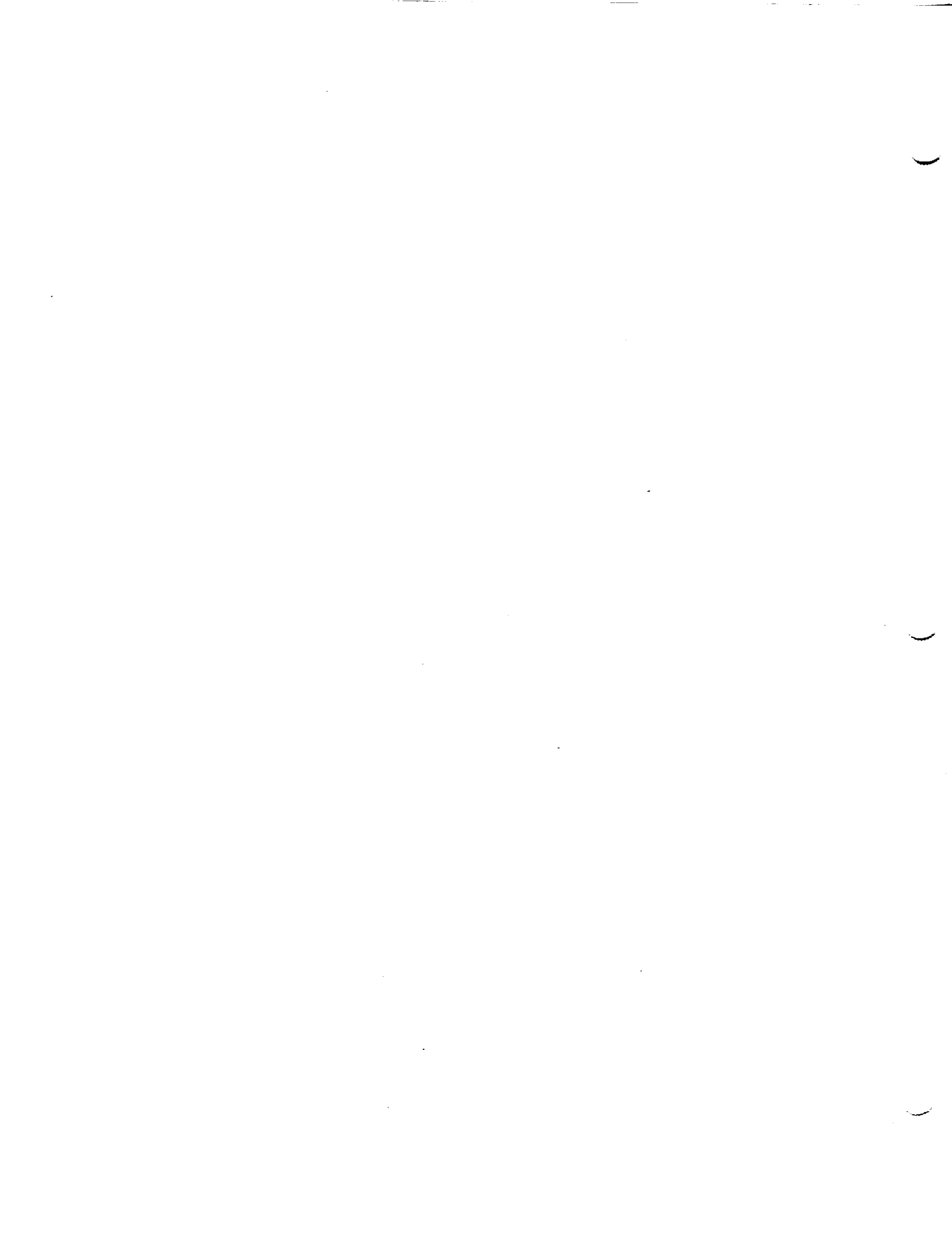
I wish to gratefully acknowledge the help of Jean Phillips and The Schwerdtfeger Library staff. Jean, SSEC's indomitable librarian, did much of the initial investigative work, plied me with data catalogs and leads, gave editorial assistance and provided much appreciated moral support (i.e., she urged me on with visions of my name in print).

Thanks also go to Jan Waite-Schuster who developed an attractive and flexible page format for the inventory and to both Jan and Judy Peterson for editorial support.

This inventory would not have been completed without the support and encouragement of SSEC's 4-D team, mainly William Hibbard (program manager) and David Santek. Thanks also to SSEC and NOAA scientists who served as sounding boards and information sources. A debt of gratitude is also owed to administrators of the Space Science and Engineering Center who provided the atmosphere in which this project could be accomplished.



DATA SETS



I Data Sets

This section contains four-dimensional data sets found throughout the world divided for convenience into those found in the United States and those that are known to exist outside the United States. The first word on each page, "Institution," refers to archiving or holding agent or institution. Other categories mean as follows:

Contact: Whom to call to obtain the data.

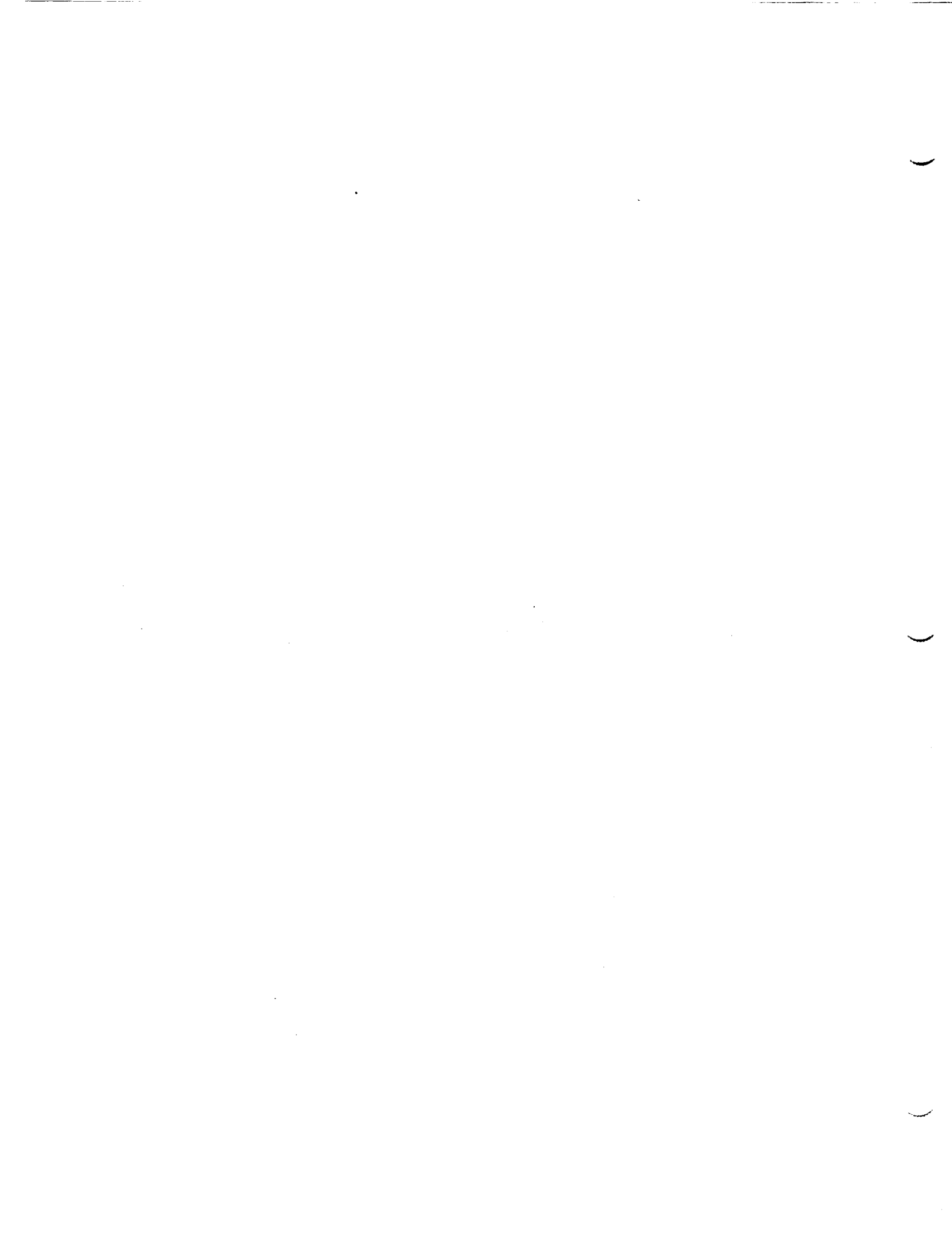
In some cases, an "Information Contact" is listed who can provide information about the data (e.g., how it was collected, how the instrument was calibrated, etc.) but who does not archive the data. In cases where more than one contact is listed, the first name is always that of the archiver.

Availability: Includes cost and general information about the data as well as restrictions on use or data availability.

Items: What is being archived and how. "Parameters" generally refers to what is being measured, although in the case of model output, these are statistical parameters.

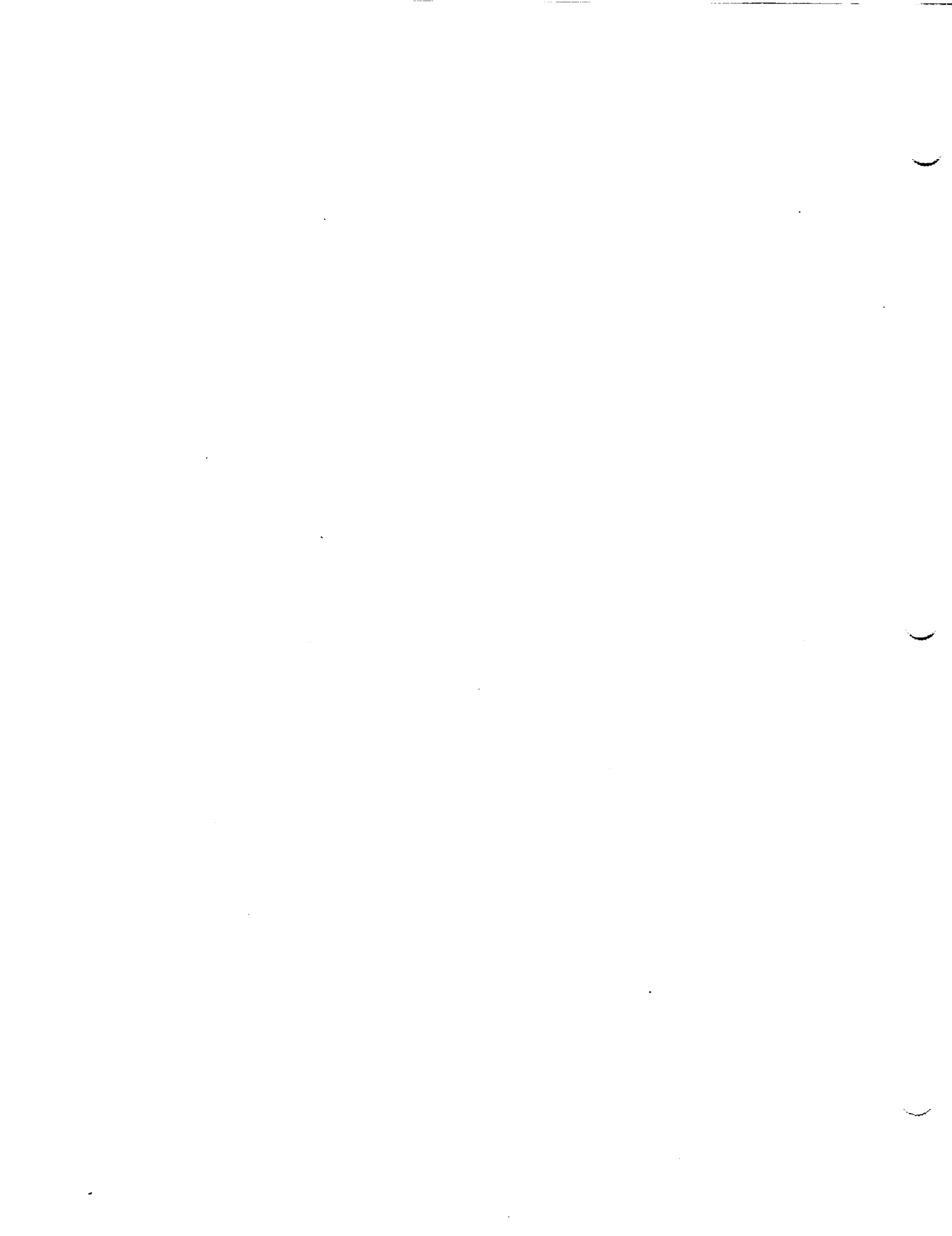
Reference: A paper, book or catalog giving more information about the data. A "Reference" is also often the original source for information about the data for this inventory.

Those data sets starred (*) at the top of the page have been visualized at the Space Science and Engineering Center.



DATA SETS:

United States



INSTITUTION: Aster, Inc. *

CONTACT: Greg Tripoli
1225 W. Dayton St.
Madison, WI 53706
608/262-3700

AVAILABILITY: Each simulation is a separate case study and is accessed separately. Model output is in mass storage on a CRAY and needs to be transformed to tape. Costs of time, tape, etc., are recovered. Will perform case studies with the model on cost-recoverable basis.

ITEMS: Numerical simulations of cumulonimbus clouds, orographic snow fall, mesoscale convective systems, fire storm for a nuclear winter problem, volcanic plume

Type/Source: The Regional Atmospheric Model System (RAMS)

Parameters: Some or all of: u , v , w wind components; pressure; temperature; theta; mixing ratio of vapor, cloud water, rain water; cloud ice; snow; graupel; soot; SO_2 ; soil moisture and temperature through layers; long and short wave (qr) radiational tendencies of temperature; topography where appropriate

Coverage: Time varies; spatial coverage varies with scale and simulation

Resolution: Horizontal, between 200 m and 100 km
Vertical, from 100 m to 1 km
Time, 1-5 minute intervals, depending on length of simulation

Media: Stored in binary form on CRAY; can be transformed to 1600-bpi magnetic tape and a number of formats, such as ASCII

Organization: By case study, by time, then 3-D variables

REFERENCE: Tripoli and Cotton, 1982: The Colorado State University three-dimensional cloud-mesoscale model. *J. Rech. Atmos.*, 16.

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INSTITUTION: Defense Mapping Agency

CONTACT: DMA Combat Support Center
ATTN: PMA
Washington, DC 20315-0010
301/227-2495

AVAILABILITY: Through December 1989, two sample data sets are being offered to private researchers (i.e., to those not having a government contract). Each costs \$600. The DMA says these are the only sets they intend to sell except under contract with the U.S. Government. Restrictions on other DMA data do not apply to these, and only these, two data sets. Appropriate DMA Product Specification is included with each shipment. Allow 3-4 weeks for delivery.

ITEMS: Topographical data sets

Type/Source: Digital Feature Analysis Data Level 1 (DFAD-1)
This set is not strictly 4-dimensional, but when combined with DTED it provides a digital off-line data base for use in simulation, such as line of sight, obstruction and perspective view development.

Parameters: Selected natural and man-made planimetric features, type classified as point, line, or area features as a function of their size and composition

Coverage: 43-45⁰N, 113-109⁰W
Only this area is available to the general public. If you want other areas in the world, you must have a government contract and go through your contract manager to obtain them.

Resolution: Typical cell contains 3500 features, equivalent to 1:250,000 scale maps.

Media: 9-track, 1/2 inch magnetic tape, 1600 or 6250 bpi

Volume: 8 cells each (one tape each)

Organization: Each feature is assigned an identification code and described by microcoding in terms of composition, height, length and orientation. Data are stored in polygon format and segregated into 1⁰ by 1⁰ geographic cells.

REFERENCE: Defense Mapping Agency, 1988: *Digitizing the Future*, Defense Mapping Agency, Washington, D.C., 7-9.

INSTITUTION: Defense Mapping Agency (DMA)

CONTACT: DMA Combat Support Center
ATTN: PMA
Washington, DC 20315-0010
301/227-2495

AVAILABILITY: This data set is available only if you have a government contract through your contract manager.

ITEMS: Topographical data sets

Type/Source: Digital Feature Analysis Data Level 3C (DFAD-Level 3C)
DFAD is not strictly 4-dimensional, but when combined with DTED it provides a digital off-line data base for use in simulation, such as line of sight, obstruction and perspective view development.

Parameters: Include size, shape, position, orientation, predominant height and surface material type, both natural and man-made features

Coverage: Global, though locations of some areas will be classified.

Resolution: Equivalent to 1:50,000 scale maps

Media: 9-track, half-inch magnetic tape, 1600 or 6250 bpi

Organization: One data record for each feature. File size varies from 2 by 2 nautical miles (nm) to 5 by 5 nm.

REFERENCE: Defense Mapping Agency, 1988: *Digitizing the Future*, Defense Mapping Agency, Washington, D.C., 7-9.

INSTITUTION: Defense Mapping Agency (DMA)

CONTACT: DMA Combat Support Center
ATTN: PMA
Washington, DC 20315-0010
301/227-2495

AVAILABILITY: Through December 1989, two sample data sets are being offered to private researchers (i.e., to those not having a government contract). Each costs \$600. The DMA says that **these are the only sets they intend to sell except under contract with the U.S. Government. Restrictions on other DMA data do not apply to these, and only these, two data sets.** Appropriate DMA Product Specification is included with each shipment. Allow 3-4 weeks for delivery.

ITEMS: Topographical data sets

Type/Source: Digital Terrain Elevation Data Level 1 (DTED-1)

Parameters: Terrain elevation, slope and surface roughness

Coverage: 43-45⁰N, 113-109⁰W
Only this area is available to the general public. If you want other areas in the world, you must have a government contract and go through your contract manager to obtain them.

Resolution: Equivalent to 1:250,000 scale maps
Every 3-arc second

Media: 1600 or 6250 cpi, 9-track, 1/2 inch magnetic tape
ASCII format

Volume: 8 cells (one tape each)

Organization: Each cell header record provides identification, administrative data, and information required for the application, maintenance, and verification of the elevation values. Each Elevation Data contains 1201 elevation values along a single meridian. File size is 1⁰ by 1⁰. Matrix structure.

REFERENCE: Defense Mapping Agency, 1988: *Digitizing the Future*, Defense Mapping Agency, Washington, D.C., 7-9.

INSTITUTION: Drexel University

CONTACT: Professor Jack G. Kay
Department of Chemistry
Drexel University
Philadelphia, PA 19104
215/895-1688

AVAILABILITY: Call Professor Kay

ITEMS: Atmospheric radio isotopes

Type/Source: Sampling from ground-based stations and aircraft

Parameters: Radon and associated byproducts (radon 222, lead 210, plutonium 210)

Coverage: About 50 nautical miles around a point 350 miles off California's Pacific coast, July and August 1985, within and just above marine boundary layer

Resolution: 60 data points in 10 flights over 30 days

Media: Floppy disks (3 1/2", Macintosh format)

Volume: 3

INSTITUTION: Drexel University

CONTACT: Carl Kreitzberg or Ed Hartnett
Department of Physics and Atmospheric Science
Drexel University
Philadelphia, PA 19104
215/895-2786 or 215/895-2726
OMNET - C.KREITZBERG
OMNET - GALE.DAT

AVAILABILITY: At nominal cost

ITEMS: Field experiment data set

Type/Source: Genesis of Atlantic Lows Experiment

Parameters: Winds, heights, temperatures, dewpoints
Satellite imagery, soundings and sea surface temperature

Coverage: 15 January through 15 March 1986
Eastern United States/western Atlantic Ocean
Surface to 100 mb heights

Resolution: Mesoscale/synoptic

Media: Digital tape

Volume: 13 intensive observational periods

Organization: Chronological

REFERENCE: Velden, C. and J. Pyeatt, 1987: *GOES Imagery for the Genesis of Atlantic Lows Experiment*, University of Wisconsin-Madison, Space Science and Engineering Center

Also see *GALE Data User's Guide* available from the contact above

INSTITUTION: Drexel University *

CONTACT: Professor Donald J. Perkey or Professor Carl W. Kreitzberg
 Department of Physics and Atmospheric Sciences
 Drexel University
 Philadelphia, PA 19104

AVAILABILITY: Through Professor Perkey or Professor Kreitzberg
 The cost of the computer tape and postage is recovered.

ITEMS: Numerical model output

Type/Source: Drexel University's Limited-Area Mesoscale Prediction System (LAMPS)

Parameters: See Organization, below

Coverage: Depends on case; typically continental United States with adjacent oceans for 24-48 hour period at 1-3 hour intervals

Resolution: Typically 1.25° - 0.33° latitude-longitude horizontal mesh. Typically 0, 0.025, 0.375, 0.75, 1.25, 2, 3, 4.5, 6, 7.5, 9, 10.5, 12, 14, 16 km vertical σ_z surfaces

Media: Magnetic tape, 1600 or 6250 bpi, usually 32-bit positive integers

Volume: Typically one to two 6250-bpi tapes needed for complete case history

Organization: Variables are stored in this order:
 3-D variables: 1) u and 2) v wind components; 3) temperature; 4) specific humidity; 5) cloud water; 6) rain; 7) pressure and 8) its tendency; 9) u , 10) v , 11) T , 12) q , and 13) c tendencies due to parameterized precipitation; 14) T tendencies due to radiation and 15) to model-resolved diabatic effects; 16) relative humidity; 17) unused variable; 18) level releasable instability; 19) level model-resolved precipitation; 20) level parameterized precipitation; 21) height above mean sea level; 22) vertical velocity

Continued

2-D variables: 1) total releasable instability; parameterized
2) cloud base, 3) cloud top, 4) precipitation rate; 5) accumulated
parameterized precipitation; 6) model-resolved precipitation
rate; 7) accumulated model-resolved precipitation; 8) total
precipitation rate; 9) accumulated total precipitation;
10) surface temperature; 11) surface specific humidity;
12) pressure tendency at model top due to parameterized
precipitation; 13) surface elevation; 14) west-to-east gradient of
terrain elevation; 15) south-to-north gradient of terrain
elevation; 16) surface type with 1=water, 0=land;
17) parameterized cloud area; surface layer 18) velocity scale,
19) temperature scale, 20) specific humidity scale, 21) length
scale; planetary layer 22) height and 23) its tendency;
24) sensible heat flux; 25) latent heat flux; 26) parameterized
environmental subsidence; 27), 28), 29) and 30) unused
variables.

Appendix H gives "Schematic of Data Storage on LAMPS Model
History Tape."

INSTITUTION: ERL/Wave Propagation Laboratory *

CONTACT: Robert Kropfli
NOAA/ERL/Wave Propagation Laboratory
325 Broadway
Boulder, CO 80303
303/497-6235

AVAILABILITY: This is not an archive. Dr. Kropfli is looking for collaborators for support of raw data analysis.

ITEMS: Winds triangulated from multiple doppler radars (from microbursts in a tornado)

Type/Source: Radars

Parameters: U, v, w wind components, reflectivity in dbz, derivable doppler velocity and circular depolarization ratio

Coverage: Colorado (east of Stapleton airport) about 10 x 10 km from 2 to 6 km altitude for ten minutes

Resolution: About 0.15 km horizontal and vertical, every 100 seconds

Media: 9-track magnetic tape

Volume: 6 microbursts

Organization: Chronological

REFERENCE: Kropfli, R.A., 1986: Microburst Observations by high-resolution dual doppler radar, *23rd Conference on Radar Meteorology, September 1986. AMS, J109-112.*

INSTITUTION: ERL/Wave Propagation Laboratory

CONTACT: Richard Strauch
NOAA/ERL/Wave Propagation Laboratory
325 Broadway
Boulder, CO 80303
303/497-6385

AVAILABILITY: On a case by case basis

ITEMS: Wind profiles

Type/Source: Radar wind profiler (prototye experiment)

Parameters: Wind speed and velocity

Coverage: 4 stations in Colorado, from 1984 to November 1988

Resolution: Every hour, 500 m--1.2 km

Media: Magnetic tape

Volume: About a tape per year per site

Organization: By site and by time

INSTITUTION: Goddard Space Flight Center *

CONTACT: Dr. Franco Einaudi
Branch Head, Code 612
NASA/GSFC
Greenbelt, MD 20771
301/286-6078

AVAILABILITY: On a case by case basis. Direct requests to Branch Head, Code 612

ITEMS: Model output

Type/Source: GMASS model, a primitive equation hydrostatic 4-dimensional model with parameterization for convective precipitation and boundary layer processes.

Parameters: Air parcel trajectories; temperature, humidity, momentum; in post-processing mode--derived divergence, vorticity, potential vorticity

Coverage: Continental United States plus western North Atlantic, Canada, northern Mexico for 36 hours of Presidents' Day storm

Resolution: Model resolution is flexible; depends on grid chosen. The time step in the model is 1 minute.
For this output, 58 km horizontal, about .5 km vertical (32 vertical levels to 100 mb), every 15 minutes

Media: Model runs on Cyber 205; output is not machine dependent 9-track tape

Volume: Model--30,000 lines of FORTRAN code
Output--1 tape

Organization: By parameter vertical level by time

REFERENCE: Kaplan, M.L., J.W. Zack, V.C. Wong, J.T. Tuccillo, 1982: Initial results from a mesoscale atmospheric simulation system and comparisons with the AVE-SESAME I data set. *Monthly Weather Rev.*, 110, 1564-1590. Describes initial results.

Uccellini et al., October 1987: Synergistic interactions between an upper-level jet streak and diabatic processes that influence the development of a low-level jet and a secondary coastal cyclone. *Monthly Weather Rev.*, 115, (10) 2227-2261. Describes changes to model (as used in this output).

INSTITUTION: Goddard Space Flight Center
National Space Science Data Center

CONTACT: National Climate Data System
Lola Olsen, NCDS User Support Office
NASA/GSFC/NSSDC
Greenbelt, MD 20771
301/286-3209

Regina Brown, Manager
301/286-6595

AVAILABILITY: Call or dial in.

ITEMS: Aerosol and gas profiles:
1) AEM-2 SAGE Profiles
2) ERBS SAGE II Profiles
3) Nimbus-7 SAM II BANAT

Type/Source: Stratospheric Aerosol and Gas Experiment Profiles

Parameters: 1) Aerosols, nitrogen dioxide and being reprocessed for ozone
2) Aerosols, humidity, nitrogen dioxide, ozone
3) Aerosols

Coverage: 1) Global from 72°N-72°S, above cloud tops; from 21 February 1979 through 18 November 1981 (sunset data only after June 1979).
2) Global from 80°N-80°S, above cloud tops; 24 October 1984-30 November 1987
3) Global from 64°N-80°N and 64°S-80°S; November 1978 through April 1987

Resolution: Full coverage every 18 days; altitude: 1 km below 25 km, 5 km above that; horizontal: 1 km x 250 km

Media: Magnetic tape and CDF

Volume: 1) 33 tapes, 185 Mbytes
2) 4 tapes, 42 Mbytes
3) 102 tapes, 719.3 Mbytes

Organization: Chronological

REFERENCE: Olsen, L., January 1989: *Data Sets Available via NCDS as of 1/17/89*, NASA, Goddard Space Flight Center, NCDS.

Horowitz, R. and J.H. King, January 1988: *NSSDC Data Listing*, NASA, Goddard Space Flight Center, NSSDC, World Data Center-A for Rockets and Satellites, 6-7.

Also see Sources section, this catalog.

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National Space Science Data Center

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NASA/GSFC/NSSDC
Greenbelt, MD 20771
301/286-3209

Regina Brown, Manager
301/286-6595

AVAILABILITY: Call or dial in. In parentheses (Items) are NSSDC ID's.

ITEMS: Cloud measurements (ISCCP-B3)

Type/Source: International Satellite Cloud Climatology Project Stage B3 Data

Coverage: From 30 June 1983 through 31 January 1985

Resolution: 30 km x 30 km

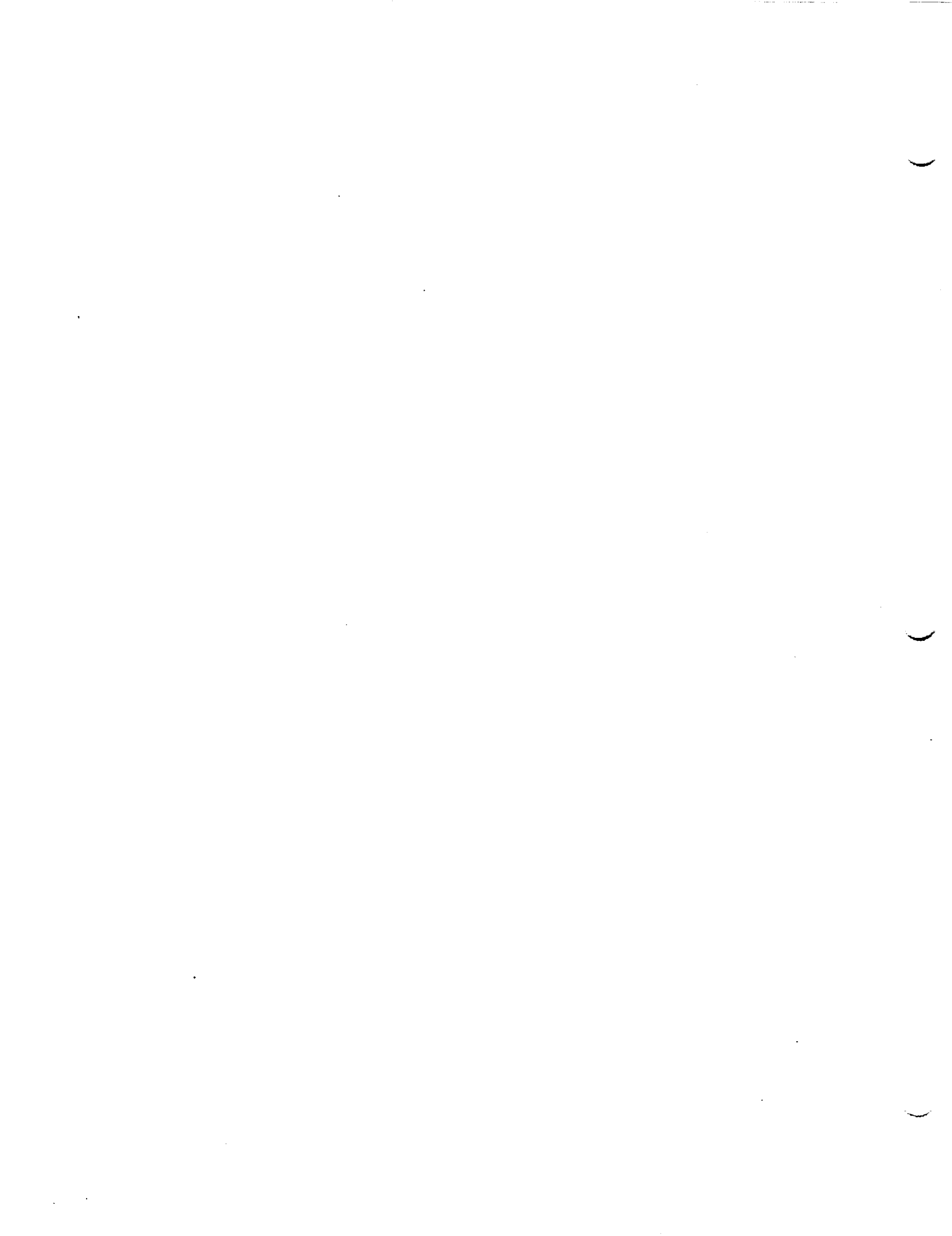
Media: Magnetic tape

Volume: 148 tapes

Organization: Chronological

REFERENCE: Horowitz, R. and J.H. King, January 1988: *NSSDC Data Listing*, NASA, Goddard Space Flight Center, NSSDC, World Data Center-A for Rockets and Satellites, 6-7.

Also see Sources section, this catalog.



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NASA/GSFC/NSSDC
Greenbelt, MD 20771
301/286-3209

Regina Brown, Manager
301/286-6595

AVAILABILITY: Call or dial in. In parentheses (Type/Source) are NSSDC ID's.

ITEMS: FGGE (First Global GARP Experiment) data

Type/Source: 1) Level II-b Restructured Data (FGGE2B)
2) Level III-b Analysis from the European Center for Medium
Range Forecasts (FGGE3B)
3) Level-III Final (FGGE3B-FIN)

Parameters: Cloud height, humidity, pressure, temperature, vertical motion,
wind, salinity

Coverage: 1) Global, 4 December 1978 through November 1979
2) Global, December 1978 through November 1979
3) Global, January 1979--5 March 1979 and 5 May 1979--5 July
1979

Resolution: 1) Point measurements generally at 0000, 0060, 1200, 1800 UT;
4 tropospheric and 3 stratospheric levels; horizontal: 500 km
2) 1.875^o grid; 10-1000 mb, 15 levels; 0000 and 1200 UTC
normally, 0600 and 1800 UTC during special observation
periods
3) 1.875^o grid; .4-1000 mb, 19 levels; 0000, 0600, 1200,
1800 UTC

Media: 1) Magnetic tape
2 and 3) Tape and CDF

Volume: 90 (2.63 Gbytes), 82 (2.96 Gbytes), 21 (2.19 Gbytes) tapes
(respectively, by type)

Organization: Chronological

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INSTITUTION: Goddard Space Flight Center
National Space Science Data Center

CONTACT: National Climate Data System
Lola Olsen, NCDS User Support Office
NASA/GSFC/NSSDC
Greenbelt, MD 20771
301/286-3209

Regina Brown, Manager
301/286-6595

AVAILABILITY: Call or dial in. In parentheses (Items) are NSSDC ID's.

ITEMS: Grids (NMCGRD)

Type/Source: National Meteorological Center Northern Hemisphere Octagonal
Grids

Parameters: Height, temperature, sea level pressure

Coverage: From 1 January 1973 through December 1981

Resolution: 47 x 51 polar stereographic

Media: Magnetic tape

Volume: 18 tapes

Organization: Chronological

REFERENCE: Horowitz, R. and J.H. King, January 1988: *NSSDC Data Listing*, NASA, Goddard Space Flight Center, NSSDC, World Data Center-A for Rockets and Satellites, 6-7.

Also see Sources section, this catalog.

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Regina Brown, Manager
301/286-6595

AVAILABILITY: Through NCDS (or individual Principal Investigators, for their parts of the set)

ITEMS: First ISCCP Regional Field Experiment data set

Type/Source: 1) FIRE cirrus intensive field observation
2) FIRE marine stratocumulus intensive field observation

Parameters: 1) Clouds, humidity, radiation budget, stability, temperature, wind
2) Clouds, humidity, temperature, wind

Coverage: 1) 13 October--2 November 1986, midwest U.S., centering over Wisconsin
2) 29 June--19 July 1987, off southwest coast of California including San Nicolas Island (29-34⁰N and 119-125⁰W)

Resolution: Varies with data type, instrument

Media: Magnetic tape and CDF

Volume: Increases as the more than 100 principal investigators involved in FIRE submit their data. See list, Appendix I, for data sets archived in January 1989.

REFERENCE: Olsen, L., January 1989: *Data Sets Available via NCDS as of 1/17/89*, NASA, Goddard Space Flight Center, NCDS.

Olsen, L., January 1989: *FIRE Cirrus Surface Data, FIRE Cirrus Aircraft Data, FIRE Marine Strat. Surface Data, and FIRE Marine Strat. Aircraft Data*, NASA, Goddard Space Flight Center, NCDS.

Horowitz, R. and J.H. King, January 1988: *NSSDC Data Listing*, NASA, Goddard Space Flight Center, NSSDC, World Data Center-A for Rockets and Satellites, 6-7.

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AVAILABILITY: Call or dial in. In parentheses (Items) are NSSDC ID's.

ITEMS: Grids (NMCGRD)

Type/Source: National Meteorological Center Northern Hemisphere Octagonal
Grids

Parameters: Height, temperature, sea level pressure

Coverage: From 1 January 1973 through December 1981

Resolution: 47 x 51 polar stereographic

Media: Magnetic tape

Volume: 18 tapes

Organization: Chronological

REFERENCE: Horowitz, R. and J.H. King, January 1988: *NSSDC Data Listing*, NASA, Goddard Space Flight Center, NSSDC, World Data Center-A for Rockets and Satellites, 6-7.

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Greenbelt, MD 20771
301/286-3209

Regina Brown, Manager
301/286-6595

AVAILABILITY: Call or dial in. In parentheses (Items) are NSSDC ID's.

ITEMS: Heat budget data (NOAA-HB)

Type/Source: NOAA-2 to -5 and TIROS-N, and NOAA-6, -7 and -9

Parameters: Radiation budget

Coverage: From 1 June 1974 through November 1986

Resolution: 2.5⁰ x 2.5⁰

Media: Magnetic tape

Volume: 48 tapes

Organization: Chronological

REFERENCE: Horowitz, R. and J.H. King, January 1988: *NSSDC Data Listing*, NASA, Goddard Space Flight Center, NSSDC, World Data Center-A for Rockets and Satellites, 6-7.

Also see Sources section, this catalog.

INSTITUTION: Goddard Space Flight Center
National Space Science Data Center

CONTACT: National Climate Data System
Lola Olsen, NCDS User Support Office
NASA/GSFC/NSSDC
Greenbelt, MD 20771
301/286-3209

Regina Brown, Manager
301/286-6595.

AVAILABILITY: Call or dial in. In parentheses (Items) are NSSDC ID's.

ITEMS: Limb Infrared Monitor of the Stratosphere (LIMS)

Type/Source: Nimbus-7 LIMS Map Archival Tapes

Parameters: Height, humidity, nitric acid, nitrogen dioxide, ozone,
temperature

Coverage: Global, 84⁰N--64⁰S; November 1978 through April 1979;
100--.05 mb

Resolution: 1.5 km

Media: Magnetic tape and CDF

Volume: 8 tapes, 151 Mbytes

Organization: Chronological

REFERENCE: Olsen, L., January 1989: *Data Sets Available via NCDS as of 1/17/89*, NASA, Goddard Space Flight Center, NCDS.

Horowitz, R. and J.H. King, January 1988: *NSSDC Data Listing*, NASA, Goddard Space Flight Center, NSSDC, World Data Center-A for Rockets and Satellites, 6-7.

Also see Sources section, this catalog.

INSTITUTION: Goddard Space Flight Center
National Space Science Data Center

CONTACT: National Climate Data System
Lola Olsen, NCDS User Support Office
NASA/GSFC/NSSDC
Greenbelt, MD 20771
301/286-3209

Regina Brown, Manager
301/286-6595

AVAILABILITY: Call or dial in. In parentheses (Items) are NSSDC ID's

ITEMS: Microwave data (ESMR3DAY)

Type/Source: Electrically Scanning Microwave Radiometer

Parameters: Sea-ice concentration

Coverage: From 1 January 1972--13 March 1974

Resolution: 293 x 293 polar stereographic grid

Media: Magnetic tape

Volume: 1 tape

Organization: Chronological

REFERENCE: Horowitz, R. and J.H. King, January 1988: *NSSDC Data Listing*, NASA, Goddard Space Flight Center, NSSDC, World Data Center-A for Rockets and Satellites, 6-7.

Also see Sources section, this catalog.

INSTITUTION: Marshall Space Flight Center

CONTACT: To procure this data set:
Steve Williams
ED-43
SPACE Data Manager
NASA/Marshall Space Flight Center
Huntsville, AL 35812
205/544-1650

To discuss this data set:
Paul Meyer
ED-43
NASA/Marshall Space Flight Center
Huntsville, AL 35812
205/544-1654
or Steve Goodman, 205/544-1683

AVAILABILITY: See COHMEX data sets cost.

ITEMS: Volumetric and doppler radar data

Type/Source: CP2 radar (NCAR)

Parameters: Radar reflectivities, intensities of precipitation, derived wind speeds

Coverage: 20 July 1986 - one thunderstorm including microburst during COHMEX, 1/2 hour period, 14 km (lat) x 14 km (long) x 15 km (altitude)

Resolution: Every 2-1/2 minutes, every 250 m (altitude), every 500 m (lat and long)

Media: Magnetic tape, NCAR radar format

Volume: 1 storm

Organization: Chronologically, then by parameter

REFERENCE: Williams, S.F., H.M. Goodman, K.R. Knupp, J.E. Arnold, August 1987: *SPACE/COHMEX Data Inventory Document*, NASA Technical Memorandum 4006. NASA, Scientific and Technical Information Office.

INSTITUTION: Marshall Space Flight Center *

CONTACT: Mike Kalb
USRA/ED42
NASA/Marshall Space Flight Center, AL 35812
205/544-1684

AVAILABILITY: Available on a case by case basis (Not an archive)

ITEMS: LAMPS model output--LAMPS is a fully moist, 3-D primitive equation numerical weather prediction model.

Type/Source: LAMPS model

Parameters: 3-D grid-point data including the standard meteorological variables, *u*, *v*, *w*, *T*, *p*, *q*, rain water, cloud water, precipitation rates and accumulations (convective and grid-resolved), convective tendencies of temperature, moisture and momentum
Total of 22 3-D variables and 30 surface variables

Coverage:

- 1) 2 case studies (48-hour forecasts) from GALE Intensive Observation Period-2 (23-27 January 1986)
- 2) 6-7 March 1982, Eastern United States, (24-hour forecast)
- 3) 25-26 January 1988, East Coast United States (24-48 hour forecast)
- 4) 11 June 1986, United States

Resolution:

- 1), 4) 46 km grid
- 2) 70 km grid
- 3) 140 km grid

Media: Physical tape, histories of model output stored every 1-3 hours of simulation time

Volume: 1-4 tapes depending on model domain, grid resolution and frequency of history storage

Organization: Histories stored chronologically on tape

INSTITUTION: Marshall Space Flight Center *

CONTACT: Paul Meyer
ED-43
NASA/Marshall Space Flight Center
Huntsville, AL 35812
205/544-1654

AVAILABILITY: On request

ITEMS: LAMPS Model output data

Type/Source: LAMPS Model

Parameters: 22 different 3-D grids, fifteen 2-D grids

Coverage: Continental United States
Approximately 36 hours per set
Assorted times

Resolution: Approximately 100 km horizontal, 1 km vertical, 1 hour

Media: 9-track magnetic tape

Organization: Chronologically

INSTITUTION: Marshall Space Flight Center

CONTACT: Steve Williams
ED-43
SPACE Data Manager
NASA/Marshall Space Flight Center
Huntsville, AL 35812
205/544-1650

AVAILABILITY: At cost

ITEMS: COHMEX data set

Type/Source: Cooperative Huntsville Meteorological Experiment
Contains these experiments: Satellite Precipitation and
Cloud Experiment (SPACE), Microburst and Severe
Thunderstorm program (MIST), FAA-Lincoln Operational
Weather Study (FLOWS)
Sources: aircraft-based remote sensors, satellites,
sounding systems, radars, surface systems (including
lidar, Doppler radar)

Parameters: Temperature, water vapor, precipitation, radiances, wind

Coverage: June and July 1986 over the Tennessee River Valley
About every hour to every 6 hours

Resolution: Varies with data type

Media: Computer tape

Volume: Much

Organization: Chronologically by data type

REFERENCE: Williams, S.F., H.M. Goodman, K.R. Knupp, J.E. Arnold, August
1987: *SPACE/COHMEX Data Inventory Document*, NASA
Technical Memorandum 4006, NASA, Scientific and Technical
Information Office.

INSTITUTION: Marshall Space Flight Center

CONTACT: To procure this data set:
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ED-43
SPACE Data Manager
NASA/Marshall Space Flight Center
Huntsville, AL 35812
205/544-1650

To discuss this data set:
Paul Meyer
ED-43
NASA/Marshall Space Flight Center
Huntsville, AL 35812
205/544-1654
or Steve Goodman, 205/544-1683

AVAILABILITY: See COHMEX data sets cost.

