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NASA

Technical Memorandum 85083

DATA MANAGEMENT SUPPORT FOR SELECTED CLIMATE DATA SETS USING THE CLIMATE DATA ACCESS SYSTEM

(NASA-TM-85083) DATA MANAGEMENT SUPPORT FOR SELECTED CLIMATE DATA SETS USING THE CLIMATE DATA ACCESS SYSTEM (NASA) 95 p
HC A05/MF A01 CSCL 04B

N83-35562

Unclas
G3/47 42137

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August 1983

National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland 20771

DATA MANAGEMENT SUPPORT FOR SELECTED CLIMATE DATA SETS USING THE CLIMATE DATA ACCESS SYSTEM

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CODE 931

AUGUST 1983

NASA/GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

Abstract

This report identifies the functional capabilities of the Goddard Space Flight Center (GSFC) Climate Data Access System (CDAS), an interactive data storage and retrieval system, and describes the archival data sets which this system manages. The CDAS manages several climate-related data sets, such as the First Global Atmospheric Research Program (GARP) Global Experiment (FGGE) Level II-b and Level III-a data tapes.

CDAS data management support currently consists of three basic functions: (1) an inventory capability which allows users to search or update a disk-resident inventory describing the contents of each tape in a data set, (2) a capability to depict graphically the spatial coverage of a tape in a data set, and (3) a data set selection capability which allows users to extract portions of a data set using criteria such as time, location, and data source/parameter and output the data to tape, user terminal, or system printer. The system was designed so that other functions may easily be added later. This report includes figures that illustrate menu displays and output listings for each CDAS function.

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1. Introduction

This report describes the Climate Data Access System (CDAS), an interactive data storage and retrieval system. The CDAS manages many diverse but related weather and climate tape-resident data sets, such as Scanning Multichannel Microwave Radiometer (SMMR) PARM-LO, PARM-SS, MAP-LO, and MAP-SS tapes; First Global Atmospheric Research Program (GARP) Global Experiment (FGGE) Level II-b and Level III-a tapes; and Backscatter Ultraviolet (BUV) Compressed Total Ozone (CTOZ), Detailed Total Ozone (DTOZ), Daily Zonal Means (DZM), and profile tapes. The system was developed on a Digital Equipment Corporation (DEC) VAX 11/780 by personnel from Computer Sciences Corporation (CSC) and Goddard Space Flight Center (GSFC) Information Extraction Division (IED).

The system is interactive and menu driven, permitting users to perform the following data management functions:

INVENTORY - Search or update (add to, modify, delete from) a disk-resident inventory that contains information describing each available tape of a particular data type and its associated components (files or grids)

LOCATION PLOTS - Depict graphically the spatial coverage of user-specified data files on a tape

SELECT - Extract data that satisfy a set of user-specified criteria, such a time, location, source/data type, and geophysical parameter, and create a new data set (reformatted into a tabular structure and output to disk, user terminal, or the system printer, or output to tape in the original format) containing only those data of interest.

Not all of the above capabilities are available for every data type. But the system is dynamic; in other words, the design allows the addition of capabilities to manage other data sets (for example, Solar Backscatter Ultraviolet (SBUV)/ Total Ozone Mapping Spectrometer (TOMS)) without affecting the already existing capabilities. Additional functions may also be easily added to the system; the functions planned include the following:

ANALYSIS - Perform an objective analysis on a data set, interpolating the values of variables that were measured at essentially random locations to grid points equally spaced in some coordinate system

DISPLAY - Create an image data set on tape or disk for subsequent display and analysis on image analysis terminals such as those on the Atmospheric and Oceanographic Information Processing System (AOIPS) or on other such terminals obtained for use on the host system.

For each function and data type there is one FORTRAN program. The execution of these programs is managed by the Transportable Applications Executive (TAE), a collection of executive programs also being developed by GSFC IED. TAE provides the high-level user interface to these programs (through menus and tutored input for parameters), thus making it easier to enforce a uniform user interface to each program. Many of the applications (such as the Landsat-D Assessment System (LAS) and the Pilot Climate Data Base Management System (PCDBMS)) being developed within the IED will use a TAE interface. Therefore, TAE will provide the user with a consistent, friendly interface to several application programs. Since TAE is to be implemented on several computer systems, this interface can remain standardized even if applications are using different computer systems or an application must change computer systems.

The remaining sections of this report provide additional information on the capabilities of the CDAS. This document reflects the status of the system as of October 1982. Section 2 describes the content of the archival data sets. Section 3 describes each of the functions in greater detail, providing information about each option available to a user and the inputs the user must supply. This section also includes samples of system output and concludes with a scenario of system use. Section 4 closes with a brief description of additional data management capabilities being planned by the IED.

2. Archival Data Sets

A key objective of the IED is to develop techniques for managing many diverse but related weather and climate data sets. A predecessor of the CDAS, the Data Retrieval System (DRS), was developed on the AOIPS PDP 11/70 computer system for managing GARP-funded meteorological data sets with global coverage during the periods August 18 through October 18, 1975, (Data Systems Test (DST) 5) and January 5 through March 5, 1976 (DST 6). CDAS continues support to the GARP Project by providing data management capabilities for some of the data sets produced for the Global Weather Experiment (GWE, formerly the First GARP Global Experiment (FGGE)). The GWE provided data sets with global coverage from December 1, 1978, through November 30, 1979.

In addition to these GARP-funded data sets, there are a number of other important meteorological data sets prepared or being prepared within the GSFC Applications Directorate. The Nimbus Observations Processing System (NOPS) is producing Level 0 (raw measurements), Level I (calibrated, located radiances), Level II (derived geophysical parameters at highest resolution), and Level III (gridded, averaged parameters) tape and film products for the eight sensors onboard the Nimbus-7 satellite. The Ozone Processing Team (OPT) produced a seven year (1970-77) ozone data set, including total ozone and ozone profiles from the Nimbus-4 BUV measurements. This data set includes Level 0, I, II, and III tape products. Data management capabilities have been developed within CDAS for portions of the NOPS SMMR instrument Level II and III tape products and the BUV (Level I, II, and III) tape products. Capabilities for other such data sets are planned.

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The following subsections give additional information about the characteristics of the data which CDAS currently manages.

2.1 SMMR

The Nimbus-7 Scanning Multichannel Microwave Radiometer (SMMR) is a multispectral passive microwave imager with sensitivities sufficient for the determination of a number of meteorological, oceanographic, and climatological parameters, such as sea-surface temperature, sea-surface wind speed, and total atmospheric water vapor. SMMR was turned on October 25, 1978, and was still operating as of October, 1982. The first day of the data sets to be archived is November 16, 1978. On this day, the standard operating cycle of one day on, one day off, was begun. This cycle allows SMMR to map the earth every six days from 84.2 degrees south to 84.2 degrees north. Data should be available at the archives in late 1982.

Figure 1 shows the SMMR tape products produced by the Nimbus ground processing system. SMMR User-Formatted Output (UFO) tapes contain the SMMR raw, uncalibrated 12-bit counts. Information from these UFO tapes and Image Location Data Tapes (ILT) is combined to produce Temperature of Antenna Tapes (TAT) containing converted radiometric data and latitude/longitude information for each field of view (FOV).

