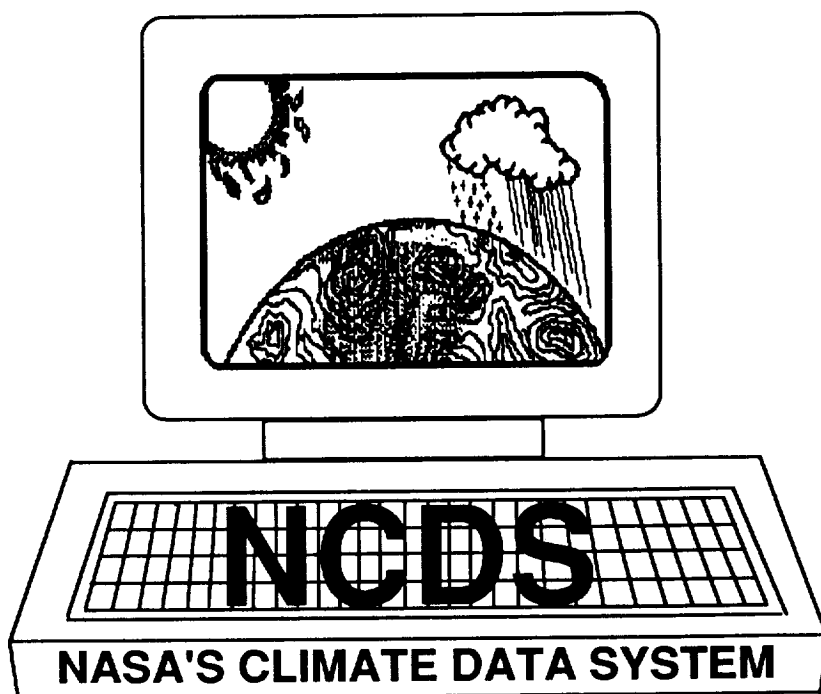


NASA's Climate Data System Primer

Version 1.2

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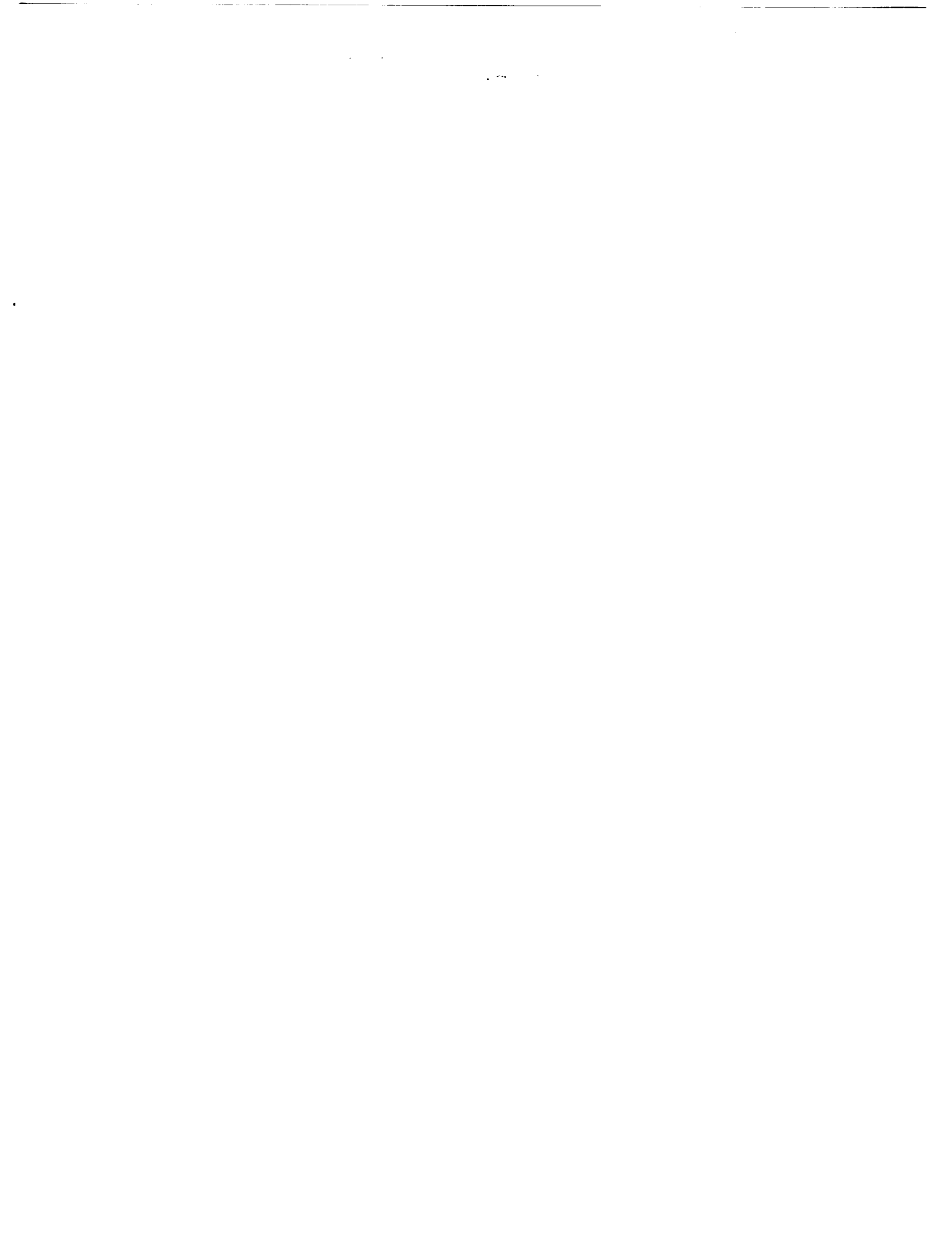
**National Space Science Data Center
National Aeronautics and Space Administration
Goddard Space Flight Center**

May 1989

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NASA's Climate Data System Primer

Version 1.2

May 1989

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Why Do I Need This Manual?

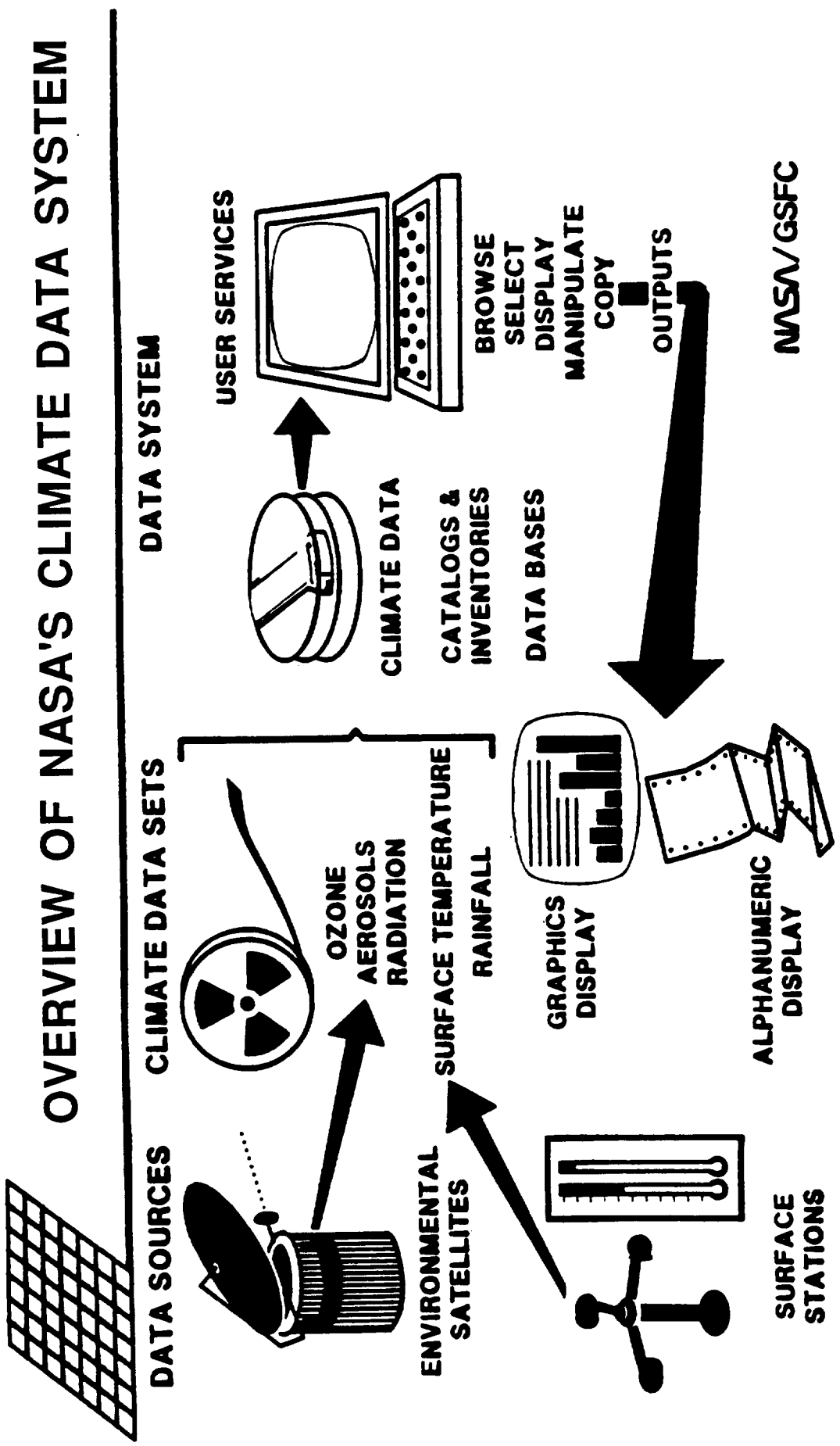
This primer introduces you to NASA's Climate Data System (NCDS), an interactive scientific information management system that allows you to locate, access, manipulate, and display climate-research data. Depending upon your prior experience with computer systems, you may want to read this manual carefully or just skim it for specific details.

This guide should give you enough information to start using NCDS. You may obtain most of the additional information you need from the system itself. An overview brochure and a catalog of climate data are also available. Contact James W. Closs at NCDS's Support Office (301-286-3209) to obtain copies of these documents.

What Is NCDS?

NCDS is an integrated set of tools for locating, accessing, manipulating, and displaying data from NASA research and development data sets and several correlative data sets. It provides comprehensive information about available data and flexible, easy access to a number of valuable climate data sets from both satellite and conventional sources. You may browse, select, display, and manipulate these data, producing output products in several usable forms, such as subset tapes, graphical displays, data listings, and statistical summaries. The interactions among NCDS's components are illustrated on the facing page.

OVERVIEW OF NASA'S CLIMATE DATA SYSTEM

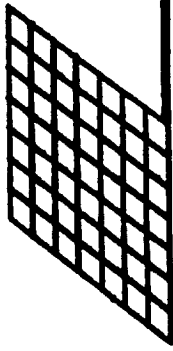


How Is NCDS Organized?

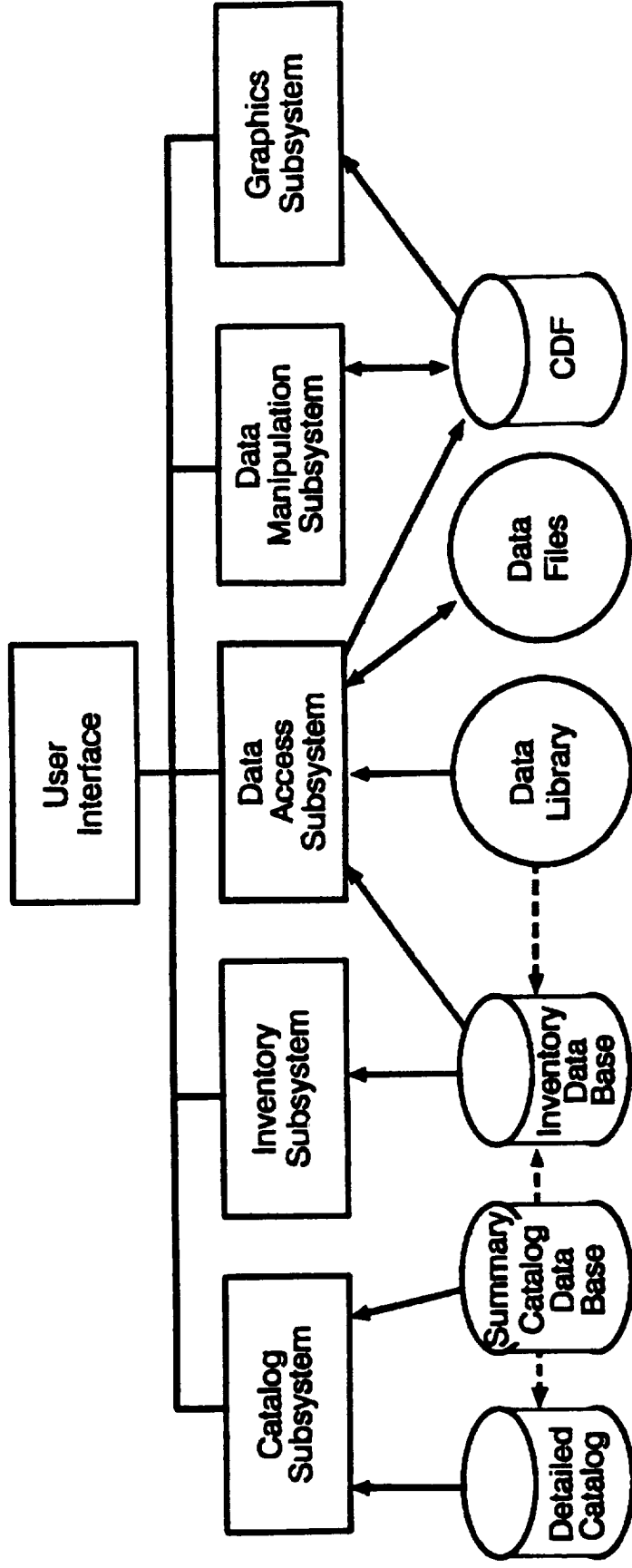
The diagram on the facing page illustrates the organization of NCDS. It consists of five subsystems: CATALOG, INVENTORY, DATA ACCESS, DATA MANIPULATION, and GRAPHICS. Each of these subsystems provides a separate functional capability which will be described further in later sections of this primer. The interface to these subsystems is provided via the Transportable Applications Executive (TAE). The TAE provides a uniform interface to the applications programs that perform the system functions. It performs many of the host operating system specific functions for you.