ITEMS: Volumetric and doppler radar data

Type/Source: CP2 radar (NCAR)

Parameters: Radar reflectivities, intensities of precipitation, derived wind speeds

Coverage: 20 July 1986 - one thunderstorm including microburst during COHMEX, 1/2 hour period, 14 km (lat) x 14 km (long) x 15 km (altitude)

Resolution: Every 2-1/2 minutes, every 250 m (altitude), every 500 m (lat and long)

Media: Magnetic tape, NCAR radar format

Volume: 1 storm

Organization: Chronologically, then by parameter

REFERENCE: Williams, S.F., H.M. Goodman, K.R. Knupp, J.E. Arnold, August 1987: *SPACE/COHMEX Data Inventory Document*, NASA Technical Memorandum 4006, NASA, Scientific and Technical Information Office.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Robert Chervin
National Center for Atmospheric Research
P.O. Box 3000
Boulder, CO 80307
303/497-1339

AVAILABILITY: Only available to potential collaborators with Dr. Chervin.
Accessible on NCAR mass storage system

ITEMS: CCM output

Type/Source: Community Climate Model

Parameters: Standard atmospheric parameters

Resolution: Every 12 hours

Media: Computer tape, in CRAY format

Volume: 1.2 terrabits

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
National Center for Atmospheric Research
Scientific Computing Division
Data Support Section
P.O. Box 3000
Boulder, CO 80307
303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Aircraft data, GATE (DS 875 and DS 880)

Type/Source: Aircraft data from GATE

Coverage: Atlantic, June 1974--September 1974 (GATE Experiment)

Media: Magnetic tape

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*.
Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
National Center for Atmospheric Research
Scientific Computing Division
Data Support Section
P.O. Box 3000
Boulder, CO 80307
303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Aircraft data, TWERLE (DS 615)

Type/Source: TWERLE balloon

Coverage: Southern hemisphere, June 1975--August 1976

Media: Magnetic tape

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*.
Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
National Center for Atmospheric Research
Scientific Computing Division
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P.O. Box 3000
Boulder, CO 80307
303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: FGGE data

Type/Source: ECMWF, GFDL, FGGE-IIIb and NCAR grids, reanalyses, raobs, pibal, aircraft, dropwindsondes, LIMS soundings, ship, bathyspheres, tesac, drifting buoys, satellites (TIROS, etc.)

Parameters: Standard atmospheric parameters, vertical motions (calculated from grids), upper air profiles, sea surface temperatures, winds, radiances, retrievals

Coverage: December 1978--November 1979, but not all data types are available for the whole time period

Resolution: Varies

Media: Magnetic tape, in FGGE format except for TIROS soundings

Volume: Many tapes, varies drastically among types

Organization: Chronological

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
National Center for Atmospheric Research
Scientific Computing Division
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P.O. Box 3000
Boulder, CO 80307
303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Global analyses from the National Meteorological Center

Type/Source: Flattery-Hough analyses

Parameters: Standard atmospheric parameters

Coverage: 1) 31 October 1972--23 September 1974, sea level--50 mb.
2) 1 December 1974--30 June 1976
3) 1 July 1976--present

Resolution: 1) 2.5 degrees (NCAR format, DS-81)
2) NMC 65 x 65 (DS-66)
3) 2.5 degrees (84 format, DS-82)

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

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National Center for Atmospheric Research
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P.O. Box 3000
Boulder, CO 80307
303/497-1215
Telex: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR by those who have an NCAR computing project number.

ITEMS: Grid point analysis data

Type/Source: NMC, LAFM, Navy, ECMWF, Miscellaneous

Parameters: Vary from set to set. Any of these: humidity, relative humidity, temperature, *u* and *v* wind components, precipitation, mixing ratio, and forecast sets

Coverage: 1963--current (varies from set to set)
Northern hemisphere, tropical, global. Only "global" is continuous from 1976-1986.
Levels covered vary. Not listed for some sets.

Resolution: Varies. 47 x 51, 65 x 65, 2.5 degrees, 63 x 63

Media: Tape, usually 1600 bpi. Some at 6250 bpi

Volume: Varies dramatically from set to set

Organization: Data grouped by source

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
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303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: GTS observed data

Type/Source: Raob and pibal, aircraft, satellites (soundings, through April 1979, and winds)

Parameters: Winds, etc.

Coverage: 1) January 1973--29 December 1984 (NMC)
upper atmosphere, global
2) October 1966--January 1986 (Navy)
surface and upper atmosphere, global

Media: Magnetic tape

Volume: 2) Fifty-seven 6250-bpi magnetic tapes
118 in other formats

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
National Center for Atmospheric Research
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Data Support Section
P.O. Box 3000
Boulder, CO 80307
303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: NMC analyses and forecast model output

Type/Source: From NMC

Parameters: Vertical motion data

Coverage: October 1958 through 1972 at differing levels, differing times.
From September 1975 through the present at 850, 500, 200 mb
for the 6-hour forecast.

Media: Magnetic tape

Organization: By time

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*.
Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
National Center for Atmospheric Research
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Boulder, CO 80307
303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Ocean climatology (DS278)

Parameters: Temperature and salinity

Coverage: Global, surface to 150 m

Resolution: 1 degree

Media: Magnetic tape

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*.
Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
National Center for Atmospheric Research
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Boulder, CO 80307
303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Ocean depth measurements

Parameters: Ocean depth

Coverage: Global

Resolution: 1 degree; 5 minutes

Media: Magnetic tape

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

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303/497-1215
TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Ocean grids

Type/Source:

- 1) S. Levitus, GFDL (DS 285.0)
- 2) A. Gordon, Lamont-Doherty Geological Lab (DS 285.1)
- 3) From ships, Reynolds, CAC (DS 277)
- 4) Sol Hellerman, GFDL (DS 232)

Parameters:

- 1) Monthly--temperature; seasonal--temperature, salinity; annual--temperature, salinity, oxygen saturation
- 2) Temperature, salinity, oxygen, sigma -t, silicate, phosphate, nitrate
- 3) Sea surface temperatures
- 4) Wind stress components

Coverage:

- 1) Seasonal, annual; global
- 2) 30°S-80°S oceans
- 3) 40°S-60°N oceans, January 1970--September 1986
- 4) Global

Resolution:

- 1) 1 degree grids
- 2) 1 degree latitude by 2 degrees longitude, 47 levels, 0-9500 m
- 4) 2 degree grids

Media: Magnetic tape

Volume:

- 1-3) Unknown
- 4) 3.11 Mb

Continued

REFERENCE:

The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

1) Levitus, Sid, December 1982: *Climatological Atlas of World Oceans*, NOAA Professional Paper #13, 173 pages. Available through Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. #003-017-00509-7.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

CONTACT: Roy L. Jenne
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TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Raobs, daily world

Type/Source: From MIT (E. Kung)

Parameters: Winds, etc.

Coverage: Global, May 1958--April 1963

Media: 6250-bpi magnetic tape

Volume: 3 tapes

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*.
Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

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National Center for Atmospheric Research
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TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Raobs, time series

Type/Source: Raobs

Parameters: Rawins and winds aloft

Coverage: From stations all over the world during different time periods; e. g., Australia, 1943-1977; Singapore, 1957--December 1985 United States plus Canada (through September 1971), Caribbean, Mexico, Pacific Islands, Chile, Antarctica, etc.--at significant levels for 1948-1985.

Media: Magnetic tape

Volume: Varies considerably, depending on number of stations reporting

Organization: The "U.S. plus" set is organized by station series within batches (e.g., 1948-1970)

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

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National Center for Atmospheric Research
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TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Satellite data

Type/Source: GOES, NOAA TOVS, Nimbus-3 and -4 atmospheric sounders--
NOAA VTPR, NOAA HIRS, MSU, SSU

Parameters: Standard atmospheric

Coverage: Corresponds to satellite track

Resolution: Varies with the satellite and instrument

Media: Magnetic tape--some 6250 bpi, 1600 bpi

Volume: Varies with set

Organization: By instrument and satellite

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*.
Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

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TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Ship observations
(Not strictly a 4-D data set, but could be an excellent addition to one)

Type/Source: Ships and COADS data

Parameters: Sea surface temperatures

Coverage: Global, 1850-1979, 72 million observations

Resolution: The COADS data from the observations is in 2 degrees

Media: Magnetic tape

Volume: Many

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Center for Atmospheric Research

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TELEX: 989764

AVAILABILITY: Data can be copied on tape at cost or used on-line at NCAR if you have an NCAR computing project number.

ITEMS: Stratospheric data

Type/Source: Various, including model output, rocket soundings, satellite, ozonesondes

Parameters: Ozone, etc.

Coverage: Varies from set to set--some northern hemisphere, some southern hemisphere, global, several stations

Resolution: Various altitude, latitude and longitude and time

Media: Magnetic tape

Volume: Several sets just 1 tape; some are larger

REFERENCE: The catalog, *Data Availability at NCAR*, lists all data available from NCAR's Data Support Section. Phone number above.

Jenne, Roy L., 1975: *Data sets for meteorological research*. Boulder, CO. NCAR TN/IA-111.

INSTITUTION: National Climatic Data Center

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

AVAILABILITY: \$11 handling charge for each digital order plus cost of data

ITEMS: ALPEX data (FA00424)

Type/Source: The Alpine Experiment:
1. ALPEX Quick-Look
2. Research aircraft data
3. Level IIB (dropwindsonde)
4. Level IIIB (ALPEX analyses)
5. Special satellite
6. U.S. national holdings

Parameters: Airflow and mass field over and around mountains under various synoptic conditions, circulations due to wind forcing

Coverage: European Alps: 5°W-30°E, 38-50°N

Media: Magnetic tape, 1600 or 6250 bpi, ASCII or EBCDIC mode

Volume: 6 data sets

Organization: A catalog is provided with the data sets.

REFERENCE: Hatch, W.L., 1986: *Selective Guide to Climatic Data Sources, Key to Meteorological Records Documentation No. 4.11*, I-70, 71.

INSTITUTION: National Climatic Data Center

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

AVAILABILITY: \$11 handling charge for each digital order plus cost of data

ITEMS: Climatic diagnostics data base (FA00784)

Type/Source: NMC's global analyses

Parameters: *U* and *v* wind components, temperature, geopotential height, vertical velocity, humidity, vorticity, pressure, derivations from the above

Coverage: Global, 1 October 1978--30 September 1983

Resolution: Monthly, 9 constant pressure levels

Media: Magnetic tape, 6250 bpi, binary, unlabeled

Volume: Four 9-track tapes

Organization: Year, month, hour (0000 or 1200 UTC)

REFERENCE: Hatch, W.L., 1986: *Selective Guide to Climatic Data Sources. Key to Meteorological Records Documentation No. 4.11*, I-123, 124.

INSTITUTION: National Climatic Data Center

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

AVAILABILITY: \$11 handling charge for each digital order plus cost of data

ITEMS: First GARP Global Experiment (FGGE) (FA00331)

Type/Source: Every observational method possible

Parameters: All meteorological parameters possible

Coverage: Global, 27 November 1978--30 November 1979
Special observation periods: 5 January--5 March 1979
and 1 May--30 June 1979

Resolution: Varies with type

Media: Magnetic tape, 1600 or 6250 bpi, ASCII or EBCDIC mode

Volume: 9 sets, inventory available

Organization: Each set shows areas covered, period of record and the tape where it is found

REFERENCE: Hatch, W.L., 1986: *Selective Guide to Climatic Data Sources. Key to Meteorological Records Documentation No. 4.11*, I-66, 7.

INSTITUTION: National Climatic Data Center

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

AVAILABILITY: \$11 handling charge for each digital order plus cost of data

ITEMS: GARP Atlantic Tropical Experiment (GATE) (FA00282)

Type/Source: Observations from ships, surface, buoys, aircraft, satellites

Parameters: Wind and cloud measurements, all standard meteorological observations at many levels

Coverage: Tropical Atlantic Ocean and adjacent land areas
17 June--23 September 1974

Media: 9-track magnetic tape, 1600 bpi, EBCDIC mode, unlabeled
Also available on microfilm.

Volume: 9691 magnetic tapes

Organization: Data inventory (catalog) available with the sets.

REFERENCE: Hatch, W.L., 1986: *Selective Guide to Climatic Data Sources. Key to Meteorological Records Documentation No. 4.11, I-63 to I-65.*

INSTITUTION: National Climatic Data Center

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

AVAILABILITY: \$11 handling charge for each digital order plus cost of data

ITEMS: GFDL Atmospheric Circulation Tape Library (FA00919)

Type/Source: Many, including global rawinsondes, surface and ship reports

Parameters: Pressure, horizontal departure fields from mean conditions, cross sections, mountain topography

Coverage: Global, 1 May 1958--30 April 1973

Resolution: 11 constant pressure levels between 50 and 1000 mb
Monthly (computed from daily records)
Southern hemisphere not analyzed for 1958-63 period

Media: 9-track magnetic tape, 6250 bpi, ASCII, unlabeled. Can be copied in EBCDIC mode and onto other computer media.

Volume: 32 tapes

Organization: By field within periods of years (e.g., 1963-1973)
General information pamphlet gives details on fields.

REFERENCE: Hatch, W.L., 1986: *Selective Guide to Climatic Data Sources. Key to Meteorological Records Documentation No. 4.11*, I-141, 142.

Oort, Abraham H., 1983: *Global Atmospheric Circulation Statistics, 1958-1973*. NOAA Professional Paper No. 14. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

INSTITUTION: National Climatic Data Center

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

AVAILABILITY: \$11 handling charge for each digital order plus cost of data

ITEMS: Mixing height studies (FA00161)

Type/Source: Observing stations, raobs

Parameters: Mixing heights: mixing depths, wind speed, precipitation

Coverage: Morning and afternoon; 1 January 1960--31 December 1964, 62 stations in United States; various later years with more stations

Resolution: Hourly surface, upper air at 0000 UTC and 1200 UTC

Media: 9-track magnetic tape, 1600 and 6250 bpi, ASCII mode, labeled. Copies can be made in EBCDIC mode.

Volume: 1 tape 1600 bpi (for 1960-64), 2 tapes 6250 bpi (more recent years)

Organization: Data inventory available, arranged by header numbers

REFERENCE: Hatch, W.L., 1986: *Selective Guide to Climatic Data Sources. Key to Meteorological Records Documentation No. 4.11, I-73, 74.*

INSTITUTION: National Climatic Data Center

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

AVAILABILITY: \$11 handling charge for each digital order plus cost of data

ITEMS: 1) Palmer drought analyses (FA00370)
2) Time-biased corrected divisional temperature-precipitation drought index (FA00011)

Type/Source: Individual stations

Parameters: Some: precipitation, mean temperature, soil moisture (surface and underlying), evapotranspiration, moisture loss (potential, surface, underlying), runoff, amount of dryness needed to end a wet spell, amount of moisture needed to end a dry spell, severity indexes

Coverage: United States (not Hawaii, Alaska), U.S. Virgin Islands, Puerto Rico

Resolution: 1) Weekly (January 1973 through present)
2) Monthly (January 1931-present)

Media: Magnetic tape, 1600 or 6250 bpi, ASCII or EBCDIC mode

Volume: 1 tape each

Organization: By state, state climatic division, year, month or week

REFERENCE: Hatch, W.L., 1986: *Selective Guide to Climatic Data Sources. Key to Meteorological Records Documentation No. 4.11*, I-59 to I-62.

INSTITUTION: National Climatic Data Center

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

AVAILABILITY: \$11 handling charge for each digital order plus cost of data

ITEMS: Precipitation data (FA00402 and FA00403)

Type/Source: NWS and cooperative observer stations

Parameters: Rain rate

Coverage: FA00402: United States and territories; from August 1, 1948 (except for Hawaii and islands)
FA00403: United States, except Alaska, and territories; from May 1971 (from July 1971 for Puerto Rico and U.S. Virgin Islands)

Resolution: Hourly (FA00402) and every 15 minutes (FA00403)

Media: Magnetic tape, 9 track, 6250 bpi, ASCII (Other modes available at extra cost)

Volume: FA00402: 14 magnetic tapes
FA00403: 5 tapes

Organization: By state, then by station, element type, year, month, day

REFERENCE: Hatch, W.L., 1986: *Selective Guide to Climatic Data Sources. Key to Meteorological Records Documentation No. 4.11*, I-11 to I-14

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INSTITUTION: National Climatic Data Center
Satellite Data Services Division

CONTACT: User Services (to acquire data):
Satellite Data Services Division, NCDC/NESDIS
World Weather Building, Room 100
Washington, DC 20233
301/763-8111

Information only:
Katherine B. Kidwell
301/763-1372

AVAILABILITY: Through NESDIS User Services. Cost is \$92/tape, \$11 handling charge per order

ITEMS: Cloud climatology from the International Satellite Cloud Climatology Project (ISCCP)

Type/Source: Satellite--geostationary and polar orbiting

Parameters: Cloud cover (C-1 and C-2 data) and globally merged calibrated radiances (B-3 data)

Coverage: July 1983 through present (updated periodically), global

Resolution: Several levels.
C-1: 250 km, B-3: 30 km
C-1 and B-3: every 3 hours, C-2: averaged monthly

Media: Magnetic tape

Volume: C-1: 2 tapes/month
B-3: varies

Organization: Chronological

REFERENCE: Kidwell, K.B. and B. Worthington, 1988: *ISCCP Catalog*, NOAA/NESDIS, Washington DC.

INSTITUTION: National Environmental Satellite and Data Information Service

CONTACT: Mary Hollinger
NOAA/NESDIS/Satellite Data Service Division E/CC61
Room 100
World Weather Building
Washington, DC 20233
301/763-8111

Information only:
Don J. Boucher
M5/715
The Aerospace Corporation
P.O. Box 92957
Los Angeles, CA 90009-2957
213/336-6634

AVAILABILITY: Cost is \$92 per data set plus \$11 handling charge. This is a relatively new archive which will be ready to take requests in June 1989.

ITEMS: Microwave image data records (radiances)

Type/Source: Microwave imager (SSM/I) on U.S. Air Force's Defense Meteorological Satellite Program's polar-orbiting satellites. The SSM/I is a 7-channel, 4-frequency, linearly polarized, passive microwave radiometric system.

Parameters: Liquid water column, ocean surface wind speed, ice coverage, precipitation, land surface moisture and temperature, snow water content, water vapor.

Coverage: Near-global (2.4 degrees at poles, and small areas at equator are uncovered), since June 1987

Resolution: 25 km (50 km for ice age and soil moisture), brightness temperatures at 19.35, 22.235, 37 and 85.5 GHz.

Media: Magnetic tape

Organization: Chronologically, within Level I-b format

REFERENCE: Holling, J., R. Lo, G. Poe, R. Savage and J. Pierce, September 1987: *Special Sensor Microwave/Imager User's Guide*, Naval Research Laboratory, Washington, DC.

*Defense Meteorological Satellite Program--Block 5D-2
Compilation, Mission Operations, DMSP Directorate, Weather
and Navigation Division. Available through Department of the
Air Force, HQ Space Division, YD, P.O. Box 92960, Worldway
Postal Center, Los Angeles, CA 90009-2960.*

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INSTITUTION: National Environmental Satellite and Data Information Service

CONTACT: Mary Hollinger
NOAA/NESDIS/Satellite Data Service Division E/CC61
Room 100
World Weather Building
Washington, DC 20233
301/763-8111

Information only:
Don Boucher
M5/715
The Aerospace Corporation
P.O. Box 92957
Los Angeles, CA 90009-2957
213/336-6634

AVAILABILITY: Cost is \$92 per data set plus \$11 handling charge. This is a relatively new archive which will be ready to take requests in June 1989.

ITEMS: Temperature soundings

Type/Source: Microwave temperature sounder (SSM/T) on board U.S.A.F.'s Defense Meteorological Satellite Program's polar-orbiting satellites

Parameters: Temperature at various pressure levels (see resolution) and pressure at tropopause

Coverage: Global, since late November 1987

Resolution: Pressure levels: 1000, 850, 700, 500, 400, 300, 250, 200, 150, 100, 70, 50, 30, 20 and 10 mb and 14 thicknesses between these levels

Media: Magnetic tape

Organization: Chronologically, in level 1-B format

REFERENCE: *Defense Meteorological Satellite Program--Block 5D-2 Compilation*, Mission Operations, DMSP Directorate, Weather and Navigation Division. Available through Department of the Air Force, HQ Space Division, YD, P.O. Box 92960, Worldway Postal Center, Los Angeles, CA 90009-2960.

INSTITUTION: National Meteorological Center

CONTACT: Tony Siebers
National Meteorological Center
World Weather Building Room 410
5200 Auth Road
Camp Springs, MD 20233
301/763-8076

AVAILABILITY: Case by case basis

ITEMS: Analysis and forecast gridded fields

Type/Source: Aviation model (also known as global or spectral model)

Parameters: Heights, u and v components, pressure, absolute vorticity, relative humidity, temperature, velocity, precipitable water, wind shear, dew point, lifted index

Coverage: Most grids are 4225 point (65 x 65) northern hemisphere polar stereo-oriented $80^{\circ}W$, pole at (33,33), some grids 5365 point (145 x 37), southern hemisphere latitude/longitude grid for $90^{\circ}S$ to $0^{\circ}S$ (2.5 degree spacing); measurements at levels which vary with variable; previous year

Resolution: 381 km at $60^{\circ}N$
Forecasts at 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 72 hours

Media: Magnetic tape, documentation of format available

Volume: For forecast periods

Organization: By forecast time; list of parameters available

INSTITUTION: National Meteorological Center *

CONTACT: Tony Siebers
National Meteorological Center
World Weather Building Room 410
5200 Auth Road
Camp Springs, MD 20233
301/763-8076

AVAILABILITY: Case by case basis

ITEMS: Analysis and forecast gridded fields

Type/Source: LFM (Limited Fine Mesh) model

Parameters: Relative humidity, precipitable water, temperature, wind shear, u and v wind components, velocity, precipitation, dew point, height, pressure, lifted index

Coverage: 2385 point (53 x 45) northern hemisphere polar stereo grid oriented $105^{\circ}W$, pole at (27, 49); measurements at levels which vary with variable; previous year

Resolution: 190.5 km at $60^{\circ}N$
Forecasts at 0, 6, 12, 18 and 48 hours

Media: Magnetic tape, documentation of format available

Volume: 9 forecast periods

Organization: By forecast time; list of parameters available

INSTITUTION: National Meteorological Center

CONTACT: Tony Siebers
National Meteorological Center
World Weather Building Room 410
5200 Auth Road
Camp Springs, MD 20233
301/763-8076

AVAILABILITY: Case by case basis

ITEMS: Analysis and forecast gridded fields

Type/Source: Medium-range forecast model

Parameters: Heights, u and v gradients, pressure, absolute vorticity, relative humidity, temperature, velocity, precipitable water, wind shear, others

Coverage: Most grids 4225 point (65 x 65) northern hemisphere polar stereo-oriented $80^{\circ}W$; measurements at levels which vary with variable; previous year

Resolution: 381 km at $60^{\circ}N$
Forecasts at 0, 12, 24, 36, 48, 60, 72, 84, ... 240 hours (beyond 84 hours only a subset of parameters are available)

Media: Magnetic tape, documentation of format available

Volume: For forecast periods above

Organization: By forecast time; list of parameters available

INSTITUTION: National Meteorological Center

CONTACT: Tony Siebers
National Meteorological Center
World Weather Building Room 410
5200 Auth Road
Camp Springs, MD 20233
301/763-8076

AVAILABILITY: Case by case basis

ITEMS: Analysis and forecast gridded fields

Type/Source: Regional Forecast Model (RGL--same as NGM, Nested Grid Model)

Parameters: Precipitation and precipitable water, pressure, heights, temperature, relative and specific humidity, lifted index, velocity, u and v wind components, absolute vorticity, others

Coverage: 2385 point (53 x 45) northern hemisphere polar stereo grid oriented 105°W, pole at (27, 49); measurements at levels which vary with variable; previous year

Resolution: A grid: 190.5 km at 60°N
B grid: 168 km at 45°N
C grid: 84 km at 45°N
Forecasts at 0, 6, 12, 18 and 48 hours

Media: Magnetic tape, documentation of format available

Volume: 9 forecast periods

Organization: By forecast time; list of parameters and map showing nested grids is available

INSTITUTION: National Oceanographic Data Center

CONTACT: User Services
NOAA/NESDIS E/OC21
1825 Connecticut Avenue, NW
Washington, DC 20235
202/673-5549

AVAILABILITY: You can request data by letter, telephone or visit to the NODC. The latter requires advance notice. Identify products as completely as possible, note application of the data. Normal turnaround time is 2-3 weeks. There is a small handling charge and you generally need to prepay. See Appendix E for more information. Letters in parentheses after Item entry are file designator.

ITEMS: Atlantic Remote Sensing Land/Ocean Experiment (ARSLOE) data (F181)

Type/Source: EM current meters, waveriders, wave staffs, pressure gauges, etc.

Parameters: Coastal ocean wave and current: mean sea level, current, water level, pressure, wave displacement and slope components, wave spectra, angular Fourier coefficients of the wave, three-axis current meter data

Coverage: Coastal North Carolina
From 6 October through November 1980

Media: Magnetic tape

Volume: 75 observation months (20 tapes)

REFERENCE: March 1984: *National Oceanographic Data Center Users Guide--Key to Oceanographic Records Documentation No. 14*, National Oceanographic Data Center, Washington, D.C.

INSTITUTION: National Oceanographic Data Center

CONTACT: User Services
NOAA/NESDIS E/OC21
1825 Connecticut Avenue, NW
Washington, DC 20235
202/673-5549

AVAILABILITY: You can request data by letter, telephone or visit to the NODC. The latter requires advance notice. Identify products as completely as possible, note application of the data. Normal turnaround time is 2-3 weeks. There is a small handling charge and you generally need to prepay. See Appendix E for more information. Letters in parentheses after Item entry are file designator.

ITEMS: Bathythermograph data (MBT and XBT)

Type/Source: Mechanical (MBT) and expendable (XBT) bathythermographs

Parameters: Temperature, depth

Coverage: MBT: 980,000 stations, 1941--1986, all oceans
XBT: 718,000 stations, 1966--present, all oceans

Resolution: MBT: At 5 m intervals down to maximum of 285 m
XBT: At inflection points down to maximum of 450 or 760 m

Media: Magnetic tape
MBT digitized from analog bathythermograph slides and log sheets

Volume: See coverage

REFERENCE: March 1984: *National Oceanographic Data Center Users Guide--Key to Oceanographic Records Documentation No. 14*, National Oceanographic Data Center, Washington, D.C.

INSTITUTION: National Oceanographic Data Center

CONTACT: User Services
NOAA/NESDIS E/OC21
1825 Connecticut Avenue, NW
Washington, DC 20235
202/673-5549

AVAILABILITY: You can request data by letter, telephone or visit to the NODC. The latter requires advance notice. Identify products as completely as possible, note application of the data. Normal turnaround time is 2-3 weeks. There is a small handling charge and you generally need to prepay. See Appendix E for more information. Letters in parentheses after Item entry are file designator.

ITEMS: Gulf Offshore Weather Observing Network (GOWON) data (F192)

Type/Source: Instruments on offshore oil rigs

Parameters: Air temperature and pressure; wind direction, speed, and gust; significant wave height, maximum wave height, and wave period; water level

Coverage: 1981-1982, U.S. Gulf Coast

Media: Magnetic Tape

Volume: 324 observation months (1 tape)

REFERENCE: March 1984: *National Oceanographic Data Center Users Guide--Key to Oceanographic Records Documentation No. 14*, National Oceanographic Data Center, Washington, D.C.

INSTITUTION: National Oceanographic Data Center

CONTACT: User Services
NOAA/NESDIS E/OC21
1825 Connecticut Avenue, NW
Washington, DC 20235
202/673-5549

AVAILABILITY: You can request data by letter, telephone or visit to the NODC. The latter requires advance notice. Identify products as completely as possible, note application of the data. Normal turnaround time is 2-3 weeks. There is a small handling charge and you generally need to prepay. See Appendix E for more information. Letters in parentheses after Item entry are file designator.

ITEMS: Intertidal (F030 and F100) and marine (F028, F124, F132) organisms and nutrients (F029, F049), fish and shellfish (F123)

Type/Source: Field sampling

Parameters: Organism type (e.g., phytoplankton), depth (sampling and bottom), concentration of organisms, chlorophyll, nutrients and carbon, carbon assimilation, as well as meteorological conditions (SST's, wind speed, direction, etc.)

Coverage: About 1960 to present, but depends on item
Varies for each organism type: Coastal Alaska (for all items),
Puget Sound, Gulf of Mexico, North Pacific, Arctic Ocean,

Media: Magnetic tape

Volume: Varies by item--940 to 15,000 stations

Organization: By station, by date

REFERENCE: March 1984: *National Oceanographic Data Center Users Guide--Key to Oceanographic Records Documentation No. 14*, National Oceanographic Data Center, Washington, D.C.

INSTITUTION: National Oceanographic Data Center

CONTACT: User Services
NOAA/NESDIS E/OC21
1825 Connecticut Avenue, NW
Washington, DC 20235
202/673-5549

AVAILABILITY: You can request data by letter, telephone or visit to the NODC. The latter requires advance notice. Identify products as completely as possible, note application of the data. Normal turnaround time is 2-3 weeks. There is a small handling charge and you generally need to prepay. See Appendix E for more information. Letters in parentheses after Item entry are file designator.

ITEMS: Marine toxic substances and pollutants (F144)

Type/Source: Field samples

Parameters: Kind of pollutant (e.g., tar), concentration, depth, distance to shore, meteorological and sea surface conditions, tide stage and height, depth of thermocline or mixed layer, surface temperature, salinity, wave height and periods

Coverage: 1970--present
U.S. Gulf Coast, coastal Alaska, Puget Sound

Media: Magnetic tape

Volume: 12,570 stations

Organization: By survey platform, by date

REFERENCE: March 1984: *National Oceanographic Data Center Users Guide--Key to Oceanographic Records Documentation No. 14*, National Oceanographic Data Center, Washington, D.C.

INSTITUTION: National Oceanographic Data Center

CONTACT: User Services
NOAA/NESDIS E/OC21
1825 Connecticut Avenue, NW
Washington, DC 20235
202/673-5549

AVAILABILITY: You can request data by letter, telephone or visit to the NODC. The latter requires advance notice. Identify products as completely as possible, note application of the data. Normal turnaround time is 2-3 weeks. There is a small handling charge and you generally need to prepay. See Appendix E for more information. Letters in parentheses after Item entry are file designator.

ITEMS: Meteorology and wave spectra (F191)

Type/Source: NOAA buoys

Parameters: Air temperature and pressure, dew point, wind speed and direction, wind gust, visibility, precipitation, solar radiation, water temperature and salinity or conductivity, wave height, average wave period and direction, dominant wave period, maximum wave height and steepness. Also may be reported: subsurface temperature, salinity, conductivity, pressure, east and north current components

Coverage: 1970--present
Coastal U.S. and Great Lakes

Resolution: Up to hundredths of a minute

Media: Magnetic tape

Volume: 6,137 observation months

Organization: By station, by date

REFERENCE: March 1984: *National Oceanographic Data Center Users Guide--Key to Oceanographic Records Documentation No. 14*, National Oceanographic Data Center, Washington, D.C.

INSTITUTION: National Oceanographic Data Center

CONTACT: User Services
NOAA/NESDIS E/OC21
1825 Connecticut Avenue, NW
Washington, DC 20235
202/673-5549

AVAILABILITY: You can request data by letter, telephone or visit to the NODC. The latter requires advance notice. Identify products as completely as possible, note application of the data. Normal turnaround time is 2-3 weeks. There is a small handling charge and you generally need to prepay. See Appendix E for more information. Letters in parentheses after Item entry are file designator.

ITEMS: Oceanographic station data including values of density, sound velocity and dynamic depth anomaly (SD)
Compressed physical-chemical oceanographic (CTD/STD) data (C022)
High-resolution CTD/STD Data (F022)

Type/Source: Multi-bottle Nansen casts
CTD/STD instruments or other water samplers

Parameters: Temperature and salinity for all stations. Some also report dissolved oxygen, phosphate, total phosphorus, silicate, nitrite, nitrate, and pH as well as meteorological conditions at time of cast (air temperature and pressure, wind, waves) and water color, water transparency, and depth to bottom.

Coverage: 1900 (earliest) to present, all oceans

Resolution: Depth resolution as fine as 1 m intervals for high-resolution CTD/STD data; depth intervals of tens to hundreds of meters for oceanographic station and low-resolution CTD/STD data

Media: Magnetic tape

Volume: 711,963 stations

Organization: By station, by time

REFERENCE: March 1984: *National Oceanographic Data Center Users Guide--Key to Oceanographic Records Documentation No. 14*, National Oceanographic Data Center, Washington, D.C.

INSTITUTION: National Severe Storms Laboratory *

CONTACT: Ed Brandes
National Severe Storms Laboratory
1313 Halley Circle
Norman, OK 73069
405/360-3620

AVAILABILITY: On request

ITEMS: Winds triangulated from multiple doppler radars

Type/Source: Radars in Oklahoma

Parameters: *U, v, w* wind components; reflectivity in dbz

Coverage: About 60 km around each radar; an hour per storm

Resolution: 1 km horizontal and vertical, approximately 4 minutes

Media: 9-track magnetic tape

Organization: Chronologically

INSTITUTION: National Severe Storms Laboratory *

CONTACT: Conrad Ziegler
National Severe Storms Laboratory
1313 Halley Circle
Norman, OK 73049
405/366-0416

AVAILABILITY: Contact C. Ziegler directly.

ITEMS: Model data

Type/Source: Kinematic Microphysical Cloud Model

Parameters: *U, v, w* wind components; reflectivity; potential temperature; vapor; cloud, rain, graupel, and their concentrations; cloud ice; snow; space-charged densities of cloud ice; cloud water; scalar electrical potential; diffusion coefficient

Coverage: Roughly 50 km horizontal, 20 km vertical

Resolution: Spaced 3 minutes apart

Media: 9-track magnetic tape

Organization: Grouped by time

Call Bill Baumgardtner, NSSL, for tape formatting information.

INSTITUTION: Naval Oceanographic Office

CONTACT: Ken Countryman
Naval Oceanographic Office, Code OP
Stennis Space Center, MS 39522-5001
601/688-5670

AVAILABILITY: Access to the model itself can only be obtained if you have a Defense contract. Contact your ONR contract officer and specify area and season.
Mr. Countryman, however, will discuss the model with interested parties.

ITEMS: Generalized Digital Environmental Model (GDEM)

Type/Source: Based on MOODS (see next page)

Parameters: Grid of temperature and salinity, preserves ocean currents

Coverage: Oceans north of Equator, one model run per season with monthly sea surface temperature fields, surface to ocean floor

Resolution: 30 minutes, NODC standard depths (raw data is averaged and spatially interpolated)

Media: Tape, ASCII blocked format

Volume: Very large. Specify a particular area and season.

Organization: By season, by latitude and longitude

REFERENCE: *A survey of underwater acoustic models and environmental acoustic data banks*, ASW FPO Report - 80-115. Anti-submarine Warfare Systems Project Office, Department of the Navy, Washington, D.C. 20362

INSTITUTION: Naval Oceanographic Office

CONTACT: Michael Jugan
Naval Oceanographic Office, Code OPSM
Stennis Space Center, MS 39522-5001
601/688-4424

AVAILABILITY: Must have a DOD contract to have access to NOO data. Some subsets are available on tape, but if frequent users wish to access the data base itself, they must be on an approved remote access list.

ITEMS: Master Ocean Observation Data Set (MOODS)

Type/Source: Ship and airborne instruments, bathythermographs, etc.

Parameters: Temperature, salinity, depth

Coverage: World-wide, since 1920

Resolution: Randomly spaced, most in NODC standard depths

Media: Magnetic tape

Volume: About 4.5 million observations. MOODS is one of the largest (if not the largest) oceanographic data bases in the world in a single format.

Organization: Geographically sorted, by area and time frame

REFERENCE: *A survey of underwater acoustic models and environmental acoustic data banks*, ASW FPO Report - 80-115. Anti-submarine Warfare Systems Project Office, Department of the Navy, Washington, D.C. 20362

INSTITUTION: University of Wisconsin-Madison
Cooperative Institute for Meteorological Satellite Studies

CONTACT: Brian Goodman
Space Science and Engineering Center/CIMSS
1225 W. Dayton Street
Madison, WI 53706
608/263-2268

AVAILABILITY: Case by case basis

ITEMS: Synoptic time (0000 UT and 1200 UT) analyses using modified
Australian BMRC operational data assimilation
(analysis/forecast) system

Type/Source: GALE Field Experiment IOP #2

Parameters: Primary meteorological variables and secondary diagnostic
quantities

Coverage: 1200 UTC from 23 January 1986 every 12 hours through
1200 UTC 28 January 1986, 50°N-20°N and 100°W-50°W

Resolution: 60 km, 65 x 65 horizontal grid, 15 sigma levels in forecast
model, 10 p-levels in analysis and model output

Media: Magnetic tape, 6250 bpi, unlabelled, standard NMC packed-
tape format

Volume: 10 synoptic time analyses including radiosondes, ships, buoys,
surface A reports, and all special network reports (no satellite
data included)

Organization: By synoptic time

INSTITUTION: University of Wisconsin-Madison
Cooperative Institute for Meteorological Satellite Studies

CONTACT: Brian Goodman
Space Science and Engineering Center/CIMSS
1225 W. Dayton Street
Madison, WI 53706
608/263-2268

AVAILABILITY: Case by case basis

ITEMS: Operational VAS retrievals and cloud heights and amounts
(11 x 11) and special research VAS retrievals (5 x 5) and
satellite drift winds

Type/Source: COHMEX Field Experiment

Parameters: Vertical soundings of geopotential height, temperature,
dewpoint temperature, also precipitable water and lifted index
from VAS retrievals; low, middle and high cloud-drift winds;
cloud-top pressure and emissivity estimates

Coverage: Eastern United States
Operational VAS: June--July 1986
Special research VAS: five days (17, 19, 23 June and 8, 11
July)
Operational, normally available retrievals and cloud
parameters: 1-2 times daily
Special: 4 to 5 time periods 1.5 hours apart between 1200 and
2400 UTC for each of the five days

Resolution: Operational about 90 km; special about 40 km

Media: Magnetic tape, 6250 bpi, standard McIDAS MD file schemas

Volume: See coverage

Organization: Sequentially in time for operational, by day for special data
sets; by data type

INSTITUTION: University of Wisconsin-Madison
Cooperative Institute for Meteorological Satellite Studies

CONTACT: Brian Goodman
Space Science and Engineering Center/CIMSS
1225 W. Dayton Street
Madison, WI 53706
608/263-2268

AVAILABILITY: Case by case basis

ITEMS: Data Assimilation analysis/forecast output using modified
Australian BMRC operational data assimilation
(analysis/forecast) system

Type/Source: GALE Field Experiment, seven IOP days

Parameters: Primary meteorological variables (geopotential height, u and v
wind components, temperature, dewpoint temperature, vertical
velocity and pressure coordinates, mean sea level pressure) at
mandatory pressure levels, surface variables (pressure and
temperature, accumulated precipitation)

Coverage: 0000 UTC 24 and 26 January, 11, 14 and 20 February, and 4
March 1986
60°N-10°N and 130°W-50°W
Ten mandatory pressure levels (1000 mb-100 mb).
For each case study day, 24-hour control forecasts were made
with the fields output every 3 hour ebb of NMC global
analysis. Assimilations were performed at 0900 UTC and 1100
UTC and the forecasts restarted through to the final
verification time at 0000 UTC on the next day (i.e., 0300,
0600, 0900, 1200, 1500, 1800, 2100, 0000 UTC) using TOVS,
VAS and VAS+MSU satellite retrievals, respectively.

Resolution: 90 km; 65 x 65 horizontal grid; 15 sigma levels in forecast
model, 10 pressure levels in analysis and model output

Media: Magnetic tape, 6250 bpi, unlabeled, standard NMC packed-
tape format

Volume: See coverage

Organization: By case-study day

INSTITUTION: University of Wisconsin-Madison *
Cooperative Institute for Meteorological Satellite Studies

CONTACT: Gary S. Wade
NOAA/NESDIS/SDAB at
Space Science and Engineering Center
1225 W. Dayton Street
Madison, WI 53706

AVAILABILITY: Available for cost of tape and restore/save operations

ITEMS: VAS and TOVS/AVHRR multispectral radiances:
Raw satellite radiance data; ancillary data for satellite
retrievals (surface observations, NMC forecast fields); satellite
products (retrieval profiles, derived product images, SST)

Type/Source: Gulf of Mexico Experiment (GUFMEX)

Parameters: Visible and multispectral radiances
Infrared--VAS, HIRS (TOVS), AVHRR
Microwave--MSU (TOVS)

Coverage: 15 February to 1 April 1988 over Gulf of Mexico region
Imagery--typically every 6 hours for GOES-7, including VAS
multispectral imaging and dwell sounding data;
typically twice daily for NOAA-10; very limited AVHRR
passes (about 20)

Resolution: VAS--8 or 16 km, with up to 12 bands
TOVS--HIRS, 20 km, 20 bands
TOVS--MSU, 150 km, 4 bands
AVHRR--1 km, 5 bands

Media: McIDAS put tapes

Volume: About 50 tapes

Organization: Chronologically by instrument (VAS, TOVS, AVHRR)

INSTITUTION: University of Wisconsin-Madison
Cooperative Institute for Meteorological Satellite Studies

CONTACT: Gary S. Wade
NOAA/NESDIS/SDAB at
Space Science and Engineering Center
1225 W. Dayton Street
Madison, WI 53706

AVAILABILITY: Available for cost of tape and restore/save operations

ITEMS: VAS-derived products--satellite retrievals, sea surface temperatures, derived images

Type/Source: GOES-VAS

Parameters: Multispectral radiances from space

Coverage: Primarily from GOES-East, from October 1980 to present
Prime emphasis over United States and North America
(also some global and other regional applications,
e.g., Brazil)

Resolution: 8 or 16 km

Media: McIDAS put tapes

Volume: Varied by year. Little for earlier years.
Over 1000 tapes.

Organization: Chronologically

INSTITUTION: University of Wisconsin-Madison
Cooperative Institute for Meteorological Satellite Studies

CONTACT: Timothy Schmit
Space Science and Engineering Center/CIMSS
GTE/ABLE Archive
1225 W. Dayton Street
Madison, WI 53706
608/263-0291

For VISSR and VAS data:
Satellite Data Services
WWB-Room 100
5200 Auth Road
Washington, DC 20233

AVAILABILITY: Recover costs

ITEMS: Data set for the Global Tropospheric Experiment/Atmospheric Boundary Layer Experiment-2 (GTE/ABLE-2). The experiment was designed to define the role of the rain forest of Amazonia in regulating tropospheric trace gas constituents during a period corresponding to the wet season.

Type/Source: Satellite data and conventional observations

Parameters: Standard meteorological variables from:
GOES-7--dwell soundings, multi-spectral images,
high-resolution visible and infrared imagery;
NOAA-10--multispectral infrared (HIRS) and multispectral
microwave (MSU) soundings (I-b data); surface reports,
radio soundings, NMC's global analyses

Coverage: Primary coverage is from 5-13 May 1987
most parameters from 6 April-20 July 1987
Amazonia and surrounding area

Resolution: Every three, six or twelve hours, depending on data type

Media: Magnetic tape
McIDAS format for most data
I-b TOVS format

Organization: Chronologically within data type

INSTITUTION: University of Wisconsin-Madison *
Department of Meteorology

CONTACT: Edwin Eloranta
Department of Meteorology
1225 W. Dayton Street
Madison, WI 53706
608/262-7327

AVAILABILITY: Through Dr. Eloranta on a case by case basis

ITEMS: Lidar reflectivities

Type/Source: UW-Madison lidar.

Parameters: Raw lidar data (3-D scans) corrected for laser energy variations and inverse R^2 losses

Coverage: South of Madison, WI and Manhattan, KS
Ranges 10-15 km, 2 minutes to 8 hours

Resolution: Spatially highly variable--from 7.5 m to 50 m
2-3 minutes, but individual laser pulses 1/30 second apart

Media: 2.6 gb write-once optical disc

Volume: About 20 data sets, 4 discs, 10 Gb

Organization: Sequentially by time. Can also access by laser-shot number.

INSTITUTION: University of Wisconsin-Madison *
Department of Meteorology

CONTACT: Robert Schlesinger
Department of Meteorology
1225 W. Dayton Street
Madison, WI 53706
608/262-1670

To obtain copies of the data set on tape:
Ken Hansen
NCAR
P.O. Box 3000
Boulder, CO 80307
303/497-1294

AVAILABILITY: Talk to Dr. Schlesinger about the numerics and physics of his 3-D convective cloud model or about using the model output. Call Ken Hansen regarding taped copies of the model output and associated NCAR costs.