The individual FOV temperatures are aggregated into cells of four different sizes and stored on CELL and CELL-30 tapes. The 780-kilometer wide SMMR scanning swath is partitioned into 30-by-30, 60-by-60, 97.5-by-97.5, and 156-by-156-kilometer cells. Average brightness temperatures for those frequencies whose FOV size does not exceed the cell size are computed for each cell. Each cell is tagged with information from the Geography Season Filter Tape (GSFT) to allow later selective derivation of one of four

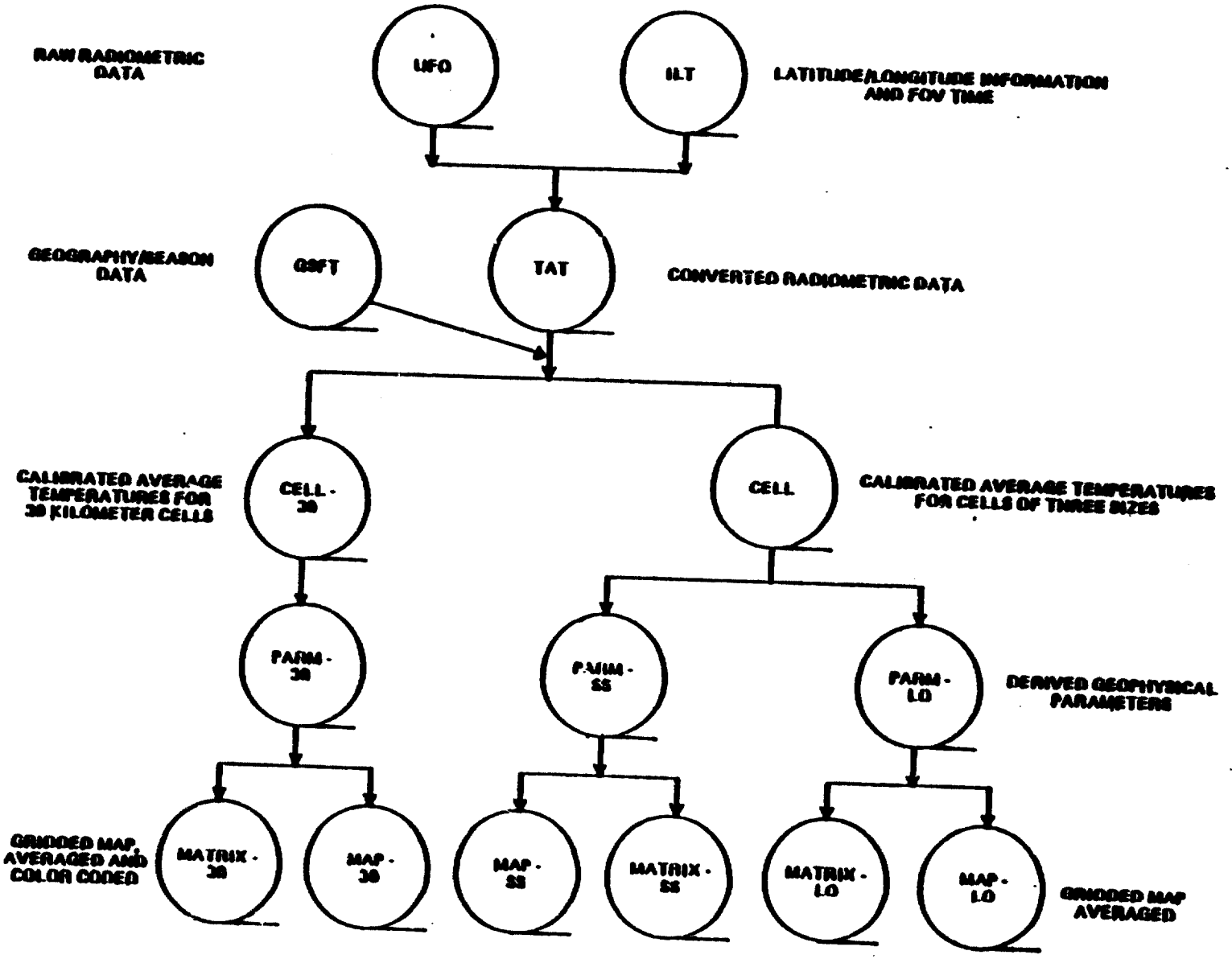

Figure 1. Nimbus-7 SMMR Tapes

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classes of parameters (ocean/atmosphere, sea ice, snow/ice, or land). Corrected average temperatures arranged orbitally, latitude/longitude, and geography/season data for each 30-kilometer cell are stored on CELL-30 tapes. The same information for the other resolutions is stored on the CELL tapes. The cell temperature data are then used to compute scientific parameters. Each parameter is computed on a cell-by-cell basis (for cells of fixed size) and stored on PARM tapes. The 30-kilometer resolution parameters are stored on the PARM-30 tapes and the lower resolution land/ocean and ice/snow/ice sheet parameters are stored on the PARM-LO and PARM-SS tapes, respectively. Parameter values from the PARM tapes are then projected onto Mercator and polar stereographic grids, averaged over 3, 6, or 30 days, and stored on MAP tapes or MATRIX tapes. The MATRIX tapes are produced by replacing the parameter values with color codes.

The CDAS provides capabilities for managing the SMMR PARM-LO, PARM-SS, MAP-LO, and MAP-SS data tapes. Capabilities for other SMMR products, such as the PARM-30 and CELL tapes, may be added in the future. A brief description of the formats of the SMMR data sets managed by CDAS is included below. More detailed information about these formats is provided in the Nimbus Observation Processing System (NOPS) Tape Specifications (references 9, 10, 19, and 20).

The first file of the SMMR tape products managed by the CDAS is the NOPS Standard Header file. This file consists of two identical 630-byte records that contain information about the tape, such as the format code (e.g., PARM-LO, PARM-SS, MAP-LO, MAP-SS), the tape sequence number, and the time range of the data on the tape. The other information stored on the tapes is described below.

2.1.1 SMMR PARM-LO and PARM-SS

The SMMR PARM tapes consist of a header file, a sequence of data files, and a dummy file signifying the end of the tape. This overall tape organization is shown in Figure 2.

Each data file contains data for one orbit. Each physical record in a data file consists of three logical records. There are three types of logical records: a documentation logical record, a data logical record, and a dummy logical record. Each of these records consists of 4140 bytes, for a physical record size of 12,420 bytes.

The first logical record of the first physical record of every data file is a documentation logical record. This record contains information about the data file, such as the year, the day, and the orbit of the data.

The documentation logical record is followed by a sequence of data logical records. Each data logical record contains data covering a 780-by-780 area using 5, 8, and 13 bands of 5, 8, and 13 cells (156-by-156, 97.5-by-97.5, and 60-by-60-kilometer cells), respectively. The five bands of five cells per band group can handle up to four different parameters; the eight bands of eight cells per band group is set up for a maximum of two parameters, and the last group (13 bands of 13 cells) is set up for four sets of parameters. These parameters are indicated by codes and change at the cell level as indicated by the use of a filter, which designates whether the parameter is a land parameter, an ocean parameter, a sea-ice parameter, a land-snow parameter, or an ice-sheet parameter. Table 1 lists these parameters and their codes.