As shown in the diagram, the subsystems interact with several data collections: a catalog and an inventory, which describe available data at two different levels; the data library, consisting mainly of magnetic tapes in the original formats provided by the producers; and other data files produced by users, including files in a special data-set-independent format developed at the National Space Science Data Center (NSSDC). This latter data construct we call the Common Data Format (CDF). It is a self-describing format and allows us to provide data manipulation and graphics functions once, without the cost and delay of redeveloping these capabilities for data sets in formats different from those already supported.

You may also find it advantageous to store any data sets you produce in CDF. You will then be able to use NCDS data manipulation and graphics tools with your data sets. You may also find that you can write additional generic tools yourself, thereby saving programming development time and cost.



STRUCTURE OF NASA'S CLIMATE DATA SYSTEM



How Do I Get Started?

To use NCDS, you must be able to access the National Space Science Data Center (NSSDC) Computer Facility (NCF) where NCDS resides. To do this, you must have an account on the NCF VAX 11/780 and be able to establish a terminal line link with it. You may arrange to obtain an account from NCDS's Manager (phone number on back cover), who will provide you with a user name (usually your last name) and password.

You may access the computer via terminals directly connected to the computer, through dial-in lines (300, 1200, and 2400 baud), over the Space Physics Analysis Network (SPAN) using DECnet, TCP/IP Internet, or via GTE Telenet. The specific procedures for using Telenet or other dial-in lines to access NCDS are described in the appendix. The figure on the facing page shows the location of current SPAN nodes. The name of the SPAN node where NCDS resides is "NSSDC."

After you have connected to the computer, signal the system that you want to log in by pressing the return key (<CR>). (If you are dialing in, you may have to do this several times.) The system responds by prompting you for your user name. Enter it and press <CR>. (The system will display your user name as you type it.) The system then prompts you to enter your password. Enter your password carefully, because the system does not display it as you type, and then press <CR>. The computer will then display system messages followed by the \$ prompt.

To activate NCDS, type the command **NCDS**. If your terminal is not linked directly to the computer, you will then be prompted to enter an abbreviation for the type of terminal you are using, such as a **VT100**, **IBM PC** (emulating a Tektronix 4010), or **VT240**. If you need a list of the options, type **HELP** in response to the prompt. (A list of the supported terminals is also provided in the appendix.) If none of the options is appropriate, type **OTHER** and the computer will respond as if you were using a teletype terminal.

How Do I Control the System?

The first display you see will be NCDS's banner, including the software version number. (If you prefer not to have this banner displayed, activate NCDS with the command **NCDS NOBAN**. This option is particularly useful if your output device is slow or if you are using a dial-in phone line.) When you press the return key, you will see a menu of options. This first menu is called the ROOT menu, and it offers you a choice of the five subsystems of NCDS, plus a utility menu. You are now interfacing with the TAE. The TAE provides menus for program selection, tutored displays for setting program parameters, a command mode for program selection by experienced users, and extensive help features.

Menus contain numbered entries, each of which describes another menu or a function (also called a *proc* by TAE) which can be activated by the TAE. Menu names are enclosed in brackets for clarity. Tutored displays present information about each program parameter (called a *parm*) used to control the execution of the selected function. Tutor names are enclosed in parentheses. They display the name of the program parameter, a description of the parameter, and the current value of the parameter. The value of the program parameters may be established by default or may be set explicitly.

At any time during an NCDS session, except while you are actually running a *proc*, you will be in one of three phases: the menu phase, which allows you to navigate to desired programs by selecting options from menus; the command phase, which allows you to execute programs directly without navigating the menu tree; or the tutor phase (which you access from either menu mode or command mode), which allows you to set the program parameters for controlling the *procs*. A detailed scenario showing menus and tutored displays is included in the last chapter of this manual.

What If I Need Help?

No matter whether you are in the menu, tutor, or command phase, the system can provide you with assistance. If you simply type **HELP** you will get the general help pertaining to whichever of these three phases you are in at that time. You can obtain assistance on a specific topic by restricting the help requests.

When you request help from a supported terminal, the TAE presents you with the first page of the requested information and a prompt line. You can then page through the information by entering a carriage return or by entering **PAGE n**, where *n* is the page number to be displayed. To return to the location from which you requested help, you enter **EXIT**.

In the menu phase, you may need assistance on a menu entry before you choose it. You may type **HELP *** to obtain general information about the entire menu. If you want information about a specific menu entry, type **HELP n**, where *n* is the entry number. In the tutor phase, you may need assistance before you can set the parameter values. For example, you may want a more complete definition of a parameter or more precise instructions for entering and choosing the valid values.

- **HELP *** produces information on the current proc.
- **HELP parm** produces the help text on the program parameter that you provide. This information includes: (1) the meaning of the parameter, (2) the values that are acceptable, (3) the meaning of different values, (4) the form of the value.

How Do I Use the Menus?

In the menu phase, you are prompted with a question mark ? appearing at the lower left side of the screen. You then have two choices of action:

- You can make a selection from the numbered entries.
- You can enter one of the options listed on the last line of the menu (the prompt line).

In menu mode, the number and kinds of decisions you can make are restricted to the following basic functions:

- Moving to another menu or a proc
- Making a transition to command mode
- Accessing help on the current menu or its entries
- Logging off the system

Menu prompt-line options allow you to perform these functions. These options are described in the table on the facing page. The prompt-line options may be abbreviated, even down to a single letter, provided their uniqueness is retained. Entries may be in upper or lower case; for example, **menu** is equivalent to **MENU**. Several of these options are illustrated in the scenario in the last section of this manual.

Menu Prompt-Line Options

<i>OPTION</i>	<i>FUNCTION</i>
BACK	Returns to the previous menu.
MENU menu-name	Displays the named menu. Note that TAE tracks the menu path, so that selecting BACK from the new menu returns you to the previous menu. If no menu name is given, the current menu is redisplayed.
TOP	Returns to the root menu.
COMMAND	Causes TAE to exit menu mode and enter command mode.
HELP	Displays procedural information on the operation of menu mode. HELP can have one of three modifiers:
HELP *	Displays information on the current menu.
HELP proc	Displays help information on the specified proc or command.
HELP n	Displays help information on entry number n of the current menu.
LOGOFF	Logs you off the system.

How Do I Set Program Parameters?

When you select a proc from a menu (or request from command mode that the system tutor you on a proc), the TAE prompts you with a tutor screen for specifying program parameters. A tutor display, or tutor screen, is a CRT display containing guides for entering parameter values (arranged in tabular form in the central area of the screen) and tutor prompt-line options (arranged horizontally across the bottom of the screen near the prompt line).

On a supported CRT, the tutor screen presents you with the information about each parameter of the selected proc. For each parameter, the tutor screen displays three types of information:

- the name of the parameter (*parm*)
- a short description of the parameter (*description*)
- the current value of the parameter, if one exists (*value*)

Tutor prompt-line options allow you to perform the functions shown in the table on the facing page.

To enter a value for a parameter, use the tutor prompt-line option **parm=value**. Type the parameter name (or a unique abbreviation), followed by an equals sign, followed by the desired value(s). Enter character strings in double quotes " " if they contain blanks. If you have a VT100-compatible terminal, you can also use the up and down arrow keys to highlight each parm, then use the PF2 and PF3 keys to scroll forward or backward through the valid values. When you see a value of interest, press the carriage return to enter it on the screen.

In many cases, a parameter will have a predefined value (based on what is most convenient or most commonly used). This value is its default. It will be used if you do not replace it with another value. If a parameter has such a value, it is displayed on the tutor screen, and the program executes using this value if you do not change it.

Tutor Prompt-Line Options

<i>OPTION</i>	<i>FUNCTION</i>
HELP parm	Displays textual help information and valid values for <i>parm</i> .
PAGE n or parm	Displays the page number specified or the page with the specified <i>parm</i> .
SELECT parm	Shows a list of valid values for the specified parm and allows you to select a value.
SHOW parm	Shows the value of the nth element of a multi-valued parm.
HELP *	Displays text describing the current proc.
RUN	Executes the proc to perform the requested function. (During the execution of a proc, you may be requested to provide additional information via additional tutor displays.)
EXIT	Terminates the requested function without running the proc and returns you to the location from which you requested the proc or its tutor display.
SAVE filename	Saves the current parameter values in a disk file. If you do not provide the <i>filename</i> , TAE uses the name of the proc as the file name.
RESTORE filename	Extracts the parameter values from the disk file. If you omit <i>filename</i> , TAE uses the proc name to find the file. Use LAST for the <i>filename</i> in order to restore the parameter values from the most recent tutor run.
<CR>	Moves you to the next page of the tutor display.
parm=value	Assigns a new value to the specified <i>parm</i> .

How Do I Find Data Sets for My Research?

Use the CATALOG Subsystem to examine comprehensive information about a number of climate parameter data sets and the associated sensor measurements from which they were derived. This subsystem provides key information about each data set in a standardized format so that you can easily compare data sets and determine whether to retrieve or access particular ones. The data descriptions include the characteristics, processing status, availability, and the names of people to contact for further information, as shown in the outline of the data descriptions on the facing page. These descriptions include information about planned data sets, as well as existing ones. They describe not only data sets held by NCDS but also those held by other systems and archive centers.

In order to determine which data sets might be of interest, you may query a summary of the catalog, specifying the climate parameter, processing level, mission, or sensor. In response to the query, the system returns about twenty lines of summary information for each data set. It also points you to corresponding detailed catalog entries.

A detailed scenario illustrating how to specify the program parameters and the type of information available in the summary of the catalog is included in the last section of this manual.

Outline of Data Set Descriptions in NCDS's Catalog

- 1. Type of Data**
 - 1.1 Parameter/Measurement
 - 1.2 Unit of Measurement
 - 1.3 Data Sources
 - 1.4 Data Set Identification

- 2. Spatial Characteristics**
 - 2.1 Spatial Coverage
 - 2.2 Spatial Resolution

- 3. Temporal Characteristics**
 - 3.1 Temporal Coverage
 - 3.2 Temporal Resolution

- 4. Instrument Description**
 - 4.1 Mission Objectives
 - 4.2 Key Satellite Flight Parameters
 - 4.3 Principles of Operation
 - 4.4 Instrument Measurement Geometry

- 5. Data Processing Sequence**
 - 5.1 Processing Steps and Data Sets
 - 5.2 Derivation Techniques/Algorithms
 - 5.3 Special Corrections/Adjustments
 - 5.4 Processing Changes

- 6. Quality Assessment**
 - 6.1 Data Validation by Producer
 - 6.2 Confidence Level/Accuracy Judgement
 - 6.3 Usage Guidance

- 7. Contacts for Data Production Information**

- 8. Output Products and Availability**
 - 8.1 Tape Products
 - 8.2 Film Products
 - 8.3 Other Products

- 9. Data Access**
 - 9.1 Archive Identification
 - 9.2 Procedures for Obtaining Data
 - 9.3 NCDS Status/Plans

- 10. Contacts for Archive/Data Access Information**

- 11. References**
 - 11.1 Satellite/Instrument/Data Processing
 - 11.2 Journal Articles and Study Reports
 - 11.3 Archive/DBMS Usage Documentation

- 12. Related Data Sets**

- 13. Summary/Sample**

- 14. Notes**

How Is the Inventory Different from the Catalog?

The inventory provides a lower level of data description than the catalog and describes only data sets actually held in NCDS's library. It describes the contents of a data set at a fairly low level of data aggregation, such as the tape, file, orbital strip, or image. The information in the inventory is provided in a standardized form so you may easily query it.

You may use NCDS's INVENTORY Subsystem to obtain specific information from the inventory about data volume and physical location. However, the inventory's main use is by the system itself. The system uses the inventory for locating, retrieving, and accessing the data you request.