ITEMS: Model-generated data

Type/Source: 3-D convective cloud model, experiment TLAPS-3

Parameters: 3-D winds, potential temperature, water vapor mixing ratio, liquid water mixing ratio, pressure

Coverage: One hour, 54 km on a side, 19.8 km deep, 27x27x22 interior grid cells

Resolution: Every 3 minutes, 2 km horizontal, .9 km vertical

Media: 64-bit (8-byte) CRAY floating-point words, on mass storage system at NCAR; contact Ken Hansen to have dataset copied to physical tape compatible with user's computer

Volume: About 35.5 Mb, 1.6 Mb per time level

Organization: In 21 similar groups of 52 logical records, one group per time level, from earliest to latest

REFERENCE: Schlesinger, R., May 1988: Effects of stratospheric lapse rate on thunderstorm cloud-top structure in a three-dimensional numerical simulation. I--Some basic results of comparative experiments. *Journal of the Atmospheric Sciences*, 45, 1555-1570.

INSTITUTION: University of Wisconsin-Madison *
Space Science and Engineering Center

CONTACT: Andrew Horvitz
NOAA/NESDIS/SDSD
World Weather Building
5200 Auth Road
Washington, DC 20233
310/763-8111

Information only:
Dee Wade
Space Science and Engineering Center
1225 W. Dayton Street
Madison, WI 53706
608/262-3762

AVAILABILITY: Non-McIDAS users must go through Mr. Horvitz for data.
Both Horvitz and Ms. Wade will provide information about
the data. Cost determined by NESDIS.

ITEMS: Full-disc geostationary satellite imagery

Type/Source: U.S., European, Japanese geostationary satellites

Parameters: visible and infrared wavelengths

Coverage: Global, continuous for GOES since 1978
SMS--GATE period only (27 June - 28 September 1974)
GOES-Indian Ocean--1 December 1978 - 30 November 1979.

Resolution: Full resolution

Media: GOES--digital format on videocassette
METEOSAT and GMS--6250 bpi CCT's.

Volume: See coverage.

Organization: Chronologically by satellite

REFERENCE: Complete catalog available through NESDIS.

INSTITUTION: University of Wisconsin-Madison *
Space Science and Engineering Center

CONTACT: Andrew Horvitz
NOAA/NESDIS/SDSD
World Weather Building
5200 Auth Road
Washington, DC 20233
310/763-8111

Information only:
Dee Wade
Space Science and Engineering Center
1225 W. Dayton Street
Madison, WI 53706
608/262-3762

AVAILABILITY: Non-McIDAS users must go through Mr. Horvitz to request data. Both Horvitz and Ms. Wade will provide information about the data. Derived products available through G.Wade (see UW-Madison, CIMSS).

ITEMS: GOES-VAS

Type/Source: The Visible/Infrared Spin-scan Radiometric Atmospheric Sounder on GOES

Parameters: Brightness temperatures, radiances

Coverage: GOES-East and/or -West geographic area of coverage
GOES-East: from 4 May 1987 through present
GOES-West: from 20 October 1987 through present
Either or both: from 23 September 1980 - 24 March 1987

Resolution: Full

Media: Digital format on videocassette

Volume: See coverage

Organization: Chronologically by satellite

REFERENCE: Complete catalog available through NESDIS.

INSTITUTION: University of Wisconsin-Madison
Space Science and Engineering Center

CONTACT: Jean Phillips, Librarian
Space Science and Engineering Center
1225 W. Dayton Street
Madison, WI 53706
608/262-0987

AVAILABILITY: Available in World Data Center-A's FGGE Level II-b data set and in SSEC archive

ITEMS: Wind measurements derived from geostationary satellite data

Type/Source: GOES-East and -West, GOES-Indian Ocean

Parameters: Winds

Coverage: Morning and evening

Media: 1600-bpi magnetic tape and 800-bpi magnetic tape, in McIDAS readable format and FGGE Level II-b format

Volume: See GOES entry.

Organization: Chronologically by satellite

INSTITUTION: University of Wisconsin-Madison
Space Science and Engineering Center

CONTACT: Jean Phillips, Librarian
Space Science and Engineering Center
1225 W. Dayton Street
Madison, WI 53706
608/262-0987

AVAILABILITY: Available in SSEC archive

ITEMS: Wind measurements derived from geostationary satellite data

Type/Source: GMS-Himawari (Japan)

Parameters: Winds, imagery

Coverage: Morning and evening for 1 December 1978--30 June 1979
Imagery through 30 November 1979

Resolution: 2 x 1.5 km

Media: 1600-bpi magnetic tape and 800-bpi magnetic tape in both
McIDAS-readable format and FGGE Level II-b format

Volume: See coverage

Organization: Chronologically

INSTITUTION: University of Wisconsin-Madison
Space Science and Engineering Center

CONTACT: Jean Phillips, Librarian
Space Science and Engineering Center
1225 W. Dayton Street
Madison, WI 53706
608/262-0987

AVAILABILITY: Archived at SSEC, but final tape, log and documentation are available from the National Science Foundation

ITEMS: Wind measurements derived from geostationary satellite data

Type/Source: METEOSAT

Parameters: Winds and imagery

Coverage: Winds: morning and evening over West Africa from
15 July--15 August 1979
Imagery: 1 December 1978--24 November 1979.

Resolution: 2.5 km

Media: 1600-bpi magnetic tape in EBCDIC format

Volume: See coverage

Organization: Chronologically

INSTITUTION: Wind Cave National Park *

CONTACT: Jim Nepstad
Hot Springs, SD 57747
605/745-4600

AVAILABILITY: On request

ITEMS: Wind Cave survey

Parameters: Cave paths in 3-D

Coverage: 1 mile square by 700 feet vertical

Resolution: 1 foot

Media: IBM floppy disk

Volume: 12,000 3-D points

Organization: By cave run

INSTITUTION: Wisconsin Department of Transportation

CONTACT: Gregory D. Hedden (1)
Gregory D. Hedden and Associates
3805 Council Crest
Madison, WI 53711
608/238-5490

Transportation Assistance Safety Officer (2)
Department of Transportation
4802 Sheboygan Avenue
Madison, WI
608/266-1905

AVAILABILITY: 1) Raw data only available at cost of xeroxing
2) Fee for booklet

ITEMS: Pilot training module--meteorology

Type/Source: NWS local office, Truax field, Madison

Parameters: 1) Temperature, moisture (radiosondes), storm systems
(radar echoes), contours, surface fronts, winds aloft,
weather depiction (ceiling, sky cover), SAs 850, 700 500,
300 mb

Coverage: 2 October 1987
Midwest to east coast, Maine to Kentucky
Several atmospheric levels
GOES images: Infrared 1101 UTC,
Visible 1331 UTC

Resolution: Depends on data type

Media: Paper (weather maps and GOES photoprints)

Volume: 20 pages in module, raw data much more

Organization: By data type

INSTITUTION: Wisconsin Geological and Natural History Survey

CONTACT: Ken Bradbury (or designee)
3817 Mineral Point Road
Madison, WI
608/262-1705

AVAILABILITY: Will be sold by the Survey. Documentation will be made available as a Survey circular.

ITEMS: Path 3-D code

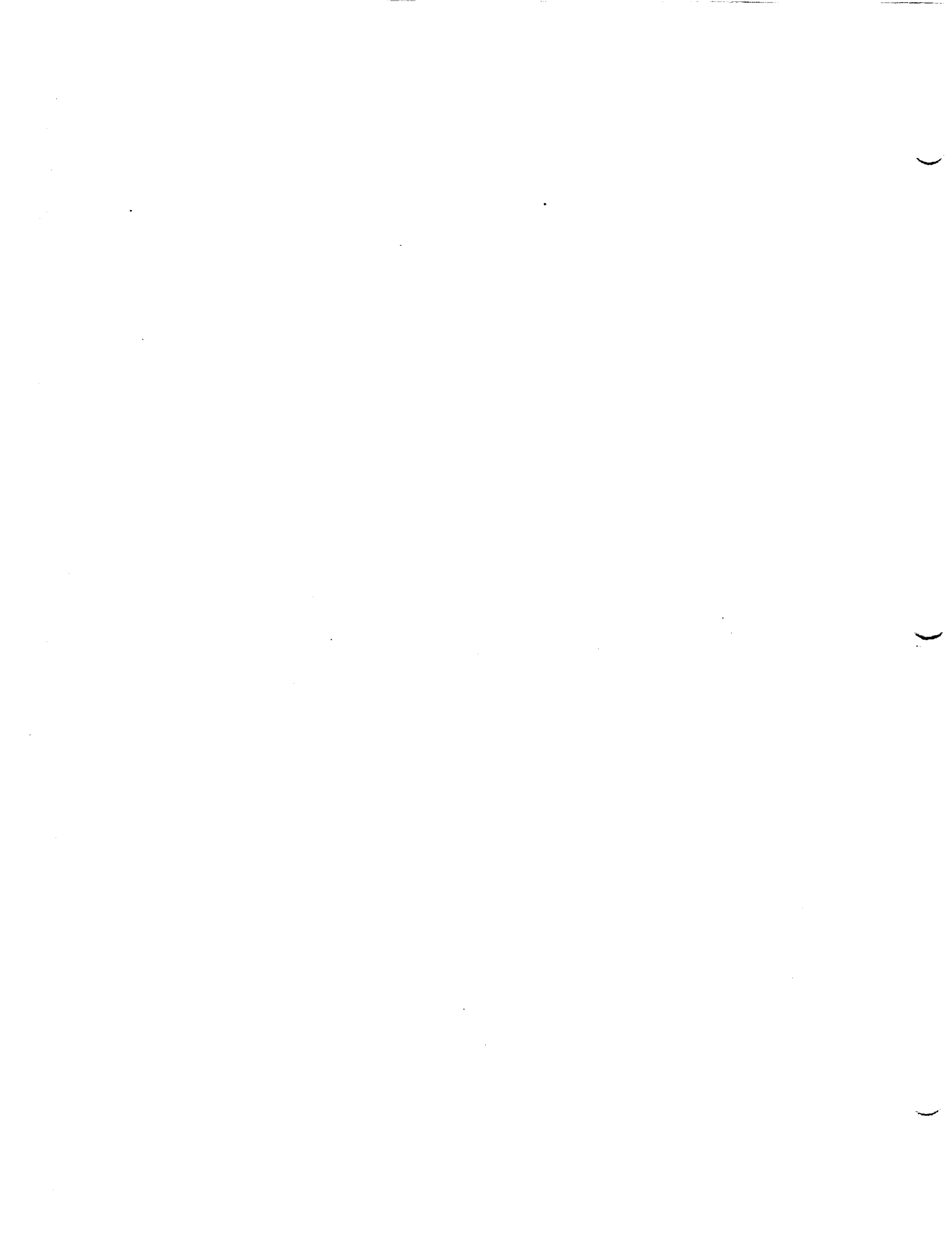
Type/Source: FORTRAN

Parameters: Tracks simulated water particles through time

Media: The version being sold is on a 5-1/4" floppy disk for IBM PC

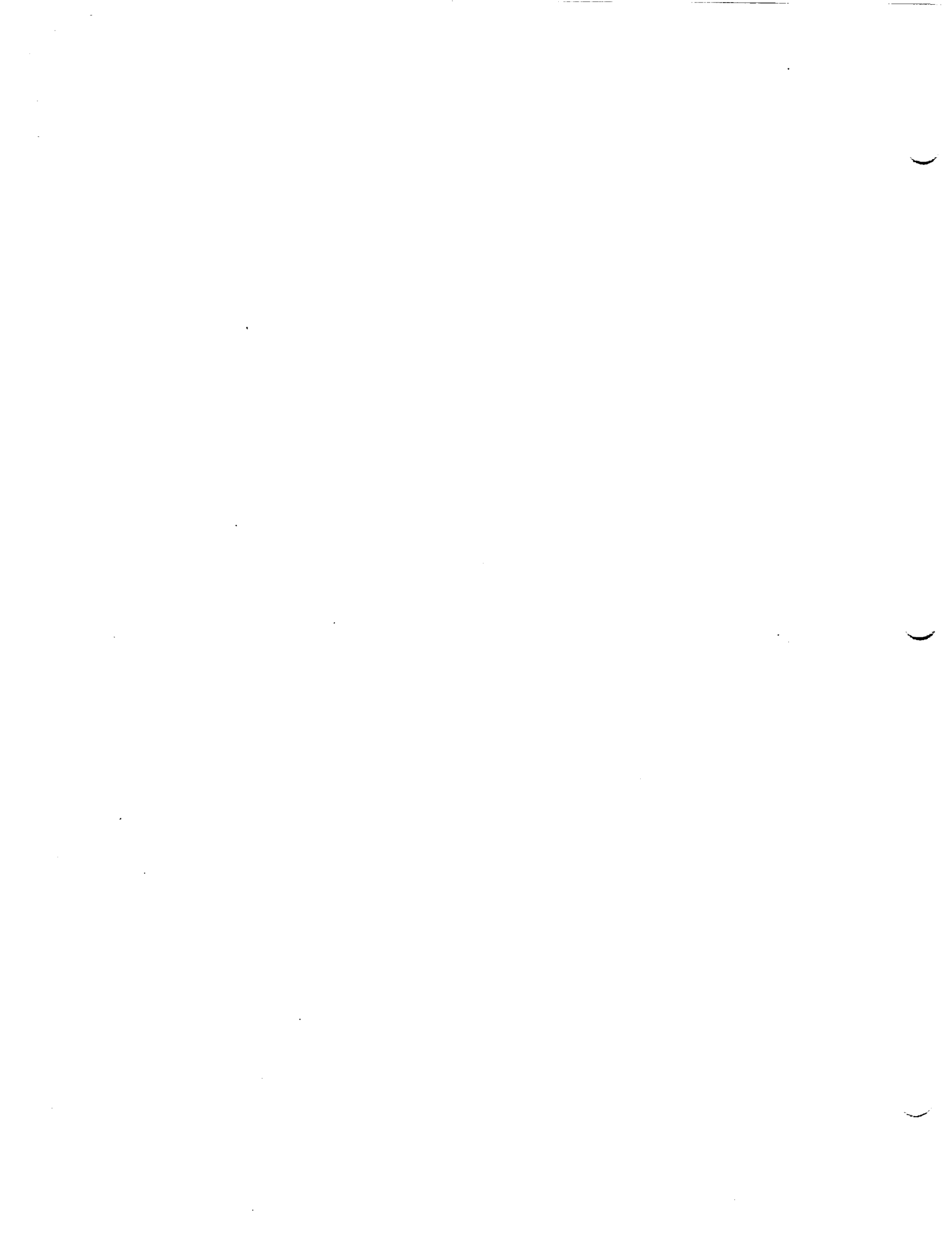
Volume: 1 floppy

Authors of the model: C. Zheng, K.R. Bradbury, M.P. Anderson



DATA SETS:

Outside the United States



INSTITUTION: Bureau of Meteorology Research Centre

CONTACT: Graham Mills
Bureau of Meteorology Research Centre
Box 1289K
Melbourne 3001, Victoria
AUSTRALIA
OMNET - BMRC.AUSTRALIA

AVAILABILITY: Available at nominal cost to interested users. Contact G. Mills first.

ITEMS: Meteorological analyses

Type/Source: 1) Case study over Australia, 28 November through 2 December 1987
2) Case study of frontal cloud-band development over southeastern Australia, 25-28 August 1985

Parameters: Winds, heights, temperatures, dewpoints, MSLP

Coverage: Surface to 50 mb over Australian region

Resolution: 150 km, 6 hours

Media: 9-track tape

Volume: One tape for each data set

Organization: Chronological

REFERENCE: 1) Velden, C. S., and G. A. Mills: An unusually intense late-Spring cyclone over southern Australia. Submitted to *Weather and Forecasting*.
2) Mills, G.A., 1988: The dynamics of a rapid cloud-band development over southeastern Australia. Submitted to *Monthly Weather Review*.

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INSTITUTION: Curtin University

CONTACT: Department of Geology and Geophysics
Curtin University of Technology
Kent Street
Bentley, W. Australia 6001
09/350-7092
Telex: AA92983
Fax: 09/458-4661

AVAILABILITY: Similar data is available from the Colorado School of Mines.

ITEMS: Seismic data

Type/Source: East Heaton Experiment

Parameters: Seismic surface waves

Coverage: To 25 m deep

Resolution: Every 15 m horizontally, every 3 m in depth

Media: Magnetic tape, SEG-Y format

Volume: 6×10^6 surface samples, 3×10^6 depth samples

Organization: Sets of seismic shot records

INSTITUTION: Deutscher Wetterdienst

CONTACT: Deutscher Wetterdienst, Zentralamt Offenbach
Federal Republic of Germany
Frankfurter Strasse 135
D-6050 Offenbach am Main
Federal Republic of Germany
069-8062 745

AVAILABILITY: Generally applies a fixed charge. For data exchanges free of charge, a statement is required that the data will not be used by or passed to any other organization without the agreement of the Deutscher Wetterdienst.

ITEMS: Radiation data sets

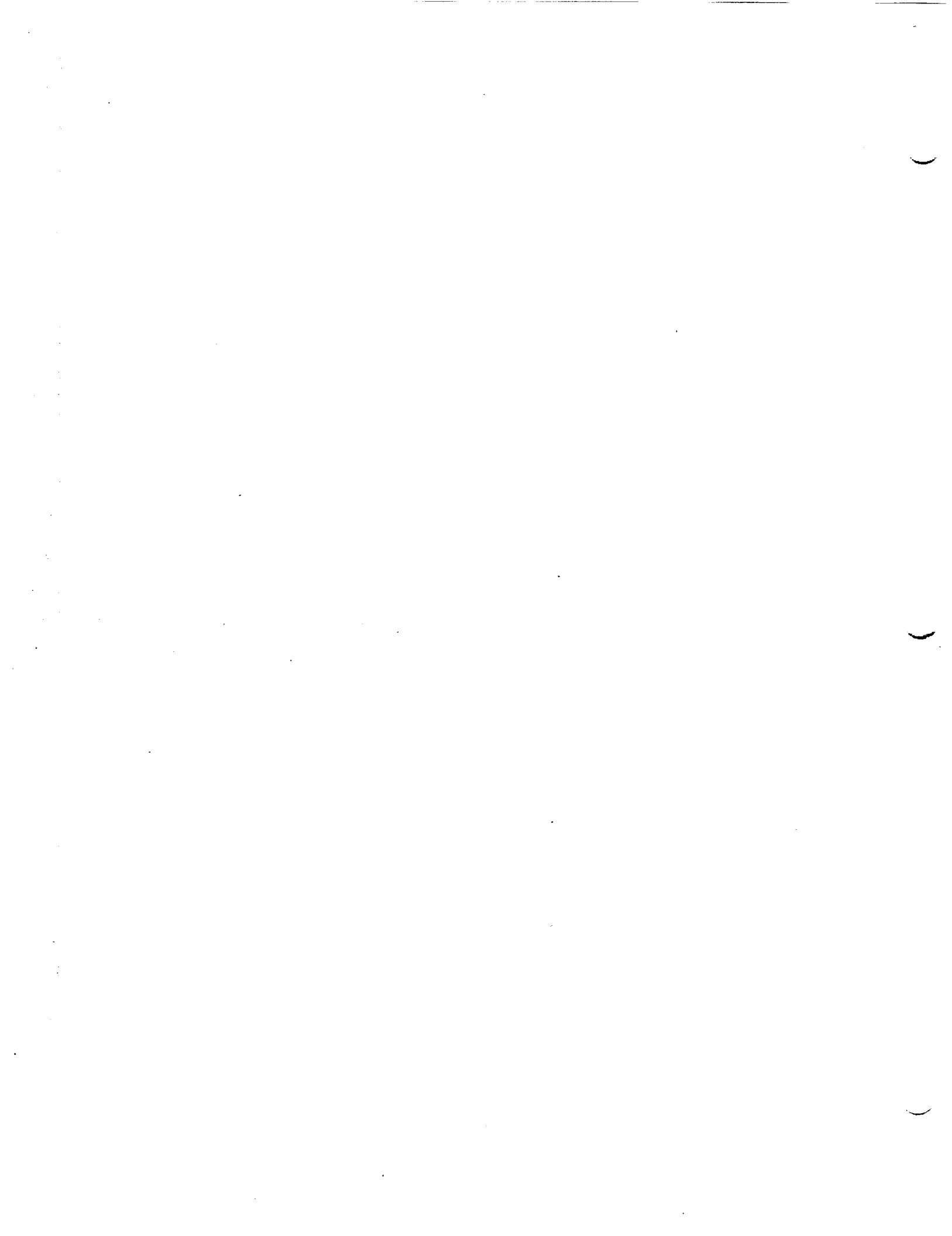
Type/Source: METEOSAT data

Parameters: Net total radiation

Coverage: 1985-present
Federal Republic of Germany (55-47⁰N, 4-15⁰E)

Resolution: Daily and monthly

Media: Magnetic tape



INSTITUTION: European Centre for Medium Range Weather Forecasts

CONTACT: Dr. L. Bengtsson, Director
ECMWF
Shinfield Park
Reading, Berkshire, RG2 9AX
England
Int. telephone number: 44 734/876000
Telex: 847908
Telefax: 0734/869450

AVAILABILITY: Cost £60 (about \$90, depending on exchange rate) per tape. Subject to change. 1600 bpi tape costs extra (number of tapes increases by factor of 3). Use the standard order form (Appendix B).

ITEMS: FGGE Level III-B: 1) original observations and
2) final analyses

Type/Source: 1) First Global GARP Experiment observational data
2) From Special Observation Periods. Includes, beside original data, SYNOP, SHIP, SATEM, SATOB, MONEX, and reprocessed DROPSONDE and LIMS data

Parameters: 1) Main level II-b data--height, horizontal wind components, mean sea level pressure, temperature, relative humidity, vertical velocity
2) Main level-II data--height, horizontal wind components, temperature, relative humidity and vertical velocity (in Pas^{-1})

Coverage: 1) 1 December 1978--30 November 1979
2) 5 January--5 March, 5 May--5 July 1979

Resolution: 1) 1.875 degrees horizontal, 15 pressure levels
2) 1.875 degrees horizontal, 19 pressure levels (initialized analyses) or 15 levels (uninitialized)

Media: 9-track magnetic tape, 6250 bpi (extra charge for 1600 bpi)

Volume: 1) 27 tapes

Organization: 2) Available in 2 streams--initialized and uninitialized

Continued

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REFERENCE:

- 1) Format for international exchange of level-III data sets are published as Appendix II of the FGGE Data Management Plan, World Meteorological Organization (WMO), Geneva.

Bengtsson, Kanamitsu, Kallberg and Uppala, 1982:
FGGE 4-dimensional data assimilation at ECMWF.
Bulletin of the AMS, 63, No. 1, January.

Catalog of selected daily global analysis maps was published by Bjørheim, Julian, Kanamitsu, Kallberg, Price, Tracton and Uppala, ECMWF, 1981.

INSTITUTION: European Centre for Medium Range Weather Forecasts

CONTACT: Dr. L. Bengtsson, Director
ECMWF
Shinfield Park
Reading, Berkshire, RG2 9AX
England
Int. telephone number: 44 734/876000
Telex: 847908
Telefax: 0734/869450

AVAILABILITY: Any sub-areas are available, as are data at various resolutions on regular or Gaussian latitude/longitude grids, or as spherical harmonics with selected triangular truncation. Costing is based on the "per unit cost," £60 (about \$90, depending on exchange rate) per tape plus number of tapes, interpolation required or not, which set and which sub-set, number of months required. (See Appendix B for standard order forms.) Discounts are given for large orders.

ITEMS: WCRP Level III-A global atmospheric data archive:

- 1) Basic Level III Data Sets--suitable for users with limited data processing resources
- 2) Advanced Operational Analysis Data Sets--particularly useful where high resolution is essential, suited for use with case studies and as initial conditions for high resolution models
- 3) Supplementary Fields Data Set--derived from 6-hour forecasts used as "first-guess" for analyses within ECMWF's data assimilation system.

Type/Source: Tropical Ocean and Global Atmosphere (TOGA) program

Parameters:

- 1) Uninitialized analysis values for 14 standard pressure levels, geopotential, temperature, wind u and v components, vertical velocity, relative humidity, dewpoint, land-sea mask. Derived quantities not included, but can be calculated from the data
- 2) Uninitialized analysis values for pressure, geopotential, temperature, wind u and v components, vertical velocity and relative humidity, surface parameters as above plus soil moisture, snow depth, cloud cover, deep-soil wetness, deep-soil temperature, surface roughness, albedo.
- 3) Additional surface data, fluxes and net radiation data derived from short-range forecasts

Coverage: Aims at covering ten years from 1 January 1985, global
Now covers from 1 July 1985 to present

Continued

Resolution:

- 1) 2-1/2 by 2-1/2 degrees, 0000 UTC and 1200 UTC daily, 14 pressure levels and surface
- 2), 3) Archived at resolution of ECMWF's operational system. 80 lines of latitude between pole and equator regularly spaced at 1.125° between points along each latitude row. 0000 UTC, 0600 UTC, 1200 UTC and 1800 UTC; 14 standard pressure levels and surface
- 3) 6-hour forecast values for 0000 UTC and 1200 UTC

Media: 6250-bpi 9-track magnetic tape

Volume:

- 1) 12 tapes
- 2) 44 tapes
- 3) 6 tapes

Organization: Uses the WMO FM 92-VIII Ext GRIB (Grid In Binary) form of data representation.

- 1), 2), 3) Each parameter at each level is stored as a field of gridded values in latitude rows starting in the north and working southwards; within each row, values run from west to east starting at 0° . Upper air and surface data sets are maintained separately and must be requested separately.
- 2) Each parameter at each level is stored as a field either of grid-point values or of spherical harmonic coefficients.

REFERENCE: Documentation available includes a *Data Manual*, a *User Guide to ECMWF Products*, and a twice yearly newsletter.

INSTITUTION: European Centre for Medium Range Weather Forecasts

CONTACT: Dr. L. Bengtsson, Director
ECMWF
Shinfield Park
Reading, Berkshire, RG2 9AX
England
Int. telephone number: 44 734/876000
Telex: 847908
Telefax: 0734/869450

AVAILABILITY: Cost £60 (about \$90, depending on exchange rate) per tape.
Subject to change. 1600 bpi tape costs extra (number of
tapes increases by factor of 3). Use standard order form,
Appendix B.

ITEMS: WMO global analysis data sets (initialized analyses)

Type/Source: Upper-air grid-point fields

Parameters: Geopotential height, temperature, horizontal wind u and v
components, vertical velocity, relative humidity

Coverage: 1 January 1980--31 December 1987

Resolution: 0000 UTC and 1200 UTC, 7 standard pressure levels,
2.5 x 2.5 degree latitude/longitude grid

Media: 9-track magnetic tape formats: FGGE III-B format; WMO
GRID code; internal bit format.

Organization: Each parameter on each standard pressure level is stored as a
field of grid point values in latitude rows from north to south
and row values from west to east from 177.5° to 180°E.
1200 UTC and 0000 UTC data sets must be ordered separately.

INSTITUTION: European Centre for Medium Range Weather Forecasts

CONTACT: Dr. L. Bengtsson, Director
ECMWF
Shinfield Park
Reading, Berkshire, RG2 9AX
England
Int. telephone number: 44 734/876000
Telex: 847908
Telefax: 0734/869450

AVAILABILITY: Cost £60 (about \$90, depending on exchange rate) per tape. You may obtain individual tapes or the whole set, but not parts of tapes. For this data set only, 1600 bpi tapes are not more expensive than the 6250 bpi tapes (because the number remains the same). See Appendix B for order form.

ITEMS: ALPEX data set

Type/Source: ALPEX (Alpine Experiment), an element of the GARP Mountain Sub-program. These data types are archived:
1) GTS: upper-air, 3-hourly surface, mobile ship, aircraft flight level (AIREP, CODAR), oceanographic (BATHY, TESAC reports), TIROS-N, drifting buoy
2) Conventional data (non-GTS): constant density balloon, laser, infrared, chemical and metallic tracer, radar, aircraft dropwindsondes, satellite-derived winds, NAVAID and AIDS flight level data

Parameters: Precipitation, snow depth, soil moisture and temperature, winds, temperature (including sea surface), pressure, surface-based radiation, etc.

Coverage: The Alps: 30°N-60°N, 30°W-37°E; from 1 September 1981--30 September 1982. Special observing period from 1 March-30 April 1982 contains more frequent observations for the area 38°N-50°N and 5°W-30°E. Frequency of observations varies with data type.

Resolution: Varies with data type

Media: 6250-bpi magnetic tape

Volume: GTS--12 tapes
Non-GTS--2 tapes

Organization: Split into GTS and non-GTS type data
GTS tapes each contain 5 days of data
Each non-GTS tape contains one month's data

REFERENCE: 1982: *GARP-ALPEX series, No. 1*

INSTITUTION: European Centre for Medium Range Weather Forecasts

CONTACT: Dr. L. Bengtsson, Director
ECMWF
Shinfield Park
Reading, Berkshire, RG2 9AX
England
44 734/876000
Telex: 847908
Telefax: 0734/869450

AVAILABILITY: As whole or subsets. Subsets based on quarters of the year
Cost £60 (about \$90, depending on exchange rate) per tape. See
Appendix B for order form.

ITEMS: WMO/CAS NWP data study/intercomparison data set--analyses
and forecast

Type/Source: 6 operational NWP centers in France, Germany, Japan, United
Kingdom, United States, plus ECMWF

Parameters: Precipitation, pressure, temperature

Coverage: 1979-1986, 20-90⁰N and 10 regional areas.

Resolution: 3 heights, forecasts for 24, 48, 72, ... 192 hours ahead

Media: 6250-bpi tapes. 1600-bpi tapes can also be made.
Binary, rather than WMO GRID code form

Volume: 1 year per 6250-bpi tape; 3 months per 1600-bpi tape

Organization: Sorted center by center, as three-monthly files

INSTITUTION: European Space Operations Centre, Darmstadt

CONTACT: European Space Operations Centre
METEOSAT Exploitation
Robert-Bosch-Strasse 5
D-6100 Darmstadt
Federal Republic of Germany
49-6151-8861

AVAILABILITY: Fixed charges. Non-members of ESA or EUMETSAT pay 150%.

ITEMS: METEOSAT data products and imagery

Type/Source: METEOSAT

Parameters: Water vapor, sea surface temperature

Coverage: Imagery archived since 1978, whole field of view
Derived water vapor and sst: 1982-present; 55°N-55°S,
55°W-55°E, Atlantic Ocean, Mediterranean and Red Seas;
2 observations daily

Resolution: Full spatial and temporal resolution

Media: 6250-bpi magnetic tape

Volume: A few tapes per year

Organization: Chronological

REFERENCE: *METEOSAT Image Bulletin*

INSTITUTION: Learmonth Solar Observatory
Australia

CONTACT: Joe H. Allen
National Geophysical Data Center
Solar-Terrestrial Physics Division
Boulder, CO
303/497-6323

AVAILABILITY: This is a global archive for all data of this type.

ITEMS: Upper atmosphere disturbances collected by the Ionospheric
Prediction Facility near Perth, Australia

INSTITUTION: McGill University *

CONTACT: Aldo Bellon
Radar Weather Observatory
Box 241
Ste. Anne de Bellevue
Quebec, CANADA H9X 1C0
514/457-3219

AVAILABILITY: Contact A. Bellon

ITEMS: Volumetric radar data

Type/Source: Radar at Mount Royal, Quebec

Parameters: Reflectivities in dbz

Coverage: 400 km range around Mount Royal
Various times since 1980

Resolution: 1 km horizontal, .5 km-2 km vertical, 10 minutes

Media: 9-track magnetic tape

Volume: See coverage

Organization: By time

INSTITUTION: Meteorological Office *

CONTACT: Dr. M. F. Mylne
Meteorological Office
London Road
Bracknell, Berkshire RG12 2SZ
ENGLAND
0344 (Bracknell) 42-0242

AVAILABILITY: By request for £50.71

ITEMS: Soil and vegetation types

Type/Source: Compiled from atlases by M.F. Wilson and A. Henderson-Sellers,
University of Liverpool

Parameters: Soil type, primary and secondary vegetation types

Coverage: Global

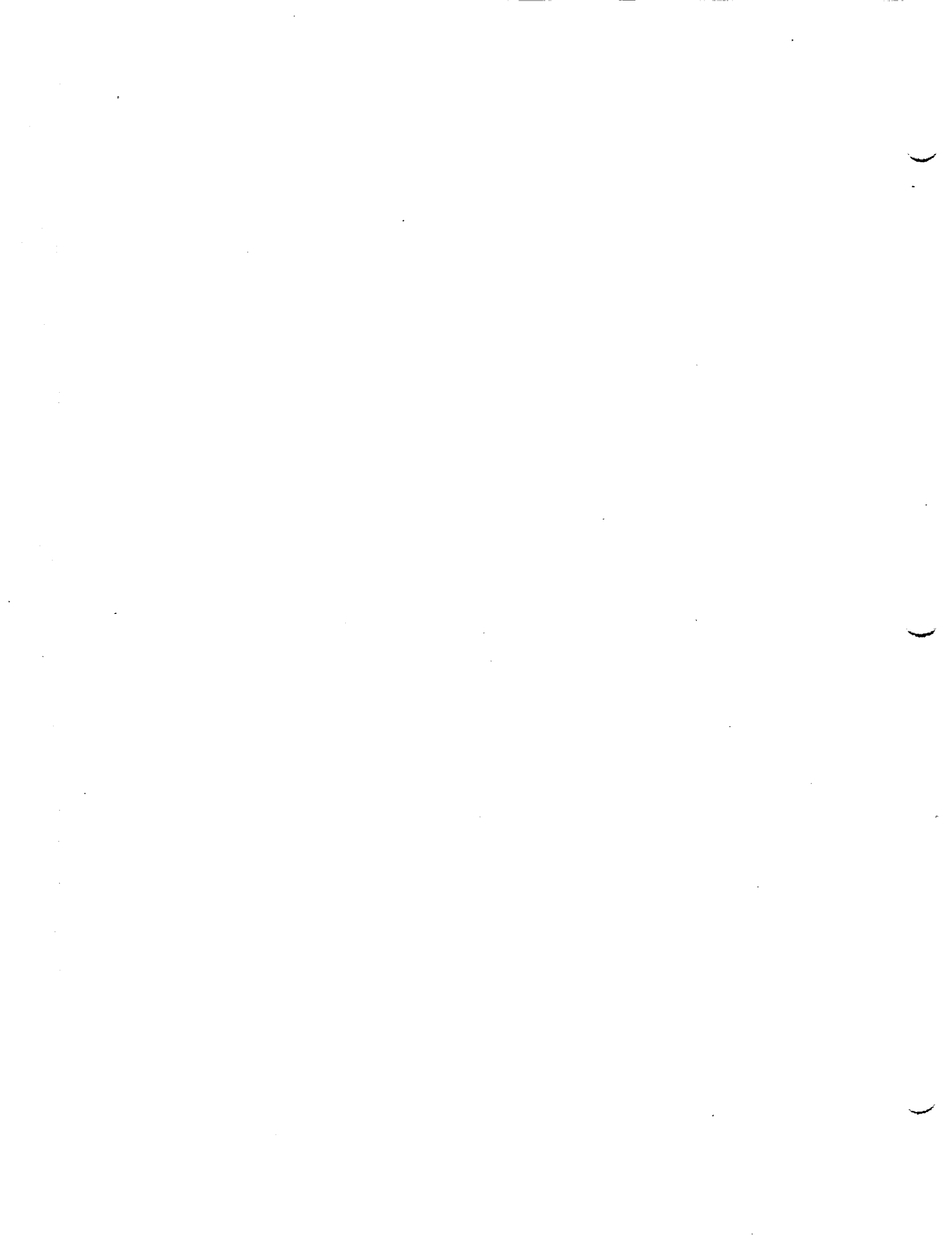
Resolution: 1 degree latitude and longitude

Media: 9-track tape

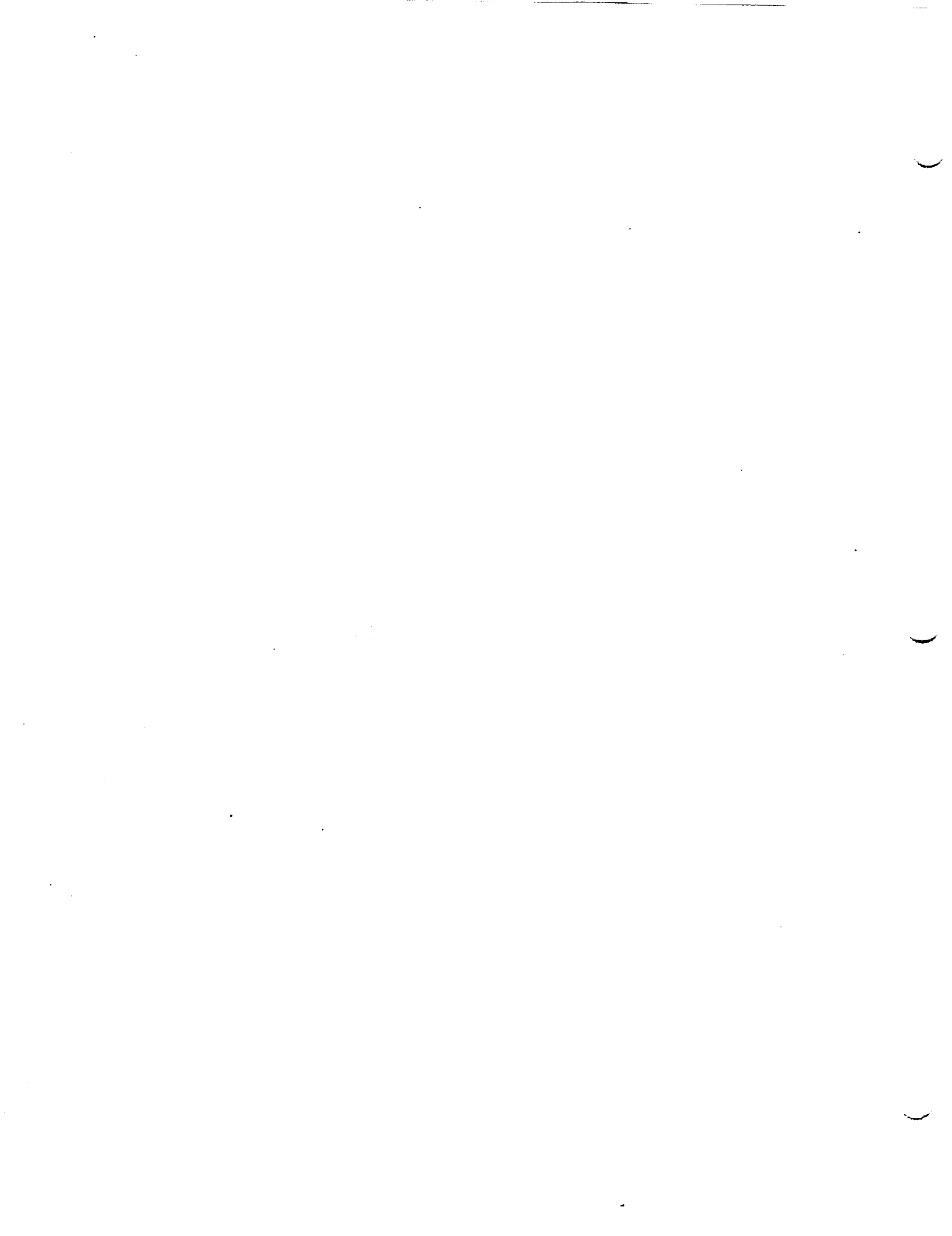
Volume: About 200,000 points

Organization: In 2-D arrays

REFERENCE: Wilson, M.F., and A. Henderson-Sellers, 1985: A Global Archive
of Land Cover and Soils Data for Use in General Circulation
Climate Models, *Journal of Climatology*, 5, 119-143.



SOURCES



II Sources

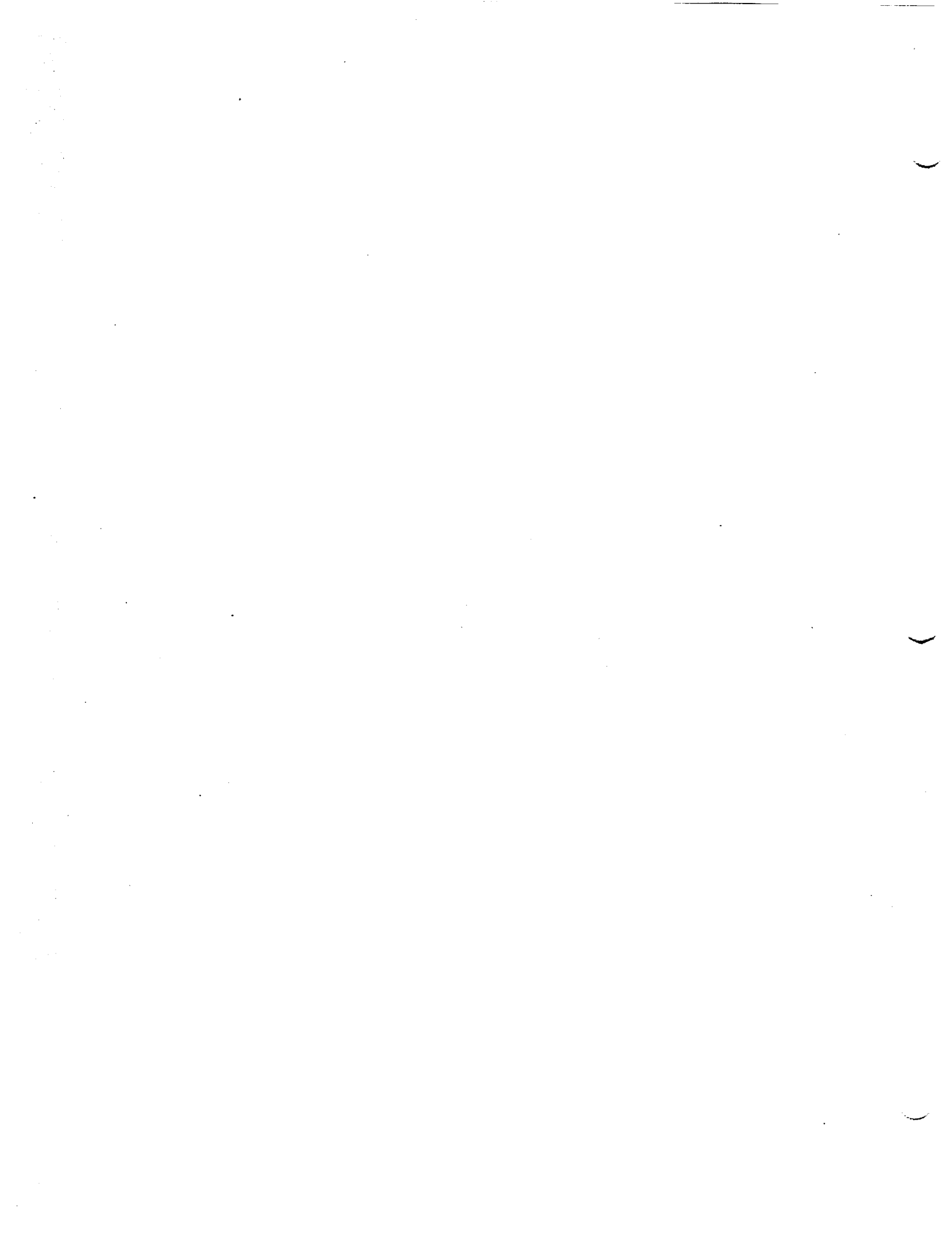
Several centers maintain data bases for the environmental sciences. In this section are those whose holdings include four-dimensional data. Some of these centers also have some of their more interesting data sets listed in the Data Sets section of this inventory.

This section is arranged alphabetically by country; within country, alphabetically by institution.

Besides centers, other useful sources of information including data directories such as NEDRES and the NASA Master Directory are also listed here. They do not give direct access to data, but provide you with information to find the data.

Each organization in this section offers either a print or on-line catalog; some have both. And their user services people can direct you to a specific data set if you have an idea of what you want.

A primary source of four-dimensional data is the weather satellite. A new report from the U.S. General Accounting Office tells you where satellite data is archived in the United States and lists all foreign satellites (see Appendix G). *Satellite Data Archiving: U.S. and Foreign Activities and Plans for Environmental Information*, GAO/RCED-88-201, was released 29 September 1988. It is available from U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877. Telephone number is 202/275-6241. The first five copies are free. While the publication lists all satellites and agencies responsible for their archival, no addresses are given. However, all the U.S. agencies which they list are listed here (in Sources) with contact points. The report is at least useful for more information on agency activities, including international agencies.