The last data logical record in the file is followed by no, one, or two

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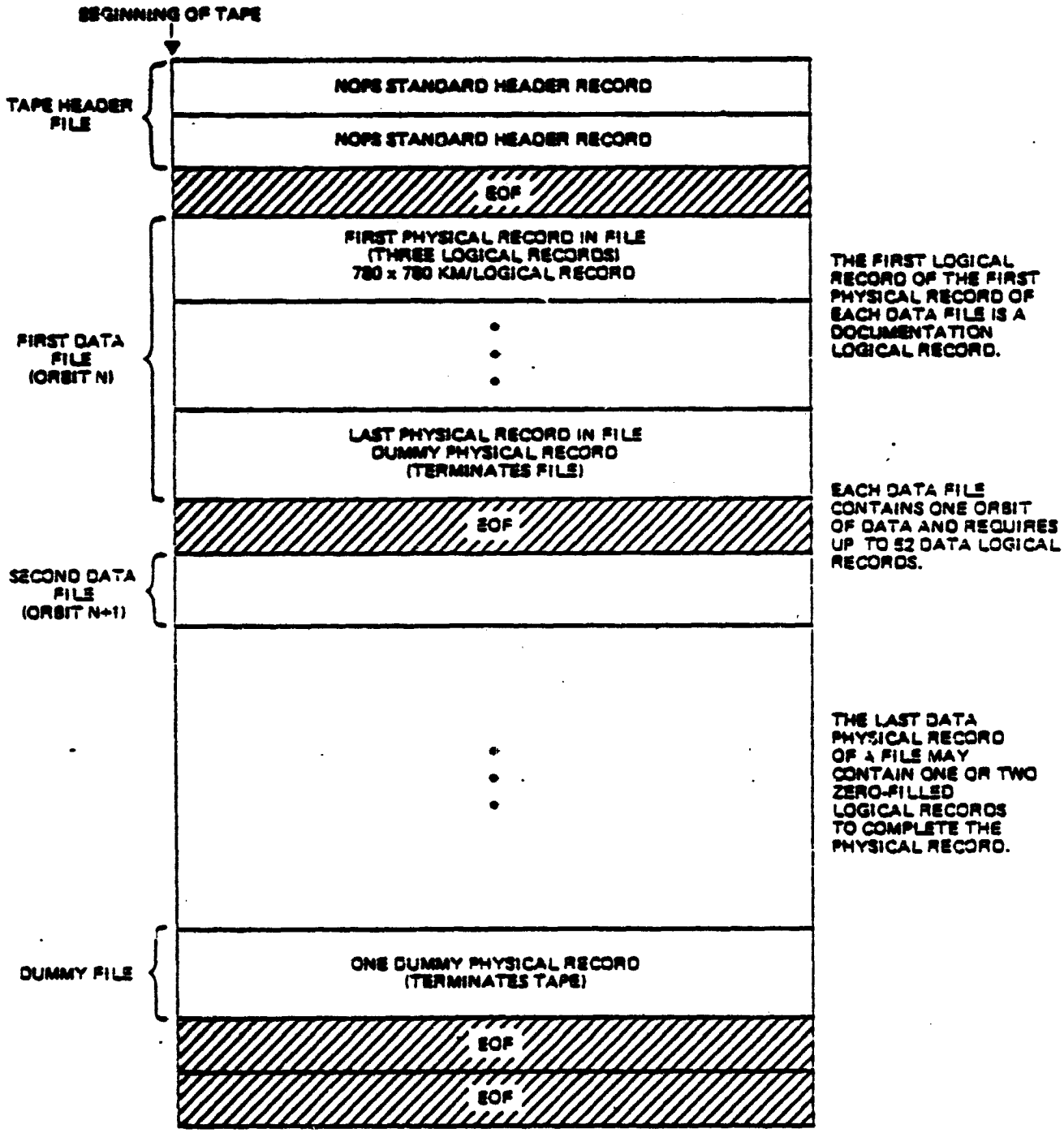

Figure 2. SMMR PARM Tape Organization

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TABLE 1. SMMR PARM Parameters

*CODE	PARAMETER	UNITS	RESOLUTION
	OCEAN PARAMETERS		
1	SEA SURFACE WIND (SPEED)	.1M/SEC	97.5KM
2	RAINFALL RATE	.1 MM/HR	60 KM
3	TOTAL ATMOSPHERIC LIQUID WATER	MGM/CM**2	60 KM
4	TOTAL ATMOSPHERIC WATER VAPOR	MGM/CM**2	60 KM
** 5 or 24	SEA-SURFACE TEMPERATURE	.1 DEG K	156 KM
	LAND PARAMETERS		
6	SOIL MOISTURE	%	156 KM
7	RAIN	(YES/NO)	30 KM
8	OPEN WATER OVER LAND	%	60 KM
9	LAND SURFACE TEMPERATURE	DEG K	156 KM
	SEA ICE PARAMETERS		
10	SEA ICE CONCENTRATION	.1 %	30 KM
25	SEA ICE CONCENTRATION	.1 %	60 KM
24	SEA ICE SURFACE TEMPERATURE	.1 DEG K	156 KM
12	MULTI-YR ICE FRACTION	.1 %	60 KM
13	LIQUID WATER CONTENT	MGM/CM**2	60 KM
	LAND SNOW PARAMETERS		
22	WATER EQUIVALENT	CM	60 KM
15	DRY SNOW	(YES/NO)	60 KM
23	SNOW SUBSURFACE TEMPERATURE	DEG K	156 KM
17	SNOW SURFACE TEMPERATURE	DEG K	156 KM
	ICE SHEET PARAMETERS		
22	ICE SHEET SURFACE TEMPERATURE	DEG K	60 KM
23	SUBSURFACE TEMPERATURE	DEG K	156 KM
20	1.7 CM A(1) T(V) + B(1)T(H)	.1 DEG K	60 KM
21	2.8 CM A(2) T(V) + B(2)T(H)	.1 DEG K	97.5KM

NOTES:

*PARAMETER CODES ARE NOT UNIQUE; THEY MUST BE USED IN CONJUNCTION WITH THE GEOGRAPHY/SEASON FILTER.

**SEA-SURFACE TEMPERATURE IS REPRESENTED BY A 5 ON PARM-LO TAPES; IT MAY BE REPRESENTED BY A 24 ON THE PARM-SS TAPES IF THE APPROPRIATE FILTER IS SET.

zero-filled logical records as needed to complete the physical record.

The last physical record in each data file is a dummy physical record, signifying the end of the file. This physical record consists of a dummy logical record and two zero-filled logical records. The first part of the dummy logical record contains the physical record number, the record ID, and the logical record number; the rest of this logical record is zero-filled.

The last data file on a SMMR PARM tape is followed by a dummy file signifying the end of the tape. This dummy file consists of one dummy physical record.

2.1.2 SMMR MAP-LO AND MAP-SS

A MAP-LO or MAP-SS tape contains a header file, followed by a sequence of data files. Each data file consists of map matrices for a 6- or 30-day time period. These data files are described in more detail below. If SMMR were operating full time, each tape would be capable of handling five 6-day files and one monthly file. The overall tape organization is shown in Figure 3.

Each data file consists of multiple frames, each corresponding to one film product. A 6-day file of a MAP-LO tape contains five frames; a 30-day file contains four frames. For a MAP-SS tape, the 6-day file contains four frames, and the 30-day file contains two frames. Different frames are at different spatial resolutions and have data for different parameters. Each frame of the MAP-LO tapes contains two Mercator map matrices, one for day and one for night. Each frame in the 6-day file on a MAP-SS tape contains four polar map matrices (two 3-day averages, N and S poles separate). A