The INVENTORY Subsystem offers you a choice of several procs that provide output either as data listings or graphic displays. There are several different procs available for listing information from the inventory. Graphic displays provide statistical information about data volume and data rates in line, scatter, pie, or bar charts; or they provide data coverage maps. The bar chart on the facing page shows data volume distribution for the First GARP Global Experiment level 3B (FGGE3B) data set. Two Special Observing Periods (SOPs) are shown for January-February and May-June, resulting in additional data for those periods.

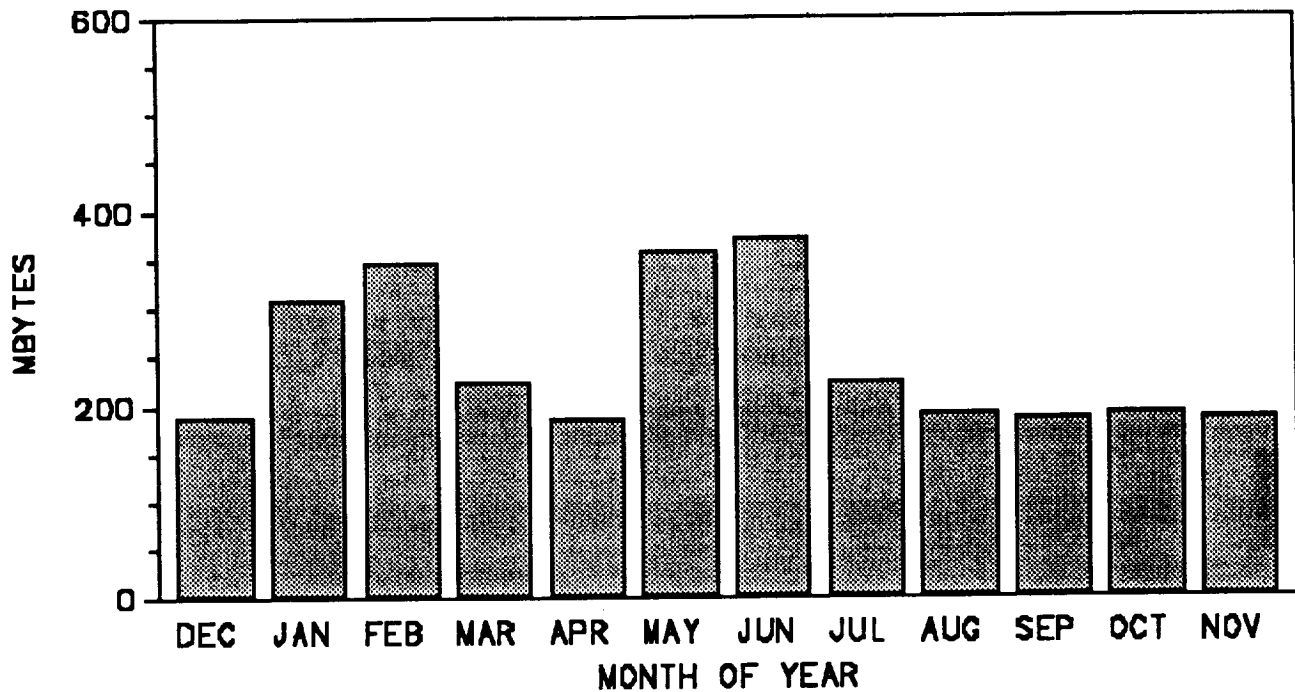
PLOTTED BY NCDS ON 10-JAN-89

NCDS INVENTORY STATISTICS

2961.612061 MBYTES FROM 1978/12/01 00:00:00 TO 1979/12/01 00:00:00

AVERAGE ENTRY FOR THE SPECIFIED INTERVAL IS 3.095 MBYTES

THERE ARE A TOTAL OF 957 INVENTORY ENTRIES



FGGE3B DATA DISTRIBUTION OVER EQUAL TIME INTERVALS

How Do I Actually Obtain the Data?

Use the DATA ACCESS Subsystem to access the data sets available in NCDS's tape library. For some data sets, you may only request that tape copies be sent to you; however, for most supported data sets you also have the option to put requested data into disk files as a CDF. This is a valuable option because such files can be input to the DATA MANIPULATION and GRAPHICS Subsystems of NCDS. These subsystems provide tools to browse the data or to transfer the data to your own machine for further analysis (for example, a personal computer or another VAX). Some users have down-loaded small volumes of data to PCs. (For information about obtaining a simple ASCII file of the data, see the next section.) Other users have moved data files directly over communications networks to their own VAX computers.

When you enter the DATA ACCESS Subsystem, you are prompted to specify the data set name, time interval, and latitude/longitude (if appropriate) in which you are interested. The DATA ACCESS Subsystem then accesses the inventory to locate the data you want and produces the output you request.

Can I Manipulate the Data?

Although NCDS is not a substitute for your normal computing facilities, it does provide several "browse" capabilities for accessing and manipulating data in CDFs. It provides data listings and additional subsetting capabilities. The data listings are output to an ASCII file which you may easily down-load to your own computer. You can also apply a time window to a CDF, edit a CDF header, create parameters, and manage your CDF library.

How Do I Graph My Data?

The GRAPHICS Subsystem allows you to obtain graphical representations of any data stored in CDF. It supports histograms, two-dimensional representations such as vector and scatter diagrams, and three-dimensional plots such as contour and surface diagrams. You can use this subsystem to preview data sets or to obtain hard copies for further analysis or publication. Output is provided for many types of terminals and plotters. (See the appendix for a list of supported terminals.) Postprocessing capabilities allow slide and microfilm production and other options, such as combining several plots on one page. This subsystem also allows you to produce charts of text for presentations.

The plot on the opposite page illustrates a contour plot created by NCDS. For surface diagrams, contour plots, and pseudo-color images, you have options for specifying the map projection (such as polar stereographic, Mercator, cylindrical equidistant). As with other graphs, you also have options that control the format, quality, and content of the graph. You may also request that statistical information be placed on the plots.

NSSDC\$DBAO:[TREINISH.TOMS.1987]TOMS-1987

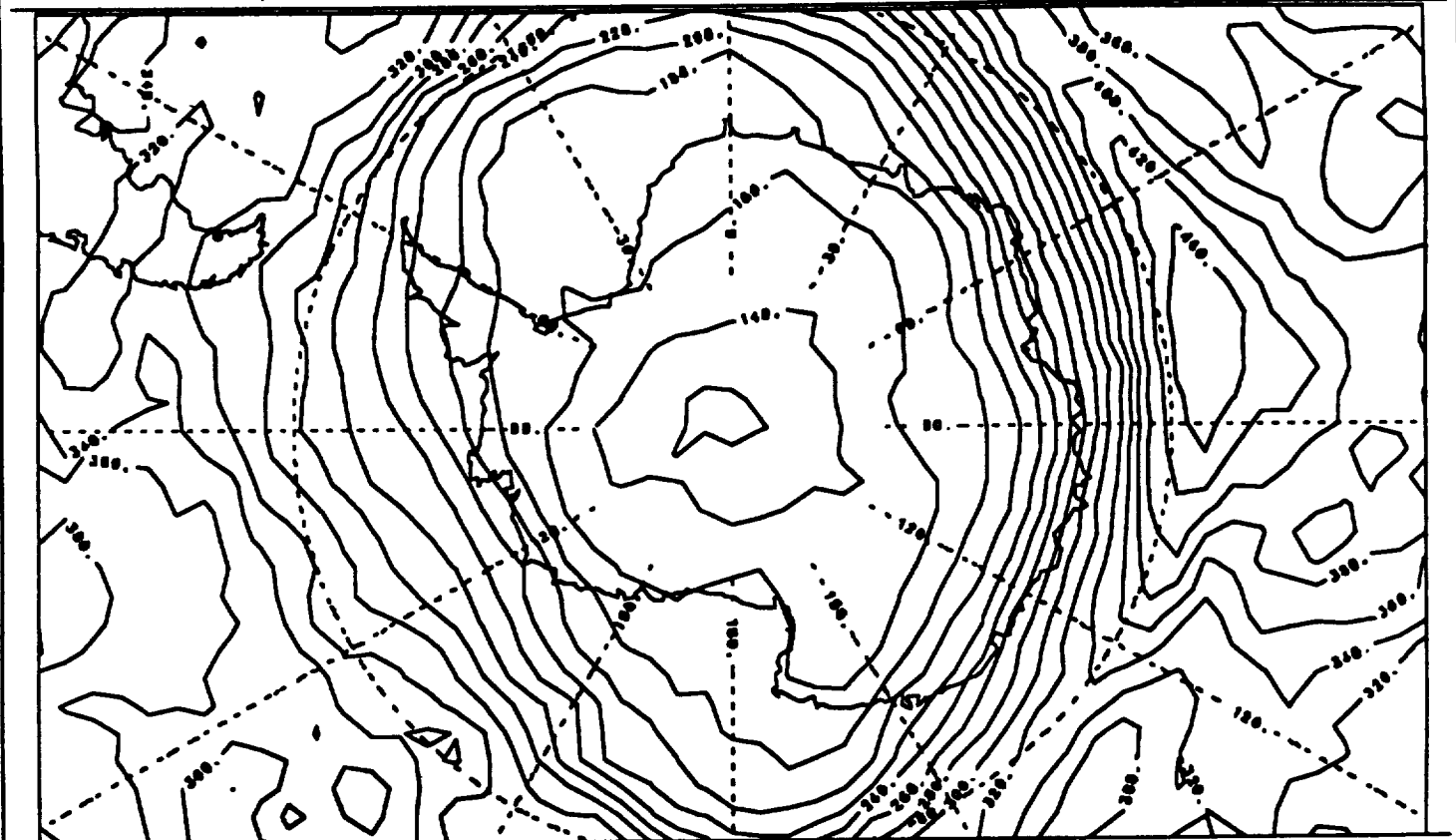
PLOTTED BY NCDS ON 13-MAY-88

SEPTEMBER 30, 1987

Nimbus-7 TOMS Daily Gridded Ozone Data

1987/09/30 00:00:00 < Date Time < 1987/09/30 00:00:00

Azimuthal equidistant map of Total Ozone-(Dobson Units)



FILTERS: 9.00 < 1MONTH < 9.00; 30.00 < 1DAY < 30.00

User: CLOSS

Who Can Benefit from NCDS?

NCDS provides a valuable tool to a number of NASA-sponsored users. Researchers, including Goddard scientists and a growing number of university users, can scan, analyze, manipulate, compare, display, and study different climate parameters. Data producers use it for data validation, data inventory, and accounting. Management uses it to obtain summary information needed for planning activities. Occasional users from other NASA centers and government agencies can obtain quick access to selected portions of large data sets.

Because NCDS provides researchers with a number of labor-saving utilities, you can perform significant research even on a limited budget.

What Changes Can I Expect in NCDS?

NCDS will continue to expand its data set support in response to requests approved by its funding sources. It will also continue to incorporate the latest versions of currently supported data sets into the data library and maintain the catalog. Data set support and software maintenance will be NCDS's most important area of development in the near future.

Please let the user support office personnel know about any problems you encounter so that they may be corrected. Suggestions for additional data sets and other features are also welcome. Though resources for providing new capabilities are usually limited, your suggestions will help NCDS to determine its priorities.

Upgrades to the computing facility used by NCDS will also allow the system to support additional users via increased computer power, more memory, and added on-line storage.

What Data Sets Can I Find in NCDS's Library?

The current holdings of NCDS's data library (mainly tapes) include the following:

- Climate Analysis Center's Sea Surface Temperatures
- Comprehensive Ocean-Atmosphere Monthly Summary Trimmed Groups
- Earth Radiation Budget Experiment Total Solar Irradiances
- First Global Atmospheric Research Program (GARP) Global Experiment (FGGE) Level II-b Restructured Data
- FGGE Level III-b Analyses and Reanalyzed Special Observing Periods from the European Center for Medium Range Forecasts
- Fleet Numerical Oceanography Center's Analyses
- Global Atmospheric Temperature Deviations (Angell's Data Set)
- Global Vegetation and Global Soils Data Sets
- International Satellite Cloud Climatology Project (ISCCP) Stage B3, Stage C1, Ice/Snow Data, and TOVS
- Max Planck Institute's COADS-Derived Heat Fluxes
- Multichannel Sea Surface Temperatures from NOAA
- National Geophysical Data Center's 5-minute Topographical Database
- National Oceanic and Atmospheric Administration Heat Budget Data
- Nimbus-4 Backscatter Ultraviolet and Nimbus-7 Solar Backscatter Ultraviolet Compressed Profiles
- Nimbus-7 Earth Radiation Budget Matrix Tapes, Seasonal Averages, and Solar Analysis Tape

- Nimbus-7 Limb Infrared Monitor of the Stratosphere Map Archive Tapes
- Nimbus-7 Stratospheric Aerosol Measurement II Beta and Aerosol Number Density Archival Tape
- Nimbus-7 Temperature-Humidity Infrared Radiometer C-Matrix Data
- Nimbus-7 Total Ozone Mapping Spectrometer Ozone Data and Gridded Data
- Regions of Solar Activity
- Solar Maximum Mission Active Cavity Radiometer Irradiance Monitor Solar Irradiance Data
- Stratospheric Aerosol and Gas Experiment II Profiles
- UNESCO River Discharge
- Various satellite data sets in support of the First ISCCP Regional Experiment
- World Monthly Surface Station Climatology

How About an Example?