SOURCE: Argentina--Servicio Meteorologico Nacional

CONTACT: Servicio Meteorologico Nacional
Archivo Nacional de Meteorologia
25 de Mayo 658
1002 Buenos Aires, Argentina

ITEMS: Satellite and radar data

FORMAT: Magnetic tape

REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources*,
CCI Rapporteur, Remote Sensing Data Management, Canadian
Climate Centre, 4905 Dufferin Street, Downsview, Ontario,
M3H 5T4, Canada.

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SOURCE: Australia--Bureau of Meteorology

CONTACT: Ms. C. J. Skinner
Bureau of Meteorology
GPO Box 1289K
Melbourne, Victoria 3001
Australia

ITEMS: Satellite (including TOVS) and radar data

FORMAT: Magnetic tape

REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources*,
CC1 Rapporteur, Remote Sensing Data Management, Canadian
Climate Centre, 4905 Dufferin Street, Downsview, Ontario,
M3H 5T4, Canada.

SOURCE: Canadian Climate Centre

CONTACT: Director, Climate Applications Branch
Canadian Climate Centre
Atmospheric Environment Service
4905 Dufferin Street
Downsview, Ontario
Canada M3H 5T4

ITEMS: Satellite and radar data

FORMAT: Magnetic tape

REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources*,
CC1 Rapporteur, Remote Sensing Data Management, Canadian
Climate Centre, 4905 Dufferin Street, Downsview, Ontario,
M3H 5T4, Canada.

SOURCE: Czech Hydrometeorological Institute

CONTACT: Czech Hydrometeorological Institute
NaSabatce 17 EP Libus
143 06 Prague 4
Czechoslovakia

ITEMS: Satellite and radar data

FORMAT: Magnetic tape

REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources*,
CCI Rapporteur, Remote Sensing Data Management, Canadian
Climate Centre, 4905 Dufferin Street, Downsview, Ontario,
M3H 5T4, Canada.

SOURCE: England--European Centre for Medium Range Weather Forecasts

SUMMARY: Produces routine global analyses of the atmosphere and numerical forecast products. See Data Sets--Outside the United States in this catalog for individual data sets. See Appendix B for more information and standard order forms.

CONTACT: Dr. L. Bengtsson, Director
ECMWF
Shinfield Park
Reading, Berkshire, RG2 9AX
England
Int. telephone number: 44 734/876000
Telex: 847908
Telefax: 0734/869450

COST: See Data Sets

ITEMS: See Data Sets

SOURCE: German Democratic Republic--Meteorological Service

CONTACT: Mr. K. Richter
Meteorological Service
of the German Democratic Republic
DDR--1500 Potsdam, Albert Einstein Str.
German Democratic Republic
42-44-46 (local number)

ITEMS: Satellite, radar and data

FORMAT: Magnetic tape

REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources*,
CCI Rapporteur, Remote Sensing Data Management, Canadian
Climate Centre, 4905 Dufferin Street, Downsview, Ontario,
M3H 5T4, Canada.

SOURCE: Germany, Federal Republic--Deutscher Wetterdienst

CONTACT: Deutscher Wetterdienst, Zentralamt Offenbach
Federal Republic of Germany
Frankfurter Strasse 135
D-6050 Offenbach am Main
Federal Republic of Germany
069-8062 745

COST: Generally applies a fixed charge. For data exchanges free of charge, a statement is required that the data will not be used by or passed to any other organization without the agreement of the Deutscher Wetterdienst

ITEMS: Climatological data from the national network and global radiation data sets derived from METEOSAT data

SOURCE: Germany, Federal Republic--European Space Agency

CONTACT: Meteorological Data Management Department
European Space Operations Centre
European Space Agency
Robert-Bosch Strasse 5
6100 Darmstadt
Federal Republic of Germany
49-6151-8861

SUMMARY: Publishes *METEOSAT Image Bulletin*.

COST: Fixed charges approved by ESA Council. Countries not members of ESA or EUMETSAT pay 150%. Images began to be archived in 1978. Archive is planned to be maintained until 1990 at least.

ITEMS: All METEOSAT imagery and derived meteorological products. Archived in full spatial and temporal resolution over full field of view.

FORMAT: Magnetic tape

REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources*, CCI Rapporteur, Remote Sensing Data Management, Canadian Climate Centre, 4905 Dufferin Street, Downsview, Ontario, M3H 5T4, Canada.

SOURCE: Iraq--Geological Survey and Mineral Organization

CONTACT: D.G. of the Geological Survey and
Mineral Organization
P.O. Box 986
Alwiya-Baghdad, Iraq

ITEMS: Satellite, perhaps other data

FORMAT: Magnetic tape

REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources*,
CCI Rapporteur, Remote Sensing Data Management, Canadian
Climate Centre, 4905 Dufferin Street, Downsview, Ontario,
M3H 5T4, Canada.

SOURCE: Oman--Directorate General of Civil Aviation
& Meteorology, DGCAM

CONTACT: Department of Meteorology
DGCAM
Post Box No. 1288
Seeb International Airport
Sultanate of Oman
51 96 04 or 51 96 12

COST: Nominal

ITEMS: Satellite data and derived products. Includes air temperature, relative humidity, atmospheric pressure, vapor pressure, surface wind, upper-air, evaporation global solar radiation. Tropical cyclone and SW monsoon information.

FORMAT: Magnetic tape

SOURCE: Romania--Institute of Meteorology and Hydrology

CONTACT: Institute of Meteorology and Hydrology
Soseaua Bucuresti- Ploiesti 97
Sectorul 1
Romania

ITEMS: Satellite and radar data

FORMAT: Magnetic tape

SOURCE: Switzerland--University of Bern

CONTACT: Geography Department
University of Bern
Hallerstrasse 12
CH-3012 Bern
Switzerland
031-65-80-19

SUMMARY: Digital archive since 1982 of morning and afternoon orbits of NOAA-AVHRR, normally channels CH2 and CH4, for central Europe. NOAA-APT archived since 1980; METEOSAT imagery since 1979.

COST: Charges fixed by negotiation

ITEMS: Satellite data and derived products

FORMAT: Magnetic tape

SOURCE: Switzerland--World Climate Data Information Referral Service,
INFOCLIMA

SUMMARY: A WMO service to collect and disseminate information on existence and availability of climate data. No data is held at the WMO; centers holding data register their data with INFOCLIMA and data is requested directly from the source. INFOCLIMA lists available data in the *INFOCLIMA Catalogue of climate system data sets*.

The catalog is structured to enable search of data-set descriptions in the following sequence: data category; area covered by the data set; data set descriptions and corresponding data center.

CONTACT: Ken Davidson, Senior Scientific Officer
World Climate Data Programme
World Meteorological Organization
41 Giuseppe Motta
Case Postale No. 5
CH 1200 Geneve 20
Switzerland
41-22-34-6400
Telex: 23-260 OMM CH
FAX: 41 22 342326

ITEMS: Upper air, surface climatological, radiation (surface), maritime and ocean, cryosphere, atmospheric composition, hydrological, historical and proxy data. Includes satellite data.

SOURCE: U.S.A.--Carbon Dioxide Information Analysis Center

SUMMARY: Funded by Department of Energy. 30 of their data sets are completely quality assured. 250 non-quality-assured sets are also available upon signing a disclaimer. Most may not be 4-dimensional. The publication, *An Annotated Inventory of Climatic Indices and Data Sets* (November 1986), is available from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. It describes indexes derived from data available at this center.

CONTACT: Michael Farrell, Director
Carbon Dioxide Information Analysis Center
Oakridge National Laboratory
P.O. Box X
Oak Ridge, TN 37831
615/574-0390

COST: To recover costs.

ITEMS: Data sets for research on global change and the effects of increased atmospheric carbon dioxide

FORMAT: Magnetic tape, including the FORTRAN code to read it.

SOURCE: U.S.A.--Earth Science Data Directory

SUMMARY: Sponsored by the U.S. Geological Survey, Department of the Interior. Anyone with a modem and telecommunications software can access this menu-driven directory. See Appendix A for *Information Sheet*.

CONTACT: C. R. Baskin, ESDD Project Manager
U.S. Geological Survey
801 National Center
Reston, VA 22092
703/648-7112 or FTS/959-7112

COST: Currently, no computer costs are associated with the search.

ITEMS: Information on availability of earth-science and natural-resource data. The referenced data bases are both automated and nonautomated, and belong to many different organizations. Possible 4-D items cataloged include: abandoned mines maps, air quality data, bathymetry and elevations for one-degree size areas, biophysical land classification and mapping, cave maps, contour data base, selected oil and gas tests, fracture mapping, high-resolution seismic data, soil characteristics and maps, topographic data bases, history shoreline and erosion rate files, map and chart information systems, geologic map indexes, ground water and surface water data files, mineral resource files, gas and oil production, drilling statistic files, bay, estuary and tidal area files.

SOURCE: U.S.A.--NASA Master Directory

SUMMARY: A service of NASA's Space Science Data Center. It is intended to be as comprehensive as possible a directory to earth and space science data sets. Developers are trying to include data from all agencies.

CONTACT: Maryel Schein
NASA/GSFC
Greenbelt, MD 20771
301/286-7688

or contact Jim Thieman, Manager
NASA Master Directory
Code 633
NASA/GSFC
Greenbelt, MD 20771
301/286-9790

Access through SPAN or Telenet. Other networks also may be used. Also, dial in to 301/286-8000.

A link command is offered to connect into other data systems, such as OCEANIC. As of 1 December 1988, 15 such connections were available.

COST: Only network/phone charges

ITEMS: Many space and earth science data sets. Developers plan to include all that there are.

SOURCE: U.S.A.--NASA Ocean Data System (NODS)

SUMMARY: Gives direct access to remotely sensed and in situ oceanographic data sets. Funded by NASA/OSSA/ESAD Oceanic Processes Branch and NASA/OSSA Information Systems Office.

The system can be accessed in menu-driven and command-driven modes. A special graphics terminal is needed to use the system's graphics. For a color display, you need a Tektronix 4107.

CONTACT: NASA Ocean Data System
Jet Propulsion Laboratory
MS 202-101
4800 Oak Grove Drive
Pasadena, CA 91009

Access through SPAN or Telenet using any ASCII terminal.

For information on data sets:
818/354-4787 or FTS/792-4787

NODS staff are available 8:30 a.m. to 4:30 p.m. (Pacific Time) Monday through Friday.

COST: Rate schedule is being established.

ITEMS: On- and off-line remotely sensed data, and on-line in situ data, including: SEASAT instruments' data, GEOS-3 altimeter data, JASIN and NDBO observations

SOURCE: U.S.A.--National Center for Atmospheric Research (NCAR)

SUMMARY: A major source of atmospheric data. Also holds major oceanographic data sets. Examples of their data are listed in Data Sets: United States in this inventory. Catalog, *Data Availability at NCAR*, can be obtained from address below.

CONTACT: Roy L. Jenne
National Center for Atmospheric Research
Scientific Computing Division, Data Support Section
P.O. Box 3000
Boulder, CO 80307
303/497-1215
Telex: 989764

COST: Call to obtain an NCAR computing project number if you wish to use their data on-line. Data can also be copied onto tape at cost.

ITEMS: A wide variety of atmospheric data collected for many years.

FORMAT: Magnetic tape

SOURCE: U.S.A.--National Climatic Data Center (NCDC)

SUMMARY: One of three NOAA/NESDIS data centers serving as repositories and dissemination facilities for data. NCDC holds atmospheric and weather data. The center obtains data from the National Weather Service, the U.S. Air Force, Army, Navy and Marines, the FAA, the U.S. Coast Guard and private "observers." NCDC says that it is responsive to special needs, helping to build data sets from what exists.

See Data Sets: United States, this catalog for some of their digital data sets. They also house a vast amount of charts and other weather data on paper and microfiche.

CONTACT: NOAA/NESDIS/NCDC
Federal Building
Asheville, NC 28801-2696
User Services: 704/259-0682

COST: \$11 handling charge for each digital order plus cost of data

ITEMS: Climate, marine and atmospheric data

FORMAT: Magnetic tape, 1600 or 6250 bpi, ASCII or EBCDIC mode

REFERENCE: Warren L. Hatch: *Selective Guide to Climatic Data Sources, Key to Meteorological Records Documentation No. 4.11.*

SOURCE: U.S.A.--National Environmental Data Referral Service (NEDRES)

SUMMARY: Operated by NOAA/NESDIS as an on-line "yellow pages" directory referencing U.S. environmental data. NEDRES does not house data, but directs you to the data holder. NEDRES can describe any type of environmental data, and descriptor fields can be modified to suit particular needs.

CONTACT: To obtain a password to access the data base:
BRS Information Technologies
1200 Route 7
Latham, NY 12110
800/345-4277

Access also through GTE Telenet, Tymnet or Uninet

For more information about the service:
NEDRES Program Office
NOAA/AISC, (E/AIx3)
1825 Connecticut Avenue, NW
Room 524
Washington, DC 20235
Gerald S. Barton, Chief
202/673-5404 or FTS/673-5404

COST: \$25 for password and yearly access
Charges for using database vary, based on length of time online and number of records retrieved. A user's guide costs \$10. See Appendix C for *How to Access the NEDRES Database*, a Price List and a User Agreement.

ITEMS: Lists 20,000 sources for these data types: Climatological, meteorological, oceanographic, geophysical, hydrological, limnological

Published *Chesapeake Bay Environmental Data Directory*, A Maryland Sea Grant Publication, a comprehensive listing of environmental data sets for Chesapeake Bay.

FORMAT: Magnetic tape

REFERENCE: Barton, Gerald S., 1987: NEDRES: An Interactive Computer Tool for Locating Geophysical Information. *EOS*, 12 May 1987.

SOURCE: U.S.A.--National Geophysical Data Center (NGDC)

SUMMARY: One of three NESDIS data centers serving as repositories and dissemination facilities for the data of others. NGDC archives marine geophysical data, solid earth geophysical data, upper atmosphere physics data, and snow and ice data.

See Appendix D for a Directory of Data Services and information on some data bases.

CONTACT: National Geophysical Data Center
NOAA, Code E/GC1 Dept. C22
325 Broadway, 445
Boulder, CO 80303
303/497-6215 (General number. See Appendix D for others.)
Telex: 592811 NOAA MASC BDR

COST: Varies considerably: averages \$150/computer tape
\$10 handling fee on all orders; \$20 on foreign orders

ITEMS: Topographical data, heat flow and volcanic emissions, bathymetry, magnetism, gravity, earthquake seismicity, tsunamis, sediment, satellite data, seismic reflection, solar flares, ionospheric disturbances, auroral imagery, geomagnetic variations, cosmic ray data, avalanche, permafrost, ice core and iceberg data

FORMAT: Magnetic tape, maps photographs, floppy disk, publications, and CD-ROMs. 4-D data not available in all formats.

SOURCE: U.S.A.--National Oceanographic Data Center (NODC)

SUMMARY: One of three NESDIS data centers serving as repositories and dissemination facilities for the data of others.

See Appendix E for pages from the *NODC Users Guide, Key to Oceanographic Records Documentation No. 14*, with more information about the center and its data. The *Users Guide* is available from:

National Oceanographic Data Center
Product Development Branch
NOAA/NESDIS E/OC23
Washington, DC 20235

CONTACT: NODC User Services
National Oceanographic Data Center
NOAA/NESDIS E/OC21
2001 Wisconsin Avenue, NW
Washington, DC 20235
202/673-5549 or FTS/673-5549

See Appendix E for Liaison Offices.

COST: Data products are provided at cost as follows:
Tapes: At least \$98--800 & 1600 bpi; \$111--6250 bpi.
Printouts: \$14 minimum (station and bathythermograph data)
Data summaries, analyses, and graphic products at cost of generation.

ITEMS: Holds data for use in offshore engineering, ocean resource development, marine environmental protection, theoretical oceanography. Parameters archived: water temperature, salinity, currents, chemistry and pollutants, wave measurements, biological elements.

FORMAT: See Cost. Not all data sets are available on tape.

REFERENCE: *NODC Environmental Information Bulletins* No. 88-5 and 88-6. Very helpful summaries of their physical/chemical (88-5) and biological (88-6) data sets, many of which are 4-dimensional.

SOURCE: U.S.A.--National Space Science Data Center (NSSDC)

SUMMARY: This center contains several data bases:
Astronomical Data Center (ADC)
NASA Climate Data System (NCDS)
Crustal Dynamics Data Information System
(CDDIS)
National Space Science Data Center (NSSDC)
Each can be accessed separately and is the source for a particular type of data.

CONTACT: World Data Center A for Rockets and Satellites
(WDC-A-R&S)
National Aeronautics and Space Administration
Goddard Space Flight Center
National Space Science Data Center
Greenbelt, Maryland 20771
301/286-6695
Telex: 89675 NASCOM GBLT
TWX: 7108289716

Any data at the centers in NSSDC can be accessed via SPAN
(Space Physics Analysis Network).
Address: NCF::REQUEST.

These centers within the NSSDC have separate contacts:

NCDS: Regina Brown, Manager, 301/286-6595
Lola Olsen, NCDS User Support Office,
301/286-9760
CDDIS: Carey Noll, 301/286-9283 or
NCF::NOLL (SPAN)

Researchers outside the U.S. contact:

World Data Center A for Rockets and Satellites
Code 630.2
Goddard Space Flight Center
Greenbelt, Maryland 20771 U.S.A.

AVAILABILITY: The catalog is extremely useful: Horowitz, Richard and Joseph H. King, January 1988: *NSSDC Data Listing*.

Also useful is an 11-volume series, the *Data Catalog Series for Space Science and Applications Flight Missions*. For environmental data sets, perhaps the most useful three volumes are: *Volume 4A, Descriptions of Meteorological and Terrestrial Applications Spacecraft and Investigations*, July 1985; *Volume 3B, Descriptions of Data Sets from Low- and Medium-Altitude Scientific Spacecraft and Investigations*, April 1986; *Volume 2B, Descriptions of Data Sets from Geostationary and High-Altitude Scientific Spacecraft and Investigations*, May 1988.

Continued

The NSSDC would like copies of papers published using their data.

COST: To recover costs. Usually must be prepaid.

ITEMS:

- ADC: Astronomical data.
- NCDS: Assorted environmental data sets.
See Data Sets section.
- CDDIS: Geodetic data--laser, Very Long Baseline Interferometry data, Global Positioning System data
- NSSDC itself: Environmental satellite data, since 1967.
Many different satellite instruments' data (e.g., Nimbus microwave spectrometer). Also aircraft, balloon, ground-based, model, multiple source and rocket data and programs. Some of these may have different contacts. Call NSSDC.

FORMAT: Depends on data set

SOURCE: U.S.A.--Naval Digital Mapping, Charting and Geodesy
Analysis Program (DMAP)

SUMMARY: DMAP is the Navy's agency which facilitates access to digital mapping, charting and geodesy (MC&G) data. If you plan to use Navy products regularly, get on the mailing list for *DMAP NEWS*, an informative quarterly that lists and describes new and developing data sources and bases. *DMAP NEWS* lists NORDA publications which include descriptions of data bases, some of which are available to the general public.

CONTACT: According to DOD contacts, you can only access Navy data bases if you have a DOD contract. You must contact your contract manager.
For information on Geographic Information Systems:
601/688-5224
For information on computer rendering of geographically gridded data sets: Jerry Landrum, 601/688-4822
For information on GEOMAG, an ASCII Fortran subroutine that computes declination, inclination and total intensity of the geomagnetic field for altitudes to 800 km:
DoD Geomagnetic Data Library,
601/688-5832.
To receive the DMAP newsletter, call Susan Carter at
601/688-4652.

COST: Varies with data type

ITEMS: Information on mapping, charting and geodesy data bases

FORMAT: Varies with data set

SOURCE: U.S.A.--NOAA/NESDIS, Satellite Data Services Division,
NCC/EDIS

CONTACT: Satellite Data Services Division, NCC/EDIS
World Weather Building, Room 100
Washington, D.C. 20233

ITEMS: Satellite data and derived products

FORMAT: Magnetic tape

REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources.*
CCI Rapporteur, Remote Sensing Data Management, Canadian
Climate Centre, 4905 Dufferin Street, Downsview, Ontario,
M3H 5T4, Canada.

SOURCE: U.S.A.--Ocean Network Information Center (OCEANIC)

SUMMARY: Developed at the College of Marine Studies, University of Delaware to support the World Ocean Circulation Experiment (WOCE). OCEANIC is an electronic online information system. It provides listings of data, not access to the data.

Access OCEANIC via SPAN, TELEMAIL, Internet gateways, international packet-switched networks or dial-up modem.

The system is menu-driven, and should be self-explanatory. OCEANIC managers invite comments and criticisms to make the system as useful as it can be.
See Appendix F for detailed access information.

CONTACT: Katherine Bouton
U.S. WOCE Data Management Unit
College of Marine Studies
University of Delaware
Lewes, DE 19958
302/645-4278
TELEMAIL/OMNET: K.BOUTON
TELEMAIL/KOSMOS: KBOUTON
SPAN: DELOCN::BOUTON (or node address 6289::)
Internet: bouton@vax1.acs.udel.edu
(or node address 192.5.57.1)

COST: None besides mode of access; e.g., phone charges

ITEMS: World Ocean Circulation Experiment (WOCE) program information
High-level directory of oceanographic data sets
Graphics-based library of data products
Information on computer networks
Directory of oceanographers on SPAN, Internet, Bitnet, and Telemail (Omnet and Kosmos)
Searchable international research ship schedule

SOURCE: U.S.S.R. State Committee for Hydrometeorology

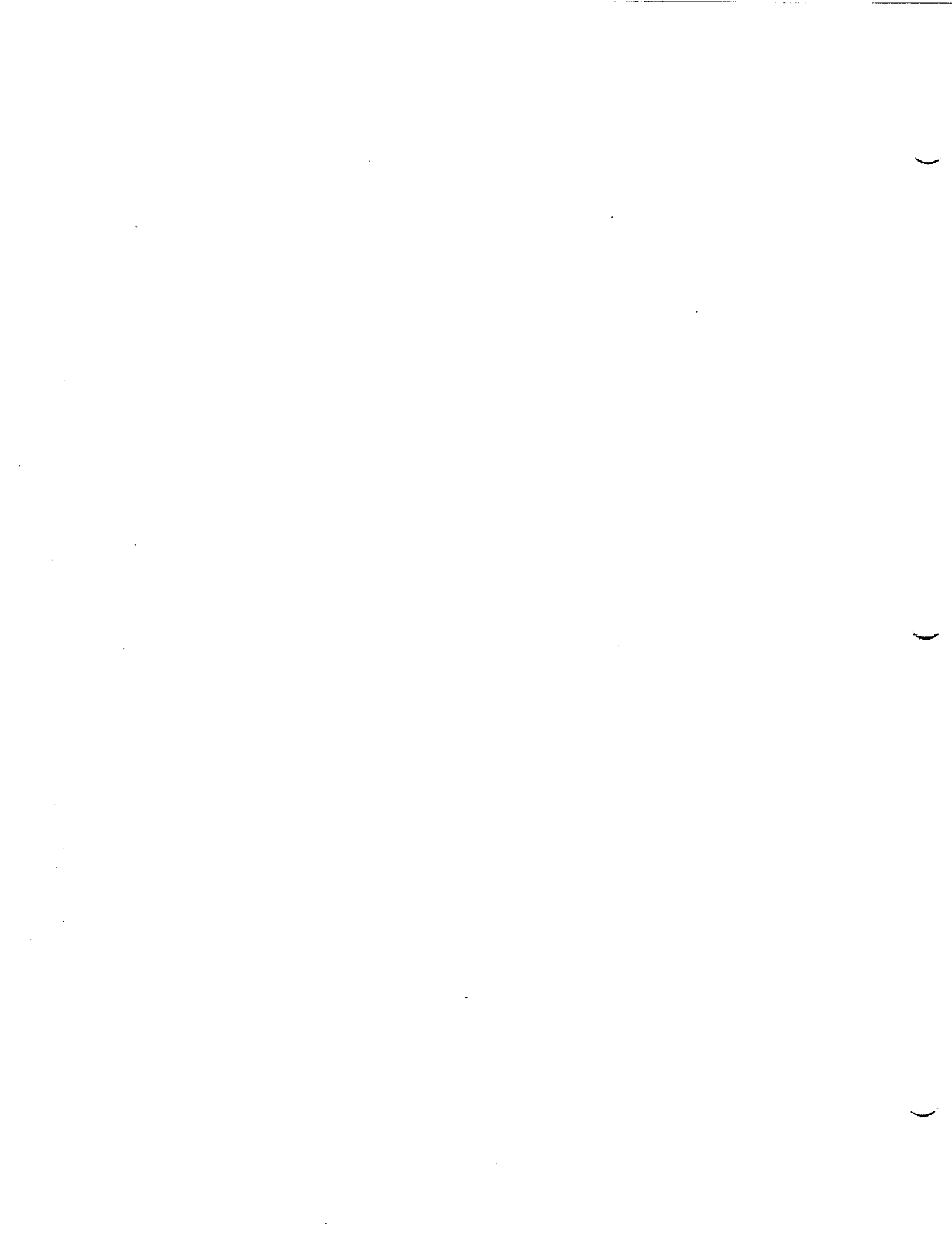
CONTACT: USSR State Committee for Hydrometeorology and
Control of Natural Environment
12 Pavlik Morozov Street
123376 Moscow D-376
U.S.S.R.

ITEMS: Satellite data and derived products

FORMAT: Magnetic tape

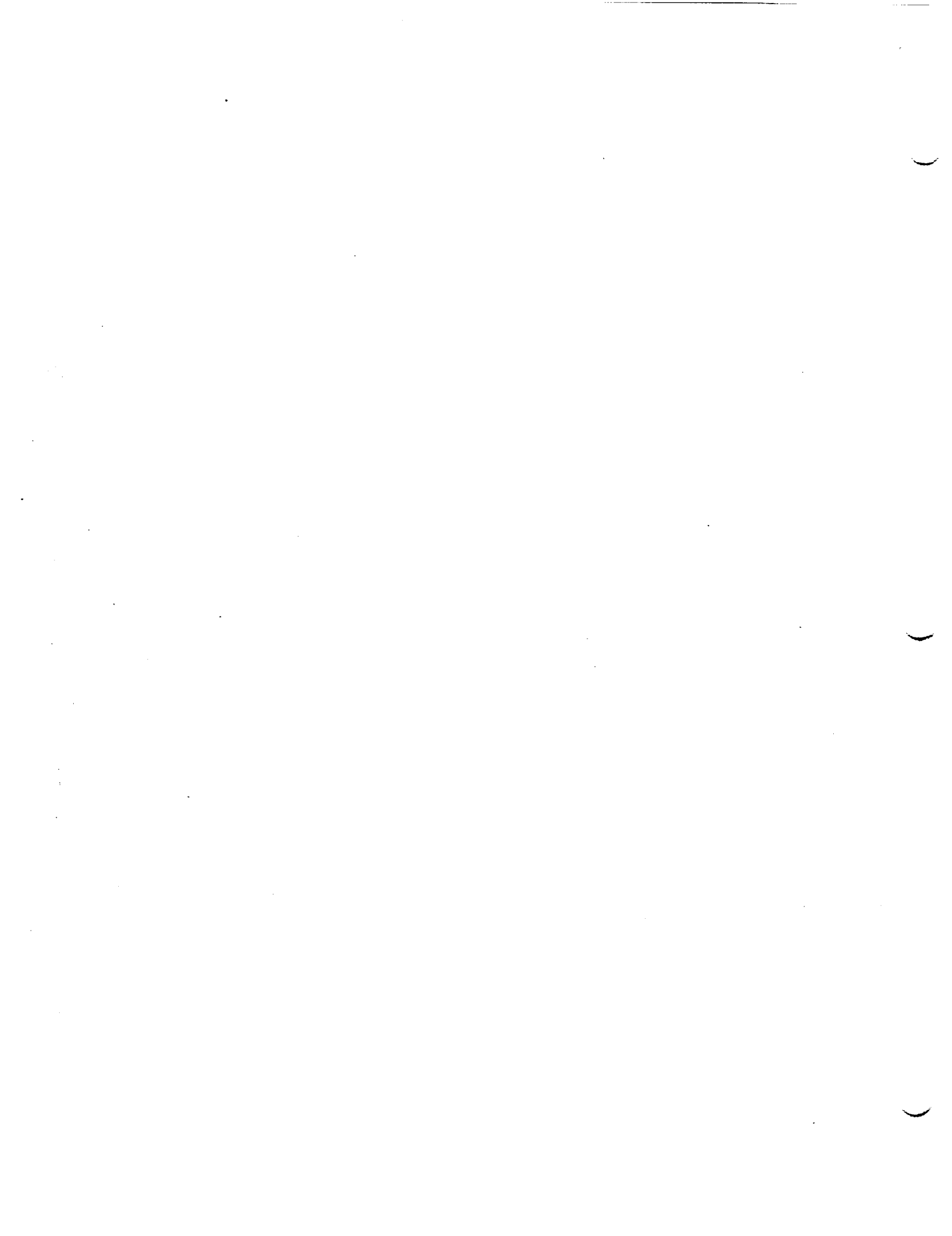
REFERENCE: Hogg, W. D.: *A Survey of Archived Remote Sensing Data Sources*,
CCI Rapporteur, Remote Sensing Data Management, Canadian
Climate Centre, 4905 Dufferin Street, Downsview, Ontario,
M3H 5T4, Canada.

FUTURE DATA



III Future Data

In this section we list sources of data which you can hope to find in the future. The amount of information available on each data type varies appreciably, necessitating widely varying summaries. Some of these "future" entries are evolving to the point that they may already be in place when you read this; however, at the time of publication, they were still in the developmental stages.



Defense Mapping Agency (DMA)

Contact:

Director, DMA Combat Support Center
ATTN: PMA
Washington, DC 20315-0010
301/227-2495 or 1-800/826-0342
Telex: 710-824-0293

In their catalog, *Digitizing the Future*, Second Edition, October 1988 (DMA Stock No. DDIPDIGITALPAC), the DMA states that they are "in the midst of a mandatory modernization program." The modernization program will "give DMA an end-to-end digital production capability" and will double their productivity. This modernization will also result in vastly improved services to their military customers and in new products. Of special note is:

VIDEOMAP (Video discs of maps and charts, PS/3DF/010)--originally designed as a briefing tool, is often used as a base "for digital overlay systems (where map symbols and annotations are superimposed on top of the map bases to create graphic overlays)"

Each video disc can store up to 54,000 video images per side (equivalent to about 150-180 JOG size map sheets) at three different image sizes. Images can be: maps and charts, coverage graphics, legends, glossaries, and special information.

VIDEOMAP consists of:

- 1) video discs
- 2) data base software
- 3) indexing system program software.

VIDEOMAP is designed to be used with standard laser video disc players with a computer--an IBM PC or compatible under DOS, or a VAX 11/780 under VAX/VMS. A user's manual is available to explain the operation of the software products.

Reference:

Digitizing the Future; Second Edition, October 1988, p. 87.

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Defense Mapping Agency (DMA)

DIGITAL TERRAIN ELEVATION DATA (DTED) Level 1 in CD-ROM format.

In FY 1989, the DMA plans to begin producing DTED in CD-ROM format. An IBM PC compatible floppy disc with software enabling calculation of the elevation for a given latitude and longitude accompanies the prototype data sets. CD-ROM prototypes for DFAD (see Data Sets) are currently in the planning stages.

Distribution will be limited to agencies within the executive branch of the U.S. government and qualified contractors.

Environmental Research Laboratory

Contact: Don Beran, Director
Profiler Program Office
NOAA/ERL, RE/25
325 Broadway
Boulder, CO 80303
303/497-6765

A Profiler demonstration network is planned for primarily the middle third of the United States to start in 1989. This network of approximately thirty stations is an out-growth of a regional weather experiment in Colorado using similar profilers since 1983. The system is built by Unisys (formerly Sperry). Products to be provided through the network are vertical wind profiles (horizontal wind speed and direction, vertical component) and tropopause height.

An archive of 6-minute data is being developed. The data will first be available on magnetic tape, but it is planned to be made as accessible as can be done, possibly through dial-up capability or in a Zephyr data stream. The data will be provided to NWS offices in real time.

Reference:

Chadwick, R.B., 1988: The wind profiler demonstration network. *Extended Abstracts, Symposium on Lower Tropospheric Profiling: Needs and Technologies, 31 May-3 June 1988, Boulder, CO.* AMS, Boston, MA, pp.109-110.

Profiler Forum, an occasional newsletter published by NOAA/ERL, gives up-to-date information on Profiler network developments and research developments using Profiler data.

Write:

Lorraine Kaimal, Editor
Profiler Program, R/E/FS3
325 Broadway
Boulder, CO 80303
303/497-6801 or FTS/320-6801

Eos (Earth Observing System) instruments

Eos is planned for launch in the mid-1990's to augment NOAA satellites. Eos, an interagency effort, is the brainchild of the Earth System Science Committee of the NASA Advisory Council, devised to obtain and disseminate data about the earth to fulfill the Committee's objective of obtaining "a scientific understanding of the entire Earth system on a global scale by describing how its component parts and their interactions have evolved, how they function, and how they may be expected to continue to evolve on all time-scales." The Eos instruments will provide global data sets for hydrology, oceanography, meteorology, and other disciplines. (See Appendix J for list of proposed instruments.)

According to James Graf, JPL, Eos "consists of...four spacecraft in polar orbit supporting 15 tons of instrumentation, complementary ground-based sensors, and an extensive information system." (See reference below.)

Reference:

NASA, 1986: *Earth Observing System--Science and Mission Requirements, Working Group Report*. NASA Technical Memorandum 86129, NASA/Goddard Space Flight Center, Greenbelt, MD. The first in a long series of NASA reports on Eos and its instruments.

James Graf, 1988: The Earth Observing System. *IEEE Geoscience and Remote Sensing Society Newsletter*, May 1988, pp 9-13.

For complete information on the MODIS instruments, see "The Moderate Resolution Imaging Spectrometer (MODIS)" by Vincent V. Salomonson, NASA/Goddard Space Flight Center, feature article in the August 1988 issue of *IEEE Geoscience and Remote Sensing Society Newsletter*.

Experiment on Rapidly Intensifying Cyclones over the Atlantic (ERICA)

The Office of Naval Research's Heavy Weather at Sea Initiative sponsors ERICA, a research program designed to obtain new scientific understanding of rapidly intensifying storms at sea. The field phase takes place in December 1988 and January-February 1989 over the northwestern Atlantic Ocean. A research objective is numerical model development.

New measurement systems brought into use during ERICA are Loran-C dropwindsonde systems, air-deployed drifting buoys and airborne Doppler radar. These will give spatial and temporal coverage and resolution not previously possible over open ocean.

At least these different sorts of data will be collected during the field program:

- P-LDW (Loran dropwindsondes) from aircraft at at least three levels;
- flight-level data from aircraft at different levels;
- Doppler radar data;
- jet-stream and boundary-layer documentation;
- data from ARGOS satellite-linked drifting buoys;
- rawinsondes on shore and at sea;
- satellite.

Supplementary data systems include:

- additional remote-sensing aircraft;
- wind profilers;
- surface mesonets;
- ground-based radars including the AFGL Doppler and SPANDAR at Wallops Island;
- Omega dropwindsondes;
- lightning detection networks;
- ships and moored buoys.

Drexel University will manage ERICA data, including its distribution, as it did for GALE. ERICA participants expect that during the first year after the field phase data will be provided to field participants and those involved in quality control. If GALE and other field experiments are any indication, distribution to the larger research community can be expected after the first year.

National Institute for Telecommunications Research

Contact: T.P. Boyle, Product Specialist
Satellite Applications Centre
DMCT/CSIR
P.O. Box 395
Pretoria 0001
Republic of South Africa

They will begin in future to collect Digital Terrain Model data which will not vary with time, but will be registered to satellite data and possibly other data types.

Pilot Land Data System (PLDS)

Contact: Ken McDonald, operations manager, 301/286-8766
Maryel Schein, PLDS User Support Office, 301/286-9761

The Pilot Land Data System is a data base being developed at Goddard Space Flight Center's National Space Science Data Center. Three projects have been initially selected:

International Satellite Land Surface Climatology
Project (ISLSCP)

Retrospective Analysis Project--historical satellite data
First ISLSCP Field Experiment--field measurements,
remote sensing data

Sedimentary Basins Project--geologic data for Wind River/
Bighorn Basin, Wyoming

PLDS will be accessible on the NSSDC VAX 11/780 (see Sources section for more information on NSSDC) or on the Jet Propulsion Laboratory's MicroVAX. Requests from researchers besides principal investigators will be considered as resources allow.

STORM

Contact:

Richard Dirks
STORM Program Office
NCAR
P.O. Box 3000
Boulder, CO 80307
303/497-8900

The National Stormscale Operational and Research Meteorology (STORM) Program, a multi-agency effort, has been in the planning stages since before 1982. In December 1988, a STORM implementation plan had been distributed and was being reviewed. Also, a data management director was being hired. Until this time, STORM had produced primarily conferences and research on mesoscale meteorology and data assimilation. It also fostered the Pre-STORM program.

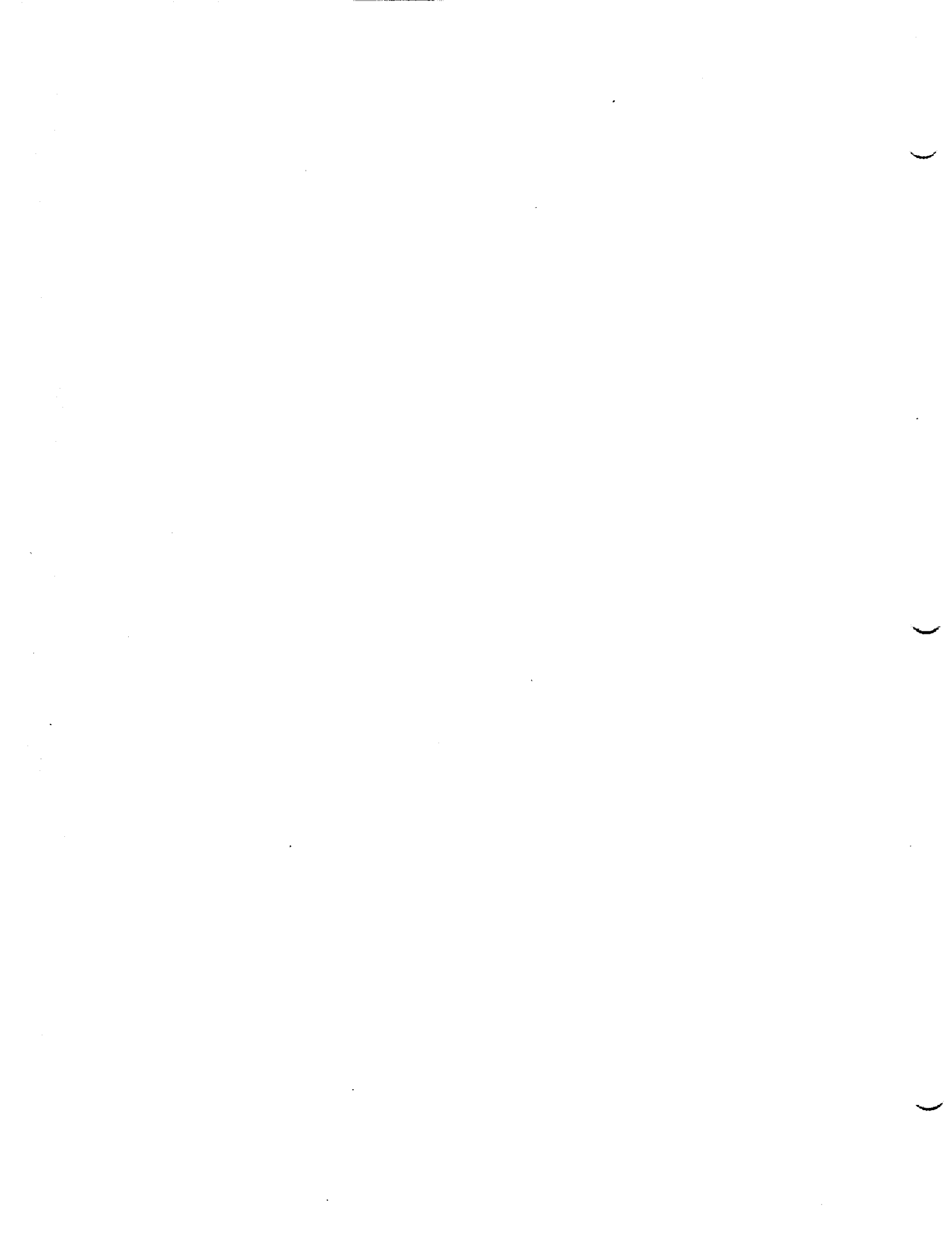
The implementation plan gives two objectives: to improve the 0- to 48-hour prediction of precipitation and severe weather and to advance fundamental understanding of precipitation and the mesoscale and its role in the hydrologic cycle. STORM's promise for four-dimensional data users lies in its major focus of exploiting high-resolution operational data for research. Data that STORM planners hope to generate or utilize includes measurements from wind profilers and NEXRAD radars and measurements of Doppler shift and radiative emissions. Those involved in STORM hope to encourage and benefit from Weather Service modernization.

An experiment is planned for 1992, when profilers and some NEXRAD radars will be in place. Several preliminary programs, beginning in 1989, will be conducted to assess new instruments being fielded, such as profilers and airborne Doppler radars.

Reference:

STORM Watch: Lorraine Kaimal, Editor
STORM Program Office
325 Broadway
Boulder, CO 80303
303/497-6801

APPENDIXES



APPENDIX A

Earth Science Data Directory Information Sheet



INFORMATION SHEET



U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR

THE EARTH SCIENCE DATA DIRECTORY

WHAT IS ESDD?

The Earth Science Data Directory (ESDD) is being developed by the U.S. Geological Survey as a nationwide system for readily determining the availability of specific earth-science and natural-resource data. It offers online access to a USGS mainframe computer repository of information about earth-science and natural-resource data bases. The referenced data bases are both automated and non-automated, and they belong to many different entities. ESDD participants include governmental agencies, academic institutions, and those from the private sector.

The term "earth-science and natural-resource data," as used for the ESDD, is an all-embracing term referring to any systematic body of knowledge, automated or not, relating to the Earth, its environment and its energy, mineral, water, land, plant, animal, and other resources. The ESDD can enable users to locate everything from complex computerized indices, systems, and files to paper records, maps, and files.

ESDD data bases include those concerned with the geologic, hydrologic, cartographic, and biologic sciences. Data bases that support the protection and management of natural resources are also included. These data bases reference geographic, sociologic, economic, and demographic data. Many of them offer potential as base and/or overlay input for geographic information systems (GIS).

WHY IS ESDD NEEDED?

The rapid growth of the availability of scientific and technical data has greatly increased the need for easy means to identify and locate the data. Time and money may sometimes be spent unnecessarily to acquire new data when suitable data already exist. Because the demands for more efficient approaches to costly research, developmental planning, and environmental monitoring are steadily increasing, the need for improved access to associated types of data is also increasing. The continuing development of the ESDD is an important step toward improving access to existing data. Improved access will help to decrease data collection costs, help to avoid duplication, and increase opportunities to share data.

The U.S. Geological Survey, as the Nation's largest earth-science research and information agency, is charged with providing geologic, topographic, and hydrologic information that contributes to the wise management of the Nation's natural resources. Because of the extensive collection and use of data required to accomplish this broad mission, the USGS recognized the need for a comprehensive catalog of

available resource data from within and without the Federal government. The ESDD is being established to meet this need for all users of these data.

HOW DOES ESDD WORK?

From almost any local computer terminal, an ESDD user can identify and locate information about earth-science and natural-resource data bases maintained by governmental agencies and others. The variety of data bases that can be located through the ESDD continues to grow rapidly.

The list of ESDD keywords includes the terms "agriculture," "hydrogeology," and "wildlife." Many other interesting and sometimes unusual terms are included among ESDD keywords. One may browse through the keywords online to get an idea of the subject areas represented in the directory. The keywords are also integral to several other highly effective search methods available online through the ESDD.