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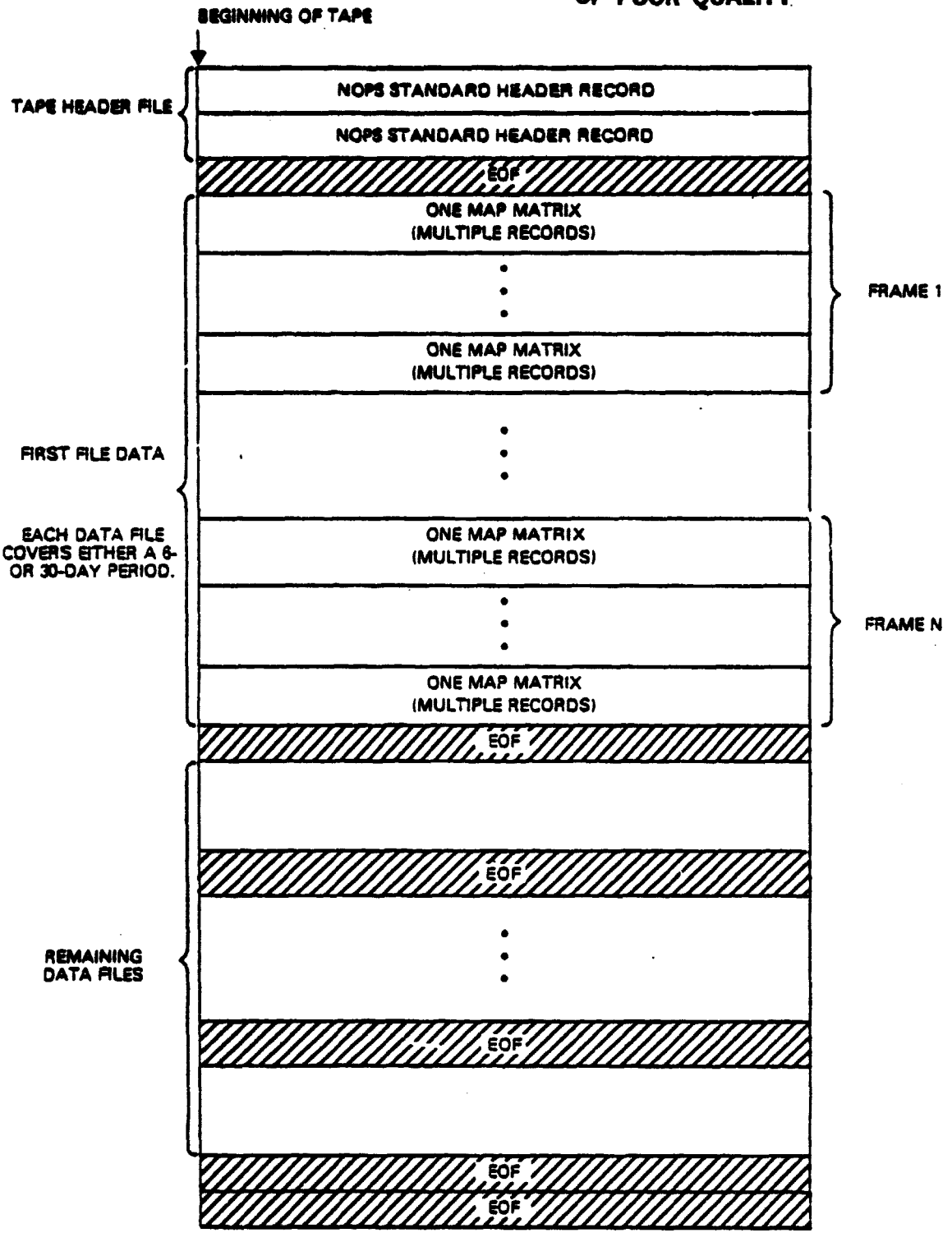

Figure 3. SMMR MAP Tape Organization

frame of a 30-day file of a MAP-SS tape contains two polar map matrices (N and S poles separate).

Most map matrices require more than one physical record to complete. Each record consists of 15,984 bytes. The first record of the data group comprising one map matrix is the documentation/matrix record. This record provides the annotation information for the map (such as the number of records in the group, the time range represented by the data, the orbits represented by the data, and the distribution of the data), and the first 7922 16-bit data words of the matrix. All subsequent records in a group are continuation records containing record control information and additional 16-bit data words of the matrix. Matrix size determines the number of continuation records following the documentation/matrix record for any data group. Each map matrix may contain data values for up to five parameters, but the group of parameters is constant over a frame. The parameter represented by a data word is designated by flag bits in the data word. The codes used for the SMMR MAP parameters are listed in Table 2. All records are ordered by group and then by time.

Table 3 summarizes some of the characteristics of the SMMR MAP tapes.

2.2 BUV

The Nimbus-4 Backscater Ultraviolet (BUV) experiment was designed to measure solar irradiance at the top of the atmosphere and the atmospheric radiance in the satellite nadir direction, thus providing data for determination of high-level ozone profiles and total ozone on a global basis. The archived BUV data set covers the time period from April 10, 1970, to May 5, 1977. Observations were made only over the daylit earth, with observation of the entire globe from 85 Degrees S to 85 Degrees N in six days.

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Table 2. SMMR MAP Parameters

CODE	PARAMETER	UNITS	RESOLUTION
	OCEAN PARAMETERS		
1	SEA SURFACE WIND (SPEED)	.1 M/SEC	97.5KM
2	RAINFALL RATE	.1 MM/HR	60 KM
3	TOTAL ATMOSPHERIC LIQUID WATER	MGM/CM**2	60 KM
4	TOTAL ATMOSPHERIC WATER VAPOR	MGM/CM**2	60 KM
5	SEA SURFACE TEMPERATURE	.1 DEG K	156 KM
	LAND PARAMETERS		
6	SOIL MOISTURE	%	156 KM
7	RAIN	(YES/NO)	30 KM
8	OPEN WATER OVER LAND	%	60 KM
9	SURFACE TEMPERATURE	DEG K	156 KM
	SEA ICE PARAMETERS		
10	SEA ICE CONCENTRATION	.1 %	30 KM
11	SEA ICE SURFACE TEMPERATURE	.1 DEG K	156 KM
12	MULTI-YR ICE FRACTION	.1 %	60 KM
13	LIQUID WATER CONTENT	MGM/CM**2	60 KM
	LAND SNOW PARAMETERS		
14	SNOW LAYER WATER EQUIVALENT	CM	60 KM
15	DRY SNOW	(YES/NO)	60 KM
16	SNOW SUBSURFACE TEMPERATURE	DEG K	156 KM
17	SNOW SURFACE TEMPERATURE	DEG K	156 KM
	ICE SHEET PARAMETERS		
18	ICE SHEET SURFACE TEMPERATURE	DEG K	60 KM
19	SUBSURFACE TEMPERATURE	DEG K	156 KM
20	1.7 CM A(1) T(V) + B(1)T(H)	.1 DEG K	60 KM
21	2.8 CM A(2) T(V) + B(2)T(H)	.1 DEG K	97.5KM

Table 3. SMMR MAP Tape Characteristics (1 of 2)

Characteristic	One File	One Frame	One Map Matrix
Parameters	Covers all land/ocean parameters or all sea-ice/snow/ice-sheet parameters; different frames cover different groups of parameters	Contains multiple parameters; same group of parameters applies to all map matrices in the frame (group of parameters constant over a frame)	Contains multiple parameters (e.g., one land parameter and one ocean parameter); only one parameter is stored at each grid location; which parameter is stored at a given grid location is designated by flag bits in the data word for that location
Spatial Coverage	For MAP-LO, has a constant spatial coverage (64°S to 64°N Mercator); for MAP-SS, covers North Pole to 50°N or 30°N plus South Pole to 50°S or 30°S, but different map matrices in the file have different spatial coverage (either Northern or Southern Hemisphere)	For MAP-LO, has a constant spatial coverage; for MAP-SS, covers Northern and Southern Hemispheres (all frames have same coverage), but different map matrices in the frame have different coverage (either Northern or Southern Hemisphere)	Has constant spatial coverage (either 64°N-64°S for MAP-LO; or, for MAP-SS, North Pole to 50°, or North Pole to 30°N, or South Pole to 50°S, or South Pole to 30°S)
Temporal Coverage	Covers either 6 or 30 days, but different map matrices in the file cover different time periods (for MAP-LO, day or night, for MAP-SS, different 3-day periods)	Has the same temporal characteristics as file	Has constant temporal coverage (for MAP-LO, either 6 days [day only], 6 days [night only], 30 days [day only], 30 days [night only]; for MAP-SS, 3 days or 30 days)

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Table 3. SMMR MAP Tape Characteristics (2 of 2)

Characteristic	One File	One Frame	One Map Matrix
Spatial Resolution	Has variable spatial resolution; there are three different Mercator resolutions and four different polar resolutions	Has constant spatial resolution (all maps in frame have same grid resolutions)	Has constant spatial resolution (one of four spatial resolutions for polar maps; one of three for Mercator maps)
Temporal Resolution	Has constant temporal resolution (each map in file is either a 3-day, 6-day, or 30-day average)	Has constant temporal resolution	Has constant temporal resolution
Spatial Resolution of Parameters	Contains parameters computed at different resolutions (but any particular parameter is mapped at only one resolution)	Contains parameters computed at differerent resolutions (but any particular parameter is mapped at only one resolution)	Contains parameters computed at different spatial resolutions (e.g., a map with a grid resolution of 50 kilometers may contain a parameter computed at a 150 kilometer resolution. This parameter value will be represented as 3-by-3 subarrays)