The following pages will illustrate a typical scenario for using NCDS. If you follow this scenario, you will locate and access temperature and humidity data from the FGGE III-b Analyses produced by the European Center for Medium Range Forecasts. The FGGE III-b data set is available for the FGGE research year (December 1978 through November 1979).

This scenario allows you to explore each of the subsystems of NCDS. First, you examine the catalog to determine which data sets are of interest and available via NCDS. Next, you query the inventory to obtain more detailed information about the available data. Using this information, you narrow down your data retrieval criteria and ask the system to build a CDF (a set of files in Common Data Format) containing the data. Once this is done, you list the CDF and then use this CDF to display some of the data.

Although this scenario depicts all these functions as being performed at one session, in actual practice these functions might be performed at different times. Each session can build on the results of previous sessions.

In this scenario, screen displays are shown at the top of each page, just as they would appear during an actual NCDS session. Explanatory text is provided at the bottom of the page. During an NCDS session, the system displays a page or screen of prompts, with one line at the bottom of the screen for your response. In this scenario, inputs are shown in a black box on this line. You enter your responses one line at a time, terminating each line with a **<CR>**. Although it is not shown here, the display will be updated to reflect each line as you enter it. For additional examples, see the demonstration option on the utility menu.

<<< NSSDC VAX 11/780>>>...

Username: PCUSER

Password: XXXXXX

*** Welcome to VAX/VMS Version V4.7 on node NSSDC ***

=====
Current Announcements for the NSSDC 11/780 VAX
=====

\$ **NCDS**

You begin your NCDS session by logging on to the VAX 11/780 host computer. Be sure to read any news items or new mail you may have received. If this is the first time you have logged in, you must change your password before logging off the computer. You may access detailed help on passwords and the VAX /VMS operating system by simply typing **HELP**. Separate help text is also maintained for NSSDC-specific software products and services, and it can be accessed by typing **HELP @NSSDC**. Invoking the NCDS software is done by simply typing **NCDS** followed by a carriage return <CR>. At any time during your NCDS session, you may return to the host operating system without interrupting your session by typing **COMMAND** and then **DCL**. To return to the NCDS menu, type **TAE** and then **MENU**.

NASA's Climate Data System

***Developed by Goddard Space
Flight Center's Data
Management Systems Facility***

Version 1.2 - April 12, 1989

Press RETURN to begin 

If you are accessing the computer remotely, you will be prompted to enter a terminal type. If you are not sure what to enter, type **HELP** for a listing of currently supported terminals. The NCDS banner will appear showing the software version number with its release date and prompt you for a carriage return **<CR>** to continue.

Menu: "ROOT", library "NCDS\$LIB"

NCDS Version 1.2 Subsystems Menu

- | | |
|-------------------------------------|---------------|
| 1) CATALOG Subsystem Menu | [CATALOG] |
| 2) INVENTORY Subsystem Menu | [INVENTORY] |
| 3) DATA ACCESS Subsystem Menu | [DACCESS] |
| 4) DATA MANIPULATION Subsystem Menu | [CDFUTIL] |
| 5) GRAPHICS Subsystem Menu | [GRAPHICS] |
| 6) Utility Menu | [UTIL] |

See Utility Menu for News, Tutorial, and Demos

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **1**

The NCDS "ROOT", or top-level menu, shows the five major subsystems of the NCDS along with a utilities option for reading information on the NCDS, managing your disk files, making suggestions, and running through an automated demonstration. You will return to this menu periodically during your session to choose the next subsystem. To determine what data sets might be of interest to you, choose the CATALOG Subsystem by typing **1** followed by a <CR>.

Menu: "CATALOG", library "NCDS\$LIB"

CATALOG Subsystem Menu

- | | | |
|----|--|-------------|
| 1) | Browse Catalog Introduction | (ISEC) |
| 2) | Catalog Summary Query Menu | [SUMMARY] |
| 3) | Browse Climate Parameter Data Set Descriptions | (PSEC) |
| 4) | Browse Radiance Data Set Descriptions | (RSEC) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **2**

The CATALOG Subsystem Menu provides an option for familiarizing yourself with the Catalog, as well as options for obtaining summary and detailed descriptions of climate-related data sets. Choose option 2 to select a data set of possible interest.

Menu: "SUMMARY", library "NCDS\$LIB"

Catalog Summary Query Menu

- | | | |
|----|----------------------------------|-------------|
| 1) | List Catalog Summary Keys | (SUMKEY) |
| 2) | List Catalog Summary Information | (SUMSEC) |
| 3) | Hardcopy Print/List Menu | [UTILITY] |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **2**

The Catalog Summary Query Menu provides options for obtaining a list of the keywords used for accessing the Catalog Summary or for obtaining brief descriptions of data sets. The Hardcopy Print/List Menu is selected to obtain printouts of summary descriptions you have viewed. Select option **2** to list summary information.

Catalog Summary Information Query

<u>parm</u>	<u>description</u>	<u>value</u>	
PARAM	List of Climate Parameters or ALL	"ALL"	(1) (2).
LEVEL	List of Processing Levels (0, I, II, or III) or ALL	"ALL"	(1) (2).
SENSOR	List of Sensors or ALL	"ALL"	(1) (2) (3).
MISSION	List of Missions or ALL	"ALL"	(1) (2) (3).

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? PARAM="TEMPERATURE, HUMIDITY"

? LEVEL=III

The Catalog Summary Information Query screen allows you to select climate parameters, processing levels, sensors, and missions of interest to you in order to restrict the amount of information returned by the query. The default values of **ALL** will return information on all Catalog summaries. In this example, specify **HUMIDITY** and **TEMPERATURE** as climate parameters and **III** for the processing level. Leave the **SENSOR** and **MISSION** values at their default. If you have a VT100-compatible terminal, you can use the up and down arrow keys to highlight each value, then use the PF2 and PF3 keys to scroll forward or backward through the valid values. When you see a value of interest, hit the **<CR>** to enter it on the screen. If you specified **OTHER** as your terminal type at the start of this session, you must first type **LIST** to display the program parameters, then **DISPLAY** to show their present values. Type **RUN** to initiate the query after you have entered the values of interest.

Catalog Summary Information Query

<u>parm</u>	<u>description</u>	<u>value</u>	
PARAM	List of Climate Parameters or ALL	"TEMPERATURE" "HUMIDITY"	(1) (2).
LEVEL	List of Processing Levels (0, I, II, or III) or ALL	"III"	(1) (2).
SENSOR	List of Sensors or ALL	"ALL"	(1) (2) (3).
MISSION	List of Missions or ALL	"ALL"	(1) (2) (3).

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? **RUN**

This page shows the appearance of the "tutor" screen after you specify the program parameters of interest. As with all procs (programs or procedures), type **RUN** to execute.

PARAMETER: TEMPERATURE

LEVEL: III

SENSOR: ANALYSES

MISSION: FGGE

**SPATIAL COVERAGE
AND RESOLUTION:**

Global; ECMWF and GFDL provide 1.875 deg grids, ECMWF provides 15 levels from 100-1000 mb; GFDL provides 19 levels from .4-1000 mb; ECMWF reanalyzed Special Observ. Period (SOP) in 19 level initialized model

**TEMPORAL COVERAGE
AND RESOLUTION:**

BEGIN TIME: 12/1978 END TIME: 11/1979
Available for 0000 and 1200 GMT, also available at 0600 and 1800 during Special Observing Periods

TAPE PRODUCTS

Geophysical Fluid Dynamics Lab (GFDL) Level III-b: 123 tapes
European Center for Medium Range Forecasts (United Kingdom) (ECMWF) Level III-b (FGGE3B): 82 tapes
ECMWF Level III-b SOPs: 21 tapes

ARCHIVE: WDC-A & NCDS

CATALOG REFERENCE: FGGE

ARCHIVE STATUS

Only original ECMWF data are available in NCDS

PRESS <CR> TO CONTINUE; ENTER "HC" FOR HARDCOPY; ENTER "EX" TO EXIT:

The Summary Catalog displays information about the data sets that meet the criteria you selected in the previous tutor screen. After each page of output, you can either continue to the next screen, create a hard copy of the present screen, or exit back to the Catalog Summary Information Query screen. There may be more than one page describing each data set. Press <CR> until you see the entry for FGGE. Note the CATALOG REFERENCE at the bottom of the screen. This will be entered later to view the detailed catalog for this entry. Type EX when you are ready to return to the menu.

Menu: "SUMMARY", library "NCDS\$LIB:"

Catalog Summary Query Menu

- | | |
|-------------------------------------|-------------|
| 1) List Catalog Summary Keys | (SUMKEY) |
| 2) List Catalog Summary Information | (SUMSEC) |
| 3) Hardcopy Print/List Menu | [UTILITY] |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **BACK**

When you exit from the Summary Information screen, you are returned to the Catalog Summary Query Menu. If you do not want to run another query, type **BACK** to step back one menu. If you had typed **HC** while viewing the Summary Information screen, you would now be able to send those screens to the printer by selecting option **3**.

Menu: "CATALOG", library "NCDS\$LIB:"

CATALOG Subsystem Menu

- | | | |
|----|--|-------------|
| 1) | Browse Catalog Introduction | (ISEC) |
| 2) | Catalog Summary Query Menu | [SUMMARY] |
| 3) | Browse Climate Parameter Data Set Descriptions | (PSEC) |
| 4) | Browse Radiance Data Set Descriptions | (RSEC) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **3**

The CATALOG Subsystem Menu also provides options for viewing detailed data set descriptions. Since you chose a processing level of III in the Catalog Summary Query screen, select option **3** here for Climate Parameter Data Sets. This term refers to those processed at the II or III level. The term "Radiance Data Sets" refers to those processed at the 0 or I level.

Tutor: proc "PSEC", library "NCDS\$LIB"

Pg 1.

Proc for Browsing Climate Parameter Data Sets

<u>parm</u>	<u>description</u>	<u>value</u>
ENTRY	Catalog Entry Name	"FGGE"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? **RUN**

The system "remembers" that you were interested in the FGGE data set, and automatically inserts its title as the default *parm*. If this is not the catalog entry that you wish to view in detail, enter the catalog reference name that you noted from the Summary Information screen. This is the title of the detailed data set description corresponding to the Summary Information screen. Type **RUN** to initiate the program.

CONTENT

1. TYPE OF DATA	5
1.1 Parameter/Measurement	5
1.2 Unit of Measurement	8
1.3 Data Source	8
1.4 Data Set Identification	18
2. SPATIAL CHARACTERISTICS	20
2.1 Spatial Coverage	20
2.2 Spatial Resolution	21
3. TEMPORAL CHARACTERISTICS	23
3.1 Temporal Coverage	23
3.2 Temporal Resolution	25

PAGE#: N, NEXT: <CR>, FORWARD/BACK PAGE: F/B, PRINT: P, EXIT: E, CHOICE: **23**

This is the first page of the table of contents for the FGGE3B Detailed Catalog. The current page number and total pages are shown in the upper right corner. The table of contents and subtitle organization are much the same for all catalog entries, allowing easy comparison with other detailed data set descriptions. You can move to the next page by hitting a <CR>, move forward or backward, print a page, or move to any page in the catalog. To see information on the data set temporal coverage, type **23** (for page 23) followed by a <CR>.

3. TEMPORAL CHARACTERISTICS

3.1 Temporal Coverage. A build-up and testing period covers December 1, 1977, through November 30, 1978. Global observations were collected December 1, 1978, through November 30, 1979. Within this year, two Special Observing Periods (SOPs) were specified: January 5, 1979, through March 5, 1979, and May 1, 1979, through June 30, 1979. Within each SOP, an Intensive Observing Period (IOP) of 30 days was specified. IOP-1 began January 15, 1979, and was extended 7 days because of operational delays. IOP-2 began May 10, 1979.

Not all data sources are available during the above time periods though. As described in Item 1.3, several surface-based stations were implemented only for the SOPs; U.S. dropwindsonde aircraft provided data only for the IOPs; TWOS operated only during the SOPs; and constant level balloons and drifting buoys were released so as to provide maximum data amounts during the SOPs.

Other data sources were not available during the entire experiment.

PAGE#: N, NEXT: <CR>, FORWARD/BACK PAGE: F/B, PRINT: P, EXIT: E, CHOICE:

You may continue browsing this catalog entry, entering **E** when you are finished. You should spend some time examining this catalog entry, making sure that the quality, resolution, and coverage of the data set are suitable for your needs. When you exit from this entry, you will be returned to the CATALOG Subsystem Menu.

Menu: "CATALOG", library "NCDSSLIB:"

CATALOG Subsystem Menu

- | | | |
|----|--|-------------|
| 1) | Browse Catalog Introduction | (ISEC) |
| 2) | Catalog Summary Query Menu | [SUMMARY] |
| 3) | Browse Climate Parameter Data Set Descriptions | (PSEC) |
| 4) | Browse Radiance Data Set Descriptions | (RSEC) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **TOP**

Type **BACK** or **TOP** at the CATALOG Subsystem Menu to return to the ROOT menu and continue your session.