Information items in the ESDD include, but are not limited to--

- Narrative description of the data base and indexing terms
- Source of the information regarding the data
- Name, address, and phone number of reference contact
- Time period of referenced data coverage (as applicable)
- Frequency of data base updating
- Computer type, location, and data base management system (for automated data bases)
- Geographic coverage of referenced material

Accessing the ESDD:

Computer terminals equipped with a modem and telecommunications software can readily access the ESDD. Powerful search features make searching the cross-referenced contents of the directory quite easy. A series of menus is used by the ESDD to guide users to conduct searches. The results of searches can be presented in any of several different formats that may be chosen by the user.

ESDD IS LOOKING FOR USERS AND CONTRIBUTORS--Contributors to and users of the expanding ESDD catalog can be governmental agencies at all levels, academic institutions, and the private sector. With the cooperation and support of the extensive earth-science community nationwide, the ESDD is becoming an increasingly valuable and useful research tool. Its usefulness is attested to by the fact that there are an ever growing number of online users in all sectors.

If you use, need, produce, handle, archive, or are concerned with or about earth-science and natural-resource data sets and products, your participation in the ESDD is solicited. Full information will be provided on request. Demonstrations of the ESDD can also be arranged.

TO CONTRIBUTE INFORMATION OR BECOME A USER--Please call the ESDD Project Manager at (703) 648-7112 or FTS 959-7112. Should you prefer, you may write to:

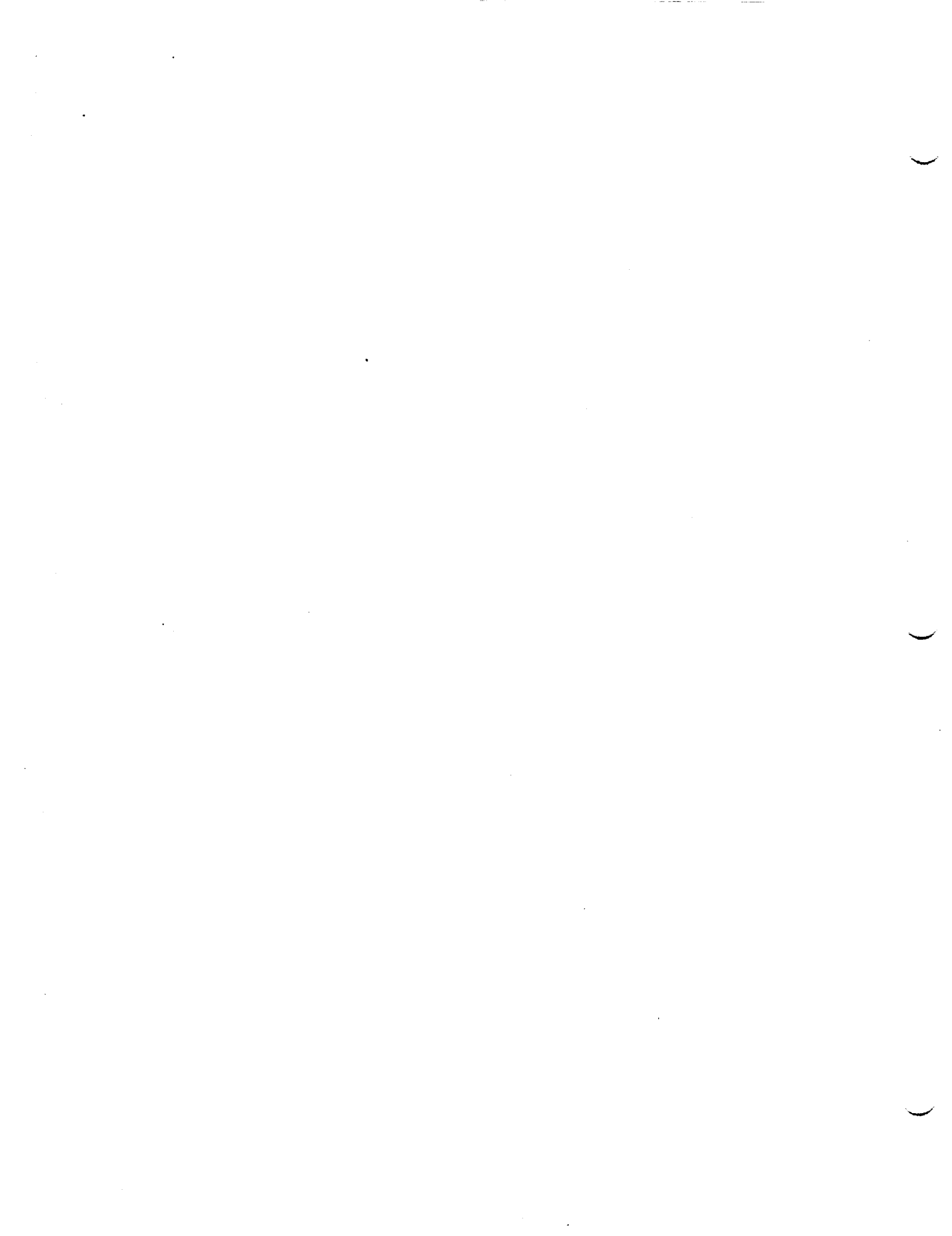
ESDD Project Manager
U.S. Geological Survey
801 National Center
Reston, VA 22092

C. R. Baskin
February 1988

APPENDIX B

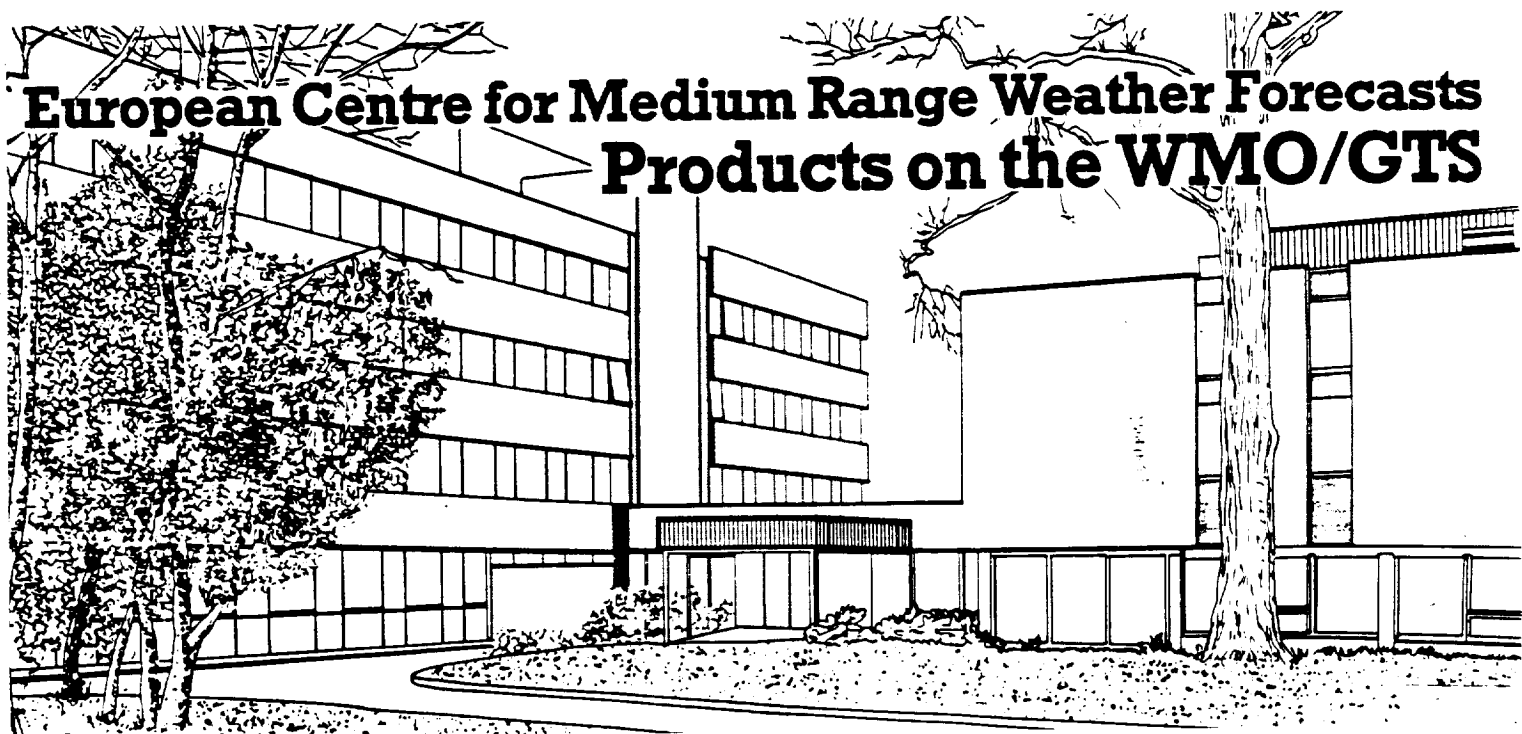
European Centre for Medium Range Weather Forecasts

Products on the WMO/GTS
and
Order Forms



For further enquiries concerning the reception and use
of ECMWF GTS products, please contact:

European Centre for Medium Range Weather Forecasts,
Shinfield Park, Reading, Berkshire RG2 9AX, England;
Tel: UK (0734) 876000, Int. (44 734) 876000, Telex: 847908
Director: Dr. L. Bengtsson.



ECMWF

The European Centre for Medium Range Weather Forecasts is an international organisation whose prime objective it is to produce routine global analyses of the atmosphere and to provide its 17 Member States with numerical forecast products. ECMWF also distributes a selection of its products via the Global Telecommunication System of the World Meteorological Organization.

The analysis and forecast system

The ECMWF data assimilation system consists of a multivariate optimal interpolation analysis, a non-linear normal mode initialisation and a high resolution spectral model which produces a first guess forecast for the subsequent analysis. Data are assimilated every 6 hours.

The forecast model uses a spectral formulation in the horizontal, with triangular truncation at total wavenumber 106, a vertical coordinate (with 16-level resolution) that is terrain-following at low levels. The comprehensive physical parameterisation schemes include shallow and deep convection (Kuo), a radiation scheme which allows interaction with model-generated clouds and the diurnal radiative cycle.

Quality of the products

The quality of the ECMWF forecast products varies with season and flow pattern, area and parameter. In general, predictability is higher in the northern than in the southern hemisphere, because a better data coverage will provide a better determined initial state. On average, the range of useful forecasting for the northern hemisphere lies well beyond day 5, both for the surface and the 500 mb height fields, while in the southern hemisphere this limit may not always be reached. Tropical wind forecasts approach the skill of persistence around day 3.

ECMWF GRID CODE PRODUCTS on the GTS

The following ECMWF products are currently available on the GTS in the WMO GRID code:

For the northern (20-90°N) and southern (20-90°S) hemisphere: mean sea level pressure and 500 hPa height analyses and forecasts for 24, 48, 72, 96 and 120 hours ahead.

For the tropical belt (35°S-35°N): 850 and 200 hPa wind vector analyses and forecasts for 24, 48 and 72 hours ahead.

Dissemination

The products are transmitted as a series of messages injected on to the GTS via the Regional Telecommunications Hubs (RTHs) at Bracknell and Offenbach. The products are issued from ECMWF during the course of the daily operational forecast run at the appropriate model timesteps.

How to receive ECMWF GTS products

All the products are listed in the Catalogue of Meteorological Bulletins in the WMO Handbook Vol. C, where the potential user will also find the telecommunications headings and catalogue numbers used in transmission. Code form FM 47-V GRID is used to distribute the products. The format of the code is explained in WMO Publication No. 306 - Manual on Codes.

National weather services which are interested in receiving the ECMWF GTS products should approach the appropriate WMO GTS Regional Telecommunication Centre and request the switching of the products to their telecommunication facility.

Non-computerised centres may receive the GTS bulletins via teletype printers for manual decoding and plotting of the gridpoint values.

ORDER FORM FOR THE ECMWF ORIGINAL FGGE DATA SET

NAME:

ORGANISATION:

ADDRESS:

TELEX/TELEPHONE NUMBER:

Tick and fill in the appropriate boxes below

Tape density: 1600 bpi PE
 6250 bpi

Tapes will be odd parity and nine tracks with no labels.

Note: The data is kept on 6250 bpi tapes at ECMWF. By requesting tape copies with lower write density the number of tapes will increase by a factor of three. Charges will be made for the number of tapes which are actually dispatched.

Data periods:

Complete Original FGGE III-b data set

Sub-sets:

Period

<u>From</u>		<u>To</u>		
01.12.78 00UT		15.12.78 12UT.....		<input type="checkbox"/>
16.12.78 00UT		31.12.78 12UT.....		<input type="checkbox"/>
01.01.79 00UT		14.01.79 06UT.....		<input type="checkbox"/>
14.01.79 12UT		23.01.79 06UT.....		<input type="checkbox"/>
23.01.79 12UT		01.02.79 06UT.....		<input type="checkbox"/>
01.02.79 12UT		10.02.79 06UT.....		<input type="checkbox"/>
10.02.79 12UT		19.02.79 06UT.....		<input type="checkbox"/>
19.02.79 12UT		28.02.79 06UT.....		<input type="checkbox"/>
28.02.79 12UT		12.03.79 12UT.....		<input type="checkbox"/>
13.03.79 00UT		30.03.79 12UT.....		<input type="checkbox"/>
31.03.79 00UT		17.04.79 12UT.....		<input type="checkbox"/>
18.04.79 00UT		05.05.79 06UT.....		<input type="checkbox"/>
05.05.79 12UT		14.05.79 06UT.....		<input type="checkbox"/>
14.05.79 12UT		23.05.79 06UT.....		<input type="checkbox"/>
23.05.79 12UT		01.06.79 06UT.....		<input type="checkbox"/>
01.06.79 12UT		10.06.79 06UT.....		<input type="checkbox"/>
10.06.79 12UT		19.06.79 06UT.....		<input type="checkbox"/>
19.06.79 12UT		28.06.79 06UT.....		<input type="checkbox"/>
28.06.79 12UT		08.07.79 12UT.....		<input type="checkbox"/>
09.07.79 00UT		26.07.79 12UT.....		<input type="checkbox"/>
27.07.79 00UT		13.08.79 12UT.....		<input type="checkbox"/>
14.08.79 00UT		31.08.79 12UT.....		<input type="checkbox"/>
01.09.79 00UT		18.09.79 12UT.....		<input type="checkbox"/>
19.09.79 00UT		06.10.79 12UT.....		<input type="checkbox"/>
07.10.79 00UT		24.10.79 12UT.....		<input type="checkbox"/>
25.10.79 00UT		11.11.79 12UT.....		<input type="checkbox"/>
12.11.79 00UT		29.11.79 12UT.....		<input type="checkbox"/>

Invoice in US Dollars requested

Data is supplied by ECMWF subject to the following conditions:

1. The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
2. Articles, papers, or written scientific works of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:

(For ECMWF internal use only)

Number of tapes

Total amount charged

Invoice/Revenue Order No.

Budget Reference

Revenue of:

a. Authorised

Department Head

Date

b. Approved

Financial Comptroller

Date

ORDER FORM FOR THE ECMWF FINAL FGGE DATA SET

NAME:

ORGANISATION:

ADDRESS:

TELEX/TELEPHONE NUMBER:

Tick and fill in the appropriate boxes below

Tape density: 1600 bpi PE
 6250 bpi

Tapes will be odd parity and nine tracks with no labels.

Note: The data is kept on 6250 bpi tapes at ECMWF. By requesting tape copies with lower write density the number of tapes will increase by a factor of three. Charges will be made for the number of tapes which are actually dispatched.

Data periods:

Complete ECMWF Final FGGE III-b data set

Sub-sets:

SOP I Stream A

<u>From</u>		<u>To</u>		
01.01.79	00UT	06.01.79	18UT.....	<input type="checkbox"/>
07.01.79	00UT	12.01.79	18UT.....	<input type="checkbox"/>
13.01.79	00UT	18.01.79	18UT.....	<input type="checkbox"/>
19.01.79	00UT	24.01.79	18UT.....	<input type="checkbox"/>
25.01.79	00UT	30.01.79	18UT.....	<input type="checkbox"/>
31.01.79	00UT	05.02.79	18UT.....	<input type="checkbox"/>
06.02.79	00UT	11.02.79	18UT.....	<input type="checkbox"/>
12.02.79	00UT	17.02.79	18UT.....	<input type="checkbox"/>
18.02.79	00UT	23.02.79	18UT.....	<input type="checkbox"/>
24.02.79	00UT	01.03.79	18UT.....	<input type="checkbox"/>
02.03.79	00UT	05.03.79	18UT.....	<input type="checkbox"/>

SOP I Stream B

tbs

PTO

SOP II Stream A

<u>From</u>		<u>To</u>		
05.05.79	00UT	10.05.79	18UT.....	<input type="checkbox"/>
11.05.79	00UT	16.05.79	18UT.....	<input type="checkbox"/>
17.05.79	00UT	22.05.79	18UT.....	<input type="checkbox"/>
23.05.79	00UT	28.05.79	18UT.....	<input type="checkbox"/>
29.05.79	00UT	03.06.79	18UT.....	<input type="checkbox"/>
04.06.79	00UT	09.06.79	18UT.....	<input type="checkbox"/>
10.06.79	00UT	15.06.79	18UT.....	<input type="checkbox"/>
16.06.79	00UT	21.06.79	18UT.....	<input type="checkbox"/>
22.06.79	00UT	27.06.79	18UT.....	<input type="checkbox"/>
28.06.79	00UT	03.07.79	18UT.....	<input type="checkbox"/>
04.07.79	00UT	05.07.79	18UT.....	<input type="checkbox"/>

SOP II Stream B

tbs

Invoice in US Dollars requested

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2. Articles, papers, or written scientific works of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:

(For ECMWF internal use only)

Number of tapes

Total amount charged

Invoice/Revenue Order No.

Budget Reference

Revenue of:

a. Authorised

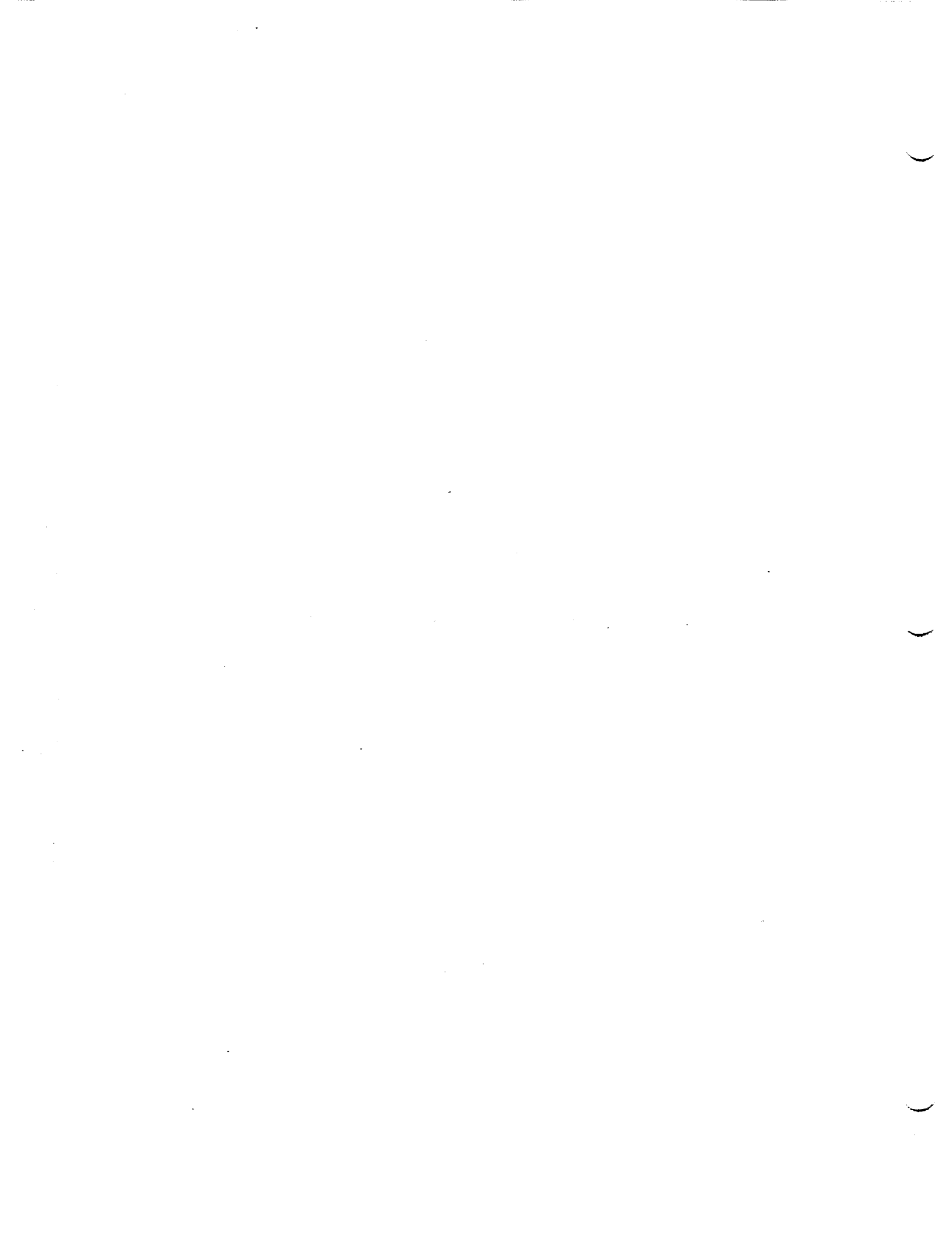
Department Head

Date

b. Approved

Financial Comptroller

Date



ORDER FORM FOR ECMWF/TOGA BASIC LEVEL III DATA SETS

SURFACE DATA SET

NAME:

ORGANISATION:

ADDRESS

TELEX/TELEPHONE NO:

Tick and fill in the appropriate boxes below:

OUTPUT FORMAT: All data will be supplied in FM 92-VIII Ext. GRIB, on 9-track magnetic tape, with odd parity and no labels. Data will be written with fixed length blocks, each GRIB message beginning a new block. Block lengths will be 32768 bytes or less.

Please state maximum block length acceptable bytes

TAPE DENSITY: (select one option)

1600 bpi Phase Encoded

6250 bpi

DATA REQUIRED: 0000 UTC

1200 UTC

Starting date (YYMMDD):

Ending date (YYMMDD):

AREA:

Specify either sub-area latitude of south-west corner

longitude of south-west corner

latitude of north-east corner

longitude of north-east corner

(Note decimal point; for latitude + represents north, - represents south from equator; for longitude + represents east, - represents west from 0 meridian)

or the whole globe

PARAMETERS:

surface pressure

surface temperature

MSL pressure

u-wind at 10 m

v-wind at 10 m

temperature at 2 m

dewpoint at 2 m

surface geopotential

land-sea mask

GRIB unpacking software required

Invoice in US-Dollars requested

Data is supplied by ECMWF subject to the following conditions:

1. The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
2. Articles, papers, or written scientific words of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:

=====

(For ECMWF internal use only)

Number of tapes

Amount charged for tapes

Invoice/Revenue Order No.

Budget Reference

Revenue of:

a. Authorised

Department Head

Date

b. Approved

Financial Comptroller

Date

GRIB unpacking software required

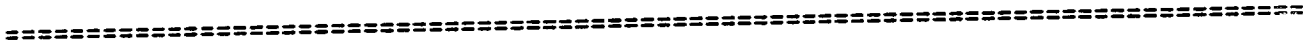
Invoice in US-Dollars requested

Data is supplied by ECMWF subject to the following conditions:

1. The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
2. Articles, papers, or written scientific words of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:



(For ECMWF internal use only)

Number of tapes
 Amount charged for tapes
 Invoice/Revenue Order No.
 Budget Reference

Revenue of:

a. Authorised

Department Head

Date

b. Approved

Financial Comptroller

Date

ORDER FORM FOR ECMWF/TOGA ADVANCED OPERATIONAL ANALYSIS DATA SETS
SURFACE AND DIAGNOSTIC FIELDS DATA SET

NAME:

ORGANISATION:

ADDRESS

TELEX/TELEPHONE NO:

Tick and fill in the appropriate boxes below:

OUTPUT FORMAT: All data will be supplied in FM 92-VIII Ext. GRIB, on 9-track magnetic tape, with odd parity and no labels. Data will be written with fixed length blocks, each GRIB message beginning a new block. Block lengths will be 32768 bytes or less.

Please state maximum block length acceptable bytes

TAPE DENSITY: (select one option)

1600 bpi Phase Encoded

6250 bpi

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

DATA REQUIRED: 0000 UTC

0600 UTC

1200 UTC

1800 UTC

Starting date (YYMMDD):

Ending date (YYMMDD):

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

RESOLUTION: (select one option)

Latitude/longitude grid

grid length

degrees

Gaussian grid

no. of latitudes N

see note 2

Internal archive representation

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Notes:

- For latitude/longitude grid the grid length requested must be greater than or equal to 1.125 degrees.
- For Gaussian grid, the number of latitude lines between a pole and the equator should be given; resolution requested must be less than or equal to N80 (N48 for data requests 1 January 1985 - 30 June 1985).

AREA:

Specify either sub-area latitude of south-west corner

longitude of south-west corner

latitude of north-east corner

longitude of north-east corner

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

(Note decimal point; for latitude + represents north, - represents south from equator; for longitude + represents east, - represents west from 0 meridian)

or the whole globe

<input type="checkbox"/>

PARAMETERS:

surface pressure
surface temperature
soil moisture
snow depth
MSL pressure
total cloud cover

u-wind at 10 m
v-wind at 10 m
temperature at 2 m
dewpoint at 2 m
deep-soil wetness
deep-soil temperature

surface geopotential
land-sea mask
surface roughness
albedo
climate deep-soil wetness
climate deep-soil temperature

GRIB unpacking software required

Invoice in US-Dollars requested

Data is supplied by ECMWF subject to the following conditions:

1. The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
2. Articles, papers, or written scientific words of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:

=====

(For ECMWF internal use only)

Number of tapes
Amount charged for tapes
Invoice/Revenue Order No.
Budget Reference

Revenue of:

a. Authorised

Department Head

Date

b. Approved

Financial Comptroller

Date

ORDER FORM FOR ECMWF/TOGA ADVANCED OPERATIONAL ANALYSIS DATA SETS

UPPER AIR DATA SET

NAME:

ORGANISATION:

ADDRESS

TELEX/TELEPHONE NO:

Tick and fill in the appropriate boxes below:

OUTPUT FORMAT: All data will be supplied in FM 92-VIII Ext. GRIB, on 9-track magnetic tape, with odd parity and no labels. Data will be written with fixed length blocks, each GRIB message beginning a new block. Block lengths will be 32768 bytes or less.

Please state maximum block length acceptable bytes

TAPE DENSITY: (select one option)

1600 bpi Phase Encoded

6250 bpi

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

DATA REQUIRED: 0000 UTC

0600 UTC

1200 UTC

1800 UTC

Starting date (YYMMDD):

Ending date (YYMMDD):

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

RESOLUTION: (select one option)

Latitude/longitude grid

grid length

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

degrees

Gaussian grid

no. of latitudes N

see note 2

Spherical harmonics

triangular truncation

see notes 3 and 4

Internal archive representation

Notes:

- For latitude/longitude grid the grid length requested must be greater than or equal to 1.125 degrees.
- For Gaussian grid, the number of latitude lines between a pole and the equator should be given; resolution requested must be less than or equal to N80.
- For spherical harmonics, triangular truncations up to and including T106 (T63 from 1 January 1985-30 June 1985) can be supplied; such data can only be supplied for the whole globe.
- For internal archive representation, data can only be supplied for the whole globe.

AREA:

Specify either sub-area latitude of south-west corner
 longitude of south-west corner
 latitude of north-east corner
 longitude of north-east corner

			.			
			.			
			.			
			.			

(Note decimal point; for latitude + represents north, - represents south from equator; for longitude + represents east, - represents west from 0 meridian)

or the whole globe

LEVELS/PARAMETERS:

	L E V E L (hPa)													
	1000	850	700	500	400	300	250	200	150	100	70	50	30	10
Geopotential														
Temperature														
Vertical Velocity														
U-Component of Wind														
V-Component of Wind														
Relative Humidity														

GRIB unpacking software required

Invoice in US-Dollars requested

Data is supplied by ECMWF subject to the following conditions:

- The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
- Articles, papers, or written scientific words of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:

=====
 (For ECMWF internal use only)

Number of tapes
 Amount charged for tapes
 Invoice/Revenue Order No.
 Budget Reference
 Revenue of:

a. Authorised

 Department Head

 Date

b. Approved

 Financial Comptroller

 Date

ORDER FORM FOR ECMWF/TOGA ADVANCED OPERATIONAL ANALYSIS DATA SETS

SUPPLEMENTARY FIELDS DATA SET

NAME:

ORGANISATION:

ADDRESS

TELEX/TELEPHONE NO:

Tick and fill in the appropriate boxes below:

OUTPUT FORMAT: All data will be supplied in FM 92-VIII Ext. GRIB, on 9-track magnetic tape, with odd parity and no labels. Data will be written with fixed length blocks, each GRIB message beginning a new block. Block lengths will be 32768 bytes or less.

Please state maximum block length acceptable bytes

TAPE DENSITY: (select one option)

1600 bpi Phase Encoded

6250 bp

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

DATA REQUIRED: 0000 UTC

1200 UTC

Starting date (YYMMDD):

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Ending date (YYMMDD):

RESOLUTION: (select one option)

Latitude/longitude grid

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

grid length

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

degrees

Gaussian grid

no. of latitudes N

<input type="text"/>	<input type="text"/>
----------------------	----------------------

see note 2

Internal archive representation

Notes:

1. For latitude/longitude grid the grid length requested must be greater than or equal to 1.125 degrees.
2. For Gaussian grid, the number of latitude lines between a pole and the equator should be given; resolution requested must be less than or equal to N80 (N48 for data requests from 1 January 1985 - 30 June 1985).

AREA:

Specify either sub-area latitude of south-west corner

longitude of south-west corner

latitude of north-east corner

longitude of north-east corner

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

(Note decimal point; for latitude + represents north, - represents south from equator; for longitude + represents east, - represents west from 0 meridian)

or the whole globe

<input type="checkbox"/>

PARAMETERS:

- surface flux of sensible heat
- surface flux of latent heat
- net shortwave radiation (surface)
- net longwave radiation (surface)
- net shortwave radiation (top of atmos.)
- net longwave radiation (top of atmos.)
- u-component of surface wind stress
- v-component of surface wind stress

GRIB unpacking software required

Invoice in US-Dollars requested

Data is supplied by ECMWF subject to the following conditions:

1. The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
2. Articles, papers, or written scientific words of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:

(For ECMWF internal use only)

- Number of tapes
- Amount charged for tapes
- Invoice/Revenue Order No.
- Budget Reference

Revenue of:

a. Authorised

Department Head

Date

b. Approved

Financial Comptroller

Date

ORDER FORM FOR THE ECMWF/WMO ANALYSIS DATA SETS

NAME:

ORGANISATION:

ADDRESS

TELEX/TELEPHONE NUMBER:

Tick and fill in the appropriate boxes below:

OUTPUT FORMAT: (select one option)

on tape (FGGE IIIB (EBCDIC)
 (WMO Grid Code (ASCII)
 (Internal bit format

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

on paper (WMO Grid Code
 (Gridpoints

<input type="checkbox"/>
<input type="checkbox"/>

TAPE DENSITY: (if output is on tape select one option)

1600 bpi PE
 6250 bpi

<input type="checkbox"/>
<input type="checkbox"/>

Tapes will be odd parity and nine tracks, with no labels.

Data set required:

1200 UT
 0000 UT

<input type="checkbox"/>
<input type="checkbox"/>

Starting date (YYMMDD):

Ending date (YYMMDD):

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PARAMETERS/LEVELS:

(hPa)

Parameters	Levels						
	1. 1000	2. 850	3. 700	4. 500	5. 300	6. 200	7. 100
1. geopotential height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. wind u-component	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. wind v-component	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. relative humidity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. vertical velocity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

AREA:

Specify either: sub-area latitude of south-west corner
 (note decimal point) longitude of south-west corner
 latitude of north-east corner
 longitude of north-east corner

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

For latitude + represents north, - south from the equator
 For longitude + represents east, - west from 0 meridian

or the whole globe

Invoice in US Dollars requested

- NOTES:
1. For data in internal bit format, the unpacking software, in FORTRAN, will be written at the end of each tape in ASCII characters.
 2. If data from both 00 UT and 12 UT data sets are requested they will be supplied on separate tapes or printouts.

Data is supplied by ECMWF subject to the following conditions:

1. The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
2. Articles, papers, or written scientific words of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:

(For ECMWF internal use only)

Number of tapes

Number of printed pages

Amount charged for tapes

Amount charged for listings

Invoice/Revenue Order No.

Budget Reference

Revenue of:

a. Authorised

Department Head

Date

b. Approved

Financial Comptroller

Date

ORDER FORM FOR THE ALPEX DATA SET

NAME:

ORGANISATION:

ADDRESS:

TELEX/TELEPHONE NUMBER:

Tick and fill in the appropriate boxes below

Tape density:

1600 bpi PE
6250 bpi

<input type="checkbox"/>
<input type="checkbox"/>

Tapes will be odd parity and nine tracks with no labels.

Data periods:

Complete ALPEX data set

<input type="checkbox"/>

Sub-sets:

GTS data

Period

01.03-05.03.....
06.03-10.03.....
11.03-15.03.....
16.03-20.03.....
21.03-25.03.....
26.03-31.03.....
01.04-05.04.....
06.04-10.04.....
11.04-15.04.....
16.04-20.04.....
21.04-25.04.....
26.04-01.05.....

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

Non GTS-data

Period

01.03-31.03
01.04-30.04

<input type="checkbox"/>
<input type="checkbox"/>

Invoice in US Dollars requested

<input type="checkbox"/>

Data is supplied by ECMWF subject to the following conditions:

1. The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
2. Articles, papers, or written scientific works of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/we agree to the above conditions with respect to the supply of data by ECMWF.

signed:

(For ECMWF internal use only)

Number of tapes

Total amount charged

Invoice/Revenue Order No.

Budget Reference

Revenue of:

a. Authorised

Department Head

Date

b. Approved

Financial Comptroller

Date

ORDER FORM FOR THE WMO/CAS NWP DATA STUDY/INTERCOMPARISON DATA SET

NAME:

ORGANISATION:

ADDRESS:

TELEX/TELEPHONE NUMBER:

I/We hereby order WMO/CAS NWP Data Study/Intercomparison Data as follows:

Period:

Tape density:

1600 bpi PE

6250 bpi

Tapes will be odd parity and nine tracks with no labels

No of tapes:

Note that a full calendar year of data can be stored on one 6250 bpi tape; for 1600 bpi tapes three months (Jan - March, April - June, July - Sept., Oct. - Dec.) are stored on each tape.

Invoice in US Dollars requested

Data is supplied by ECMWF subject to the following conditions:

1. The supplied data will not be transmitted in whole or in part to any third party without the authorisation of ECMWF.
2. Articles, papers, or written scientific works of any form, based in whole or in part on data supplied by ECMWF, will contain an acknowledgement concerning the supplied data.

This is to certify that I/We agree to the above conditions with respect to the supply of data by ECMWF.

signed:

For ECMWF internal use only

Number of tapes prepared (6250/1600 bpi)

Total amount charged

Invoice/Revenue Order No.

Budget Reference

Revenue of:

a. Authorized

Department Head

Date

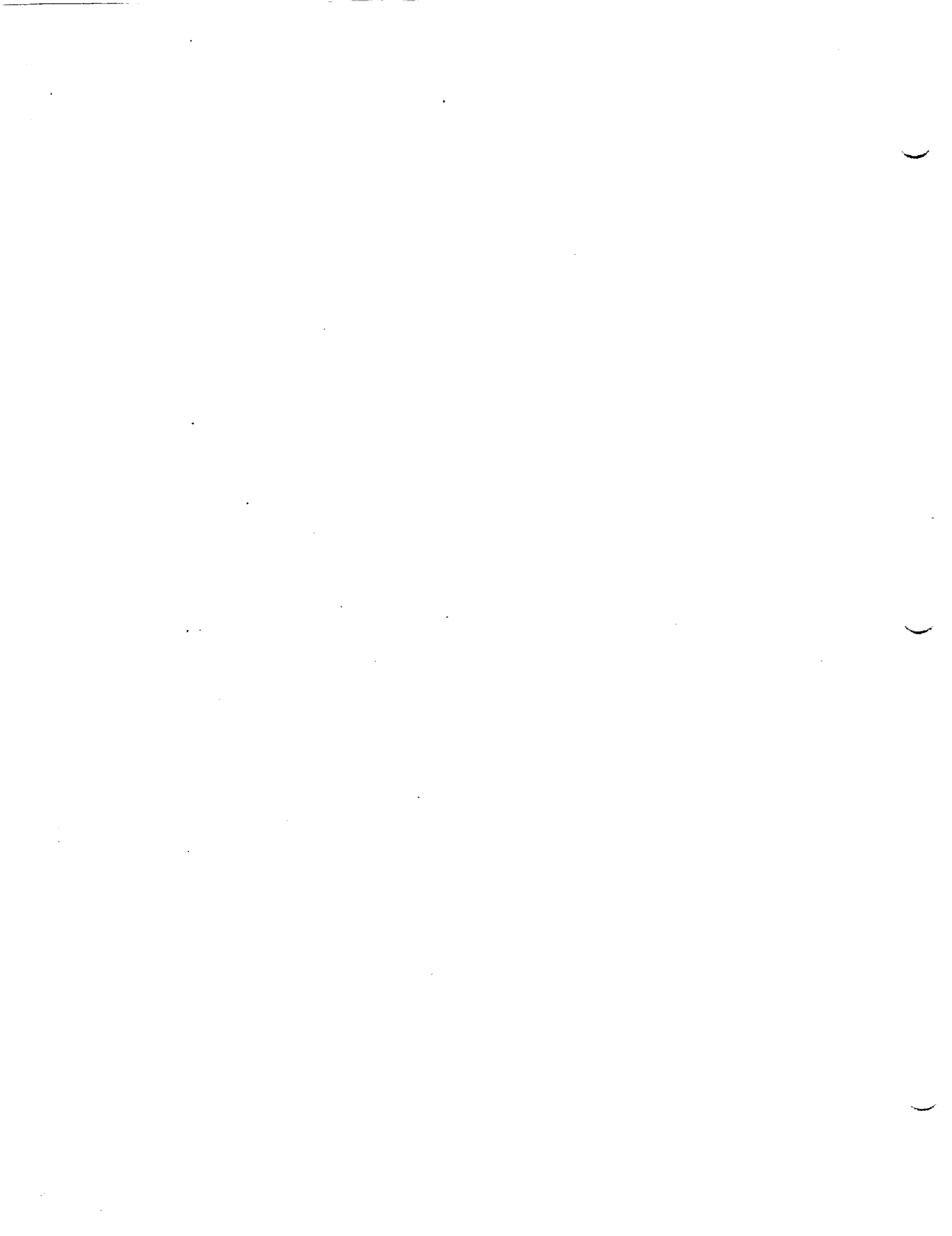
b. Approved

Financial Comptroller

Date

APPENDIX C

National Environmental Data Referral Service (NEDRES)





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL ENVIRONMENTAL SATELLITE, DATA,
AND INFORMATION SERVICE
Washington, D.C. 20233

HOW TO ACCESS THE NEDRES DATABASE

To use NEDRES you may obtain a password from the NEDRES Office and become part of our Cooperative Network, or you may obtain access directly from the vendor, BRS Information Technologies. The options follow:

1. You may obtain a password to access the database by signing a User Agreement and forwarding it to us with a payment of \$25.00. This is an annual charge for establishing and maintaining your password. The database is accessed through local networks such as Telenet, Tymnet, and Uninet. The password will allow you to access the database; thereafter you will be charged only when you use the database. Charges are based on your amount of time online and the number of records retrieved. A User Guide is available for \$10.00.

2. If you already have a BRS password, you can use it to access NEDRES. If not, you may obtain a password from BRS Information Technologies, 1200 Rte 7, Latham, NY 12110 or 800-345-4BRS. BRS has several types of services: 1) Brkthru - a menu-driven system, 2) After Dark - a special service which is only usable after 6:00 PM local time at a lower rate than the daytime rate, 3) Open Access - pay \$50.00 for a password, then \$35.00/hour plus royalties and telecommunications charge when you use the service, 4) Subscription access - charge for online time varies with number of hours of usage guaranteed per year.

3. If you prefer, you may ask this office to perform searches on subjects of interest to you. We will send the results to you within 10 days of our receipt of your request. Charges for searches are listed in the User Charge Policy and Price List.

**ORIGINAL PAGE IS
OF POOR QUALITY**



NATIONAL ENVIRONMENTAL DATA REFERRAL SERVICE (NEDRES)
 PRODUCTS & SERVICES PRICE LIST

8/88

CHARGES FOR NEDRES DATABASE ONLINE USE:

Computer Connect Time	\$45.00/hour
Password Maintenance	\$25.00/password/year
Off-line pages printed	\$ 0.35/page
Off-line print packages mailed	\$ 2.00 each
Telecommunications Connect Time	\$ 9.00/hour
Search (performed by NEDRES Office)	\$25.00/hour or fraction in addition to charges above, excluding password

<u>PUBLICATIONS</u>	<u>PRICE</u>
* <u>Finding the Environmental Data You Need</u> A brochure describing NEDRES.	Free
* <u>NEDRES Memorandum of Agreement</u> For participation in the NEDRES Network.	Free
* <u>NEDRES Database User Agreement</u> For individuals and organizations that wish to use the NEDRES Data Base	Free
* <u>NEDRES Data Base User Guide</u> (1988 Rev) Provides a detailed explanation of the NEDRES Data Base and instructions for using it on the BRS on-line information system.	\$ 7.50
* <u>Guidelines for the Description of Environmental Data Files</u> <u>for the NEDRES Database</u> (1985) Instructions for description of data for NEDRES.	\$10.00
* <u>North American Climatic Data Catalog: Part 1</u> (1984) Contains 700 descriptions of climatic data files available in the United States and Canada.	\$10.00
* <u>North American Climatic Data Catalog: Part 2</u> (1985) Continues Part 1 with 600 additional data file descriptions.	\$10.00
* <u>Satellite Remote Sensing of the Marine Environment:</u> <u>Literature and Data Sources</u> (1986)	\$10.00
* <u>Specialized Data Catalogs:</u>	
<u>Coastal and Estuarine Waters of California, Oregon,</u> <u>and Washington</u> (1985)	\$10.00
<u>Chesapeake Bay and Adjacent Wetlands</u> (1985)	Superseded
* <u>Chesapeake Bay Environmental Data Directory</u> (1988) Contains marine environmental data descriptions	Free to federal and state agencies
* <u>Environmental Data Review</u> A Newsletter.	Free

TO ORDER PUBLICATIONS: you can check those desired and return this
 sheet with your mailing address. Prepayment is required.
 Make checks payable to: U.S. Department of Commerce, NOAA.

To: NEDRES Program Office, E/AIx3
 NOAA, Room 522
 1825 Connecticut Avenue, N.W.
 Washington, D.C. 20235
 (202-673-5404)

Requester's Address:

NATIONAL ENVIRONMENTAL DATA REFERRAL SERVICE (NEDRES) DATABASE USER AGREEMENT
(NOAA ORGANIZATIONS)

The National Environmental Data Referral Service Office of NESDIS/AISC, and
(Customer), agree as follows:

I. PURPOSE, SCOPE, AND DEFINITIONS

This agreement establishes the terms and conditions according to which the customer may use the NEDRES Database Service. The NEDRES Database is a computer-readable collection of descriptions of environmental data files and related information intended to reveal the content, characteristics, and location of the data. It is described in the NEDRES Database User Guide (including future updates to this Guide). The NEDRES Database Service is the provision of the NEDRES Database on a host computer system with appropriate software to permit a user to search the Database, retrieve records of interest, and print or display them.

II. REFERENCES AND AUTHORITY

A. Title 15 U.S.C. 1525-1527 authorizes the Commerce Department to make special compilations of information and to furnish copies upon payment. Additional authority is provided by 42 U.S.C. 6602(b)(2) (Federal Government Scientific and Technical Information), and 31 U.S.C. 483a and 686a (Fees for Non-Government and Government Agencies).

B. NEDRES is operated by the NESDIS Assessment and Information Services Center under the authority of Department of Commerce Organization Order 25-5B which directs that "NOAA shall ... operate and maintain a system for the storage, retrieval, and dissemination of data relating to the state and resources of the oceans and inland waters including the seabed, and the state of the upper and lower atmosphere, of the earth, the sun, and the space environment...."