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Figure 4 shows the BUV tape products produced by the Ozone Processing Team (OPT). The Primary Data Base (PDB) is constructed by sorting, selecting, and compiling the raw data. These tapes contain the BUV measurements, the time of the measurements, the subsatellite position, and engineering information concerning the state of the spacecraft. Although the validity of the data has been checked, the measurements are still in telemetry units. The radiance data (on U-tapes) are derived by processing the PDB. The radiances for the photometer and the monochromator measurements are in engineering units. The 12 wavelengths measured are 339.8, 331.2, 317.5, 312.5, 305.8, 301.9, 297.5, 292.2, 287.6, 283.0, 273.5, and 255.5 nanometers. The Detailed Total Ozone (DTOZ) tapes contain total ozone values as well as radiance data from which individual ozone profiles may be reconstructed. The Compressed Total Ozone (CTOZ) tapes represent an abridged version of the DTOZ tapes. The Daily Zonal Means-Total (DZM or DZMT) tapes were generated from the CTOZ tapes. They contain the daily average and the standard deviation for total ozone in specified latitude zones. The Detailed Profile (DPFL) tapes contain the ozone profiles calculated from the data on DTOZ tapes. The Compressed Profile (CPFL) tapes represent an abridged version of the DPFL tapes. The Daily Zonal Means-Profiles (DZP or DZMP) tapes were generated from the CPFL tapes and contain the average and standard deviation for cumulative ozone, mixing ratio, and partial pressure at various pressure levels.

The CDAS provides capabilities for managing the Level I, II, and III data products: DTOZ, CTOZ, DZM, DPFL, CPFL, and DZP. A brief description of the formats of these data sets is included below. For more detailed

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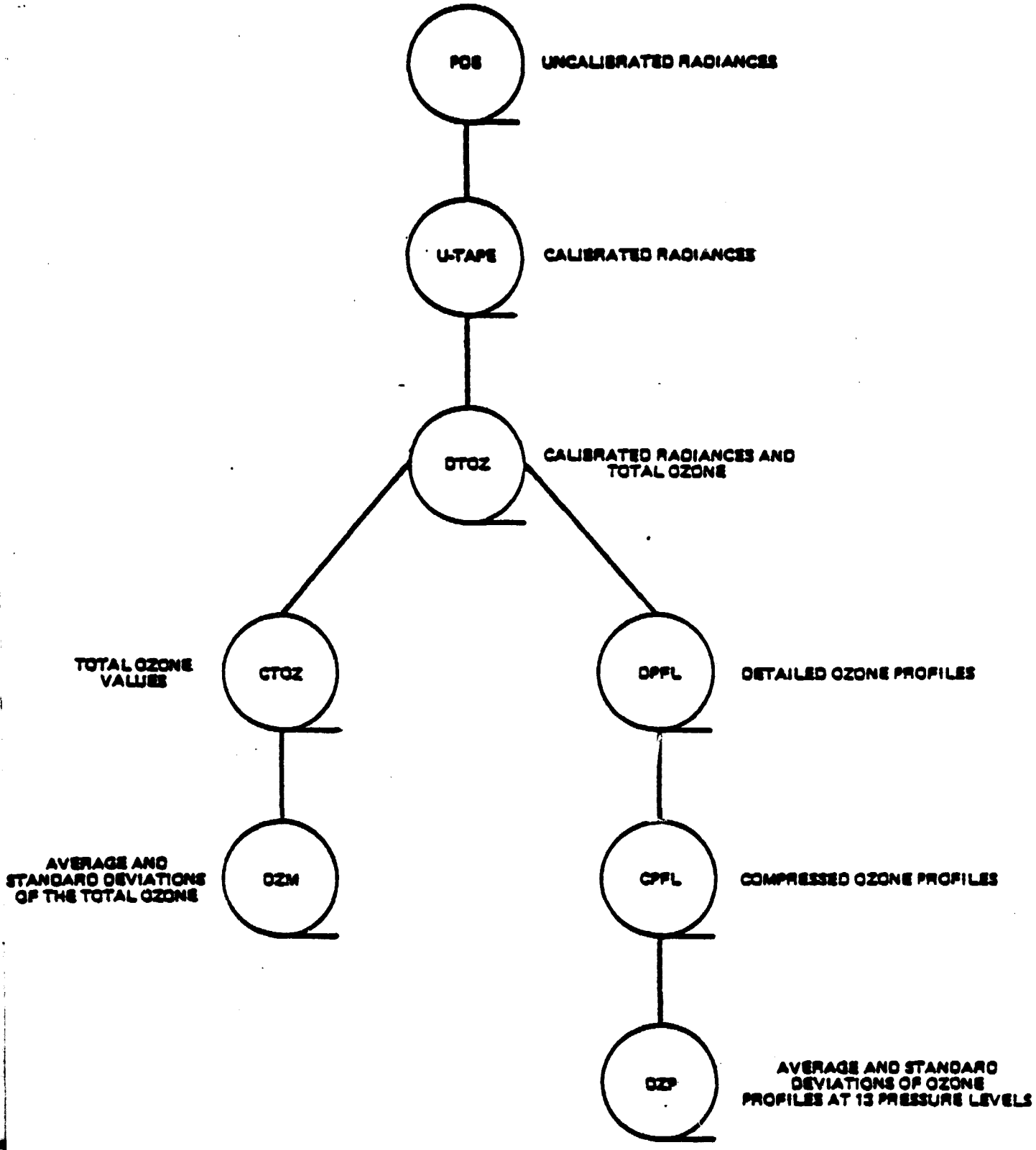

Figure 4. BUV Data Sets

information about these formats, see publications of the OPT listed in the references.

2.2.1 DTOZ

A DTOZ tape consists of a header file, a number of data files, and a trailer file. A data file contains a header record, a number of data records (one for each scan of data), and a trailer record. A single data file contains data from one or more orbits. The logical record length is 320 bytes; the physical record size is 16,000 bytes.

The header file is the first file of a tape and contains tape identification information. (Note that the year of the data is stored only in the header file.) The header record, the first record of the data file, contains information required to identify the orbit of the data on that file. A data record contains the measurements and position during one scan. The last record on a data file is the trailer record; it contains a summary of the data in the file. The last file of a tape is the trailer file; it contains a list of all the input tapes used to generate the DTOZ tape.

2.2.2 CTOZ

A CTOZ tape contains only data files. Each record in the data file consists of 80 bytes with the measurements and position during one scan. The physical block size is 8000 bytes.

2.2.3 DZM

A DZM tape contains one file per calendar year. (Note that there is no indication on the tape of the years of the data.) There are 17 logical records for each day of data, one for each of 17 latitude zones. The zones

are 10 degrees wide and are centered at -80, -70, -60, .., 60, 70, and 80 degrees. The logical record length is 40 bytes; the physical block size is 16,000 bytes.

2.2.4 DPFL

A DPFL tape consists of a header file, a number of data files, and a trailer file. The data file contains a header record, a number of data records (one for each scan of data), and a trailer file. The logical record size is 600 bytes; the physical block size is 30,000 bytes.

The header file is the first file on the tape and contains tape identification information. (Note that year information is contained only in the header file.) The header record, the first record of a data file, contains the orbit number of the data in the file. A data record contains profile results and the position during one scan. The last record in a data file is the trailer record; it contains a summary of the data in the file. The last file of the tape is the trailer file; it contains the number of files on the output tape (including header and trailer files) and the unique number of the input tape, as well as ephermeris data.

2.2.5 CPFL

A CPFL tape contains only data files. Each record in a data file contains profile results and the position during one scan. The logical record length is 200 bytes; the physical block size is 30,000 bytes.