Menu: "ROOT", library "NCDS\$LIB:"

NCDS Version 1.2 Subsystems Menu

- | | |
|-------------------------------------|---------------|
| 1) CATALOG Subsystem Menu | [CATALOG] |
| 2) INVENTORY Subsystem Menu | [INVENTORY] |
| 3) DATA ACCESS Subsystem Menu | [DACCESS] |
| 4) DATA MANIPULATION Subsystem Menu | [CDFUTIL] |
| 5) GRAPHICS Subsystem Menu | [GRAPHICS] |
| 6) Utility Menu | [UTIL] |

See Utility Menu for News, Tutorial, and Demos

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **2**

To further investigate the spatial and temporal characteristics of the actual data holdings of NCDS, select the INVENTORY Subsystem by entering **2**.

Menu: "INVENTORY", library "NCDS\$LIB"

INVENTORY Subsystem Menu

- | | |
|--|--------------------|
| 1) Inventory Query Menu for Off-Line Data Sets | [INVQ] |
| 2) List Archive of On-Line Data Sets | (ONLINE_ARCHIVE) |
| 3) List Available On-Line Samples of Data Sets | (SAMPLES) |
| 4) Inventory Graphics Menu | [INVG] |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **1**

The INVENTORY Subsystem Menu provides options for obtaining information in the form of tabular listings or graphical displays. The third option allows you to scan information on data sets that are stored on-line for more direct access. In this scenario, select option 1 for the Inventory Query Menu for Off-Line Data Sets.

Menu: "INVQ", library "NCDS\$LIB"

Inventory Query Menu for Off-Line Data Sets

- | | | |
|----|-----------------------------------|-----------------|
| 1) | List Available Climate Parameters | (P ARMS) |
| 2) | List Available Data Sets | (DSETS) |
| 3) | List Scientific Record Types | (DTYPES) |
| 4) | List Data Set Summary | (DSETSUM) |
| 5) | List Tapes by Data Set | (TAPES) |
| 6) | List Files by Data Set | (INV_DATASET) |
| 7) | List History of Tape Inventory | (TAPEHIS) |
| 8) | Hardcopy Print/List Menu | [UTILITY] |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **4**

The Inventory Query Menu for Off-Line Data Sets is designed to be used in a stepwise, logical progression. After viewing the Catalog, you may skip the first three options, as they contain the same information given in the Catalog. Select option 4 to view a summary inventory for a particular data set.

Data Set Summary Query

<u>parm</u>	<u>description</u>	<u>value</u>	
PARM	List of Climate Parameter Mnemonics or ALL	"ALL"	(1) (2) (3) (4) (5).
DATA_SET	List of Data Set Names or ALL	"ALL"	(1) (2) (3) (4) (5).

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? DATA_SET=FGGE3B

? RUN

The Data Set Summary Query screen allows you to acquire information on the time range, number of tapes, number of files, and other characteristics for a selected data set. Enter **FGGE3B** as the value for DATA_SET, leave PARM at its default of **ALL**, then type **RUN**.

***** DATA-SET = FGGE3B *****

MEDIA COUNT = 82 EARLIEST TIME = 1978/12/01 00:00:00 EARLIEST ORBIT = 0
 FILE COUNT = 1443 LATEST TIME = 1979/11/30 12:00:00 LATEST ORBIT = 0

<u>PARM</u>	<u>Measurement</u>	<u>Data Type</u>	<u>Mission & Sensor</u>
HEIGHT	GEOPOTENTIAL HEIGHT	ECMWF	FGGE ANALYSES
HUMIDITY	RELATIVE HUMIDITY	ECMWF	FGGE ANALYSES
PRESSURE	ATMOSPHERIC PRESSURE	ECNWF	FGGE ANALYSES
TMP	ATMOSPHERIC TEMPERATURE	ECMWF	FGGE ANALYSES
V_MOTION	VERTICAL VELOCITY	ECMWF	FGGE ANALYSES
WIND	WIND COMPONENTS	ECMWF	FGGE ANALYSES

Press <CR> to continue; enter "HC" for hardcopy; enter "EX" to exit <CR>
 End of Data

The information returned by the query is displayed in a tabular format. Note the mnemonics in the PARM column used for climate parameters. You may use these mnemonics in more detailed queries to limit the information returned to only the climate parameters in which you are interested. Press <CR> to continue the listing.

Menu: "INVQ", library "NCDS\$LIB:"

Inventory Query Menu For Off-Line Data Sets

- | | | |
|----|-----------------------------------|-----------------|
| 1) | List Available Climate Parameters | (P ARMS) |
| 2) | List Available Data Sets | (DSETS) |
| 3) | List Scientific Record Types | (DTYPES) |
| 4) | List Data Set Summary | (DSETSUM) |
| 5) | List Tapes by Data Set | (TAPES) |
| 6) | List Files by Data Set | (INV-DATASET) |
| 7) | List History of Tape Inventory | (TAPEHIS) |
| 8) | Hardcopy Print/List Menu | [UTILITY] |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **6**

You are returned to the Inventory Query Menu for Off-Line Data Sets. You may skip option 5 and request a FILES query by selecting option 6. This will give additional information about the actual data files on the tape(s).

Tutor: proc "INV_DATASET", library "NCDS\$LIB"

Pg 1.

File Information Query

<u>parm</u>	<u>description</u>	<u>value</u>
DATA_SET	Data Set Name	"FGGE3B"

Enter: parm=value, HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE;RETURN to page.
? **RUN**

The system "remembers" your interest in the FGGE3B data set, so you do not need to specify a value for DATA_SET unless you want to change it. Type **RUN** to execute the program.

File Information Query

BEGIN	Begin Time (as YYYYMMDDHHMMSS)	"19700101"	
END	End Time (as YYYYMMDDHHMMSS)	"19991231"	
DATATYPE	List of Scientific Data Record Types or ALL	"ALL"	(1)
			(2)
			(3)
			(4)
			(5)

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? BEGIN=19791015
? END=19791015
? <CR>

Indicate a time range of interest by inserting values for BEGIN and END. (The default values are shown.) For this example, select a time range of one day for October 15, 1979. (Note the time format.) Also note that there are additional program parameters on the second page (as indicated by the "+" in the upper right-hand corner of the screen.) Press <CR> to move to the next page.

File Information Query

<u>parm</u>	<u>description</u>	<u>value</u>	
PARM	List of Climate Parameter Mnemonics or ALL	"ALL"	(1) (2) (3) (4) (5).

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.


? PARM="TMP, HUMIDITY"

? RUN

The second page of the File Information Query allows you to specify climate parameters of interest. Insert the **HUMIDITY** and **TMP** mnemonics you noted from the Data Set Summary query (option 4 in the Inventory Query Menu), then type **RUN**.

<u>MediaID</u>	<u>File</u>	<u>Data Type</u>	<u>Number of Records</u>	<u>Time Range of Record</u> <u>Begin/End</u>	<u>Orbit</u> <u>Range</u>	<u>Length</u> <u>in Bytes</u>
P0934	8	ECMWF	1	1979/10/15 00:00:00 1979/10/15 00:00:00		3094680
P0934	9	ECMWF	1	1979/10/15 12:00:00 1979/10/15 12:00:00		3094680

TOTAL NUMBER OF FILES=	2	TOTAL NUMBER OF BYTES=	6189360
-------------------------------	----------	-------------------------------	----------------

Press <CR> to continue; enter "HC" for hardcopy; enter "EX" to exit 
 End of Data

The Files Information Query returns tape and file information for the data set, time range, and parameters requested. Study the screen to determine whether you need to further refine the Inventory request. In particular, note the volume of data (expressed in total number of bytes) described in this query. This is the volume of the data you would receive if you were to actually access these data. If you wish to obtain a printout of this screen for later reference, type **HC**. If not, press <CR> to return to the Inventory Query Menu for Off-Line Data Sets.

Menu: "INVQ", library "NCDS\$LIB:"

Inventory Query Menu For Off-Line Data Sets

- | | | |
|----|-----------------------------------|-----------------|
| 1) | List Available Climate Parameters | (P ARMS) |
| 2) | List Available Data Sets | (DSETS) |
| 3) | List Scientific Record Types | (DTYPES) |
| 4) | List Data Set Summary | (DSETSUM) |
| 5) | List Tapes by Data Set | (TAPES) |
| 6) | List Files by Data Set | (INV_DATASET) |
| 7) | List History of Tape Inventory | (TAPEHIS) |
| 8) | Hardcopy Print/List Menu | [UTILITY] |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **TOP**

When you finish viewing the tape and file information, you are returned to the Inventory Query Menu for Off-Line Data Sets. If you had typed **HC** while viewing the Files Query, you could send that screen to the printer by selecting the Hardcopy option (option 8). Option 7, List History of Tape Inventory, shows the installation dates of tapes into the system but will not be demonstrated in this scenario. Type **TOP** to return to the ROOT Menu to continue your session.

Menu: "ROOT", library "NCDS\$LIB:"

NCDS Version 1.2 Subsystems Menu

- | | | |
|----|----------------------------------|---------------|
| 1) | Catalog Subsystem Menu | [CATALOG] |
| 2) | INVENTORY Subsystem Menu | [INVENTORY] |
| 3) | DATA ACCESS Subsystem Menu | [DACCESS] |
| 4) | DATA MANIPULATION Subsystem Menu | [DATAMANIP] |
| 5) | GRAPHICS Subsystem Menu | [GRAPHICS] |
| 6) | Utility Menu | [UTIL] |

See Utility Menu for News, Tutorial, and Demos

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **3**

The DATA ACCESS Subsystem allows you to actually access the data in which you are interested. Select option 3 to do this.

Specify Data Library Source

<u>parm</u>	<u>description</u>	<u>value</u>
DATA_SET	Data Set Name	'FGGE3B'
SOURCE	Method for Specifying Input: AUTO - via Query of Inventory MANUAL - via User Input	"AUTO"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? **RUN**

Retrieving Information for the FGGE3B Data Set

The Specify Data Library Source screen asks you to specify a data set name from which you will extract data and a method for specifying the input. Once again, the NCDS "remembers" your interest in the FGGE3B data set and automatically inserts **FGGE3B** as the data set name. Leave the other program parameter **SOURCE** at its default value of **AUTO**. This will tell the system to automatically query the Inventory and determine which tapes to access. If you were to select **MANUAL**, you would be prompted for the ID number(s) of the tapes to be accessed.

Menu: "DA_OUTPUT", library "NCF_NCDS_USER:[CLIMATE]"

Output Selection Menu

- 1) **Common Data Format (CDF) Generation Menu** [DA_CDF_GEN]
- 2) **Original Format Copy Menu** [DA_ORIG_COPY]

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **1**

Dynamically Constructing TAE Tree for FGGE3B Data Set

The Output Selection Menu gives you the option of either outputting your data to disk in Common Data Format (CDF), or copying it to tape in the data set's original format. If you output data in CDF, you may use NCDS's Data Manipulation and Graphics Subsystems later to analyze your data. A message appears telling you that a TAE Tree is being dynamically constructed for the FGGE3B data set. This will allow the system to ask you for information specific to this data set.

Menu: "DA_CDF_GEN", library "NCF_NCDS_USER:[CLIMATE]"

Common Data Format (CDF) Generation Menu

- | | |
|---|------------------------|
| 1) Independent Variable Domain Menu (Required) | [DA_INDEPEND] |
| 2) Select Dependent Variables | (DA_DEPEND) |
| 3) Specify CDF Name | (DA_CDF_NAME) |
| 4) Review and Execute Requests | (DA_EXECUTE) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? 1

The Common Data Format (CDF) Generation Menu allows you to select the independent (time range, etc.) and dependent (temperature, etc.) variables to be extracted, as well as a CDF disk file name. Select option 1 first to view the Independent Variable Domain Menu.

Menu: "DA_INDEPEND", library "NCF_NCDS_USER:[CLIMATE]"

Independent Variable Domain Menu

- | | |
|---------------------------------------|------------------|
| 1) Specify Pressure Level Domain | (PRES_LVL_DOM) |
| 2) Specify TEMPORAL Domain (Required) | (TIME_DOM) |
| 3) Specify FGGEHOUR Domain | (FGGEHOUR_DOM) |
| 4) Continue with Selections | (DA_CDF_GEN) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **1**

This menu allows you to select programs for restricting the amount of data retrieved by specifying the values of the independent variables. For the FGGE3B data set, these variables are atmospheric pressure level and time range. Select option 1 to specify a pressure level.

Specify Pressure Level Domain

<u>parm</u>	<u>description</u>	<u>value</u>
MINIMUM	Minimum for PRES_LVL in mb	10.0
MAXIMUM	Maximum for PRES_LVL in mb	1000.0
S_INTVLS	Type of Intervals within Specified Spatial Domain: S = Single Spatial Interval, A = Arbitrary Intervals, P = Periodic Intervals	"S"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? MINIMUM=850
? MAXIMUM=850
? RUN

This tutor screen prompts you for a minimum and a maximum pressure level for the data to be included in your CDF file. In this example, choose only the 850.0 mb level by specifying **850** for both the minimum and maximum values. You may leave the Type of Interval at its default setting of **S**, indicating that you want to specify only one interval. Type **RUN** to execute the program.