III. TERMS AND CONDITIONS

A. Provision and Continuity of Service. The NEDRES Office of NESDIS/AISC will establish and maintain the NEDRES Database and ensure that facilities are provided through which it may be accessed conveniently by users with the proper equipment. The NEDRES Office reserves the right to amend, extend, or withdraw portions of the NEDRES Database or improve or modify other features of the NEDRES Database Service from time to time.

B. Use of the Service. The NEDRES Office will establish an account in the customer's name with a commercial database service and issue the customer one or more passwords (at the customer's option). The customer will pay for all charges against the password(s) until the NEDRES Office receives notification in writing to cancel or change them. The customer will protect against unauthorized usage of all computer passwords and accounts assigned to the customer.

January 26, 1984

C. Prices and Payment. The customer agrees to pay for the Service in accordance with the current price list furnished by the NEDRES Office; for any related services provided through the host computer system on which the NEDRES Database resides; for the acquisition of equipment, supplies, and facilities used for the customer's access of the NEDRES Database Service; and for voluntary participation in NEDRES-sponsored activities, such as travel related costs. The NEDRES Office will send a notification of the payments due for NEDRES services used to the customer annually (or more frequently if desired by the customer) and the customer will transfer funds to NESDIS/AISC within thirty (30) days of the date of notice.

D. Internal Clearance. The customer accepts sole responsibility for gaining any required clearance for the obligation of funds from the customer's financial management center and any higher levels of the customer's NOAA line or staff organization.

E. User Guides and Training. The NEDRES Office will provide at least one (1) copy of the NEDRES Database User Guide for each customer, for which a charge of \$10.00 will be included in the first bill for services. The NEDRES Office will provide one half day of training free of charge in Washington, D.C. for NOAA offices, but it is the responsibility of the customer to learn to use the Service satisfactorily.

IV. DURATION, MODIFICATION, AND TERMINATION

A. Effective date. This agreement shall take effect when signed by both parties. It shall continue indefinitely unless terminated as provided below.

B. Entire agreement; amendment. This agreement, including any price lists and other notices provided to the customer, constitutes the entire agreement between the parties. The provisions of this agreement may not be modified, amended, or expanded without prior written approval of both parties, except for the price list which may be changed by the NEDRES Office after giving the customer thirty (30) calendar days written notice.

C. Termination. The agreement may be terminated by either party at any time upon not less than thirty (30) calendar days prior written notice to that effect to the opposite party.

V. ACCEPTANCE OF AGREEMENT

This agreement is executed by the duly authorized parties whose signatures are affixed below.

A. Customer:

(Signature) (Date)

Name

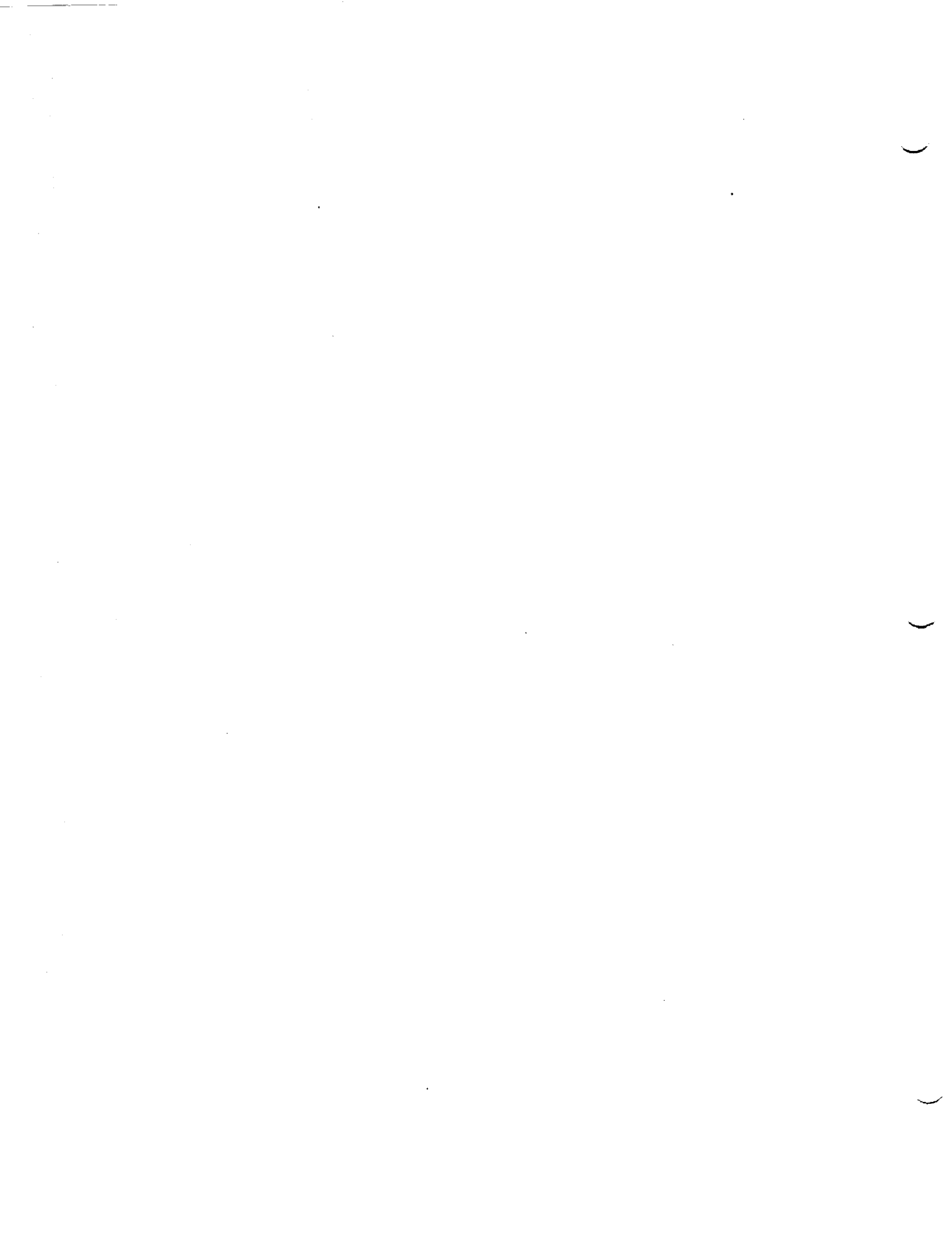
Address for user guides, offline prints

Address for invoices

B. NEDRES Office

(Signature) (Date)

Chief, NEDRES Program Office
Assessment and Information Services Center
NOAA/NESDIS (E/AIx3)
3300 Whitehaven St., N.W.
Washington, D.C. 20235



APPENDIX D

National Geophysical Data Center





**National Geophysical Data Center
and
World Data Centers A (Boulder)
DIRECTORY OF DATA SERVICES**



TELEPHONES: COMMERCIAL (303) 497 + EXT.
FTS 320 + EXT.
TELEX: 592811 NOAA MASC BDR

JANUARY 1987

**FOR GENERAL INFORMATION AND ONE-STOP SERVICE, USE EXTENSION 6364.
FOR TECHNICAL INFORMATION ABOUT DATA AND PRODUCTS, CONTACT THE PEOPLE LISTED.**

DATA SERVICES	PRIMARY	ALTERNATE
Absorption (Ionospheric) Data	George E. Tatarski (6140)	Raymond O. Conkright (6414)
Aeromagnetic Data	Ronald W. Buhmann (6128)	Susan J. McLean (6124)
Airglow		
Consultant	Helen E. Coffey (6223)	John A. McKinnon (6133)
Data	Viola W. Miller (6136)	John A. McKinnon (6133)
Aurora		
Consultant (Ground)	Helen E. Coffey (6223)	John A. McKinnon (6133)
(Satellite)	Helen E. Coffey (6223)	Herbert W. Kroehl (6121)
Data	Viola W. Miller (6136)	Helen E. Coffey (6223)
Bathymetry		
Coastal	Bruce F. Hillard (6376)	Peter W. Sloss (6119)
Deepwater	Dan R. Metzger (6542)	Troy L. Holcombe (6390)
Gridded	Peter W. Sloss (6119)	Bruce F. Hillard (6376)
CDP Seismic Profile Data		
Land	David T. Dater (6120)	David M. Clark (6474)
Marine	J. Bruce Grant (6345)	Dan R. Metzger (6542)
Coal Resources	Joy A. Ikelman (6419)	Susan J. McLean (6124)
Cores, Sediments, and Bottom Samples	Carla J. Moore (6339)	Robin R. Warnken (6767)
Cosmic Rays		
Computer Format Data	Viola W. Miller (6136)	Dan C. Wilkinson (6137)
Consultant	Helen E. Coffey (6223)	John A. McKinnon (6133)
Data	Viola W. Miller (6136)	John A. McKinnon (6133)
Deep Sea Drilling Project	Michael S. Loughridge (6487)	Carla J. Moore (6339)
Drafting	Charles T. Shanks (6146)	
Earthquake Information (see also Seismology)	Susan E. Godeaux (6967)	Virginia J. Spies (6297)
Flare Data (see also Solar Data)	Viola W. Miller (6136)	Helen E. Coffey (6223)
Geochemistry		
Land	Susan J. McLean (6124)	Mildred K. England (6227)
Marine	Carla J. Moore (6339)	Robin R. Warnken (6767)
Geoidal Height	Joy A. Ikelman (6419)	David T. Dater (6120)
Geology Data		
Land	David M. Clark (6474)	David T. Dater (6120)
Marine	Carla J. Moore (6339)	Robin R. Warnken (6767)
Geomagnetism		
Aeromagnetic Data	Ronald W. Buhmann (6128)	Susan J. McLean (6124)
Digital Data Services (Observatory)	Leslie D. Morris (6475)	Carl C. Abston (6276)
Indices (general)	Betty J. Weddle (6135)	Leslie D. Morris (6475)
AE Indices Analysis	Joe H. Allen (6323)	Herbert W. Kroehl (6121)
Magnetic Field Models	W. Minor Davis (6478)	Susan J. McLean (6124)
Magnetograms	Betty J. Weddle (6135)	Leslie D. Morris (6475)

DATA SERVICES**PRIMARY****ALTERNATE****Geomagnetism (continued)**

Main Field Consultant
 Main Field Data (Charts)
 Marine
 Secular Change
 Variations Data
 Variations Data Consultant

Herbert Meyers (6521)
 Susan J. McLean (6124)
 Dan R. Metzger (6542)
 W. Minor Davis (6478)
 Betty J. Weddle (6135)
 Leslie D. Morris (6475)

Kendall L. Svendsen (6284)
 Michael S. Loughridge (6487)
 Susan J. McLean (6124)
 Leslie D. Morris (6475)
 Joe H. Allen (6323)

Geophysics

Land
 Marine

David M. Clark (6474)
 J. Bruce Grant (6345)

David A. Hastings (6729)
 Dan R. Metzger (6542)

Geothermal Data

Joy A. Ikelman (6419)

David M. Clark (6474)

Glaciology (Snow and Ice)

Ronald L. Weaver (492-7624)

Roger G. Barry (492-5488)

Graphics, Computer

Glaciology
 Marine Geology and Geophysics
 Solar-Terrestrial Physics
 Solid Earth Geophysics

Ronald L. Weaver (492-7624)
 Peter W. Sloss (6119)
 Dan C. Wilkinson (6137)
 Ronald W. Buhmann (6128)

Dan R. Metzger (6542)

David T. Dater (6120)

Gravity Data

Land
 Marine

David T. Dater (6120)
 Dan R. Metzger (6542)

David M. Clark (6474)
 J. Bruce Grant (6345)

Heat Flow Data

Joy A. Ikelman (6419)

David T. Dater (6120)

Hydrographic Data

Bruce F. Hillard (6376)

Peter W. Sloss (6119)

Ice and Snow

Ronald L. Weaver (492-7624)

Roger G. Barry (492-5488)

IDOE (Int'l. Decade of Ocean Exploration)

J. Bruce Grant (6345)
 George E. Talarski (6140)

Michael S. Loughridge (6487)
 Raymond O. Conkright (6120)

Incoherent Scatter Data

Joe H. Allen (6323)

IMS (Int'l. Magnetospheric Study Central Information Exchange)

Helen E. Coffey (6223)
 Viola W. Miller (6136)
 Doris G. Stansell (6468)

John A. McKinnon (6133)
 Helen E. Coffey (6223)
 Raymond O. Conkright (6414)

Interplanetary Phenomena Consultant Data

Helen E. Coffey (6223)
 Joy A. Ikelman (6419)

David M. Clark (6474)

Ionospheric Phenomena Data**International Ursigram and World Days Service****Land Geophysics Data****Magnetism, Magnetograms**

(see Geomagnetism or Solar Data)

Magnetospheric Data**Magnetospheric Data Consultant****Mail Lists****Maps**

Geothermal
 Land Geophysics
 Marine Geophysics
 Natural Hazards

Herbert W. Kroehl (6121)
 Joe H. Allen (6323)
 Mai E. Edwards (6958)

Helen E. Coffey (6223)
 Herbert W. Kroehl (6121)

Marine Geology Data

Joy A. Ikelman (6419)
 David T. Dater (6120)
 Peter W. Sloss (6119)
 Pat A. Lockridge (6337)

Doreen G. Ardourel (6607)
 Joy A. Ikelman (6419)
 J. Bruce Grant (6345)
 Susan E. Godeaux (6967)

Marine Geophysics Data

Carla J. Moore (6339)

Robin R. Warnken (6767)

Marine Mineral Resources

(Manganese, Phosphorites,
 Placers, Sulfides)

J. Bruce Grant (6345)

Dan R. Metzger (6542)

Marine Magnetic Data

Carla J. Moore (6339)
 Dan R. Metzger (6542)

Robin R. Warnken (6767)
 Michael S. Loughridge (6487)

Middle Atmosphere Program (MAP)

Joe H. Allen (6323)

Herbert W. Kroehl (6121)

DATA SERVICES	PRIMARY	ALTERNATE
National Petroleum Reserve in Alaska	David M. Clark (6474)	Doreen G. Ardourel (6607)
NGDC Guest Worker	Joe H. Allen (6323)	Herbert W. Kroehl (6121)
OCSEAP	Peter W. Sloss (6119)	Michael S. Loughridge (6487)
Offshore Lease Sales	J. Bruce Grant (6345)	Michael S. Loughridge (6487)
Publications (Data)		
Earthquake (Seismology)	Doreen G. Ardourel (6607)	Joy A. Ikelman (6419)
Glaciological Data	Ann M. Brennan (492-1846)	Ronald L. Weaver (492-7624)
Marine Geology and Geophysics	J. Bruce Grant (6345)	Betty V. Morlan (6144)
Remote Sensing	David A. Hastings (6729)	David M. Clark (6474)
Geomagnetic Indices Bulletin	Betty J. Weddle (6135)	Leslie D. Morris (6475)
Solid Earth Reports	Doreen G. Ardourel (6607)	Joy A. Ikelman (6419)
Solar-Geophysical Data	Helen E. Coffey (6223)	John A. McKinnon (6133)
Solar Indices Bulletin	John A. McKinnon (6133)	Helen E. Coffey (6223)
UAG Reports	John A. McKinnon (6133)	Helen E. Coffey (6223)
Riometer Data	George E. Talarski (6140)	Raymond O. Conkright (6414)
Radiometric Age Data		
Land	Susan J. McLean (6124)	David M. Clark (6474)
Marine	Carla J. Moore (6339)	Robin R. Warnken (6767)
Satellite Data		
Anomalies	Joe H. Allen (6323)	Daniel C. Wilkinson (6137)
Aurora (DMSP)	Viola W. Miller (6136)	Herbert W. Kroehl (6121)
AVHRR	David A. Hastings (6729)	David M. Clark (6474)
GOES, NOAA	Viola W. Miller (6136)	Daniel C. Wilkinson (6137)
Ionosphere	Doris G. Stansell (6468)	Raymond O. Conkright (6414)
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David T. Dater (6120)
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Topography Data Base



SE-1102
6/88

The National Geophysical Data Center (NGDC) has a variety of topography and terrain data sets available for use in geoscience applications. The data were obtained from U.S. Government agencies, academic institutions, and private industries. The data coverage is regional to worldwide; data collection methods encompass map digitization to satellite remote sensing.

30-Second Data

NGDC has two data sets of elevation data on a 30-second geographic grid, covering the conterminous United States.

30-second point elevation data were originally derived by the Defense Mapping Agency (DMA) from $1^\circ \times 2^\circ$ topographic maps (1:250,000), and refined by the National Telecommunications and Information Administration in 1984. (Product number: **168-A07-007**.) The data are rounded to the nearest 20 feet for every 30 seconds of latitude and longitude (approximately 2700 feet on the ground). The data are divided regionally by longitude into four files: 60° to 86°W , 86° to 100°W , 100° to 109°W , and 109° to 130°W . Data may be ordered as individual files. (See **How to Order**.)

NGDC's 30-second point elevation data meet the standards set by the Federal Communications Commission in General Docket No. 84-705 (November 1984). This ruling states that digital terrain data of 30-second resolution or better may be used in determining antenna height above average terrain (HAAT) calculations.

30-second average elevation data, created by the U.S. Geological Survey (USGS) from the 30-second point data, are also available as a separate data set (**410-A07-001**).

1-Minute and 3-Minute Data

These data, which contain average elevation information, were obtained by averaging the appropriate 30-second cell elevations described above. The data set is available as two files on one magnetic tape (**411-A07-001**).

5-Minute Data

Five-minute Northern Hemisphere data. Five-minute average elevation values are available on two separate files (Figure 1). File one includes areas in North and Central America (**167-A07-001**); file two includes areas in Africa, Europe, Japan, Korea, and the Middle East (**167-A07-002**). These data were originally prepared by DMA from arithmetic averages of data digitized from contour charts.

Each 60-character record covers an area of 5-minutes in latitude and 30-minutes in longitude and includes six elevation measurements. The record also includes the accuracy of each measurement and type of land or water area represented.

Five-minute global data. Digital land and seafloor elevations were assembled by NGDC from several data sets into a worldwide gridded data set (ETOPO5) with a grid spacing of 5-minutes of latitude by 5-minutes of longitude. The two files of 5-minute data above were used as a basis for much of the Northern Hemisphere. Land elevations for New Zealand came from the Department of Scientific and Industrial Research of New Zealand; land elevations for Australia were supplied by the



National Geophysical Data Center

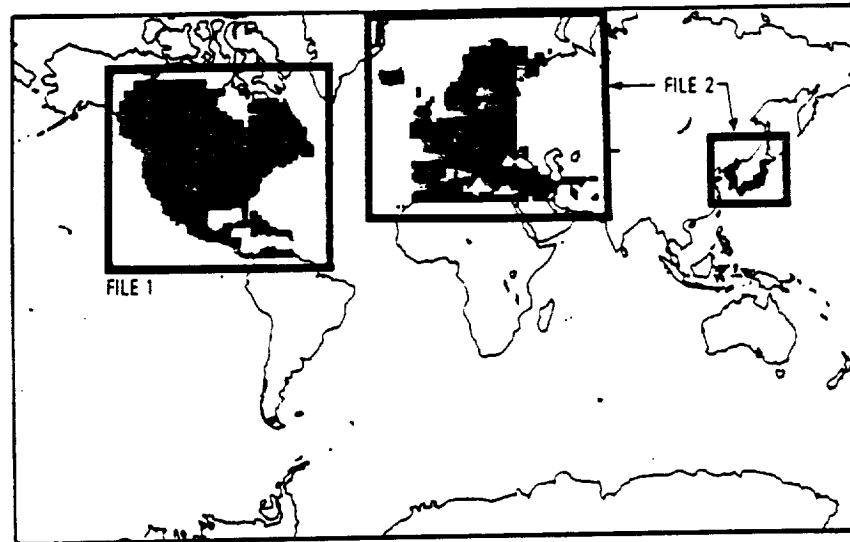


Figure 1. Coverage of 5-minute elevation data (land areas in black).

Bureau of Mineral Resources of Australia. The balance of the land elevations were interpolated from the 10-minute global elevation data. Oceanic bathymetry was compiled by the U.S. Naval Oceanographic Office. *The registration accuracy of these data is 10-minutes.*

Data are available on one magnetic tape at 6250 bpi (931-A07-002) or on two tapes at 1600 bpi (931-A07-003). In addition, a set of three computer-generated world maps have been produced with this data, depicting the relief of the surface of Earth (930-A01-001). J. R. Heitzler of Woods Hole Oceanographic Institution served as editor and general coordinator for the map project. For more information on the data or maps, and on bathymetry data, please telephone (303) 497-6338.

10-Minute Data

These data, which include 2.3 million global observations, were originally compiled by the U.S. Navy from navigational and aeronautical charts. Error checks and refinements have been made by the National Center for Atmospheric Research and NGDC.

The data set includes modal, minimum, and maximum elevations; number and orientation of ridges; terrain characteristics; and percentages of water surfaces and urban development for each 10-minute area. The data are available on magnetic tape in a variety of geographical subdivisions. (See Figure 2, and **How to Order**.) Custom searches are also available, with output on IBM-PC/AT/PS2 compatible floppy diskettes.

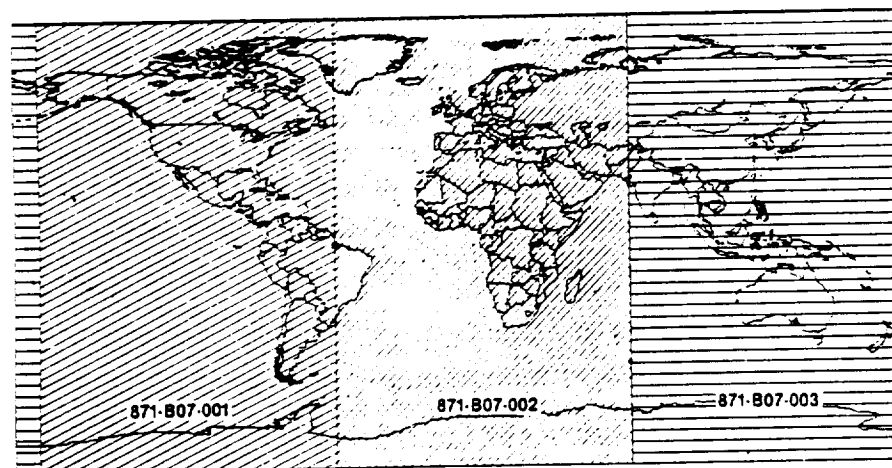


Figure 2. Index map showing 10-minute data divisions by longitude. These data are also available by geographical regions (continents).

A stereo illustration of Earth's physiography was digitally created from 5-minute bathymetry values and the 10-minute data (resampled to a 5-minute spacing), then made into Cibachrome prints. These color image maps can be viewed with a stereoscope in the same manner as stereo aerial photography. The images are useful in classroom studies of global physiography and geology, and are interesting examples of digital image processing (871-F11-001).

1-Degree Data

NGDC has four small files of 1-degree global topography data (156-B07-001). These files are:

- *Scripps Institution of Oceanography (SIO) global topography.* Worldwide ocean depths and continental elevations, averaged for areas approximately 1° square of latitude and longitude are presented in this file.
- *Rand/SIO topography.* These data, developed by Rand Corporation, are based on visual estimations from contour charts as well as the SIO file described above.
- *DMA topography.* In addition to location and elevation data, this DMA file provides an accuracy code and terrain characteristics.
- *Geoidal heights from GEOS-III.* Geoidal heights were computed by Kenneth L. Brace (DMA) based on GEOS-III satellite radar altimetry. The data are for ocean areas between 65°N and 65°S. This data file may also be ordered separately, in a set with other GEOS-III data mentioned below.

An improved version of the SIO topography has recently been contributed by J. Graham Cogley of Trent University (Ontario, Canada). The data are available as three files (on one magnetic tape), and include solid ground elevation, surface elevation, and ice shelf thickness (156-C07-001).

GEOS-III Data

The GEOS-III mission was designed by NASA to study Earth's gravitational field, the geoid, deep ocean tides, sea state, crustal structure, and solid-Earth dynamics. An excellent overview of the GEOS-III project is summarized in the *Journal of Geophysical Research*, Vol. 84, No. B8 (July, 1979).

NGDC provides two files of GEOS-III derived data on one magnetic tape (227-A07-002). The first is the file mentioned in the section above, "Geoidal Heights from GEOS-III". The second file consists of geoid undulations and free-air anomalies for 1-degree areas, contributed by Richard H. Rapp of Ohio State University. Data include latitude, longitude, free-air anomaly (and accuracy), geoid undulation (and accuracy), and elevation in meters.

GEOSAT Data

GEOSAT (a GEOdetic-SATellite) was designed and built by the Applied Physics Laboratory of Johns Hopkins University and launched by the U.S. Navy in March 1985. Following the successful conclusion of its military mission, the satellite's orbit was changed in October 1986 to permit acquisition of additional radar altimetry data (with a 6-km footprint) for the research community.

Land/ice altimetry data are managed jointly by NGDC and the National Snow and Ice Data Center. Ocean data are managed by the National Oceanographic Data Center. For more information on GEOSAT, please telephone (303) 497-6128.

SEASAT Data

The 1978 flight of NASA's SEASAT produced detailed measurements of the height of the sea surface by 13.5 GHz microwave altimetry. Data are available for all ocean areas between 72°N and 72°S, and include sea surface height contour overlays and magnetic tapes of data. Please telephone (303) 497-6338 for more information on SEASAT data.

How to Order

Digital data prices are generally for standard magnetic tape copies: 9-track, ASCII, 1600 bpi. Prices for other formats (such as 6250 bpi tapes, floppy diskettes) may be requested.

Product Number	Price	Description
168-A07-007	\$350	30-second point data; entire data set (4 tapes)
168-A07-001	\$140	30-second data: 60° to 86°W longitude
168-A07-002	\$140	30-second data: 86° to 100°W longitude
168-A07-003	\$140	30-second data: 100° to 109°W longitude
168-A07-004	\$140	30-second data: 109° to 130°W longitude
410-A07-001	\$330	30-second average data (3 tapes)
411-A07-001	\$140	1-minute and 3-minute data
167-A07-001	\$140	5-minute data: parts of North and Central America
167-A07-002	\$140	5-minute data: parts of Africa, Europe, Japan, Korea, and the Middle East
931-A07-002	\$510	ETOPO5: entire file (1 tape, 6250 bpi)
931-A07-003	\$530	ETOPO5: entire file (2 tapes, 1600 bpi)
930-A01-001	\$ 20	<i>Relief of the Surface of the Earth</i> (set of three maps)
871-A07-001	\$240	10-minute data: entire world (1 tape, 6250 bpi)
871-B07-004	\$280	10-minute data: entire world (3 tapes, 1600 bpi)
871-B07-001	\$140	10-minute data: +70° to -170° longitude
871-B07-002	\$140	10-minute data: -170° to -50° longitude
871-B07-003	\$140	10-minute data: -50° to +70° longitude
871-C07-001	\$140	10-minute data: North and South America
871-C07-002	\$140	10-minute data: Europe and Africa
871-C07-003	\$140	10-minute data: Australia and Asia
871-C07-004	\$140	10-minute data: Antarctic
871-C07-005	\$140	10-minute data: Arctic
871-D25-CUS	\$ 80	10-minute data: custom search; output on one floppy diskette. Additional diskettes are \$29 each.
871-F11-001	\$ 30	Stereo pair of Earth's physiography (two 10" x 10" color prints)
156-B07-001	\$140	1-degree data: four files on 1 tape
227-A07-002	\$140	1-degree data from GEOS-III: two files on 1 tape
156-C07-001	\$140	1-degree improved global topography data: three files on one tape

Please refer to product numbers when ordering.

The prices quoted here are valid through **September 30, 1988**. Prices applicable after that date may be obtained by calling (303) 497-6900.

Mention of a commercial company or product does not imply endorsement by NOAA or the Department of Commerce.

NGDC has a variety of other global and continental scale data bases that may be useful companions for topography and terrain data. These include bathymetry, gravity, magnetics, earthquake seismology, chemical analyses, satellite data, and marine geology and geophysics. Call (303) 497-6419 for more information.

U.S. DEPARTMENT OF COMMERCE REGULATIONS REQUIRE PREPAYMENT ON ALL NON-FEDERAL ORDERS. Please make checks and money orders payable to **COMMERCE/NOAA/NGDC**. All foreign orders must be in U.S. Dollars drawn on a U.S.A. bank. Do not send cash. Orders may be charged to an American Express card, MasterCard, or VISA card by telephone or letter; please include credit card account number, expiration date, telephone number, and your signature with order.

A ten-dollar (\$10) handling fee is required on all orders; an additional ten-dollar (\$10) charge is required for non-U.S.A. orders. You may elect to use RUSH service at an additional cost of fifteen dollars (\$15). Your order will receive priority processing and will be mailed first class. Overnight delivery is available at an additional cost; please call for details.

Please direct telephone inquiries to (303) 497-6900 (Telex: 592811 NOAA MASC BDR). Inquiries, orders, and payment should be addressed to:

National Geophysical Data Center
NOAA, Code E/GC1
325 Broadway
Boulder, CO 80303



Global Elevation Data



SE-1101

1/88

Global land elevation data at a resolution of 10 minutes are available from the National Geophysical Data Center (NGDC). These data, which include 2.3 million observations, were originally compiled by the U.S. Navy from navigational and aeronautical charts. Error checks and refinements have been made by the National Center for Atmospheric Research and NGDC.

The data set includes modal, minimum, and maximum elevations; orientation of ridges; terrain characteristics; and percentages of water surfaces and urban development for each 10-minute area.

The data are available on magnetic tape in a variety of geographical divisions. All tapes are 9-track, 1600 bpi, ASCII unless otherwise noted. In addition, custom searches on the data set are available, with output on IBM-PC compatible floppy diskette (5 1/4" double-sided double density).

Data Available

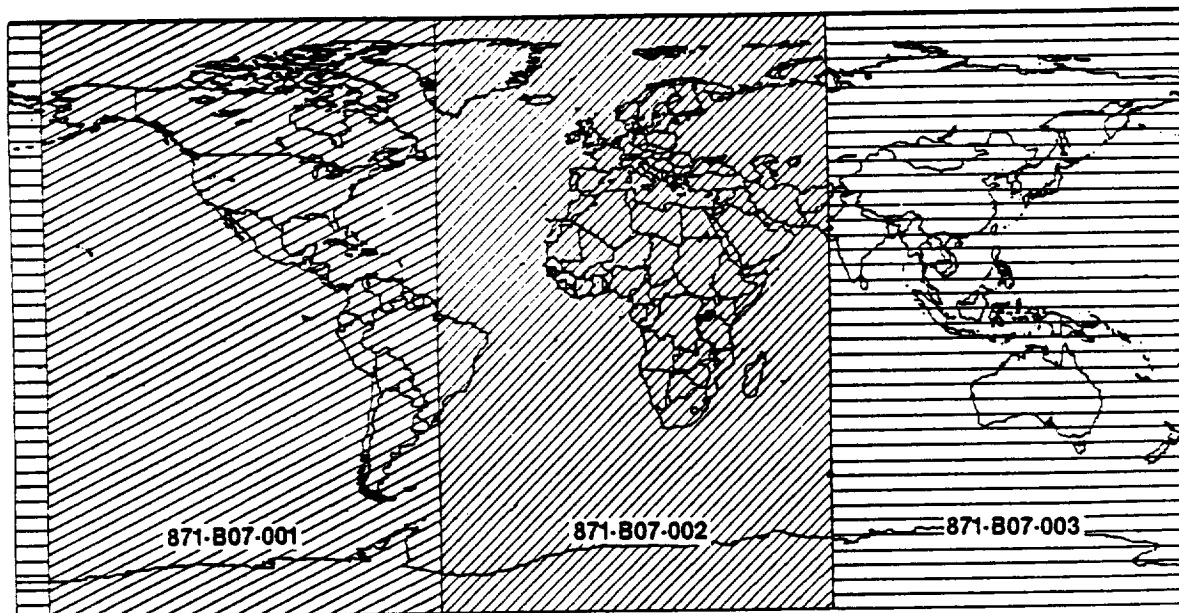
Product Number	Price	Description
871-A07-001	\$240	Entire world; one tape at 6250 bpi
871-B07-004	\$420	Entire world; three tapes at 1600 bpi
871-B07-001	\$140	+ 70 to - 170 degrees longitude
871-B07-002	\$140	- 170 to - 50 degrees longitude
871-B07-003	\$140	- 50 to + 70 degrees longitude
871-C07-001	\$140	North and South America
871-C07-002	\$140	Europe and Africa
871-C07-003	\$140	Australia and Asia
871-C07-004	\$140	Antarctic
871-C07-005	\$140	Arctic
871-D25-CUS		Custom search on data with output on floppy diskette; specify geographical coordinates. Call for pricing.

Please refer to 9-character product code when ordering.

Note: Pricing policies for the U.S. Government are under review and subject to change without notice. Please call for price confirmation before ordering.



National Geophysical Data Center



Index map showing data division by longitude. Data are also available by geographical regions (continents) and custom searches.

How To Order

U.S. DEPARTMENT OF COMMERCE REGULATIONS REQUIRE PREPAYMENT ON ALL NON-FEDERAL ORDERS. Please make checks and money orders payable to **COMMERCE/NOAA/NGDC**. All foreign orders must be in U.S. Dollars drawn on a U.S.A. bank. Do not send cash. Orders may be charged to an American Express card, MasterCard, or VISA card by telephone or letter; please include credit card account number, expiration date, telephone number, and your signature with order.

A ten dollar (\$10) handling fee is required on all orders; an additional ten dollar (\$10) charge is required for non-U.S.A. orders. Rush orders require an extra surcharge of fifteen dollars (\$15).

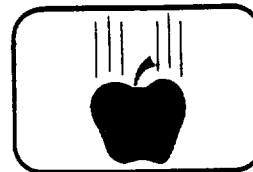
Inquiries, orders, and payment should be addressed to:

**National Geophysical Data Center
NOAA, Code E/GC4
325 Broadway
Boulder, CO 80303**

Direct telephone inquiries to:

Commercial: (303) 497-6900
FTS: 320-6900
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Gravity Data Base



SE-0701
6/88

The National Geophysical Data Center's gravity data base has been significantly enhanced and improved by several important contributions, expanding worldwide coverage to over 80% of the Earth's surface. Data usually include observed gravity, free-air and Bouguer anomalies, and elevation; some data are terrain-corrected. Several gridded data sets are also available.

Data Covering North America

Gridded gravity anomaly data for North America (6 km grid). These data were compiled in 1987 by the Geological Society of America's Decade of North American Geology (DNAG) Committee on the Gravity Anomaly Map of North America. The data set was gridded based on a Transverse Mercator projection, and contains over 2 million gridded values. The data include Bouguer anomalies on land, and free-air anomalies offshore. (Product number: **980-B07-001**.) Printed maps are available from the Geological Society of America.

Data Covering the United States

Gravity station network. The two national data sets available contain much of the same data; they differ primarily in quality control techniques and data reduction procedures.

- *Defense Mapping Agency (DMA) gravity data* consist of about 860,000 non-terrain-corrected observations for all fifty states, and was compiled from numerous sources (holdings to 1988) (**116-C07-001**).
- *National Geodetic Survey (NGS) gravity data* consist of about 1,200,000 terrain-corrected observations (preliminary holdings to 1988). The data set excludes Hawaii, but includes limited offshore data (**417-C07-001**).

Gridded gravity anomalies of the conterminous U.S. (4 km grid). Each data set contains about 1 million gridded values.

- *Bouguer anomalies onshore and free air anomalies offshore.* These data were compiled in 1983 by the Society of Exploration Geophysicists' U.S. Gravity Anomaly Map Committee (**894-A07-001**).
- *Isostatic anomalies of the conterminous U.S.* The data set was compiled in 1984 by the U.S. Geological Survey (**897-A07-001**). The *Isostatic Residual Gravity Map for the United States* was produced from these data (**897-A01-001**). The map set consists of a clear plastic overlay for the east and west half of the conterminous U.S. The gravity contours are presented at the same scale (1:250,000) and projection (Albers Equal Area) as the *Geological Map of the United States*, published by the U.S. Geological Survey.



National Geophysical Data Center

Data Covering Portions of the United States

National Petroleum Reserve, Alaska (NPRA). The NPRA is located in the central portion of the North Slope, Alaska. The NPRA gravity data set, compiled in 1980 by the U.S. Geological Survey, contains more than 53,000 records of free-air and Bouguer gravity data (895-A07-NPR).

Arctic National Wildlife Range (ANWR) and Alaska Peninsula. These data are terrain-corrected for ANWR (northeastern Alaska), and non-terrain-corrected for the Alaska Peninsula. The data set also contains the mean elevation data used in the terrain corrections for ANWR. The data set was compiled in 1984 by the U.S. Geological Survey, and contains about 1200 records (895-C07-001).

Holitna/Minchumina area, Alaska. This gravity data set is for southwestern Alaska. It was compiled in 1986 by the Alaska Geological Survey and the U.S. Geological Survey, and contains about 1300 records (895-F07-001).

California and Southern Nevada. There are 64,000 records in the data set. The records were compiled in 1983 by the U.S. Geological Survey (895-D07-001).

Portions of Wisconsin. Gravity data for portions of Wisconsin were contributed by Louisiana State University (1985), and by the University of Wisconsin and Northern Illinois University (1987). The data consist of about 1500 records (895-G07-003).

New Mexico. Gridded anomaly data for New Mexico were compiled in 1984 by the University of Texas and the U.S. Geological Survey. The data set includes 21,000 grid points (on a 1 km grid) (895-E07-001). A clear plastic overlay map, *Bouguer Gravity Anomaly Map of New Mexico*, is also available. The scale of the map is 1:500,000. The map depicts computer-contoured data at a 2-mgal contour interval and shows locations used for control (895-E01-001).

Data Covering Other Areas of the World

Portions of Southern Africa. The data set for portions of southern Africa contains about 13,000 stations. It was compiled in 1986 by the South Africa Geological Survey (896-C07-001).

Portions of Antarctica. The coverage for Antarctica is south of 50 degrees South latitude. The data set consists of two files on one magnetic tape (896-A07-003). The first file was compiled in 1984 by the Defense Mapping Agency, and contains about 57,000 stations. The second file was compiled in 1985 by the USSR, and contains about 11,000 stations.

Data Covering the World's Ocean Areas

Please telephone (303) 497-6338 for details of the marine data noted in this section.

Marine gravity data base. Trackline data are available for cruises sponsored by numerous oceanographic institutions. Bathymetric, geological, other geophysical, geochemical, and mineral resource data are also available for marine areas.

Gridded free air anomaly data (5 minute grid). This data set was compiled in 1986 from SEASAT radar altimetry data by William Haxby of the Lamont-Doherty Geological Observatory of Columbia University (978-H07-001). These data were used to generate a color image map, *Gravity Field of the World's Oceans*, at an approximate scale of 1:40,000,000 at the equator (978-H01-001).

Gridded free air anomaly data (15 minute grid). These data were compiled from SEASAT radar altimetry data by the Bureau Gravimétrique International (International Gravity Bureau) of France (978-H07-002).

CS

Satellite Altimetry Data

GEOS-III and SEASAT altimetry data have been successfully used for gravitational studies; both are available from NGDC. Altimetry data from the unclassified portion of the Navy's GEOSAT mission are also available. GEOSAT data are considered to be somewhat higher quality than GEOS-III or SEASAT data, and will be available in greater quantity over the life of the GEOSAT mission. For further information on satellite altimetry data, please call (303) 497-6128.

Custom Products

Custom searches of digital data. Custom selections of data are available for several of the gravity data sets mentioned. Searches often cost more 'per station' than the entire data base because of the added effort to produce the output. However, such searches may be economical if you are interested exclusively in specific geographical areas.

Plotting and mapping services. NGDC creates point plots and contour maps for quality control of data holdings and to provide an interpretive aid for areas specified by the user. These plots are not designed to be state-of-the-art plots that might be produced by a specialty firm in geophysical computer graphics. However, they are useful for a first-look inspection of data. As an example, on a scale of 1:250,000, using a Transverse Mercator projection, plots compatible with the U.S. Geological Survey 1 x 2 degree series can be produced. Typical prices for one labeled point plot or contour map would be between \$500 and \$750. Plots are available on paper or mylar.

For further information on custom searches or plots, please telephone (303) 497-6120.

Data Exchange Opportunities

If you already contribute gravity data to a national or international library, thank you for this valuable effort. If you aren't doing so, your contributions are encouraged. Your action enhances scientific cooperation and research, and may entitle you to no-cost data via exchange. Publication credit can be arranged for appropriate contributions.



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OF POOR QUALITY

How to Order

Digital data prices are for standard magnetic tape copies: 9-track, ASCII, 1600 bpi (except for DMA or NGS U.S. land gravity data, which are 6250 bpi). Prices for other formats (such as computer printouts, floppy diskettes) may be requested.

Product Number	Price	Description
980-B07-001	\$290	Gridded gravity anomaly data for North America (DNAG)
116-C07-001	\$590	DMA gravity data
417-C07-001	\$590	NGS gravity data
894-A07-001	\$140	Bouguer anomalies onshore/free air anomalies off-shore
897-A07-001	\$140	Isostatic anomalies of the conterminous U.S.
897-A01-001	\$ 30	<i>Isostatic Residual Gravity Map for the United States</i> ; set of two clear plastic overlay maps; each 40" x 55"
895-A07-NPR	\$140	National Petroleum Reserve in Alaska
895-C07-001	\$140	Arctic National Wildlife Range and Alaska Peninsula
895-F07-001	\$140	Holitna/Minchumina area, Alaska
895-D07-001	\$140	California and southern Nevada
895-G07-003	\$140	Portions of Wisconsin
895-E07-001	\$140	New Mexico
895-E01-001	\$ 15	<i>Bouguer Gravity Anomaly Map of New Mexico</i> ; clear plastic overlay map; 48" x 55"
896-C07-001	\$140	Portions of Southern Africa
896-A07-003	\$140	Portions of Antarctica
978-H07-001	\$ 90	5-minute gridded gravity anomaly data (SEASAT)
978-H07-002	\$ 90	15-minute gridded gravity anomaly data (SEASAT)
978-H01-001	\$ 10	<i>Gravity Field of the World's Oceans</i> ; 35" x 46" map

Please refer to product number when ordering.

The prices quoted here are valid through **September 30, 1988**. Prices applicable after that date may be obtained by calling (303) 497-6120.

Mention of a commercial company or product does not imply endorsement by NOAA or the Department of Commerce.

NGDC has a variety of other global and continental scale data bases that may be useful companions for gravity data. These include elevation, bathymetry, earthquake seismology, chemical analyses, magnetic data and field models, and marine geology and geophysical data. Call (303) 497-6419 for more information.

U.S. DEPARTMENT OF COMMERCE REGULATIONS REQUIRE PREPAYMENT ON ALL NON-FEDERAL ORDERS. Please make checks and money orders payable to **COMMERCE/NOAA/NGDC**. All foreign orders must be in U.S. Dollars drawn on a U.S.A. bank. Do not send cash. Orders may be charged to an American Express card, MasterCard, or VISA card by telephone or letter; please include credit card account number, expiration date, telephone number, and your signature with order.

A ten-dollar (\$10) handling fee is required on all orders; an additional ten-dollar (\$10) charge is required for non-U.S.A. orders. You may elect to use RUSH service at an additional cost of fifteen dollars (\$15). Your order will receive priority processing and will be mailed first class. Overnight delivery is available at an additional cost; please call for details.

Please direct telephone inquiries to (303) 497-6120 (Telex: 592811 NOAA MASC BDR). Inquiries, orders, and payment should be addressed to:

National Geophysical Data Center
NOAA, Code E/GC1
325 Broadway
Boulder, CO 80303



Potential Fields Satellite Data Base



SE-2101
6/88

The National Geophysical Data Center (NGDC) has several satellite data sets which may be applied in studies of Earth's potential fields. The data are valuable for analysis and interpretation of regional trends as well as global assessments. The following satellite data are currently available:

GEOSAT

GEOSAT (a GEOdetic-SATellite) was designed and built by the Applied Physics Laboratory of Johns Hopkins University and launched by the U.S. Navy in March 1985. Following the successful conclusion of its military mission, the satellite's orbit was changed in October 1986 to permit acquisition of additional radar altimetry data (with a 6-km footprint) for the research community.