2.2.6 DZP

There are two DZP tapes, one in geodetic coordinates and the other in geomagnetic coordinates. (Note that there is no indication of the years of the data on the tape.) There is one file per pressure level (14 levels:

0.7, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 7.0, 10.0, 15.0, 20.0, 30.0, 40.0, and 1000.0) per calendar year (8 years). The files are arranged as follows:

File Number	Pressure Level (millibars)	Year
1	0.7	1970
2	0.7	1971
3	0.7	1972
4	0.7	1973
5	0.7	1974
6	0.7	1975
7	0.7	1976
8	0.7	1977
9	1.0	1970
.	.	.
.	.	.
.	.	.
112	1000.0	1977

There are 17 logical records of 40 bytes for each day, arranged in 16,000-byte blocks. These records contain the average total ozone and profile information in 17 latitude zones. The latitude zones are 10 degrees wide and are centered at -80, -70, -60, .., 60, 70, and 80 degrees. The physical block size is 16,000 bytes.

2.3 FGGE

FGGE data sets are produced from data collected during a 12 month global observing experiment conducted by the Global Atmospheric Research Program (GARP), a joint program of the World Meteorological Organization (WMO) and the International Council of Scientific Unions (ICSU). The experiment--the Global Weather Experiment (GWE), formerly called the First GARP Global Experiment (FGGE)-- was an effort to support research investigations aimed at increasing the accuracy of medium range forecasting and increasing our understanding of the physical basis of climate. Global observations were collected from 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. The activity involved the efforts of over 140 countries and employed the following major observing systems:

- The World Weather Watch (WWW) surface and upper-air stations augmented for the experiment
- Special aircraft releasing wind-measuring dropsondes
- TIROS-N, NOAA-5, and NOAA-6 polar-orbiting satellites
- Five geostationary metecrological satellites
- About 40 wind-observing ships
- Over 150 constant-level balloons
- Approximately 200 buoys
- Commercial aircraft equipped with special instrumentation
- Nimbus-7 research satellite

More details about these systems may be found in references 4, 5, 21, 22, 23, and 24.

FGGE data are labelled as Level I, II, or III, respectively, for raw data, observations, or analyzed data. The data are further sublabelled as "a", "b", or "c" depending on whether they pertain to data collected operationally in near-real-time, collected in both real-time and delayed time to obtain the most complete data set possible, or collected for climate research. The FGGE data sets are further described in the following subsections.

2.3.1 Level II FGGE Data

The Level II data are Earth-located, time-labelled, meteorological parameters. World Meteorological Centers (WMCs) in Melbourne, Moscow, and

Washington collected a large fraction of the Level II data within hours of the observation time for operational purposes. These Level II-a data were then merged with data subsets produced by other data centers in delayed mode to produce the Main FGGE Level II-b Data Set. The Main data set, therefore, contains all of the available data from the experiment's surface-based and special observing systems.

Though this data set was produced for the entire FGGE year and any FGGE II-b Main tape can be input to CDAS functions, CDAS currently has available only a limited number of these tapes--those for January 1, 1979 (6Z), through March 7, 1979 (0Z) (SOP-1). CDAS does make available a subset of this data set which covers the entire FGGE year. This and other FGGE II-b data sets available through CDAS are described in subsections of this section.

FGGE II-b Main tapes are formatted according to the Formats for International Exchange of Level II Data Sets During the FGGE, (reference 23, Appendix 11). They are 9-track tapes recorded with odd parity and using EBCDIC recording code. FGGE specifications call for 800-bpi tapes, but CDAS archive copies are 1600-bpi tapes. Each tape contains a test file, a tape header file, and one or more data files. This organization is illustrated in Figure 5. Each file contains one or more physical records consisting of 2960 characters. There are two basic logical record lengths: 37-byte data records and 80-byte header records. A single end-of-file mark (EOF) is written after each file and a double EOF mark is written after the last data file on the tape.

The data files are put onto the tape is a specific order: all data files corresponding to a time period of 6 hours are grouped together, and, within a given group, the order of the files is determined by the data

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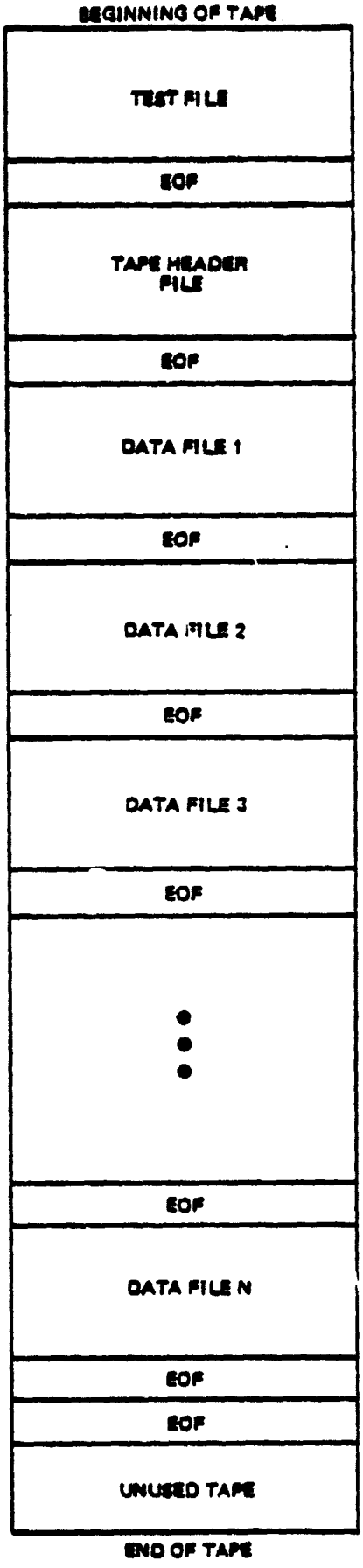

Figure 5. FGGE II-b and II-c Tape Organization

type/source. The time periods are centered at 0000, 0600, 1200, and 1800 GMT. A group of data files for a 6-hour period is not split between two tapes.

A Final Level II-b Data Set will be prepared to incorporate additional data made available after the production of the Main Level II-b Data Set, as well as to correct systematic errors detected in the data. Additional Level II-b data are available in regional data sets, supplementary data sets, and subsets of the Main Level II-b data set.

Goddard Laboratory for Atmospheric Sciences (GLAS) produced an edited Level II-b data set which contains corrected data for the SOPs and Summer Monex. The editing includes ground station latitude/longitude corrections, changes to precipitable water measurements from TIROS-N, deletion of erroneous USSR wind reports, and corrections to certain aircraft data relayed to satellite. These tapes are formatted according to the Formats for the International Exchange of Level II Data Sets During the FGGE, except they do not include the test file or tape header file. They do not include satellite clear radiances, sea-surface temperature, and oceanographic data. This data set is not currently available through CDAS, though arrangements may be made for providing CDAS outputs for these tapes.

The USA Experimental Satellite Data Producer (NASA/GSFC) is producing several Level II-c data sets containing parameters obtained from the Nimbus-7 satellite: total ozone content and ozone profiles from SBUV, sea ice concentration extracted from SMMR PARM-30 or PARM-SS tapes, and radiation budget parameters, zonally average insolation, and solar irradiance from ERB. These data will be available for the entire FGGE year.

The ozone profile data consist of layer ozone amounts, standard deviations for these, and level mixing ratios. One report contains both the total ozone and ozone profile information, though ozone profile data may be missing. The radiation budget data are provided on daily and monthly grids. These grids are organized according to a slightly modified version of the Level III formats for international exchange. (See next subsection.) The formats for international exchange of Level II data were modified to accommodate the other Level II-c parameters in this data set; the tape organization is the same as that of the FGGE II-b tapes. (See Figure 5.)

CDAS provides access to several of the Level II-b data subsets. These subsets are described below.