Menu: "DA_INDEPEND", library "NCF_NCDS_USER:[CLIMATE]"

Independent Variable Domain Menu

- | | |
|---|-------------------------|
| 1) Specify Pressure Level Domain | (PRES_LVL_DOM) |
| 2) Specify TEMPORAL Domain | (TIME_DOM) |
| 3) Specify FGGEHOUR Domain | (FGGEHOUR_DOM) |
| 4) Continue with Selections | (DA_CDF_GEN) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **2**

You are returned to the Independent Variable Domain Menu. This time select option 2 to specify a temporal domain for the data to be retrieved.

Specify Temporal Domain

<u>parm</u>	<u>description</u>	<u>value</u>	
BEGIN	Year (YYYY),	1979.0	(1)
	Month (MM),	10.0	(2)
	Day (DD),	15.0	(3)
	Hour (HH),	0.0	(4)
	Minutes (MN),	0.0	(5)
	Seconds (SS)	0.0	(6).
END	Year (YYYY),	1979.0	(1)
	Month (MM),	10.0	(2)
	Day (DD),	15.0	(3)
	Hour (HH),	0.0	(4)
	Minutes (MN),	0.0	(5)
	Seconds (SS)	0.0	(6).

Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? BEGIN="1979, 10, 15"

? END="1979, 10, 15"

? <RETURN>

This tutor screen prompts you for the time range of the data you wish to access. The default values would cause the system to retrieve data for the entire time range of the data set. In this example, you choose hour zero on October 15, 1979. Note that each program parameter has multiple values. The "+" at the upper right corner of the screen indicates that there is another page for this tutor.

Specify Temporal Domain

<u>parm</u>	<u>description</u>	<u>value</u>
T_INTVLS	Type of Intervals within Specified Temporal Domain: S = Single Interval, A = Arbitrary Intervals, P = Periodic Intervals	"S"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
? **RUN**

Because you are only requesting data from one recording period, leave "Type of Intervals" at its default value of **S**. Type **RUN** to execute the program.

Menu: "DA_INDEPEND", library "NCF_NCDS_USER:[CLIMATE]"

Independent Variable Domain Menu

- | | |
|----------------------------------|------------------|
| 1) Specify Pressure Level Domain | (PRES_LVL_DOM) |
| 2) Specify TEMPORAL Domain | (TIME_DOM) |
| 3) Specify FGGEHOUR Domain | (FGGEHOUR_DOM) |
| 4) Continue with Selections | (DA_CDF_GEN) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **4**

You are returned to the Independent Variable Domain Menu. You may skip option 3, because it is used only for extracting data at periodic intervals. Select option 4 to continue your Data Access selections.

Menu: "DA_CDF_GEN", library "NCF_NCDS_USER:[CLIMATE]"

Common Data Format (CDF) Generation Menu

- | | |
|-------------------------------------|-----------------|
| 1) Independent Variable Domain Menu | [DA_INDEPEND] |
| 2) Select Dependent Variables | (DA_DEPEND) |
| 3) Specify CDF Name | (DA_CDF_NAME) |
| 4) Review and Execute Requests | (DA_EXECUTE) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **2**

You are returned to the Common Data Format (CDF) Generation Menu. This time select option **2** to choose the dependent variables you wish to include in your CDF file.

Select Dependent Variables for CDF

<u>parm</u>	<u>description</u>	<u>value</u>
HGT_GEOP	Geopotential Height ("A"=Accept, "R"=Reject)	"A"
WIND_U	U component of Wind ("A"=Accept, "R"=Reject)	"A"
WIND_V	V component of Wind ("A"=Accept, "R"=Reject)	"A"
TMP	Temperature ("A"=Accept, "R"=Reject)	"A"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

```
? HGT_GEOP=R
? WIND_U=R
? WIND_V=R
? <RETURN>
```

This tutor screen displays all of the climate variables available in the FGGE3B data set. The default values of **A** indicate that all of the specified variables will be included in the CDF file. For this example, leave the default value of **A** for Temperature and Humidity, and change the value of all other parameters to **R**. Note that there is more than one page of variables.

Tutor: proc "DA_DEPEND", library "NCF_NCDS_USER:[CLIMATE]"

Pg 2.

Select Dependent Variables for CDF

<u>parm</u>	<u>description</u>	<u>value</u>
V_MOTION	Vertical Velocity ("A"=Accept, "R"=Reject)	"A"
HUMID_RH	Relative Humidity ("A"=Accept, "R"=Reject)	"A"
PRES_SLP	Sea Level Pressure ("A"=Accept, "R"=Reject)	"A"

Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? **V_MOTION=R**
? **PRES_SLP=R**
? **RUN**

Change the values for V_MOTION and PRES_SLP to **R**, then type **RUN** to specify the variables to be included in your CDF.

Menu: "DA_CDF_GEN", library "NCF_NCDS_USER:[CLIMATE]"

Common Data Format (CDF) Generation Menu

- | | |
|--|------------------------|
| 1) Independent Variable Domain Menu | [DA_INDEPEND] |
| 2) Select Dependent Variables | (DA_DEPEND) |
| 3) Specify CDF Name | (DA_CDF_NAME) |
| 4) Review and Execute Requests | (DA_EXECUTE) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **3**

You are returned to the CDF Generation Menu. Select option **3** to give a name to the CDF you are creating. This file will be created in your directory. A CDF actually consists of several files with the same name but with different file extensions.

Specify Output CDF Disk Filename

<u>parm</u>	<u>description</u>	<u>value</u>
CDFNAME	CDF Name (including disk and directory, if appropriate)	"FGGE3B_ECMWF"
CDFCOM	Your Comments/Description of the CDF	" "

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? CDFCOM="TEMP and RH for 10/15/79"

? RUN

This tutor screen prompts you for the name of the CDF you are creating and a short comment to be included in the description of the CDF. You may leave the default file name here and enter a brief description of the CDF file if you like. Type **RUN** to execute.

Menu: "DA_CDF_GEN", library "NCF_NCDS_USER:[CLIMATE]"

Common Data Format (CDF) Generation Menu

- | | |
|-------------------------------------|-----------------|
| 1) Independent Variable Domain Menu | [DA_INDEPEND] |
| 2) Select Dependent Variables | (DA_DEPEND) |
| 3) Specify CDF Name | (DA_CDF_NAME) |
| 4) Review and Execute Requests | (DA_EXECUTE) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **4**

The system redisplay the CDF Generation Menu. Since you have specified all of the criteria for extracting data from the tape(s), you may review your selections. Choose option **4** to view a summary of your Data Access selections.

Data Access Request Summary

Data Set: FGGE3B

Data Type: ECMWF

Source of Data: AUTO

Independent Variable Domains:

PRES_LVL Domain: 850.00 - 850.00

TIME Domain: 1979/10/15 0: 0: 0.00 - 1979/10/15 0: 0: 0.00

Output:

CDF Name: FGGE3B_ECMWF

CDF Comment: Temp and RH for 10/15/79

Dependent Variables:

TMP, HUMID_RH

Enter: Run, Batch, or Modify.

? **RUN**

The Review and Execute screen lists all of the criteria you selected for accessing data from the system. If you wish to change one or more of the selections, type **MODIFY** to return to the CDF Generation Menu. If you are satisfied with your selections, type **RUN** to execute the program.

Initiating Query of the Inventory

<u>Media ID</u>	<u>File Num</u>	<u>Data Type</u>	<u>Record Len</u>	<u>* Num Recs</u>	<u>= File Length</u>
P0934	8	ECMWF	3094680	1	3094680
Total number of Records to be Accessed				1	
Maximum number of Bytes to be Read			3094680		

Enter: Run, Batch, or Modify.

? **RUN**

The system displays a few messages informing you about the progress of your Data Access job. The system determines which tape(s) contain the desired data and, upon typing RUN again, automatically issues the "mount" request to the operators in the computer room. After a brief period of time, a message appears stating that the job has been completed successfully.

Menu: "DA_CDF_GEN", library "NCF_NCDS_USER:[CLIMATE]"

Common Data Format (CDF) Generation Menu

- | | |
|-------------------------------------|-----------------|
| 1) Independent Variable Domain Menu | [DA_INDEPEND] |
| 2) Select Dependent Variables | (DA_DEPEND) |
| 3) Specify CDF Name | (DA_CDF_NAME) |
| 4) Review and Execute Requests | (DA_EXECUTE) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **TOP**

The system again displays the CDF Generation Menu. You now have a CDF in your directory. Type **TOP** to return to the ROOT menu and continue your session.

Menu: "ROOT", library "NCDS\$LIB:"

NCDS Version 1.2 Subsystems Menu

- | | | |
|----|---|----------------------|
| 1) | CATALOG Subsystem Menu | [CATALOG] |
| 2) | INVENTORY Subsystem Menu | [INVENTORY] |
| 3) | DATA ACCESS Subsystem Menu | [DACCESS] |
| 4) | DATA MANIPULATION Subsystem Menu | [DATAMANIP] |
| 5) | GRAPHICS Subsystem Menu | [GRAPHICS] |
| 6) | Utility Menu | [UTIL] |

See Utility Menu for News, Tutorial, and Demos

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **4**

The DATA MANIPULATION Subsystem allows you to perform useful statistical operations on data you have extracted and stored in Common Data Format. To enter the DATA MANIPULATION Subsystem, select menu option **4**.

Menu: "DATAMANIP", library "NCDS\$LIB"

DATA MANIPULATION Subsystem Menu

- | | |
|---------------------------------|-------------|
| 1) List a CDF | (CDFLIST) |
| 2) Subset a CDF | (CDFSUB) |
| 3) Copy a CDF | (CDFCOPY) |
| 4) Apply a Time Window to a CDF | (CDFFILT) |
| 5) Edit a CDF Header | (CDFEDIT) |

****The following two functions are available only on NSSDCA****

- | | |
|--------------------------------|---------------|
| 6) Create Parameters | (PARAMS) |
| 7) Stratify a CDF | (CDFSTRAT) |
| 8) Manage User CDF Library | [CDFLIB] |
| 9) Terminate Data Manipulation | (DATAMTERM) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **1**

The DATA MANIPULATION Subsystem Menu provides such utilities as listing, subsetting, copying, creating parameters for, and stratifying your CDF file. Some options are only available on the VAX 8650 computer (called NSSDCA). For this scenario, select option 1 to list some data from your CDF.

Specify Input CDF

<u>parm</u>	<u>description</u>	<u>value</u>
CDFNAME	Name of Input CDF	"FGGE3B_ECMWF"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? CDFNAME="FGGE3B_ECMWF"

? RUN

You are prompted for the name of an input CDF. Enter the file name of the CDF you created in the DATA ACCESS Subsystem. Note that you may specify any CDF as long as its complete location (disk and directory information) is given. Type **RUN** to continue.

Specify Input CDF

<u>parm</u>	<u>description</u>	<u>value</u>
TIMEMIN	Minimum Time for Window Null = Start Time of CDF (YYYYMMDDHHMMSS)	-- (null value)
TIMEMAX	Maximum Time for Window Null = Stop Time of CDF (YYYYMMDDHHMMSS)	-- (null value)
INCREM	Sample Increment	1
OUTPUT	Output Device	"TERMINAL"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
? **<RETURN>**

You can specify any time period within the range of the CDF you are listing. Since the CDF you created covers only one recording period, you can leave **TIMEMIN** and **TIMEMAX**, as well as the other program parameters, at their default values. This will list the entire CDF file. Press **<CR>** to view the next page of this tutor display.

Tutor: proc "list", library "/LOCAL/"

Pg 2.

Specify Input CDF

<u>parm</u>	<u>description</u>	<u>value</u>
OUTFILE	Output Filename Null = (CDF_DATA_LIST)	-- (null value)

Enter: parm=value,HELP,PAGE,QUALIFY,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? **RUN**

This program parameter allows you to specify the name of a disk file for storing the listing. Producing a disk file of the data listing is very useful for transferring data to another computer or for obtaining a printout of the data. Because you specified that the listing appear on your terminal, leave this *parm* at its default value.

CDF Subset Parameter Selection

<u>parm</u>	<u>description</u>	<u>value</u>
FGGEHOUR	FGGEHOUR	"NO"
LONGITUD	Longitude	"NO"
LATITUDE	Latitude	"NO"
PRES_LVL	Pressure Level	"NO"
TMP	Atmospheric TMP	"NO"
HUMID_RH	Relative Humidity	"NO"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

```
? LONGITUD="YES"  
? LATITUDE="YES"  
? TMP="YES"  
? HUMID_RH="YES"  
? RUN
```

The CDF Subset Parameter Selection screen allows you to specify which variables are to be included in the listing. Set the values for LONGITUD, LATITUDE, TMP, and HUMID_RH to **YES**, then type **RUN**. A header line appears with the parameters you selected, followed by the actual data values.