Data are organized based on a 244 revolution, 17-day, exact repeat mission (ERM) cycle. The detailed sensor data, as well as orbital, atmospheric and tidal data, are processed by the National Geodetic Survey. During processing, data from ocean areas and from land/ice areas are segregated and stored on separate magnetic tapes. The data are contained in a standard format known as Geophysical Data Records (GDR). Each GDR archive tape (6250 bpi) contains two 17-day sequences; the delay time from satellite observation to data availability is typically two months.

A special GEOSAT order form is available on request. Please telephone (303) 497-6128 for more information.

MAGSAT

The MAGSAT project was a NASA effort to measure near-Earth magnetic fields on a global basis. MAGSAT collected scalar (total-field) and three orthogonal vector components of the magnetic field. During its seven and one-half months in orbit (October 1979 to June 1980), this satellite provided the most accurate measurements of the global field ever obtained, and the first measurements of the vector field in low-Earth orbit.

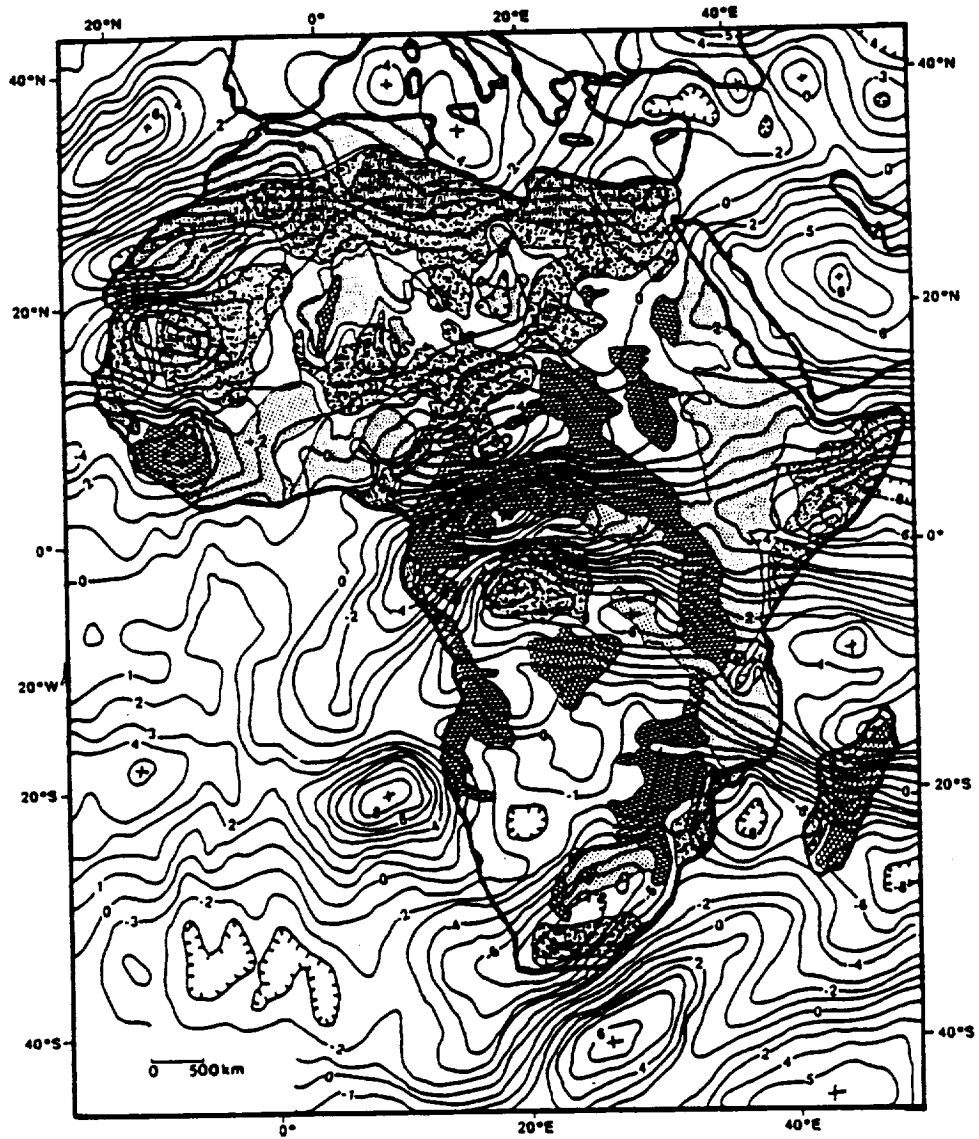
MAGSAT data have been used to investigate tectonics of the continental and oceanic lithosphere, the external and core fields, and improve data processing techniques and sensor design. Many of the studies are documented in *Geophysical Research Letters*, Vol. 9, No. 4 (April 1982) and *Journal of Geophysical Research*, Vol. 90, No. B3 (February 1985). Many new or enhanced applications are possible (see Figure 1).

Data available include a subset of the NASA data plus data contributed from significant MAGSAT investigations selected for their usefulness for terrestrial applications:

- *MAGSAT Investigator 'B' data.* One of several levels of MAGSAT data processing, these are generally considered to be the lowest processing level useful for most terrestrial applications in which orbital data are desired. (Product number: 142-A07-001.)
- *Investigator 'B' data selected for fine attitude control.* Data selected for the high degree of satellite orientation (142-A07-002).
- *Investigator 'B' data selected for quiet magnetic conditions.* Data selected for minimal external field activity (142-A07-003).
- *Gridded scalar anomalies covering non-auroral latitudes.* Two-degree latitude/longitude grid (50°N to 50°S) (142-A07-004).



National Geophysical Data Center



Uplifted Areas



Archaeean shields (over 2400 million years old)



Middle Precambrian shields (2400-1000 m.y.)



Uplifted areas less than 1000 m.y. in age

Depressed Areas



Moderate depressions

Deep portions of basins

Figure 1. Example of MAGSAT data application. MAGSAT scalar anomalies with generalized tectonic features of Africa. MAGSAT contours are 1 nanotesla (nT). Continental areas without shading are covered with relatively shallow sedimentary sequences. (Modified from Hastings, David A., 1982, Preliminary correlations of MAGSAT anomalies with tectonic features of Africa: *Geophysical Research Letters*, v. 9, no. 4, p. 303-306.)

- *Anomalies reformatted for image processing.* Gridded scalar anomaly data (above) reformatted into seven raster images (142-A07-005).
- *MAGSAT scalar anomaly image maps.* The original two-degree gridded anomalies and the spatially filtered anomalies plotted on a base map that shows the Earth's physiography for ease of interpretation. The product is two color Cibachrome prints (142-A11-001). These may be used with NGDC's stereo physiographic world image map for greater enhancement (871-F11-001). For more information about the images, telephone (303) 497-6729.

GEOS-III

The GEOS-III mission was designed by NASA to study Earth's gravitational field, the geoid, deep ocean tides, sea state, crustal structure, and solid-Earth dynamics. An excellent overview of the GEOS-III project is summarized in the *Journal of Geophysical Research*, Vol. 84, No. B8 (July, 1979). NGDC has two data sets from the GEOS-III satellite, available on one magnetic tape (227-A07-002).

- *Geoidal heights based on radar altimetry for one-degree ocean areas.* Compiled by Kenneth L. Brace of the Defense Mapping Agency. Data given are latitude, longitude, and geoid height in meters.
- *Geoid undulations and free-air anomalies for one-degree areas.* Contributed by Richard H. Rapp of Ohio State University. Data include latitude, longitude, free-air anomaly (and accuracy), geoid undulation (and accuracy), and elevation in meters.

SEASAT

The 1978 flight of NASA's SEASAT produced detailed measurements of the height of the sea surface by 13.5 GHz microwave altimetry. Data are available for all ocean areas between 72°N and 72°S.

Free air gravity anomalies based on filtered SEASAT altimetry data were calculated for a 5-minute latitude/longitude grid by William F. Haxby of the Lamont-Doherty Geological Observatory (supported by the Office of Naval Research). From these derived geophysical data, Dr. Haxby produced a SEASAT color image map, *Gravity Field of the World's Oceans* (published by NGDC, 1986). Approximate scale is 1:40,000,000 at the equator (978-H01-001).

The SEASAT image reveals previously unmapped features and improves resolution of known features. The image also resolves unusual patterns in the gravity field that may be evidence for previously unknown dynamic processes occurring in the upper mantle beneath the oceans. The 5-minute gridded SEASAT gravity anomaly data from which the map was derived are available on magnetic tape (978-H07-001).

Free-air gravity anomalies were calculated from SEASAT altimetry for a 15-minute latitude/longitude grid by the International Gravimetric Bureau of France. Coverage of this data set is 72°N to 60°S. These data are available on magnetic tape (978-H07-002).

Sea surface height contour overlays derived from SEASAT data also are available from NGDC. Sub-orbit trackline plots accompany each contour overlay. There are 64 total charts and trackline overlays; they are obtainable in sepia plastic, sepia paper, or blackline paper. For more information on these data products or other SEASAT products, please telephone (303) 497-6338.

Contributions Welcomed

The National Geophysical Data Center invites contributions of data relating to potential field studies, in order to make such information more widely available to the scientific community. We are particularly interested in public domain data (work supported with public funds) and have a 'data exchange' policy for those scientists wishing to contribute data and at the same time enhance their own data holdings. In addition, we welcome cooperative projects with governmental agencies, non-profit organizations, and universities. For more information, please telephone (303) 497-6729 or (303) 497-6591.

How to Order

Product Number	Price	Description
142-A07-001	\$1,080	MAGSAT: Investigator 'B' tapes (12 magnetic tapes)
142-A07-002	\$ 90	MAGSAT: Investigator 'B' data selected for fine attitude control (1 tape)
142-A07-003	\$ 90	MAGSAT: Investigator 'B' data selected for quiet magnetic conditions (1 tape)
142-A07-004	\$ 90	MAGSAT: Gridded scalar anomalies covering non-auroral latitudes (1 tape)
142-A07-005	\$ 90	MAGSAT: Anomalies reformatted for image processing (1 tape)
142-A11-001	\$ 30	MAGSAT: Image maps (two 10" x 10" color prints)
871-F11-001	\$ 30	Stereo physiographic world image map (two 10" x 10" color prints)
227-A07-002	\$ 140	GEOS-III: Geoidal heights; Geoid undulations and free air anomalies (2 files on 1 tape)
978-H01-001	\$ 10	SEASAT: <i>Gravity Field of the World's Oceans</i> (1 map; 35" x 46")
978-H07-001	\$ 90	SEASAT: 5-minute gridded gravity anomaly data (1 tape)
978-H07-002	\$ 90	SEASAT: 15-minute gridded gravity anomaly data (1 tape)

All magnetic tapes are 9-track, 1600 bpi, ASCII. Other formats may be requested; please telephone to check availability. **Refer to the product number when ordering.**

The prices quoted here are valid through **September 30, 1988**. Prices applicable after that date may be obtained by calling (303) 497-6128.

Mention of a commercial company or product do not imply endorsement by NOAA or the Department of Commerce.

NGDC has a variety of other global and continental scale data bases that may be useful companions for satellite data. These include elevation, bathymetry, gravity, earthquake seismology, chemical analyses, magnetic data and field models, and marine geology and geophysical data. Call (303) 497-6419 for more information.

U.S. DEPARTMENT OF COMMERCE REGULATIONS REQUIRE PREPAYMENT ON ALL NON-FEDERAL ORDERS. Please make checks and money orders payable to **COMMERCE/NOAA/NGDC**. All foreign orders must be in U.S. Dollars drawn on a U.S.A. bank. Do not send cash. Orders may be charged to an American Express card, MasterCard, or VISA card by telephone or letter; please include credit card account number, expiration date, telephone number, and your signature with order.

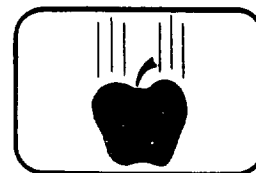
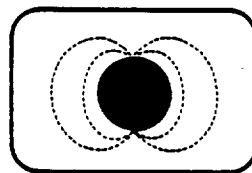
A ten-dollar (\$10) handling fee is required on all orders; an additional ten-dollar (\$10) charge is required for non-U.S.A. orders. You may elect to use RUSH service at an additional cost of fifteen dollars (\$15). Your order will receive priority processing and will be mailed first class. Overnight delivery is available at an additional cost; please call for details.

Please direct telephone inquiries to **(303) 497-6128** (Telex: 592811 NOAA MASC BDR). Inquiries, orders, and payment should be addressed to:

National Geophysical Data Center
NOAA, Code E/GC1
325 Broadway
Boulder, CO 80303



Decade of North American Geology Data



SE-2001
2/88

Gridded Magnetic and Gravity Anomaly Values for North America

We are pleased to support the Geological Society of America's Decade of North American Geology (DNAG), by distributing the digital compilations of magnetic and gravity data used to produce the *Magnetic Anomaly Map of North America* and the *Gravity Anomaly Map of North America*.

These continental scale potential field compilations represent some of the largest sets of anomaly data ever assembled. The data cover 15 percent of our planet. The digital products serve as a valuable quantitative companion to other digital geophysical data available from the National Geophysical Data Center (NGDC), as well as the DNAG color maps available from the Geological Society of America (GSA).

The magnetic anomaly data were gridded at a 2 kilometer spacing based on a spherical North American Transverse Mercator projection. The entire data set contains over 22 million grid values, covering an area from the North (geographic) Pole to northern South America. Large amounts of marine magnetic data are also included.

The gravity anomaly data, based on the same projection, were gridded at 6 kilometers and contain over 5 million grid values. Free air anomaly values derived from satellite altimetry data have been provided for oceanic areas where marine gravity data were not available.

Also being distributed with these data are FORTRAN programs which can be used to transform grid coordinates to and from geographic coordinates, and an interpolation routine which can be used to extract profiles from the gridded data sets.

For the convenience of personal computer users we are also offering customer-selected subsets of these data on floppy diskettes.

Users should be aware that the data were compiled at a grid interval appropriate for the published scale and contour interval. Attempts to use the data to produce larger scale maps, or contour intervals less than those published, may reveal inappropriate results, such as discontinuities between some data sets used in compiling the map.

Not all of the data shown on the maps are included in the gridded digital data sets. For example, gridded digital magnetic data are not available for Greenland, Mexico, and Central America as shown on the map. Gridded digital gravity data are not available for Mexico.



National Geophysical Data Center

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How to Order Maps

The GSA product number for the gravity map set is CSM002: Continental Scale Map 2. The magnetics map set is product number CSM003. Each map set includes four sheets (scale 1:5,000,000) in an illustrated file envelope. The map sheets are 42" x 55". The cost of one map set is \$23.20 folded or \$25.20 rolled. (GSA members may deduct their membership discount). If you are interested in ordering the entire Continental Scale Map series (seven map sets), call GSA for a price discount. Please direct telephone inquiries to 1-800-GSA-1988 (or 303-447-2020). Inquiries, orders, and payment should be addressed to: GSA Publication Sales, P.O. Box 9140, Boulder, CO 80301.

How to Order Digital Data

Copies of both the magnetic and gravity anomaly data are available on magnetic tapes. Customer-selected area searches are also available, with output on IBM-PC compatible 5¼" floppy diskettes. FORTRAN programs are included as separate files on each media. Please specify 1600 or 6250 bpi, and ASCII or EBCDIC format when ordering tapes.

Product Number	Price	Description
980-A07-001	\$290	DNAG magnetics data set on magnetic tape
980-A25-CUS	\$ 90	Custom search; output on one floppy diskette. Each additional diskette is \$29.
980-B07-001	\$290	DNAG gravity data set on one magnetic tape
980-B25-CUS	\$ 90	Custom search; output on one floppy diskette. Each additional diskette is \$29.

Please refer to the product number when ordering.

NGDC has a variety of other global and continental scale data bases that may be useful companions for these data. These include elevation, bathymetry, earthquake seismology, tsunamis, chemical analyses, satellite magnetic data, magnetic field models, and marine geology and geophysical data. Call (303) 497-6419 for more information.

Note: Prices are subject to change; therefore, please call for price confirmation before ordering. Mention of a commercial company or product does not imply endorsement by NOAA or the Department of Commerce.

U.S. DEPARTMENT OF COMMERCE REGULATIONS REQUIRE PREPAYMENT ON ALL NON-FEDERAL ORDERS. Please make checks and money orders payable to COMMERCE/NOAA/NGDC. All foreign orders must be in U.S. Dollars drawn on a U.S.A. bank. Do not send cash. Orders may be charged to an American Express card, MasterCard, or VISA card by telephone or letter; please include credit card account number, expiration date, telephone number, and your signature with order.

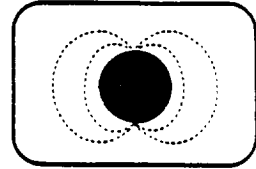
A ten-dollar (\$10) handling fee is required on all orders; an additional ten-dollar (\$10) charge is required for non-U.S.A. orders. Rush orders require an extra surcharge of fifteen dollars (\$15).

For more information on magnetics data please phone Ronald A. Buhmann at 303-497-6128. For information on gravity data contact David T. Dater at 303-497-6120. The Telex number for NGDC is 592811 NOAA MASC BDR. Inquiries, orders, and payment should be addressed to:

National Geophysical Data Center
NOAA, Code E/GC4
325 Broadway
Boulder, CO 80303

Trouble with funds? Data can be made available on an exchange basis, if you have geophysical or other data of interest to geoscientists. Please call (303) 497-6591 to find out more.

Guide to NGDC's Data on Earth's Magnetism



SE-1901
11/88

The National Geophysical Data Center (NGDC) and World Data Center A in Boulder, Colorado have a number of data sets pertaining to Earth's magnetic field, past and present. The data have been obtained from U.S. and foreign government agencies, academic institutions, and other sources.

Data Coverage, Collection, and Format . . .

Data coverage is local to worldwide. Data collection ranges from digitized analog records to field measurements, observatory time-series and summary records, and satellite readings. The data are available on compact disc, 9-track computer tape, IBM-PC compatible floppy diskette, and/or hardcopy format.

Available Data . . .

- **Satellite magnetic survey data.** These data consist of spatial and temporal data of magnetic field fluctuations; satellite magnetic surveys from MAGSAT and other satellites, with solar-terrestrial and solid-Earth applications; and magnetic anomaly data and maps.
- **Airborne (aeromagnetic) data.** Survey areas include parts of the United States, Canada, Japan, the Arctic, and Antarctica. These data are used primarily in geological and geophysical applications. Also available are the global surveys of Project MAGNET, often used for geomagnetic field modeling, and gridded data for North America, which are designed for regional studies. More than 37 million aeromagnetic data observations are held by NGDC.
- **Marine magnetic survey data.** NGDC holdings include over 9 million kilometers of underway marine survey data containing magnetic field measurements.
- **Paleomagnetic data.** Marine data encompass extensive holdings (about 45,000 determinations) from the Deep Sea Drilling Project, while land data include paleomagnetic data contributions through the World Data Center system. Related data include information on the magnetic properties of rocks.
- **Magnetic field models.** Mathematical models of Earth's magnetic field have a variety of uses, ranging from studying the Earth's deep interior to correcting differences in "magnetic North" on old land surveys. A number of regional and global models with supporting computer programs are available. In addition, historic declination tables are offered on a state-by-state basis, by specified geographic location, and through available computer software. Historical records go back more than 200 years for many locations in the United States.
- **Geomagnetic observatory records.** This data base includes secular change data such as observatory annual means and international repeat station records. NGDC also has time-series records from observatories and satellites.
- **Magnetic field survey data.** This file contains about 310,000 high-quality magnetic observations taken mostly from land surveys worldwide since 1900. Most observations include declination and horizontal intensity, or declination, horizontal intensity, and vertical or total intensity. Where possible, the values for other magnetic elements (usually the north component and east component) were computed.
- **Geomagnetic variation data.** These data include analog copies of magnetograms, 2.5- and 1.0-minute data, hourly values, and various geomagnetic indices, including AE, DST, and Kp. The data cover worldwide magnetic activity.

NEW

**World Data Center A for Solid Earth Geophysics
National Geophysical Data Center**



Data on Compact Discs . . .

NGDC has begun production of a series of compact optical discs (CD-ROMs) of geophysical data. Each disc may contain as much as 600 megabytes of readily transportable, easily accessible data on robust medium. These compact discs are accompanied by display and accession software that can be used in the analyses of the data. Three CD-ROMs feature data on the magnetic field:

- *Selected Geomagnetic and Other Solar-Terrestrial Physics Data of NOAA and NASA*. In addition to solar and ionospheric data, the CD-ROM includes a catalog of geomagnetic observatories and variations stations; 1.0-minute geomagnetic data from United States observatories for 1984; hourly, daily, and monthly average values and annual means for all years of global observatories; and geomagnetic activity indices.
- NEW • *Geophysics of North America*. This disc contains a variety of geophysical data including 2-kilometer gridded magnetic anomalies compiled for the Decade of North American Geology (DNAG) Project, and MAGSAT scalar anomalies covering non-auroral latitudes on a 2-degree grid interval.
- NEW • *Marine Geological and Geophysical Data from the Deep Sea Drilling Project (DSDP), Volume I*. A portion of this disc contains the DSDP paleomagnetic data bases: hard rock paleomagnetism, alternating field demagnetism sediment paleomagnetism, discrete sample sediment paleomagnetism, and long-core spinner magnetometer data.

About Data Contributions . . .

NGDC invites contributions of geomagnetic data in order to make such information more widely available to the scientific community. We are particularly interested in public domain data (work supported with public funds) and have a data exchange policy for those scientists wishing to contribute data and at the same time enhance their own data holdings. In addition, we welcome cooperative projects with other government agencies, non-profit organizations, and universities. For more information, please telephone (303) 497-6591.

For Additional Information . . .

NGDC publishes a number of free brochures which list geomagnetic data and services. Please telephone or write for copies of those which interest you.

88-SE-0101	Aeromagnetic Surveys in the United States
88-SE-0401	Magnetic Data Services for Surveyors
88-SE-0501	Values of Earth's Magnetic Field from Mathematical Models
88-SE-2001	Decade of North American Geology: Gridded Magnetic and Gravity Anomaly Values
88-SE-2101	Potential Fields Satellite Data Base
86-TGB-02	Aeromagnetic Data in the Arctic
86-TGB-08	International Geomagnetic Field (Icosahedron Globe)
83-MGG-06	GEODAS (GEOphysical Data System)—Worldwide Marine Geophysical Data Holdings
87-MGG-16	Paleomagnetic Data from the Deep Sea Drilling Project

Contacting Our Specialists . . .

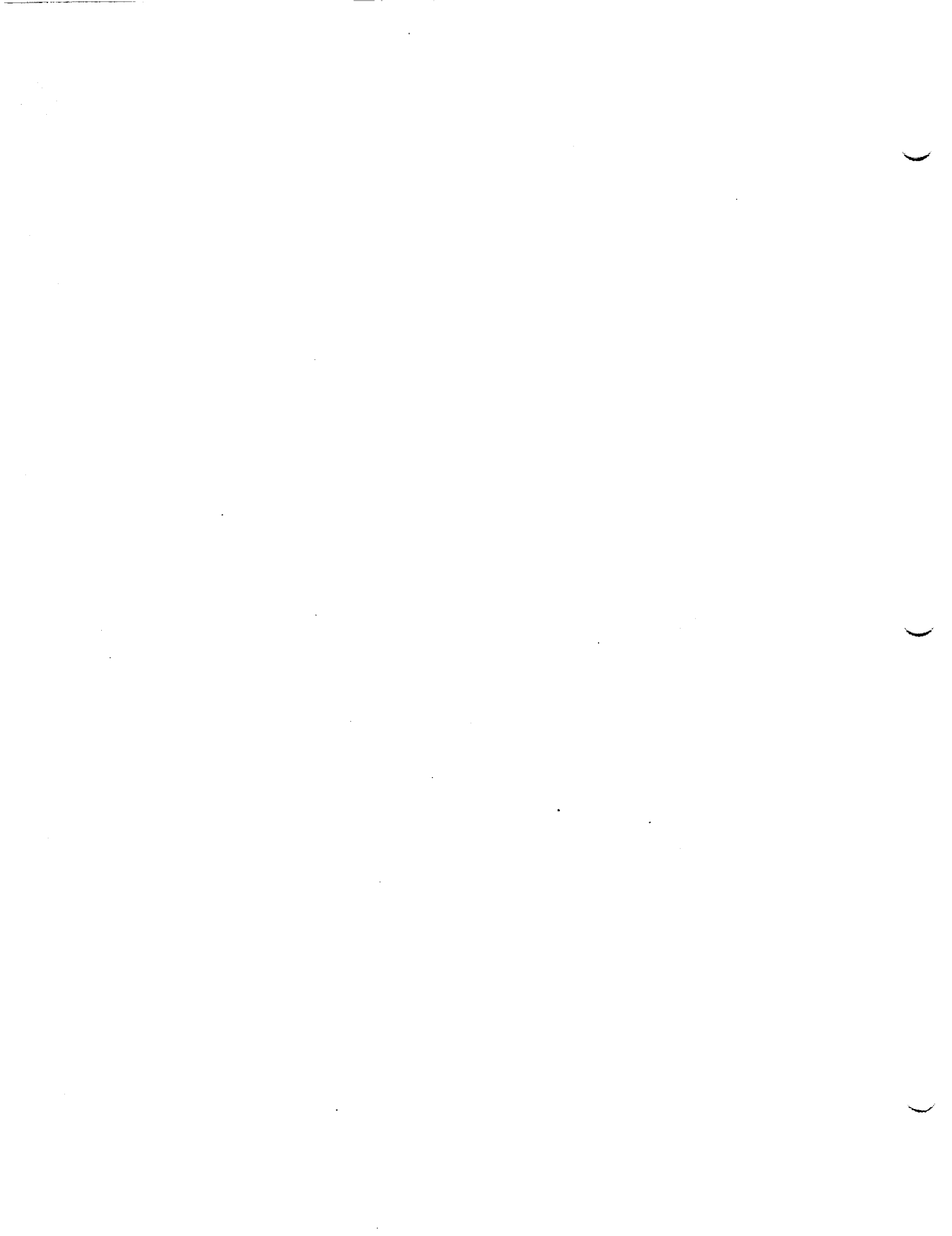
Our staff will be happy to answer any questions you may have about the data and services mentioned in this brochure. Please write to the address listed below, or telephone (303) 497 + extension.

Ext.	Specialists	Subject
6128	Ronald W. Buhmann	aeromagnetism, MAGSAT, Project MAGNET
6478	W. Minor Davis	magnetic field models, main field data, secular variation, land paleomagnetism
6591	Allen M. Hittelman	<i>Geophysics of North America</i> compact disc
6542	Dan R. Metzger	marine magnetism
6339	Carla J. Moore	marine paleomagnetism, <i>Deep Sea Drilling Project</i> compact disc
6475	Leslie D. Morris	<i>Geomagnetic and Solar-Terrestrial Physics</i> compact disc, variations data
6135	Betty J. Weddle	magnetic activity indices, magnetograms, observatory data

National Geophysical Data Center
NOAA, Code E/GC
325 Broadway
Boulder, CO 80303-3328

APPENDIX E

National Oceanic Data Center



DATE March 1984	NODC Users Guide	SECTION 5.0	PAGE 1
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5. DATA INVENTORIES

"How many oceanographic stations are available in the area between 30° to 40°N and 65° to 70°W?" "How many bathythermograph temperature-depth profiles are available in the Strait of Florida for the years 1970-79, and what are their seasonal distribution?" "Do you have data from the RV Knorr cruise of November 1976?" These questions are typical of inquiries by users who wish to obtain data from NODC's data files. NODC requesters usually have certain specific requirements. They may need data for a certain geographic area and time period or they may need data from one or more specific cruises.

NODC answers these questions, and performs many other of its data management functions, by means of a computerized data inventory system called the NODC Data Inventory Database (DINDB). The DINDB is maintained, updated, and queried using the System 2000 database management system. NODC has developed a conversational, tutorial-type system for conducting searches of the inventory database. NODC staff use this system to provide information on its data holdings to users. The basic selection criteria that can be used to search for data in NODC's master data files and other data holdings are listed in Table 5-1.

NODC services personnel can provide results of simple inventory searches for users over the telephone. For example, a user might only need to know that a certain cruise is available or the total number of observations available in a specified area. Various hard-copy data summaries and graphic plots can be generated and sent to users to provide them with more detailed inventory information, however. These data inventory presentations provide information such as geographic data distribution, counts of observations by month or season, and lists of cruises from which data are available in the user's area of interest.



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The cost of NODC data products is based on certain standard charges that include materials and computer time (Section 3.3). For complex data products tailored to user specifications costs can be determined only after the job is run, although cost estimates can be provided beforehand. For a number of simpler, frequently-requested data products, NODC has established standard unit charges. These charges are summarized in Table 6-1.

Table 6-1 NODC Standard Data Product Costs		
Product	Section	Cost
<u>Data Selection, Printout</u> Station Data Compressed CTD/STD MBT. XBT.	6.2.2 6.2.2 6.2.4 6.2.5	\$25.00 minimum, up to 50 stations; plus \$6.00 for each additional 100 stations.
<u>Data Selection, Magnetic Tape</u> Station Data Compressed CTD/STD MBT. XBT.	6.2.1, 6.2.3 6.2.1 6.2.1, 6.2.6 6.2.1, 6.2.6	\$70.00 per tape (800 bpi, 1600 bpi) or \$85.00 per tape (6250 bpi) minimum, up to 10,000 stations; plus \$1.00 for each additional 100 stations (over 10,000 stations); plus \$20.00 per tape blank tape charge (waived if user provides tape).
<u>Vertical Array Summary, Printout</u> Station Data, Compressed CTD/STD, MBT, XBT.	6.3.1	\$1.50 per summary per file for first parameter, plus \$0.50 for each addi- tional parameter from the same file; if data are from merged data set, cost is for each file (e.g., \$3.00 per sum- mary from merged MBT, XBT data).
<u>Surface Current Data System (SCUDS) Summary, Printout</u> Short Summary. Long Summary	6.3.2 6.3.3	\$0.50 per summary (either long or short summary).

Table 3.2-1 NODC Data Product Specifications

When ordering NODC data and data products, users should provide the following information as applicable to their request:

Data type or parameter

- e.g., oceanographic station data, current meter data, temperature, salinity.

Project, if applicable

- e.g., OCSEAP, MESA, MODE.

Geographic area

- latitude-longitude or geographic square numbers.

Time period

- all available data or ranges of months/years.

Cruise

- NODC cruise number (if known), originator's cruise number, or vessel name and time period.

Depth criteria

- e.g., observations deeper than 500 m.

Output format

- e.g., individual observations, data summaries, data plots.

Output medium

- e.g., computer printout, magnetic tape, microform.

Table 3.1-1 NODC Contact Points

NODC USER SERVICES BRANCH

National Oceanographic Data Center
NOAA/NESDIS E/OC21
2001 Wisconsin Avenue, NW
Washington, DC 20235

202-634-7500 (commercial)
202-634-7502 (after-hours message recorder)
FTS 634-7500

NODC LIAISON OFFICES

Northeast Liaison Office
WHOI
McLean Laboratory
Woods Hole, MA 02543

617-548-1400, Ext. 2497 (commercial)
FTS 840-7279

Southeast Liaison Office
NOAA/NESDIS/NODC
4301 Rickenbacker Causeway
Miami, FL 33149

305-361-4305 (commercial)
FTS 350-1305

Southwest Liaison Office
NOAA/NESDIS/NODC
8604 La Jolla Shores Drive
P.O. Box 271
La Jolla, CA 92037

619-453-2820 (commercial)
FTS 893-6204

Northwest Liaison Office
NOAA/NESDIS/NODC
Bin C15700/Building 1
7600 Sand Point Way, NE
Seattle, WA 98115

206-526-6263 (commercial)
FTS 392-6263

Alaska Liaison Office
NOAA/NESDIS/NODC
707 A Street
Anchorage, AK 99501

907-279-4523, Ext. 46 (commercial)
FTS 271-4063

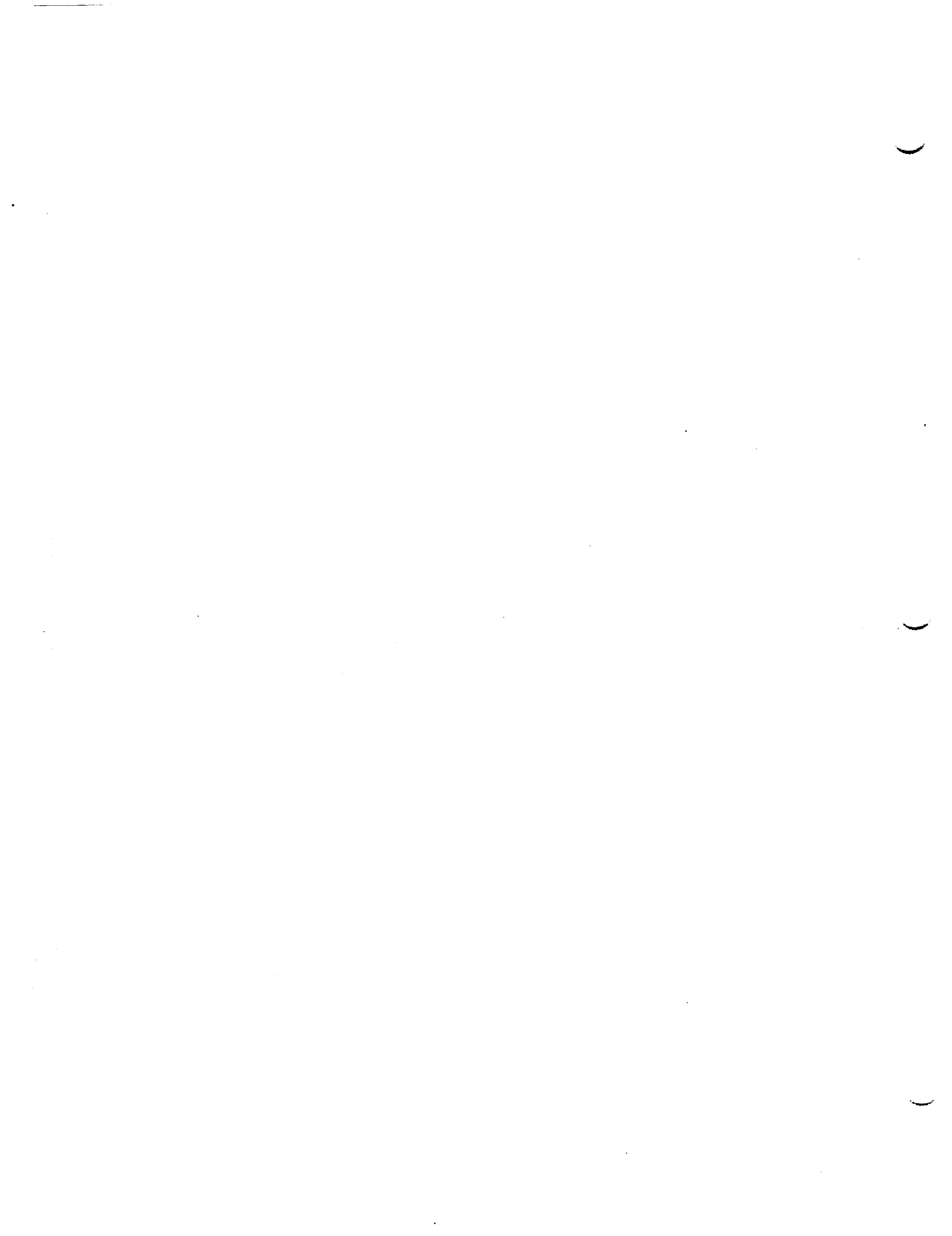
CENTRAL COORDINATION AND REFERRAL OFFICE
OCEAN POLLUTION DATA AND INFORMATION NETWORK

National Oceanographic Data Center
NOAA/NESDIS E/OCx8
2001 Wisconsin Avenue, NW.
Washington, DC 20235

202-634-7510 (commercial)
FTS 634-7510

APPENDIX F

SPAN:
Ocean Network Information Center
(SONIC)



SPAN:Ocean Network Information Center (SONIC)

Developed by the U.S. WOCE Data Management Unit

College of Marine Studies, University of Delaware

Lewes, DE 19958, USA

SONIC is intended to serve oceanographers by providing:

- World Ocean Circulation Experiment (WOCE) program information.
- Directories of oceanographic datasets.
- Information on computer networks and how to use them.
- A directory of oceanographers & meteorologists on SPAN and Omnet.
- A searchable international research ship schedule.

SONIC is accessible via international packet-switched networks (e.g. X.25).

To access SONIC, use this network address:

311030200612 (if your system requires 12 numbers)
or 31103020061200 (if your system requires 14 numbers)

Some additional addressing may be necessary, depending on the national network you are using for access. You may also need additional carriage returns after entering the address.

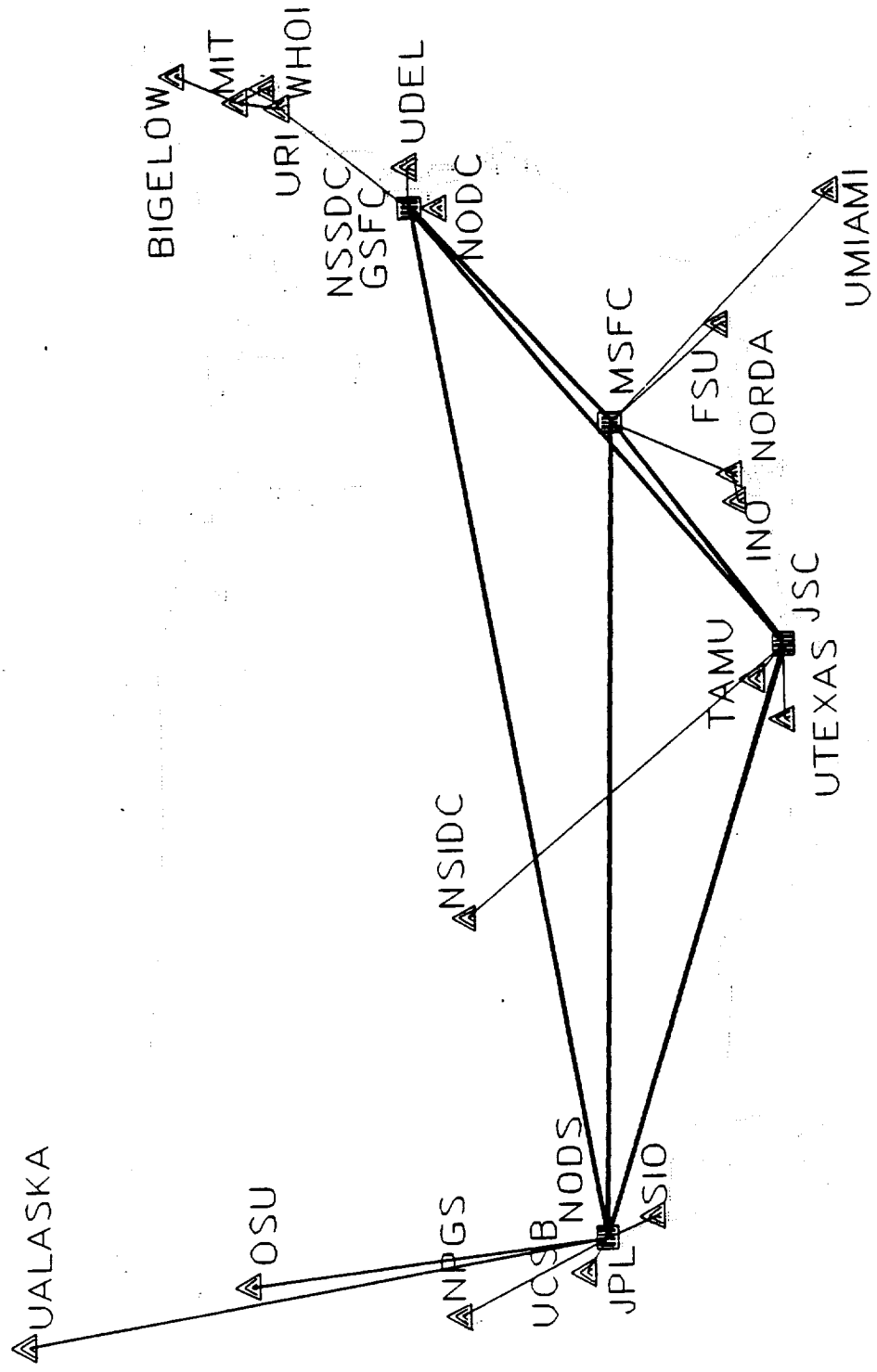
Once you are connected, you will be prompted for your name and address for our records.

The system is menu-driven, and should be self-explanatory. We want comments and criticisms on the system to aid us in making it more useful. You may leave a message on SONIC itself or, if you prefer, send comments to Katherine Bouton.

by Phone: (302) 645-4278
by TELEMAIL: K.Bouton/Omnet [MAIL/USA]
by SPAN: DELOCN::BOUTON
by mail: To the address above.

International Access 17 March 1988

SPAN OCEAN NODES



SPAN:
\$ SET HOST DELOCN (or node address 6289::)
Username: INFO (No password is required)

INTERNET GATEWAY:
% telenet longs.ucar.edu (or 128.117.64.6)

Ultrix V2.2-1 (longs)
login: delocn:: (or 6289)
Username: INFO (No password is required)

TELEMAIL/OMNET (Domestic USA):
Command? GOTO SONIC

Users in Alaska should use Telenet/Omnet network address 909014 and then GOTO SONIC.

TELEMAIL/KOSMOS (Domestic USA):
Choose menu item SONIC under Part B.

INTERNATIONAL DIRECT: (prepaid accounts)
The preferred method is via the international packet-switched network address:
311030200612 - if your national system requires a 12-digit address
31103020061200 - if your national system requires a 14-digit address
Some national systems require two zeroes in front of the address. You may need to experiment.
You will connect directly into OCEANIC. No password is required.

INTERNATIONAL TELEMAIL/OMNET:
You may connect via Telemail/Omnet at one of these addresses:
311090900003 - if your local network requires a 12-digit address
31109090000300 - if your local network requires a 14-digit address

(NOTE: Users in Canada should use datapac network address 1311090900014.)

You will get a Telenet "@" prompt after entering this address.
@ MAIL
Username? YOUR USERNAME
Password? YOUR PASSWORD
Once you are signed on to TELEMAIL:
Command? GOTO SONIC

To return to OMNET from OCEANIC:
Selection==> GOTO MAIL
When you are finished with your TELEMAIL session enter
Command? BYE then
@ HANG will force TELENET to disconnect.

DIRECT DIAL UP:

You may access OCEANIC directly using a modem (up to 2400 baud, set at 7, 1, N).