2.3.1.1 SMMR/FGGE

The SMMR/FGGE Level II-b Data Set is being produced by the USA Experimental Satellite Data Producer, NASA/GSFC. The SMMR tapes will contain sea-surface wind speeds, sea-surface temperatures, and total atmospheric water vapour extracted from the Nimbus-7 SMMR PARM-LO tapes and reformatted in accordance with the FGGE Level II internationl exchange specifications. Each tape contains only one of the three parameters mentioned above. Original plans called for merging these data with other FGGE II-b data, but SMMR processing has been delayed. Therefore, the tapes will probably not be available until 1983. CDAS will maintain a complete set (entire FGGE year) of these tapes when they are available.

2.3.1.2 LIMS/FGGE

The LIMS/FGGE Level II-b Data Set was produced by National Center for Atmospheric Research (NCAR) for the USA Experimental Satellite Data

Producer, NASA/GSFC. The LIMS tapes contain stratospheric temperature profiles (10 to 52 km, at approximately 4 degree intervals along the limb track) from the Nimbus-7 Limb Infrared Monitor of the Stratosphere (LIMS). The data set covers the seven months during which LIMS was operational: December 1, 1978, to May 28, 1979. In order to make the desired data available prior to the Level II-b cutoff (prior to regular reduction), NCAR adapted its LIMS software to yield stratospheric temperature profiles in the FGGE Level II exchange format. These data were merged into the Main Level II-b Data Set. NCAR is now reprocessing these data to produce a better data set. These new data may be available for inclusion in the Final Level II-b Data Set.

The first release of these tapes is now available to CDAS users.

2.3.1.3 Level II-b Restructured

The National Climatic Center (NCC, WDC-A (USA)) restructured the Level II-b data in order to make them more readily usable and the data extraction more economical for users interested in smaller and/or different portions of the total FGGE Level II-b data set. These data sets were prepared from the Main Level II-b data base; no corrections were made, but some data were added. These tapes represent a restructuring of the data by selected observing systems. They are grouped into land surface data, marine data, flight-level data, and upper-air profiles. They represent all of the data in the Main Level II-b data base exclusive of satellite soundings and radiances. Tapes are in the same format as the Main Level II-b Data Set except the test file is missing. The subset of tapes covering the FGGE year and which contains all of these data types is available to CDAS users.

2.3.1.4 TIROS-N Soundings

Also available to CDAS users are meteorological products from the TIROS-N Operational Vertical Sounder (TOVS) which include temperature/humidity retrievals (one set of retrievels derived from TIROS-N HIRS, MSU, and SSU combined inputs) for the FGGE year. The tapes in this data set are in the NMC/EDS format, which specifies two types of files: a housekeeping file containing a data directory for the rest of the tape and data files. Each data file has data grouped into three-hour time categories. The physical block size is 6440 bytes, and the logical record length is 280 bytes.

2.3.2 Level III FGGE Data

FGGE Level III data consist of internally consistent global analyses derived from the Level II data sets. Level III-a data sets required to initiate the forecast model were produced by the WMCs from the Level II-a data sets. Level III-b data sets were prepared from the Level II-b data sets by the European Center for Medium Range Weather Forecasts (ECMWF) (United Kingdom) and the Geophysical Fluid Dynamics Laboratory (GFDL). FGGE III-a data tapes covering the two SOPs (December 20, 1978, through March 7, 1979, and May 4, 1979, through July 1, 1979) and containing both Level II-a and Level III-a data intermixed are available to CDAS users. Only the III-a data are processed by CDAS functions. The data set includes analyses at 0000, 0600, 1200, and 1800 GMT for several different parameters. These include geopotential heights, temperatures, u- and v-wind components at 12 pressure levels (1000, 850, 700, 500, 400, 300, 250, 200, 150, 100, 70, and 50 mb); relative humidity at 6 pressure levels (1000, 850, 700, 500, 400, and 300 mb); sea-level pressure; and tropopause pressure and temperature. The fields are provided on 2.5 degree by 2.5 degree, 2.0 degree by 2.0 degree, and other latitude/longitude grids.

The format of these tapes is defined by NMC Office Notes 84 and 85. This format is much the same as the Level III international exchange format, but the tapes are IBM standard label. They contain a volume label followed by one or more data set sequences consisting of a header file, a data file, and a trailer file. This organization is illustrated in Figure 6. Each logical file begins with a label record that identifies the file name, the date, and the nominal time (00 or 12 GMT) of the data set. Tapes are 9-track and use both EBCDIC and binary recording codes.

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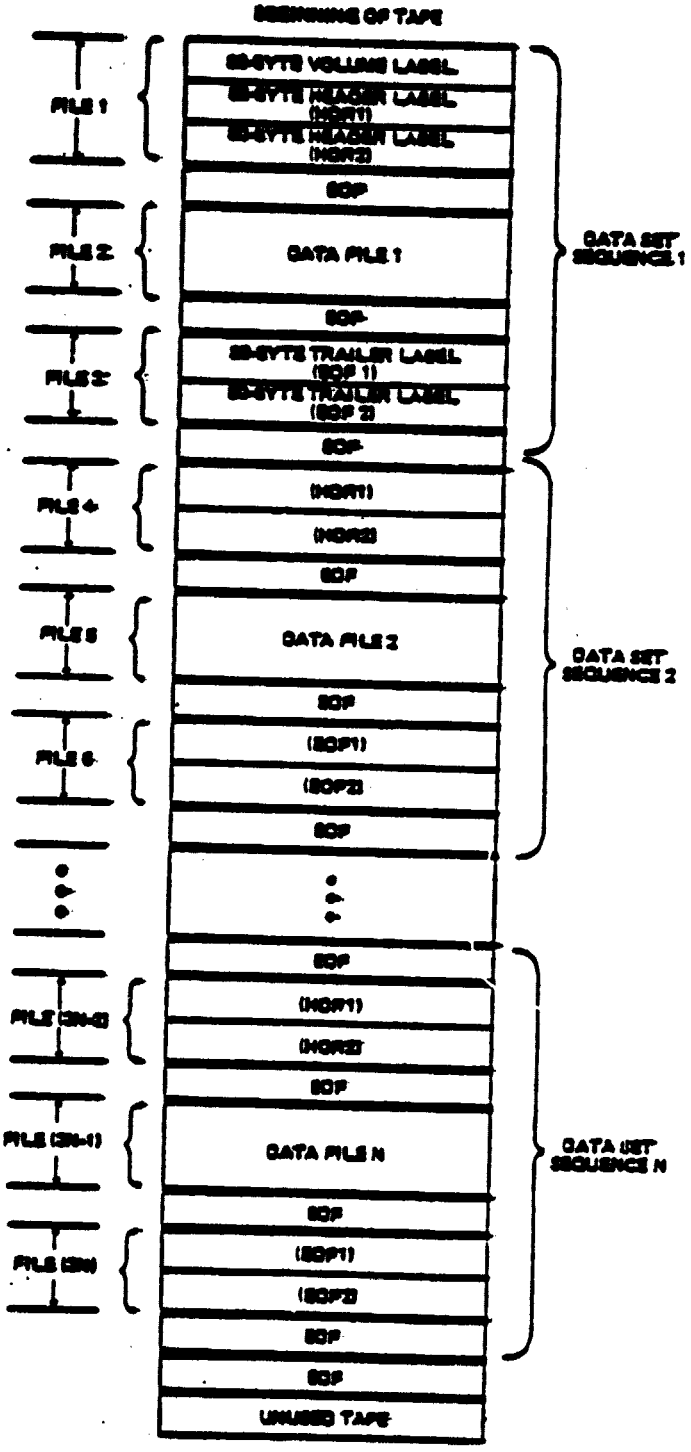

Figure 6. FGGE III-a Tape Organization

3. CDAS Functions

For each CDAS function and data type there is one FORTRAN program. The Transportable Applications Executive (TAE), a collection of executive programs being developed by GSFC Code 933 which interact with a user to manage the execution of applications programs, is responsible for initiating the program for the requested function and data type. TAE provides most of the user interface by incorporating menus for program selection, parameter tutor displays for setting program parameters, a command mode for program selection by experienced users, and extensive help features. This TAE implementation makes it easier to enforce a uniform user interface and to make additional modifications in the future, including transporting the CDAS to another computer if appropriate.