YYYY	MM	DD	HH	MN	SS	LONGITUD	LATITUDE	TMP	HUMID_RH
1979	10	15	0	0	0	-0.17906E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.17719E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.17531E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.17344E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.17156E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.16969E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.16781E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.16594E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.16406E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.16219E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.16031E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.15844E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.15656E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.15469E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.15281E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.15094E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.14906E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.14719E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.14531E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.14344E+03	-0.90000E+02	0.25786E+03	0.42972E+02
1979	10	15	0	0	0	-0.14156E+03	-0.90000E+02	0.25786E+03	0.42972E+02

Hit <CR> to continue listing

EXIT

The listing is displayed one page at a time. You may page through the listing as long as you like. Type **EXIT** when you are finished and want to return to the DATA MANIPULATION Subsystem Menu.

Menu: "DATAMANIP", library "NCDS\$LIB:"

DATA MANIPULATION Subsystem Menu

- | | |
|---------------------------------|-------------|
| 1) List a CDF | (CDFLIST) |
| 2) Subset a CDF | (CDFSUB) |
| 3) Copy a CDF | (CDFCOPY) |
| 4) Apply a Time Window to a CDF | (CDFFILT) |
| 5) Edit a CDF Header | (CDFEDIT) |

****The following two functions are available only on NSSDCA****

- | | |
|--------------------------------|---------------|
| 6) Create Parameters | (PARAMS) |
| 7) Stratify a CDF | (CDFSTRAT) |
| 8) Manage User CDF Library | [CDFLIB] |
| 9) Terminate Data Manipulation | (DATAMTERM) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **TOP**

You are returned to the DATA MANIPULATION Subsystem Menu. You may want to investigate other options at another time, but in this scenario type **TOP** to return to the ROOT Menu again and continue your session.

Menu: "ROOT", library "NCDS\$LIB:"

NCDS Version 1.2 Subsystems Menu

- | | | |
|----|----------------------------------|---------------|
| 1) | CATALOG Subsystem Menu | [CATALOG] |
| 2) | INVENTORY Subsystem Menu | [INVENTORY] |
| 3) | DATA ACCESS Subsystem Menu | [DACCESS] |
| 4) | DATA MANIPULATION Subsystem Menu | [DATAMANIP] |
| 5) | GRAPHICS Subsystem Menu | [GRAPHICS] |
| 6) | Utility Menu | [UTIL] |

See Utility Menu for News, Tutorial, and Demos

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **5**

You are now ready to plot your FGGE3B data. Select option 5 to enter the GRAPHICS Subsystem.

Menu: "GRAPHICS", library "NCDSSLIB"

GRAPHICS Subsystem Menu

- | | | |
|----|------------------------------|--------------------|
| 1) | Graphics Utilities Menu | [GRAPH] |
| 2) | Graphics Post-processor Menu | [POSTPROC] |
| 3) | Display Sample of Data Set | (DISPLAY_SAMPLE) |
| 4) | Charts Utility Menu | [CHARTS] |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **1**

The GRAPHICS Subsystem Menu allows you to select from several display utilities for plotting your data. You may also create hardcopy products through the Post-processor, display sample plots from various data sets, and view the Charts Utility Menu. Since you want to display data from your CDF, select option 1 to enter the Graphics Utilities Menu.

Menu: "SELECT", library "NGS\$MENU"

GRAPHICS Subsystem

<u>parm</u>	<u>description</u>	<u>value</u>
CDFNAME	Name of Input CDF	"FGGE3B_ECMWF"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? **CDFNAME="FGGE3B_ECMWF"**

? **RUN**

Dynamically constructing TAE Tree for
"FGGE3B_ECMWF"

You are prompted to enter the name and location of a CDF file. For this scenario, enter the name of the CDF file you constructed in the DATA ACCESS Subsystem. In certain cases, you may want to access more than one CDF at a time. You do this by specifying additional CDFs on the second and third pages. After typing **RUN**, a message appears telling you that the system is "Dynamically Constructing a TAE Tree for FGGE3B_ECMWF." Files needed specifically for your CDF are being copied into your disk space for use during your graphics session.

Menu: "SELECT", library "NGS\$MENU"

Plot Type Selection Menu

1) Histogram Menu	[HIST2]
2) X-Y Plot Menu	[XY]
3) Panel Plot Menu	[PANEL]
4) Mapped X-Y Plot Menu	[XYMAP]
5) Contour Plot Menu	[CONTOUR]
6) Mapped Contour Plot Menu	[MAPCONT]
7) Pseudo-Color Image Menu	[IMAGE]
8) Mapped Image Plot Menu	[MAPIMAG]
9) Surface Diagram Menu	[SURFACE]
10) Mapped Surface Plot Menu	[MAPSURF]
11) MERLIN Plot Menu	[MERLIN]
12) TERMINATE	(GRAPHTERM)

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **6**

The Plot Type Selection Menu shows you the different plotting options you have for displaying your data. The plotting options you choose depend on the type of data you wish to display. In order to use any of the "mapped" options, your data set must have latitude and longitude values. In addition, the MERLIN Plot Menu requires a special display terminal in NSSDC's Computer Graphics Laboratory for doing three-dimensional graphics. Because you are using humidity and temperature data from the gridded FGGE3B data set, select option 6 to generate a mapped contour plot.

Menu: "MAPCONT", library "NGS\$MENU"

Mapped Contour Plot Menu

- | | |
|---|-------------|
| 1) Define Mapped Contour PLOT AXES (REQUIRED) | (AMAPCONT) |
| 2) Define Mapped Contour PLOT OPTIONS | (PMAPCONT) |
| 3) Define Map OPTIONS | (MAPOPTS) |
| 4) Define DATA REPRESENTATION OPTIONS | (DATAOPTS) |
| 5) Define FILTERS | (FILTERS) |
| 6) Define OUTPUT CONTROLS | (CONTROL) |
| 7) DRAW Mapped Contour Plot | (MAPCONT) |
| 8) GRAPHTERM | (GRAPHTERM) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **1**

The Mapped Contour Plot Menu has several options for tailoring your plot. Most of the program parameters in these options have default values that will produce an acceptable plot without modification. You must, however, select option 1 to define the axes of the plot. You will be returned to this menu several times to continue your graphics session.

"MAPCONT" Plot Axes

<u>parm</u>	<u>description</u>	<u>value</u>
X	Latitude Positional Parameter	
Y	Longitude Positional Parameter	
Z	Value Parameter	
ANIMATE	Animation parameter OPTIONAL	-- (null value)

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? **X=LATITUDE**
 ? **Y=LONGITUD**
 ? **Z=HUMID_RH**
 ? **RUN**

The "MAPCONT" Plot Axes screen asks you for CDF variables to plot on the X, Y, and Z axes. (ANIMATE is used to show frames in sequence. It is not used here.) Assign the X axis as **LATITUDE**, the Y axis as **LONGITUD**, and the Z axis as **HUMID_RH** (Relative Humidity). Once again, you can use the up and down arrow keys to highlight the parameter you wish to change, and use the PF2 and PF3 keys to scroll forward or backward through the valid list. Press **<CR>** to set these parameters.

Menu: "MAPCONT", library "NGSSMENU:"

Mapped Contour Plot Menu

- | | |
|---|-------------|
| 1) Define Mapped Contour PLOT AXES (REQUIRED) | (AMAPCONT) |
| 2) Define Mapped Contour PLOT OPTIONS | (PMAPCONT) |
| 3) Define Map OPTIONS | (MAPOPTS) |
| 4) Define DATA REPRESENTATION OPTIONS | (DATAOPTS) |
| 5) Define FILTERS | (FILTERS) |
| 6) Define OUTPUT CONTROLS | (CONTROL) |
| 7) DRAW Mapped Contour Plot | (MAPCONT) |
| 8) GRAPHTERM | (GRAPHTERM) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **2**

You could accept the default values for the remainder of the plot options and execute your plot now, but you should examine some of the remaining options for tailoring your plot. Choose option 2 to define the Mapped Contour Plot Options.

"MAPCONT" PLOT OPTIONS

<u>parm</u>	<u>description</u>	<u>value</u>
STATS	Display statistics with plot	"OFF"
SMOOTH	Smooth the data prior to plotting	"NO"
SORT	Sort the data prior to plotting	-- (null value)
BANDING	Values for demarcation of the contour bands	0.0 (1) 1000.0 (2).

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? BANDING=33.66

? <RETURN>

Page 1 of the "MAPCONT" Plot Options shows the default values for displaying statistics, smoothing and sorting the data, and setting the intervals for color banding. The numerical values for the contour bands are set by changing the default values (0.0 and 1000.0) to 50 and 70. This will cause the contours to be displayed in three colors representing 0-50, 51-70, and 71-100.

"MAPCONT" PLOT OPTIONS

parm	description	value
ALGORITHM	Map Contour Algorithm	"SDBWEIGHT"
INCRLEVL	Increment between contour levels	0.0
LABLINCR	Number of Contour Lines between labeled contours	4
RESOLUTN	Number of Grid points along Y Edge	30.0

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? INCRLEVL=20

? LABLINCR=1

? RUN

Page 2 shows the values for the algorithm used, the contour increment, the labeled contours, and the resolution of the plot. Change the value of INCRLEVL to 20 and the value of LABLINCR to 1. This will draw a labeled contour every 20 units (%). Type **RUN** to set these program parameters and return to the Mapped Contour Plot Menu.

Menu: "MAPCONT", library "NGSSMENU:"

Mapped Contour Plot Menu

- | | |
|---|-------------|
| 1) Define Mapped Contour PLOT AXES (REQUIRED) | (AMAPCONT) |
| 2) Define Mapped Contour PLOT OPTIONS | (PMAPCONT) |
| 3) Define Map OPTIONS | (MAPOPTS) |
| 4) Define DATA REPRESENTATION OPTIONS | (DATAOPTS) |
| 5) Define FILTERS | (FILTERS) |
| 6) Define OUTPUT CONTROLS | (CONTROL) |
| 7) DRAW Mapped Contour Plot | (MAPCONT) |
| 8) GRAPHTERM | (GRAPHTERM) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **3**

This time choose option 3 to define the map options for your plot.

Map Options

<u>parm</u>	<u>description</u>	<u>value</u>	
PROJECT	Map Projection	MOLLWEIDE	
POLEPOS	Pole Position Latitude	90.0	(1)
	Longitude	0.0	(2).
CENTROID	Viewing Centroid Latitude	-- (null value)	(1)
	Longitude		(2).
FIDUINC	Fiducial line increment value	10.0	
MAGFACT	Magnification Factor	1.0	

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? FIDUINC=30

? MAGFACT=5

? <RETURN>

Page one of the Map Options screen has settings for the projection used, pole position, viewing center, fiducial line increment, and magnification factor. In this scenario, change the value of FIDUINC to **30** and that of MAGFACT to **5**. Press **<CR>** to go to the next page.

Tutor: proc "MAPOPTS", library "NGSS\$MENU:"

Pg 2.

Map Options

<u>parm</u>	<u>description</u>	<u>value</u>
MAPDATA	Select database to plot world map	2
POLITIC	Display political boundary	"OFF"
FIDUCIAL	Plot fiducial lines on world map	"ON"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.
? **RUN**

These options can be left at their default values. They allow you to select the type of world map and to choose whether or not to plot political boundaries and fiducial lines. Type **RUN** to execute the program and lock in your changes.

Menu: "MAPCONT", library "NGS\$MENU:"

Mapped Contour Plot Menu

- | | |
|---|-------------|
| 1) Define Mapped Contour PLOT AXES (REQUIRED) | (AMAPCONT) |
| 2) Define Mapped Contour PLOT OPTIONS | (PMAPCONT) |
| 3) Define Map OPTIONS | (MAPOPTS) |
| 4) Define DATA REPRESENTATION OPTIONS | (DATAOPTS) |
| 5) Define FILTERS | (FILTERS) |
| 6) Define OUTPUT CONTROLS | (CONTROL) |
| 7) DRAW Mapped Contour Plot | (MAPCONT) |
| 8) GRAPHTERM | (GRAPHTERM) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **6**

You may skip options 4 and 5 for this scenario. Option 4 allows you to scale the data you are plotting, and option 5 allows you to select filters. Select option 6 to control the output of your plot.

Output Control Options

<u>parm</u>	<u>description</u>	<u>value</u>
TITLE	Title of plot	-- (null value)
OUTFILE	Output file for post-processor	-- (null value)
TERMINAL	Output device for plot	"TERMINAL"
USERNAME	Optional user name supersede	-- (null value)
FONT	Character style for lettering	"LOW"

Enter: parm=value,HELP,PAGE,SELECT,SHOW,RUN,EXIT,SAVE,RESTORE; RETURN to page.

? TITLE="OCTOBER HUMIDITY MAP"

? OUTFILE=FGGE_PLOT

? RUN

The Output Control Options screen allows you to give your plot a title, specify a disk file to store it, send it to your terminal or directly to a disk file, and specify a different username and character font. Type in a short title to appear at the top of your plot and an output filename to store your plot in a disk file. You may leave the rest of these options at their default values. Type **RUN** to execute the program.