Dial (302) 645-4204. When requested:

USERNAME: INFO (No password required)

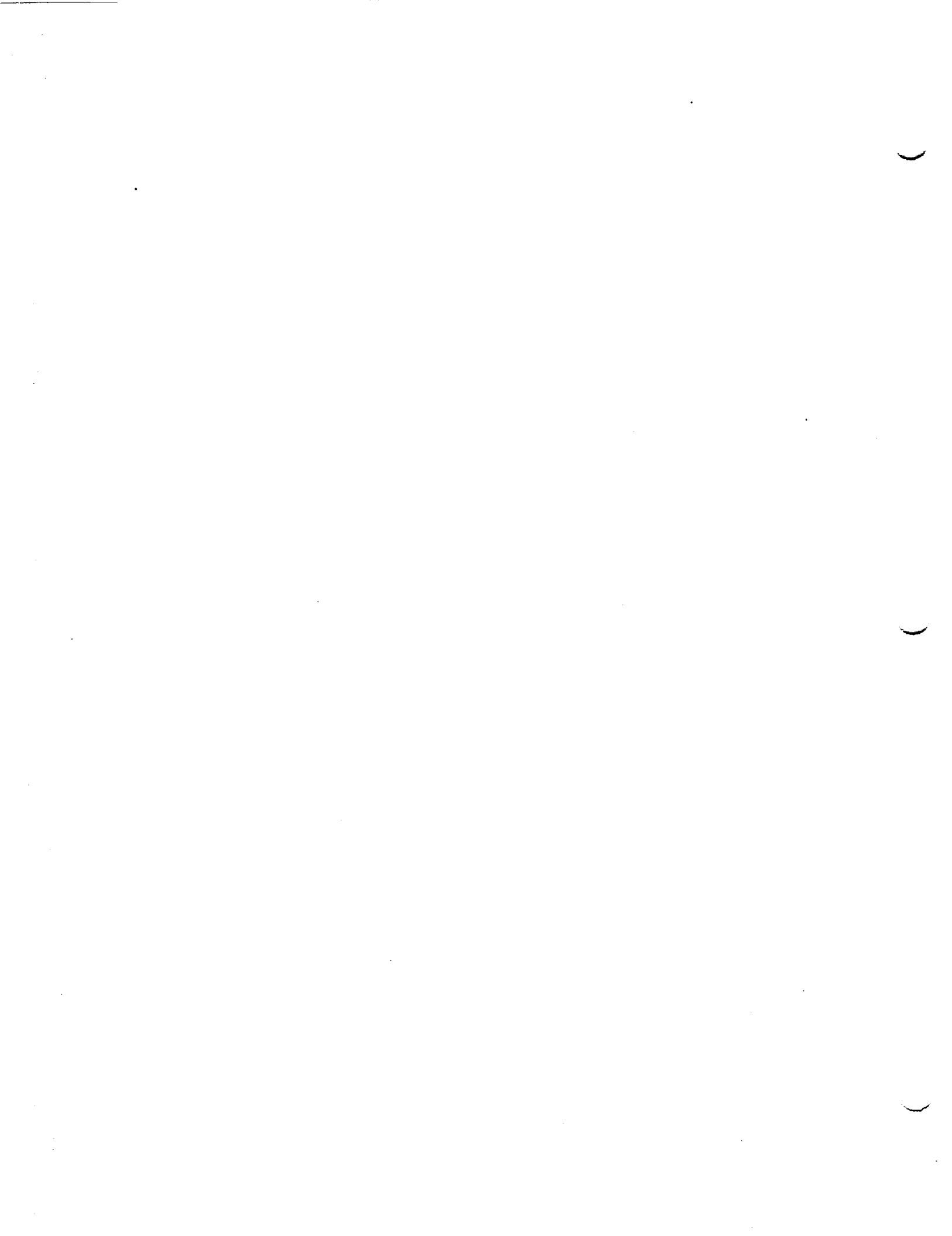
TELENET PAD:

OCEANIC is accessible by pre-paid accounts, over packet-switched systems, via Telenet Pad # 302612. At the telenet "@" prompt:

@ C 302612
Username: INFO (No password required)

APPENDIX G

Foreign Satellites: Present and Future



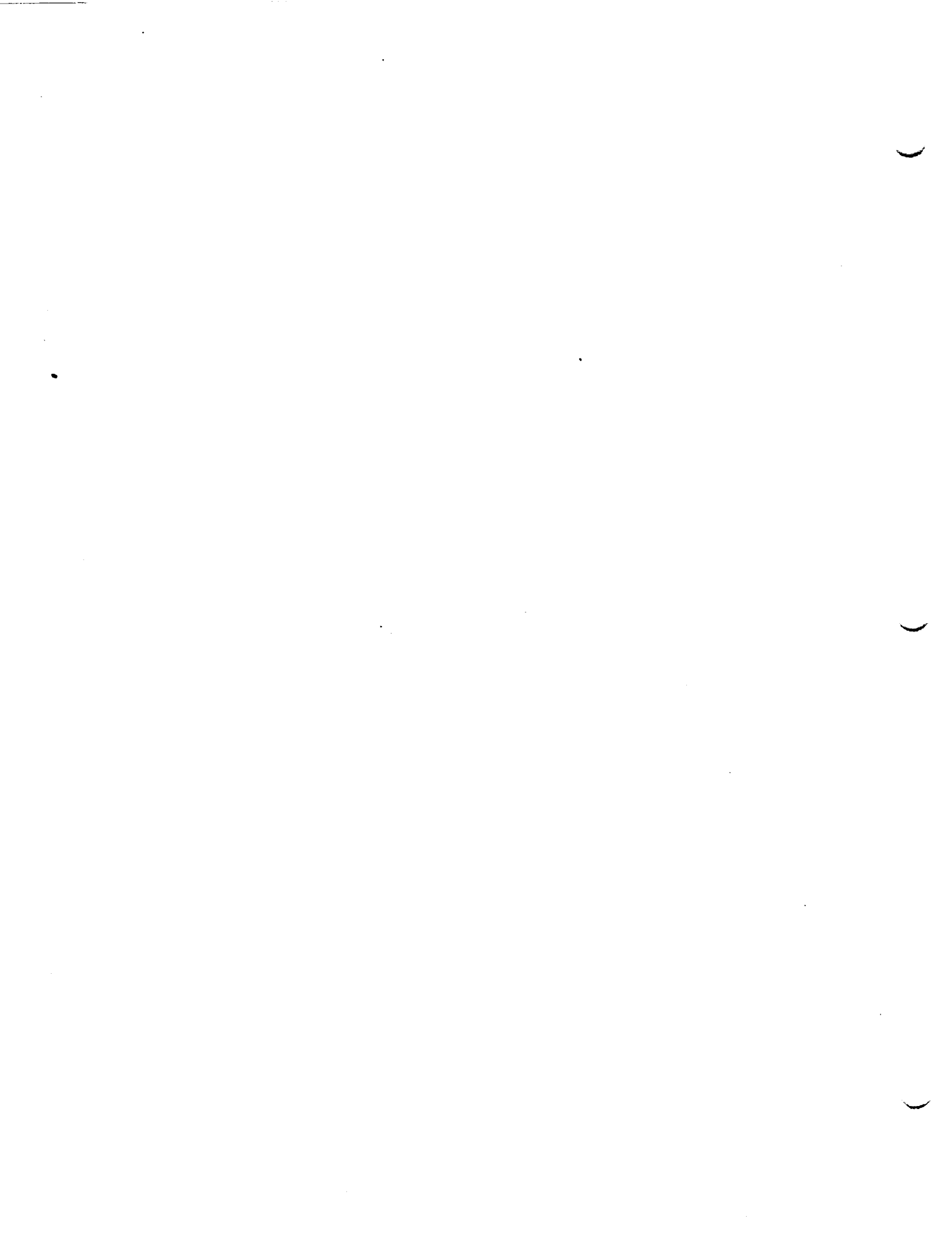
***Table 3.1: Foreign Environmental Satellites**

Year	Satellite name	Satellite type	Country
1977	Meteosat-1	Weather	ESA
1977	Geostationary Meteorological Satellite 1	Weather	Japan
1981	Meteosat-2	Weather	ESA
1982	Indian National Satellite System-1a	Weather	India
1982	Geostationary Meteorological Satellite-2	Weather	Japan
1983	Indian National Satellite System-1b	Weather	India
1984	Geostationary Meteorological Satellite-3	Weather	Japan
1986	Systeme Probatoire d'Observation de la Terre-1 (SPOT-1)	Earth observing	France
1987	Marine Observation Satellite-1	Ocean observing	Japan
1988	Indian Remote Sensing Satellite-1a	Earth observing	India
1988	Meteosat-P2	Weather	ESA
1988	Indian National Satellite System-1c	Weather	India
1988	Meteosat Operational Programme-1	Weather	ESA
1989	SPOT-2	Earth observing	France
1989	Geostationary Meteorological Satellite-4	Weather	Japan
1989	Indian Remote Sensing Satellite-1b	Earth observing	India
1989	Indian National Satellite System-1d	Weather	India
1989	Earth Resource Satellite	Earth observing	China
1990	Meteosat Operational Programme-2	Weather	ESA
1990	Marine Observation Satellite-1b	Ocean observing	Japan
1990	European Remote Sensing Satellite-1	Earth observing	ESA
1990	Indian National Satellite System-1la	Weather	India
1991	Remote Sensing Satellite	Earth observing	Brazil
1991	TOPEX/POSEIDON	Ocean observing	France/U.S.
1991	Meteosat Operational Programme-3	Weather	ESA
1991	Indian National Satellite System-1lb	Weather	India
1992	Indian Remote Sensing Satellite-1c	Earth observing	India
1992	SPOT-3	Earth observing	France
1992	Japanese Earth Resource Sensing Satellite-1	Earth observing	Japan
1993	European Remote Sensing Satellite-2	Earth observing	ESA
1993	Laser Geodynamics Satellite-2	Earth observing	Italy/U.S.
1993	Advanced Earth Observation Satellite	Earth observing	Japan
1993	Geostationary Meteorological Satellite-5	Weather	Japan
1993	Tropical Rainfall Explorer Mission	Weather	Japan
1994	RADARSAT	Earth observing	Canada
1995	SPOT-4	Earth observing	France
1995	Meteosat-Next	Weather	ESA
1996	Magnetic Field Explorer	Earth observing	France/U.S.
1997	ESA Polar Orbiting Platform	Earth observing	ESA
1997	Japanese Polar Orbiting Platform	Earth observing	Japan

Note: This list of past and future foreign satellites was created through discussions with foreign officials and by using available reports and other documents. Some of the future satellites shown may require additional approvals by the countries. In addition, some of the launch dates are subject to change.

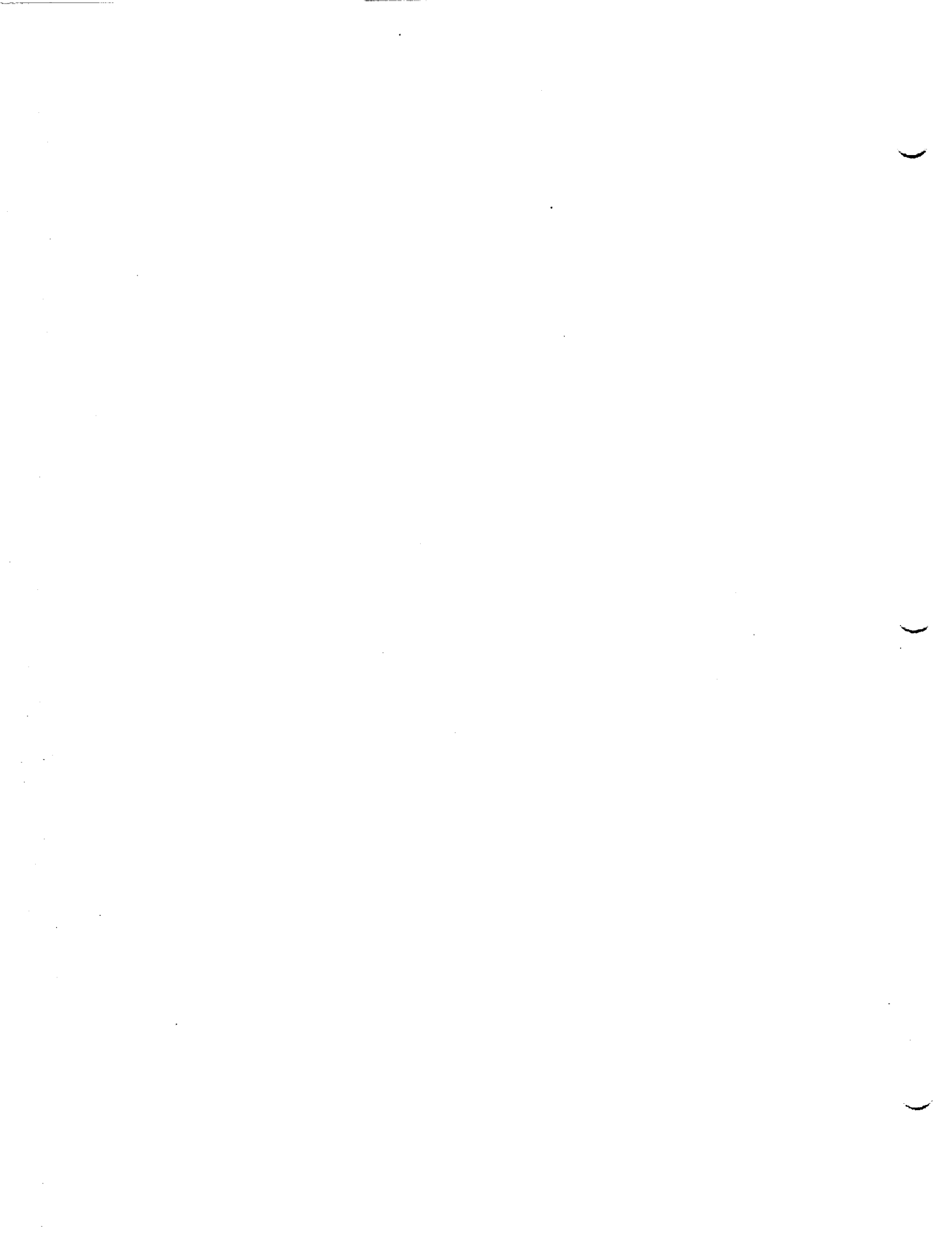
*Taken from the U.S. General Accounting Office's *Satellite Data Archiving: U.S. and Foreign Activities and Plans for Environmental Information*, GAO/RCED-88-201

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APPENDIX H

LAMPS Model History Tape



LAMPS Model History Tape

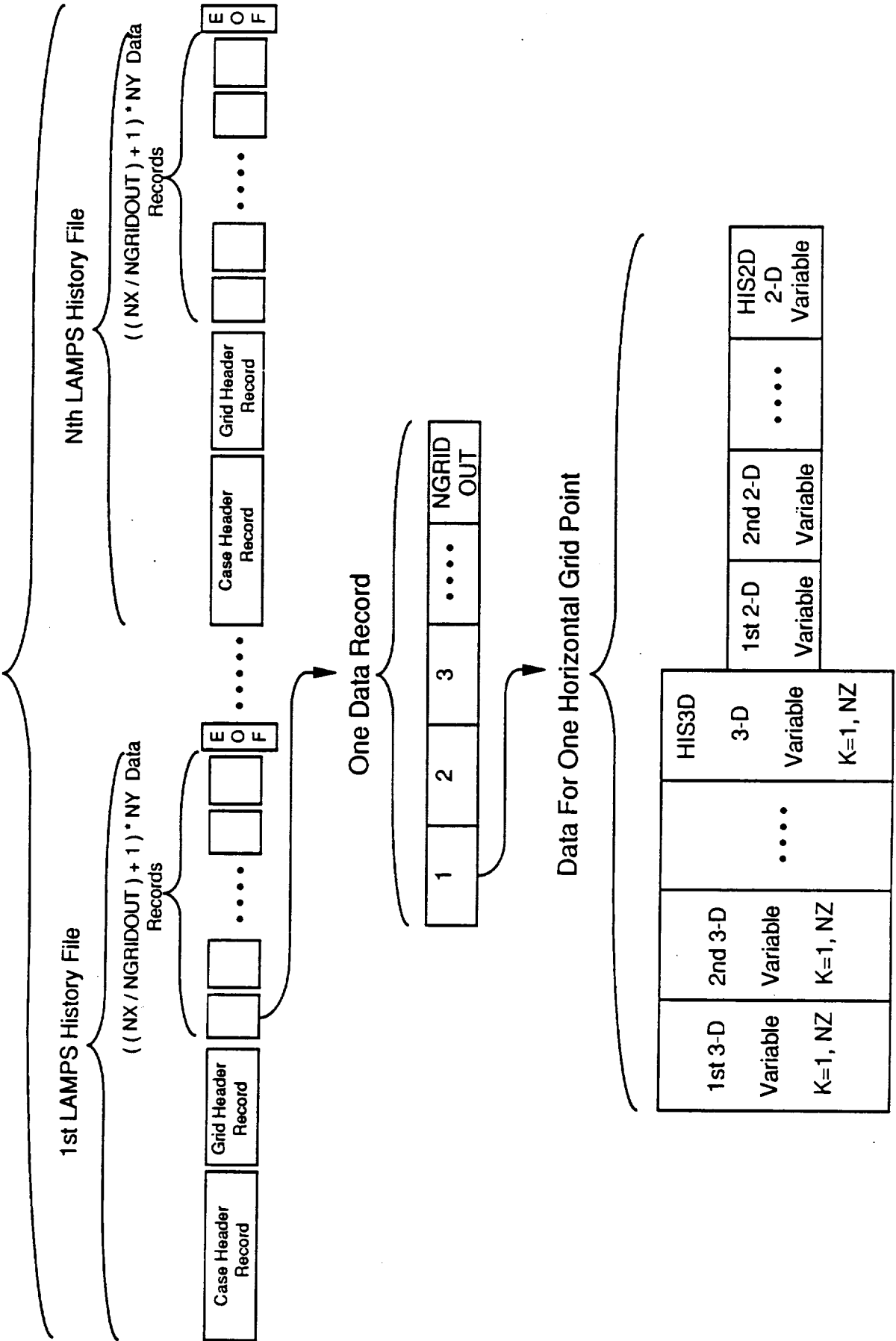
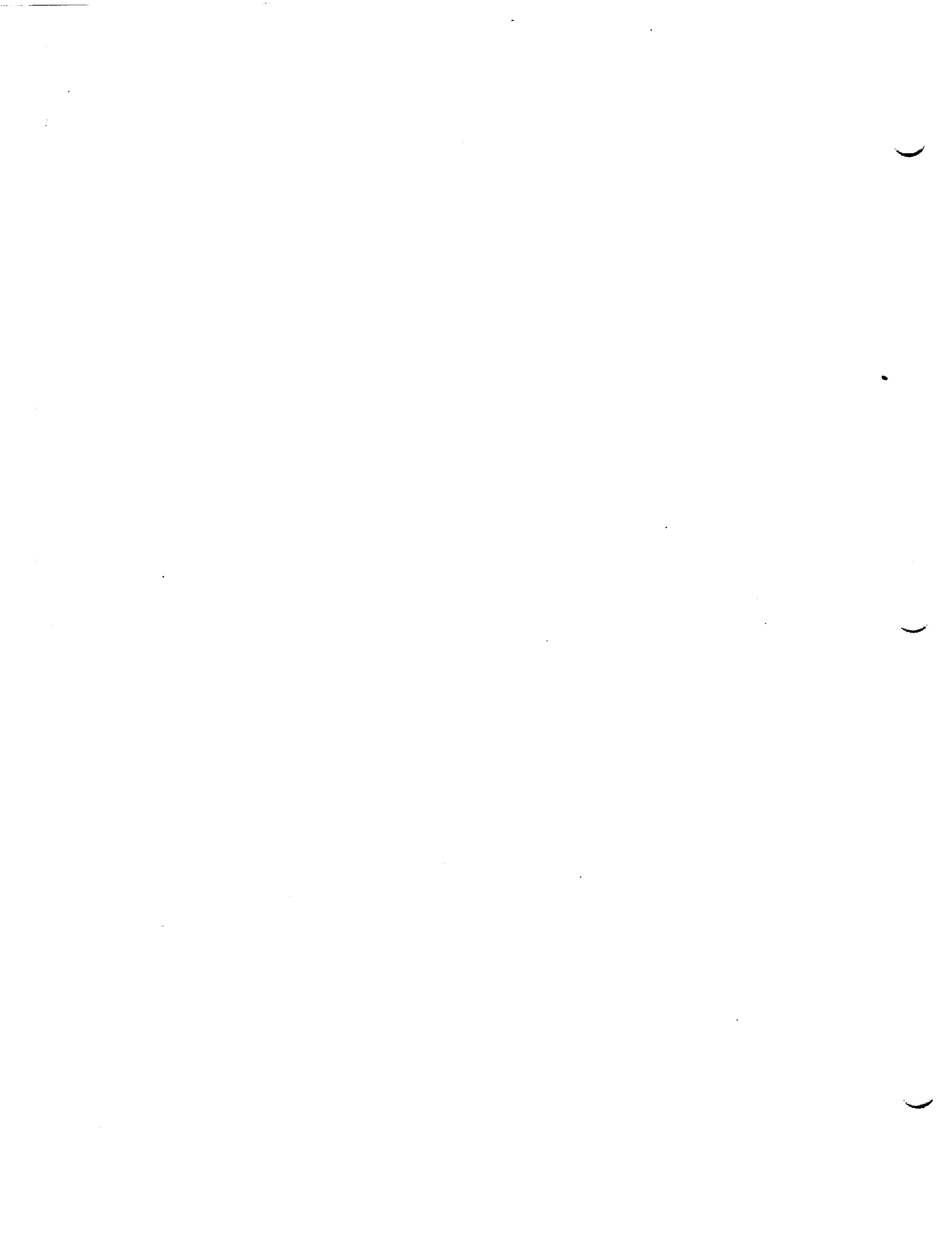
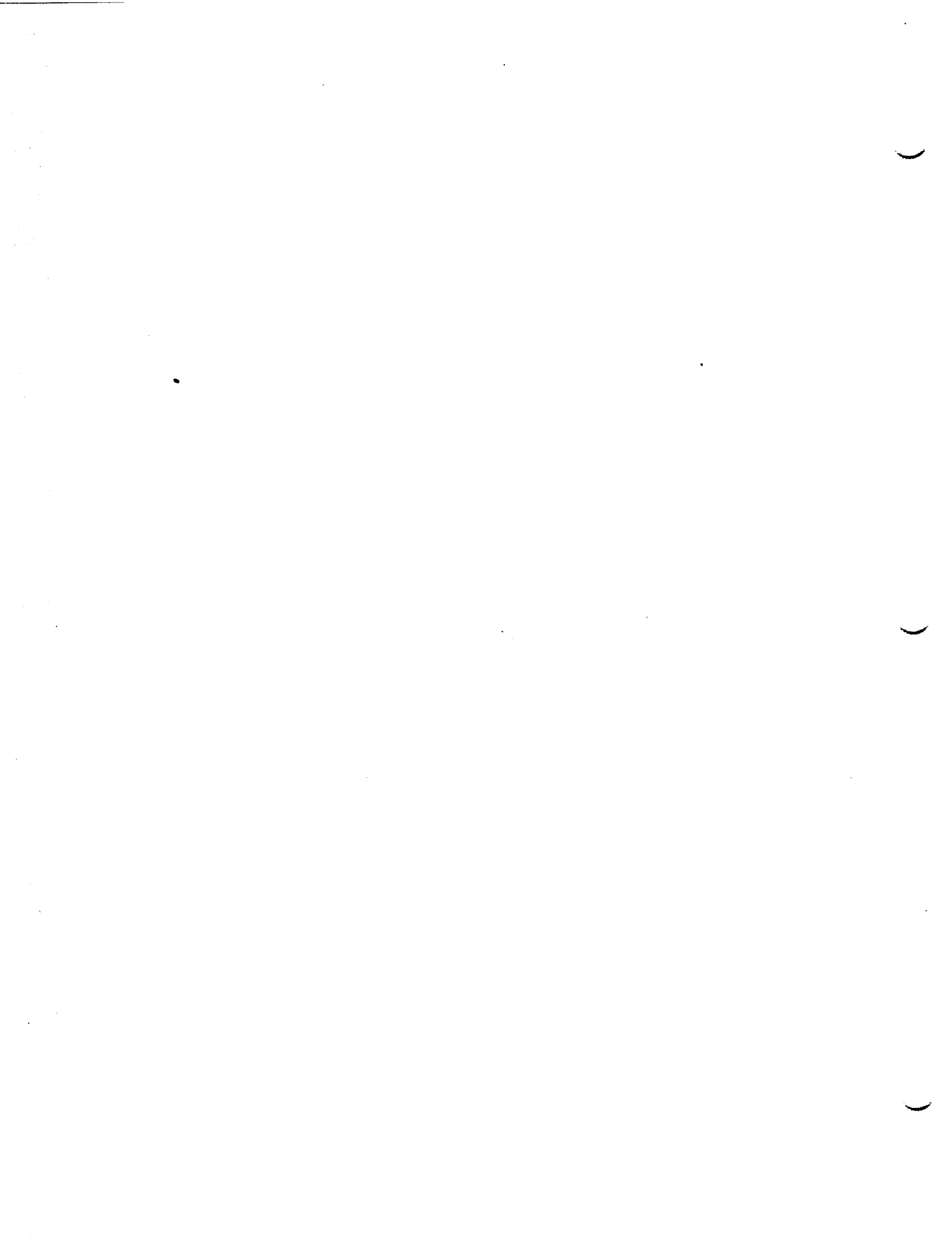


Figure 1. Schematic of Data Storage on LAMPS Model History Tape



APPENDIX I

FIRE Data Sets at NCDS



Data Sets for FIRE Available at NCDS as of January 1989

Item

Principal Investigator

Rawinsonde data

1986 FIRE Cirrus IFO
10 stations, WI, MN, IL, NE, MI
0000 UT and 1200 UT nominally
Special soundings from 10/13--11/3/86
About 50 m vertical resolution

David O'C. Starr

NASA Goddard Space Flight
Center

Radiation data

1986 FIRE Cirrus IFO
Shortwave (.28-2.8 microns) and
near infrared (.7-2.8 microns)
At Wausau, WI Municipal Airport
From 1840 UT, 10/10/86
to 2122 UT 11/2/86

David Robinson and

George Kukla

Lamont-Doherty Geological
Observatory
Columbia University

Lidar Data

1986 FIRE Cirrus IFO
On ER2
532 nm dual channel polarized
vertical resolution 7.5 meters
5 shots per second, 2-4 hours per flight
Length of flight paths varies

Jim Spinhirne and

Dennis Hlavka

NASA/Goddard Space Flight
Center

Aircraft-based measurements

1987 FIRE Marine Stratocumulus IFO
On C-130 research aircraft
Collected wind components, pressure,
temperature, carbon dioxide temperature,
dew point temperature, specific humidity,
liquid water content
Instruments used: PRT4, pyranometers,
pyrgeometer, multi-channel radiometer

Steve Nicholls

Meteorological Office
England

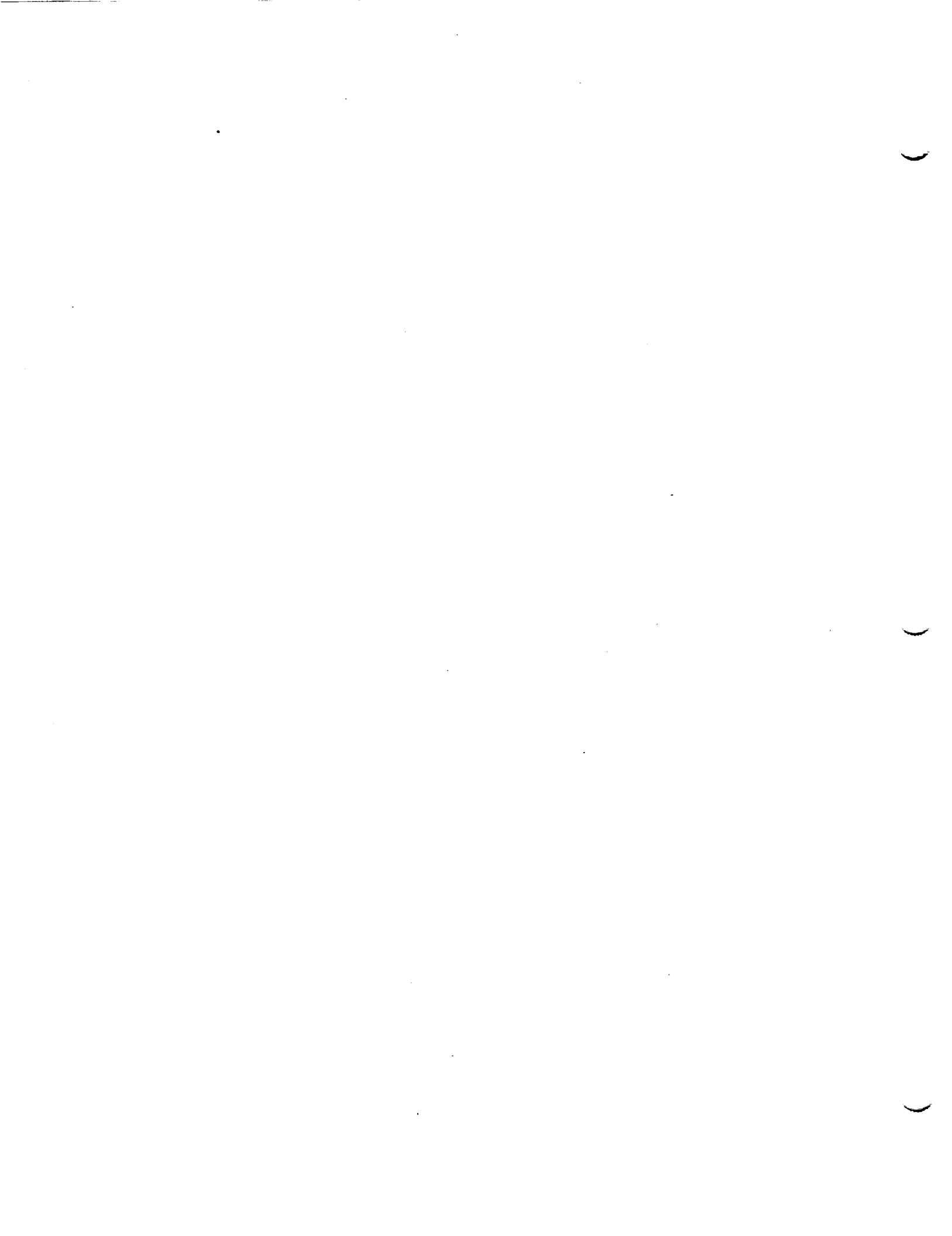
Radiometric ground-station data

1987 FIRE Marine Stratocumulus IFO
6/29/87--7/19/87 at San Nicolas Island
10-minute averages of wind speed and
direction, shortwave (.3-2.8 microns),
near IR (.7-2.8 microns), longwave
(4-50 microns), temperature,
relative humidity

Steve Cox and

Paul Hein

Colorado State University



APPENDIX J

Proposed Eos Instruments



Earth Observing System Proposed Research and Operational Instruments

Instrument	Objectives	Responsible Agency
AIRS: Atmospheric Infra-Red Sounder	Atmospheric temperature, other properties	NASA, NOAA
ALT: Radar Altimeter	Ocean circulation, surface topography	NOAA, ESA
AMRIR: Advanced Medium-Resolution Imaging Radiometer	Cloud cover, sea surface temperature, snow and ice	NOAA
AMSR: Advanced Microwave Scanning Radiometer	Atmospheric water vapor, sea surface temperature and wind	Japan
AMSU: Advanced Microwave Sounding Unit	Atmospheric temperature and humidity	NOAA, UK
ARGOS+: Data Collection and Location System	Data relay and location of ground-based measurement platforms	NOAA, France
ATLID: Atmospheric Lidar	Cloud-top height, atmospheric discontinuities, aerosol layer distribution	ESA
DB: Direct Broadcast	Communications and data distribution	NOAA
ERBI: Earth Radiation Budget Instrument	Earth's radiation budget	NOAA
GLRS: Geodynamics Laser Ranging System	Tectonic plate movement, ice flow, altimetry, surface topography	NASA
GOMR: Global Ozone Monitoring Radiometer	Vertical distribution of temperature and ozone, total ozone	NOAA
HIRIS: High-Resolution Imaging Spectrometer	Biological activity, land-surface composition	NASA
HRIS: High-Resolution Imaging Spectrometer	Biological activity, land-surface composition	ESA
ITIR: Intermediate Thermal Infrared Radiometer	High-resolution monitoring of nonrenewable resources	Japan
LASA: Laser Atmospheric Sounder and Altimeter	Tropospheric state and composition, atmospheric temperature and moisture, cloud-top properties, surface vegetation	NASA

Instrument	Objectives	Responsible Agency
LAWS: Laser Atmospheric Wind Sounder	Tropospheric winds (Doppler lidar system)	NASA
MERIS: Medium-Resolution Imaging Spectrometer	Ocean biological activity, land-surface composition and biological activity, total aerosol content, cloud properties	ESA
MODIS: Moderate-resolution Imaging Spectrometer	Biological activity, land-surface composition, snow and ice extent, cloud properties, aerosols, surface temperature, atmospheric temperature profiles	NASA
S&R: Search and Rescue	Search and rescue operations	NOAA
SAR: Synthetic Aperture Radar	Land-surface composition, topography, snow and ice extent and character, sea-ice extent and character, ocean waves, wetlands extent, soil moisture	NASA
SAR-C: Synthetic Aperture Radar-C Band	Agriculture, forestry, land, ocean and sea-ice studies	ESA
SCATT: Scatterometer	Sea-surface wind velocities	NOAA, ESA
SEM: Space Environmental Monitor	Total energy from magnetosphere, magnetic field effects	NOAA

References:

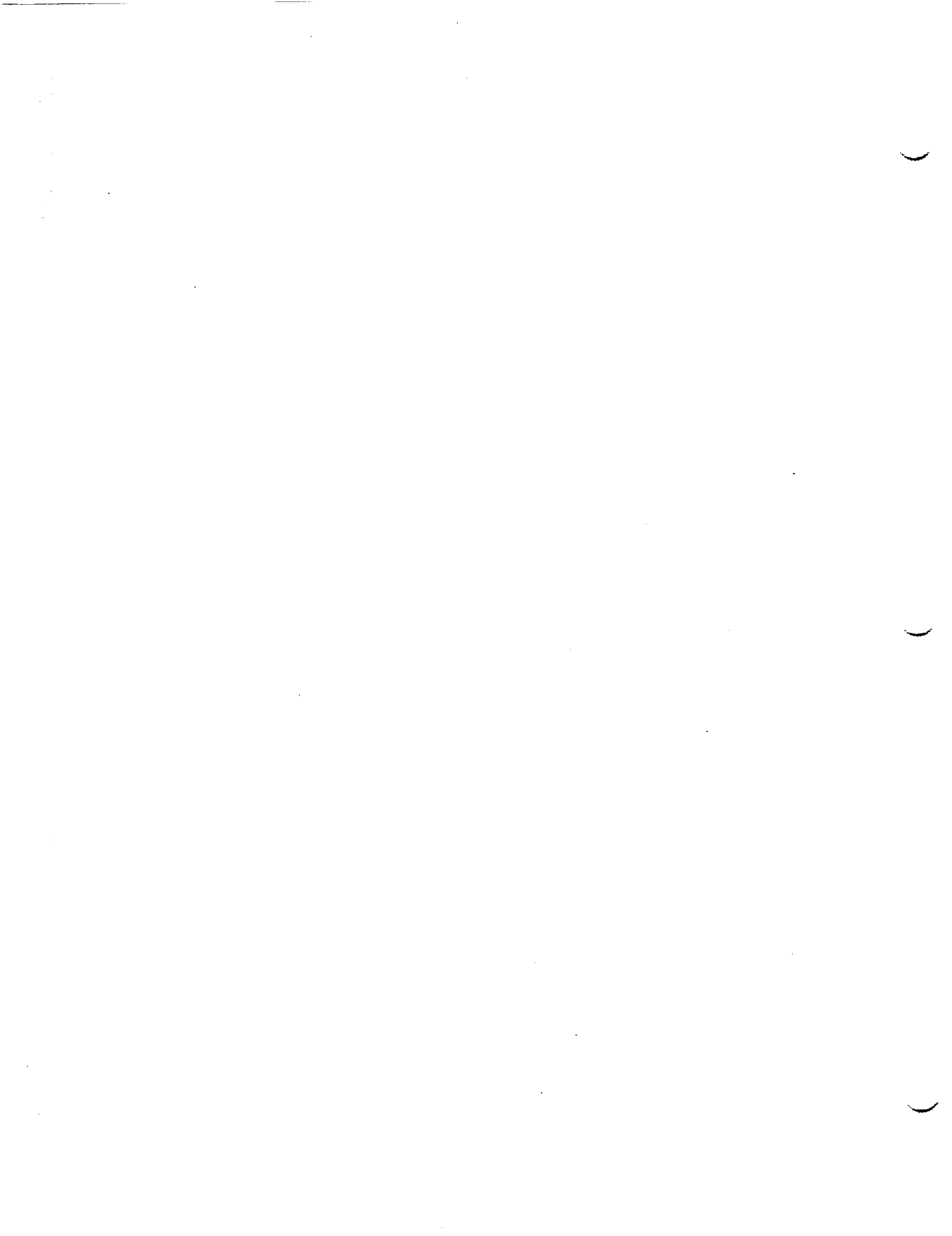
NASA, 19 January 1988: *Announcement of Opportunity--Eos. The Earth Observing System*, National Aeronautics and Space Administration, Washington, D.C.

NASA, 19 January 1988: *Earth Observing System (Eos), Background Information Package (BIP), Announcement of Opportunity No. OSSA-1-88, Part Five: Research Facility and Operational Facility Instrument Descriptions*, National Aeronautics and Space Administration, Washington, D.C.

The Earth System Sciences Committee, NASA Advisory Council, January 1988: *Earth System Science--A Closer View*, National Aeronautics and Space Administration, Washington, D.C.

APPENDIX K

Acronyms



Acronyms

ADC --Astronomical Data Center	CIMSS --Cooperative Institute for Meteorological Satellite Studies	ERICA --Experiment on Rapidly Intensifying Cyclones over the Atlantic
AFGL --Air Force Geophysics Laboratory	cpi --characters per inch	ERL --Environmental Research Laboratory
AIREP --AIRcraft REPorts	COADS --Comprehensive Oceans Atmospheric Data Set	ESA --European Space Agency
AISC --Assessment and Information Services Center	CODAR --Correlation Detection And Ranging	ESDD --Earth Science Data Directory
ALPEX --ALPine EXperiment	COHMEX --COoperative Huntsville Meteorological EXperiment	ESMR --Electrically Scanning Microwave Radiometer
AMS --American Meteorological Society	CTD --Conductivity-Temperature-Depth	ESSA --Environmental Science Services Administration (preceded NOAA)
APT --Automatic Picture Transmission	CZCS --Coastal Zone Color Scanner	ESDD --Earth Science Data Directory
ARSLOE --Atlantic Remote Sensing Land/Ocean Experiment	DFAD --Digital Feature Analysis Data	EUMETSAT --EUropean organization for the exploitation of METeorological SATellites
ASCII --American Standard Code for Information Interchange	DMA --Defense Mapping Agency	
AVE-SESAME --Atmospheric Variability Experiment-Severe Environmental Storm and Mesoscale Experiment	DMAP --Digital MAPping, Charting and Geodesy Analysis Program, U.S. Navy	FGGE --First Global GARP Experiment
AVHRR --Advanced Very High Resolution Radiometer	DMSP --Defense Meteorological Satellite Program	FIRE --First ISCCP Regional Field Experiment
	DNAG --Decade of North American Geology	FLWS --FAA-Lincoln Operational Weather Study
BMRC --Bureau of Meteorology Research Centre	DOD --Department of Defense	FPO --Field Project Office
bpi --bits per inch	DSDP --Deep Sea Drilling Project	
BUV --Backscattered UltraViolet	DST --Data Systems Test	GALE --Genesis of Atlantic Lows Experiment
	DTED --Digital Terrain Elevation Data	GARP --Global Atmospheric Research Program
CAC --Climate Analysis Center	EBCDIC --Extended Binary-Coded Decimal Interchange Code	GATE --GARP Atlantic Tropical Experiment
CAS --Calibrated AirSpeed	ECMWF --European Centre for Medium Range Weather Forecasts	GDEM --Generalized Digital Environmental Model
CCM --Community Climate Model	EM --ElectroMagnetic	GEODAS --GEophysical Data System
CCT --Computer Compatible Tape	Eos --Earth Observing System	GEOS --GEodetic Orbiting Satellite (or, Geodynamics Experimental Ocean Satellite)
CDDIS --Crustal Dynamics Data Information System	ERBS --Earth Radiation Budget Satellite	
CDF --Communications Data Field		
CD-ROM --Compact Disc-Read Only Memory		

GEOSAT--GEOdetic
SATellite
GFDL--Geophysical Fluid
Dynamics Laboratory
GIS--Geographic informa-
tion systems
GMS--Geostationary
Meteorological Satel-
lite
GOES--Geostationary
Operational Environ-
mental Satellite
GOWON--Gulf Offshore
Weather Observing
Network
GSFC--Goddard Space
Flight Center
GTE/ABLE--Global
Tropospheric Experi-
ment/Atmospheric
Boundary Layer Ex-
periment
GTS--Global Telecommu-
nication System (of
WMO)
GUFMEX--GUIF of
Mexico EXperiment

HIRS--High-resolution
InfraRed Sounder

IOP--Intensive Observing
Period
ISCCP--International Sat-
ellite Cloud Climate
Project
ISLSCP--International
Satellite Land Sur-
face Climatology
Project
ITOS--Improved Televi-
sion and infrared
Observation Satellite

JASIN--Joint Air-Sea
INteraction

LAFM--Limited-Area Fine
Mesh
LAMPS--Limited-Area
Mesoscale Prediction
System
LDW--Loran DropWind-
sondes

LFM--Limited Fine Mesh
LIMS--Limb Infrared
Monitor of the
Stratosphere

mb--millibars
Mb--Megabytes
MBT--Mechanical
BathyThermograph
McIDAS--Man computer
Interactive Data
Access System
METEOSAT--METEOro-
logical SATellite
(European)
MIST--Microburst and
Severe Thunderstorm
program
MIT--Massachusetts Insti-
tute of Technology
MODIS--MODerate-
resolution Imaging
Spectrometer
MONEX--MONsoon EX-
periment
MOODS--Master Ocean
Observation Data Set
MSL--Mean-Sea Level
MSLP--MSL Pressure
MSU--Microwave Sound-
ing Unit

NASA--National Aeronau-
tics and Space Ad-
ministration
NAVAID--NAVigational
AID
NCAR--National Center
for Atmospheric
Research
NCDC--National Climatic
Data Center
NCDS--National Climate
Data System
NDBO--Non-Directional
Beacon Observation
NEDRES--National Envi-
ronmental Data
Referral Service
NESDIS--National Envi-
ronmental Satellite,
Data and Informa-
tion Service

NEXRAD--NEXt genera-
tion RADars
NGDC--National Geo-
physical Data Center
NGM--Nested Grid Model
NGS--National Geodetic
Survey
nm--usually, nautical
miles (unless speci-
fied as nanometers)
NMC--National Meteor-
ological Center
NOAA--National Oceanic
and Atmospheric
Administration
NODC--National Oceanic
Data Center
NOO--Naval Oceano-
graphic Office
NORDA--Naval Ocean
Research and Devel-
opment Activity
NSSDC--National Space
Science Data Center
NSSL--National Severe
Storms Laboratory
NWP--Numerical Weather
Prediction
NWS--National Weather
Service

OCEANIC--OCEAn Net-
work Information
Center
ONR--Office of Naval
Research
OSSA--Office of Space
Science Applications

Pas--Pascal
PE--Processor Element
PLDS--Pilot Land Data
System

RAMS--Regional Atmos-
pheric Model System
RGL--ReGional forecast
Model

SAs--Stratospheric Aer-
osols
SAGE--Stratospheric
Aerosol and Gas Ex-
periment

SAM --Signal Analyzing Monitor	SSM/I --Special Sensor Microwave/Imager	TOVS --TIROS Operational Vertical Sounder
SATEM --Satellite TEMperature	SSM/T --Special Sensor Microwave/Temperature	TWERLE --Tropical Wind, Energy conversion and Reference Level Experiment
SATOB --SATellite OBservations	SSU --Stratospheric Sounding Unit	USRA --Universities Space Research Association
SBUV --Solar Backscatter UltraViolet radiometer	STD --Salinity-Temperature-Depth	UTC --Coordinated Universal Time (replaces GMT)
SDAB --Systems Design and Applications Branch	STORM --Stormscale Operational and Research Meteorology	VAS --VISSR Atmospheric Sounder
SDSD --Satellite Data Services Division	SYNOP --SYNOptic OPeration	VISSR --Visible/Infrared Spin-Scan Radiometer
SEASAT --SEA SATellite	TESAC --TEmpérature-SALinity-Currents	VTPR --Vertical Temperature Profile Radiometer
SMS --Synchronous Meteorological Satellite	TIROS --Television Infrared Operational Satellite	WCRP --World Climate Research Program
SONIC --SPAN: Ocean Network Information Center	TN --Technical Note	WMO --World Meteorological Organization
SOP --Special Observing Period	TOGA --Tropical Ocean and Global Atmosphere	XBT --eXpendable BathyThermograph
SPACE --Satellite Precipitation and Cloud Experiment	TOMS --Total Ozone Mapping Spectrometer	
SPANDAR --SPace ANd range RaDAR	TOPEX --TOPographic EXperiment	
SPOT --Système Probatoire d'Observation de la Terre	TOS --TIROS Operational Satellite	
SSEC --Space Science and Engineering Center		