Menu: "MAPCONT", library "NGSS\$MENU:"

Mapped Contour Plot Menu

- | | |
|---|-------------|
| 1) Define Mapped Contour PLOT AXES (REQUIRED) | (AMAPCONT) |
| 2) Define Mapped Contour PLOT OPTIONS | (PMAPCONT) |
| 3) Define Map OPTIONS | (MAPOPTS) |
| 4) Define DATA REPRESENTATION OPTIONS | (DATAOPTS) |
| 5) Define FILTERS | (FILTERS) |
| 6) Define OUTPUT CONTROLS | (CONTROL) |
| 7) DRAW Mapped Contour Plot | (MAPCONT) |
| 8) GRAPHTERM | (GRAPHTERM) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **7**

Now that you have specified all of your plotting options, you are ready to view the plot. Select option 7 to actually display the plot with the selections you have just made. Depending on the size of the data file you are using and the options selected, this may take several minutes. Once you see your plot and hear the beep signaling completion, you may either press **Q** to quit and return to the Mapped Contour Plot Option, or press **S** to take a "snapshot" of the plot and store as a disk file with the name you entered in the Output Control Options screen. This file can later be retrieved for use in the Post-processor to obtain a hard copy of your plot. An example is shown on the following page.

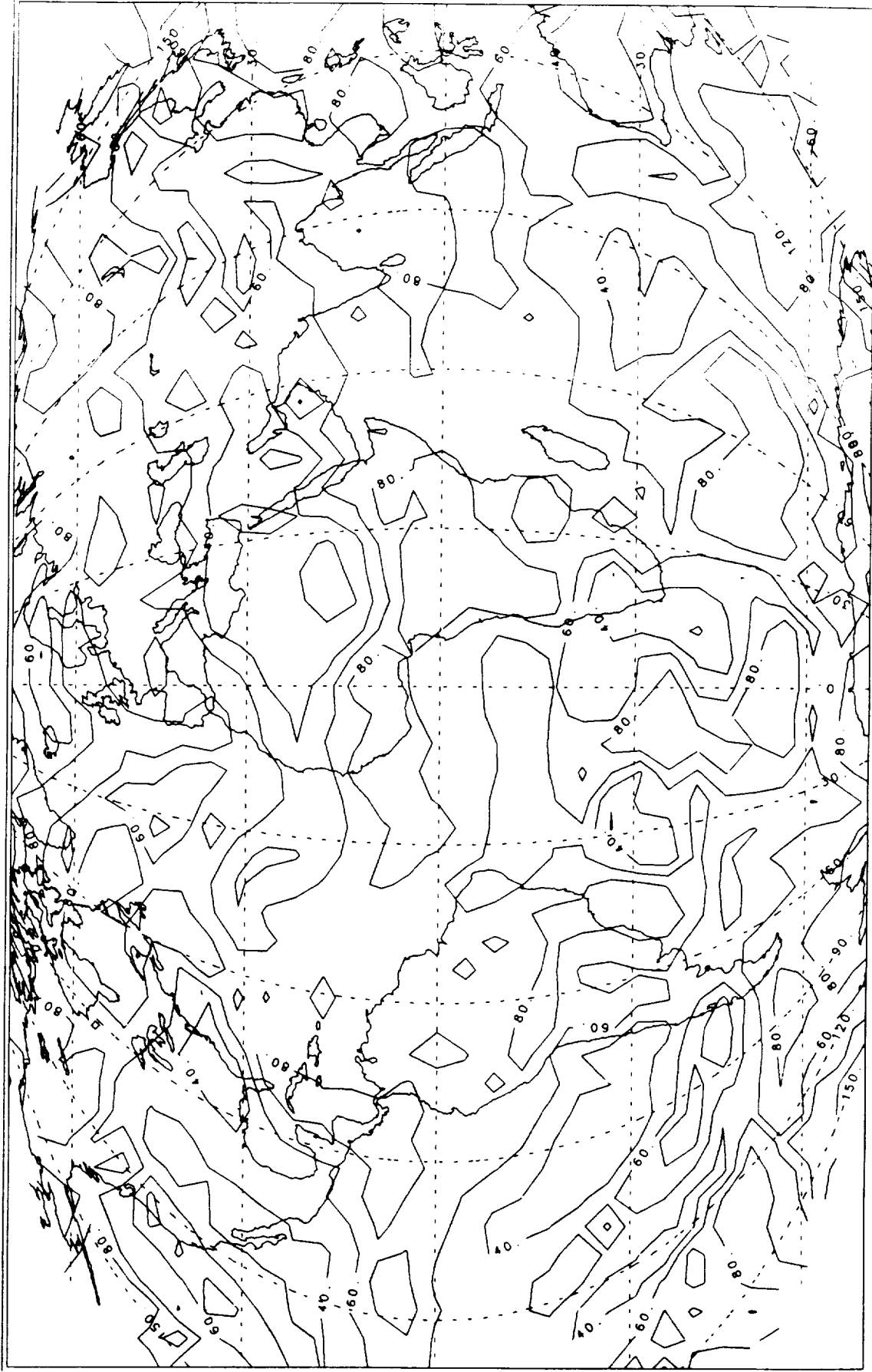
[CLIMATE2.CLOSS.DSTEST]FGGE3B-ECMWF

PLOTTED BY NCDS ON 16-FEB-89

OCTOBER HUMIDITY MAP

1979/10/15 00:00:00 < Date Time < 1979/10/15 00:00:00

Mollweide projection map of Relative Humidity-(%)



User: NCDSUSO

This mapped contour plot reflects the plotting options chosen in previous screens. The location and name of the CDF data file is given at the upper right, the title is displayed in the center above the time range, the projection type and parameter being plotted are just below the time range, and your username is in the lower right.

Menu: "MAPCONT", library "NGSSMENU:"

Mapped Contour Plot Menu

- | | |
|---|-------------|
| 1) Define Mapped Contour PLOT AXES (REQUIRED) | (AMAPCONT) |
| 2) Define Mapped Contour PLOT OPTIONS | (PMAPCONT) |
| 3) Define Map OPTIONS | (MAPOPTS) |
| 4) Define DATA REPRESENTATION OPTIONS | (DATAOPTS) |
| 5) Define FILTERS | (FILTERS) |
| 6) Define OUTPUT CONTROLS | (CONTROL) |
| 7) DRAW Mapped Contour Plot | (MAPCONT) |
| 8) GRAPHTERM | (GRAPHTERM) |

Enter: selection number, HELP, BACK, TOP, MENU, COMMAND, or LOGOFF.

? **8**

If you wish, you may go back to any of the plotting options previously shown and change the parameter values to change the appearance of your plot. Your previous parameter specifications will remain in effect until you modify them or exit the GRAPHICS Subsystem. If you have finished your graphics session, you should select option **8** to delete any temporary disk files that have accumulated in your disk space during your graphics session. Once the clean-up is completed, you will be returned to the ROOT Menu. This scenario is complete. You may leave the NCDS system and log off the host computer with the **LOGOFF** command. If you wish to examine the system further, you may find some helpful hints in the Utilities Menu.

Appendix

Additional Questions?

When Can I Use NCDS?

The NSSDC Computer Facility is available for user logon 24 hours per day, 7 days per week, except for some holidays, time needed for system backups, and special stand-alone times (such as repair of hardware failures, preventive maintenance, and testing). System backups are currently performed between 00:00 and 05:00 Monday through Friday. On weekends there is usually no operational support. This means that you cannot perform jobs requiring tape data sets or the use of special devices such as printers and plotters. More specific information, such as special stand-alone times and schedule changes, is displayed in the system news. Please limit your usage accordingly.

How Do I Dial Up NCDS's Computer?

The procedure for dialing up to the computer on which NCDS resides is as follows:

- If you have not already done so, set your terminal to 8 bits, no parity, full duplex, and an appropriate speed (300, 1200, or 2400 baud).
- Dial the phone number for the Goddard pool (a pool of numbers for accessing any computer at the Goddard Space Flight Center): 301-286-9000.
- When you are connected to the Goddard pool, enter **<CR>** and you will be prompted by "ENTER NUMBER." Respond by typing **NCDS**. There are actually two numbers available, and the number chosen will be displayed. Other lines are available for other NSSDC projects.
- When you are connected, you will see the message "CALL COMPLETE" and will be prompted for a user name. Enter your user name and press **<CR>**. You will then be prompted for your password. You can now follow the usual directions for accessing NCDS.

How Do I Use GTE Telenet to Access NCDS?

Follow the procedure below to access NCDS via Telenet:

- Dial a Telenet access location within your local calling radius (in other words, you pay for this call). A list of numbers is available from your local GTE Telenet Office listed in the telephone book (or you may call the toll-free Telenet customer service number 1-800-Telenet).
- Enter **<CR>** several times until a prompt appears.
- Type the identification address and password of NSSDC's VAX 8650 computer at the Goddard Space Flight Center (GSFC):

@ID ;32107035/GSFC
Password: 036156

- You will then be connected to the NSSDC's VAX 8650 computer. Enter your user name and password when prompted. Though you may now access your files and mail, not all NCDS functions are available to you.
- For access to NCDS, type **SET HOST NSSDC** once you receive the "\$" prompt. You will now be connected to the NSSDC's VAX 11/780, which will ask for your user name and password. You can now follow normal instructions for access to the computer and NCDS.

What Terminals Does NCDS Support?

You may use almost any terminal to access NCDS, but it will be easier for you if you use one of the terminal types (or personal computer-software combinations) explicitly supported. Any terminal not listed below is supported as an 80-column hard copy terminal. Support may be added for additional terminals, so let NCDS's User Support Office personnel know if your terminal is not included in the following list:

- C. Itoh (CIE) 414A Terminal
- Digital Engineering Graphics VT100

- Hewlett-Packard 2623A
- Hewlett-Packard 2627A
- Hewlett-Packard 2648A
- VT100 with Hewlett-Packard plotter (7470A, 7475A, 7550A, 758xA)

- IBM Personal Computer with VT100 and T4010 emulation

- Jupiter 7
- Apple Macintosh with VT100 and T4014 emulator
- Matrox Graphics VT100
- Ramtek 6211

- Tektronix 401x-compatible
- Tektronix 4014/4015/4016
- Tektronix 4027
- Tektronix 4104/4105/4106/4107/4107A/4109/4109A/4111/4112/4113/4114/4115/4116/4125/4128/4129/4510A
- Tektronix 4115/4125/4128/4129 Extended 2D coordinates
- Tektronix 4128/4129 Extended 3D coordinates
- Visual 500/550

- Digital Equipment Corporation VT-100/220
- Digital Equipment Corporation VT-240
- Digital Equipment Corporation VT-52

What If My Terminal Is Not Supported by NCDS?

If you are working at a hardcopy terminal or an unsupported CRT, the menus will be similar to those described in this manual, but the tutored displays will only list the parameter names, not their descriptions and values. This also means that the values you assign to parameters will not be echoed. To obtain additional information, use one of the following commands in response to the tutor prompt:

LIST Displays the parameter names and current values

DISPLAY Lists the descriptive text

Set *parm* values as you would on any other terminal, by typing **parm=value**.

As you become more experienced with the TAE, you may even find that this form of tutor, called a "noscreen" tutor, is more convenient for you. This might especially be true if you use a low-speed CRT which requires a lot of time for screen update. If you wish to specify the "noscreen" tutor, use the command mode to set the global parameter \$TUTOR as follows:

LET \$TUTOR="NOSCREEN"

Help is also a little different on a hardcopy terminal or an unsupported CRT. On such devices, TAE lists the help information line by line, with no break on page boundaries and no prompts.

What Do I Need to Know About the VAX Computer?

The TAE should shield you from most operating system-specific commands. However, there are several VAX Digital Command Language (DCL) commands that you might find useful. These are listed below with a short description of each:

DELETE	Deletes specified files from a disk
DIRECTORY	Provides a list of files
PURGE	Deletes all but the highest-numbered version (or versions) of a specified file or of all files
PRINT	Queues a specified file for printing on a system printer
TYPE	Displays the contents of a specified file on your terminal
MAIL	Enters the mail utility to send or read a message

If you would like to learn more about these commands or other available VAX DCL commands, type **HELP** or **HELP command** before you run NCDS (at the "\$" prompt). The utility menu allows you to perform several of these commands without knowing their particular syntax. If you run out of space in your account, you may find **delete** very useful. To determine what files may be deleted, note some conventions. CDFs are actually multiple files: a header, indices, and the data for each of the variables. Therefore, to keep a CDF, you need to keep files with the extension (last three characters after the period) of "CDH," "CDF," or "Vnn", where nn is a number between 01 and 99. Also, saved parameter files are stored in files with the extension "PAR." Most other files are probably not useful to you. Please contact the NCDS User Support Office if you have questions about the need for particular files. The Support Office can be reached at 301-286-3209 during office hours or through VAX mail at NCF::NCDSUSO.

What If I Have a Problem or an Additional Question?

NCDS's User Support Office will be happy to help you with problems or answer your questions. Feel free to contact the Support Office staff at 301-286-3209 during office hours or through VAX mail at NCF::NCDSUSO. In addition, the utility menu option for sending messages to NCDS staff is useful, especially if you normally use the system during off hours. You might also examine the "news" option of the Utility Menu. Problems that have been reported are noted here, sometimes with ways to work around a problem. Because this option also lets you find out about upcoming changes in the system, it is valuable to examine this information occasionally.