There are three basic modes of operation during a TAE session. In menu mode, (currently implemented only for the CRT user (VT100, VT52, or Tektronix 4027)), the user can navigate to the desired program by selecting options from menus. In command mode, the user can directly execute programs without navigating the menu tree. In tutor mode (currently implemented only for the CRT user), the user can specify and review the parameters which are to be passed to the application program.

In menu mode, the user is presented with a menu containing numbered entries, each of which describes another menu or a function (procedure or process, called "proc") which can be activated by TAE. If the user selects a menu entry, the corresponding menu is displayed; if he selects a proc entry, TAE enters tutor mode for the proc. The user may also enter a menu mode command. Some of the menu mode commands are listed in Table 4. Commands may have truncated abbreviations as long as uniqueness is

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Table 4. TAE Menu Mode Commands

Command	Description
BACK	Return to the previous menu
COMMAND	Enter the command mode
HELP	Display information on the operation of TAE menu mode
HELP 0	Display information on the operation of the current menu
HELP number	Display information on the operation of the specified menu entry
HELP proc	Display information on the operation of the named proc
LOGOFF	Logoff the system
MENU	Redisplay the current menu
MENU menu-name	Activate directly the named menu
TOP	Return to the root menu

maintained; lowercase is not significant.

Tutor mode may be entered either from menu mode, when a selection is made that requires the execution of a proc, or from command mode, when the "TUTOR" or "?" command is typed. In tutor mode, the user is presented with the first page of a (possibly) multi-page display showing information on each parameter of the selected proc. The name of the parameter, a description of the parameter, and the current value of the parameter are displayed. The value of the parameter may be established by default, or the user may set the value explicitly. When the user has made his specifications, he activates the proc by issuing the RUN command. Some of the tutor commands are listed in Table 5. Commands and keywords may have truncated abbreviations as long as uniqueness is maintained; lowercase is not significant.

Some of the commands which may be used in TAE command mode are listed in Table 6. These commands may be abbreviated as long as uniqueness is maintained. The RUN command is optional; for example, the user may type either "RUN PROGRAM" or "PROGRAM".

Once the user enters the RUN command, control is passed to one of the CDAS programs. These programs may prompt the user for additional information needed to complete the request. When the program exits, TAE returns to the menu from which the proc was selected or to command mode, as appropriate. If program errors occur or if the user wants to terminate a run before a program-controlled exit can be performed, he may abort the run by typing "<CTRL>C" (the key labelled "CTRL" and the "C" pressed simultaneosly) and responding to the "TAE>" prompt with "ABORT<CR>". (<CR> indicates that the carriage return key is pressed. All input should be terminated by a <CR>.)

Table 5. TAE Tutor Mode Commands

Command	Description
key=value	Assign a new value(s) to the parameter named "key"
key=	Assign the default value to the parameter named "key"
key=?	Display the page of the tutor display which contains the parameter named "key"
key=??	Display a detailed description of the parameter named "key"
<CR>	Display the next page of parameters
EXIT	Return to menu mode or command mode, as appropriate
HELP	Display help information on the use of tutor mode
RUN	Run the proc with the current parameter values
SAVE filename	Save the current parameter values on disk
RESTORE filename	Restore all parameter values from the saved disk file

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Table 6. TAE Command Mode Commands

Command	Description
ABORT	Terminate proc
DEFAULT APLIB IB=(library1, library2, ...)	Specify application libraries
EXIT	Exit from TAE
HELP command	Display information on the of the named command
HELP proc	Display information on the operation of the named proc
LOGOFF	Logoff the system
MENU	Enter menu mode
RUN proc parm1=value1 parm2=value2 ...	Execute the named proc with the provided values
TUTOR proc	Enter tutor mode for the named proc
? proc	Enter tutor mode for the named proc

The standard TAE commands are not available until the proc is aborted or the proc terminates normally.

See TAE documentation for other details on the user interface.

To initiate CDAS, the user signs on to the host computer system by entering a valid username and password. (Users should contact GSFC Code 931 for information.) Then in response to the "$" prompt the user executes a VAX command file which contains the commands which initiate CDAS by typing the following line at the terminal:

@[CDAS]MAIN<CR>

TAE then displays greeting messages and announcements and prompts the user for the type of terminal he is using: VT100, VT52, T4027 (for Tektronix 4027), or OTHER. TAE then enters menu mode or command mode depending on the terminal type. For the VT100, VT52, or T4027 terminals, TAE starts in menu mode; for the other terminals, TAE starts in command mode. In menu mode, TAE displays the initial (or "root") menu, then prompts for input with a "?". In command mode, TAE prompts for a command with "TAE>". In either mode, the user may type "HELP" to obtain a description of the proper responses for the current mode.

The CDAS MAIN Menu (root menu) is shown in Figure 7. This menu offers a choice of the basic functions of the CDAS. As with all major CDAS option menus, this menu offers HELP options which allow users to obtain more information about the menu choices. The user may type "HELP" to obtain general information about the TAE interface, "HELP FUNCTIONS" to obtain a description of each function, or "HELP DATABASE" to obtain a description of the data managed by the CDAS.

```
MENU DISPLAY:  TAE$MENU:ROOT.MDF                          PAGE # 1

                        CLIMATE DATA ACCESS SYSTEM

                              FUNCTION MENU

1)      INVENTORY

2)      LOCATION PLOTS

3)      SELECT

              For function descriptions use HELP FUNCTIONS.
              For database descriptions use HELP DATABASE.

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
?
```

Figure 7. CDAS MAIN Menu

```
MENU DISPLAY:  CDAS$TAE:INV                               PAGE # 1

                        CLIMATE DATA ACCESS SYSTEM

1)      SMMR PARM

2)      SMMR MAP

3)      BUV

4)      FGGE II-b

5)      FGGE III-b

              For database descriptions use HELP DATABASE.
```

Figure 8. CDAS DATA TYPE Menu

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If in menu mode the user chooses one of the CDAS functions, a DATA TYPE Menu is displayed on Figure 8. The user may choose a particular data type, ask for information about the data types available, or if he decides not to continue with the chosen function, return to the previous menu for other selections.

Each CDAS function provides the user with several options. After the user chooses menu entries for function and data type, a menu is displayed which lists these options. The user may choose a particular option, ask for more information about the options available, or if he decides not to continue, return to one of the previous menus. If the user chooses one of the options, he is then prompted for additional specifications needed to perform the function. These specifications are checked for validity before the program actually begins processing, and the user is given an error message if the specifications are invalid. The available options and additional user input, as well as system output for each function, are described in the following sections. Detailed information for each function and data type is provided in the CDAS User's Guide.

To execute a proc in command mode, the user will need to know the proc name and the proc's parameters. This information for CDAS procs is summarized in Table 7.

3.1 INVENTORY

The INVENTORY function allows a user to search or update (add to, modify, delete from) a disk-resident inventory that contains information describing each tape of a particular data type and its associated components (files or grids). The INVENTORY function for some data types supports two inventories, a master and a secondary. The master inventory is used for

Table 7. CDAS Procs and Parameters (1 of 2)

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Proc	Description	Parameters
INVBUV	BUV INVENTORY Process	None
INVFG2B	FGGE II-b INVENTORY Process	None
INVFG3A	FGGE III-a INVENTORY Process	None
INVSMMRM	SMMR MAP INVENTORY Process	None
INVSMMRP	SMMR PARM INVENTORY Process	None
LOCBUV	BUV LOCATION PLOTS Process	None
LOCFG2B	FGGE II-B LOCATION PLOTS Process	None
LOCSMMRP1	SMMR PARM LOCATION PLOTS Procedure for Producing Spatial Distribution Chart	TAPE = Tape ID OUT = Output Device GRID = Grid Size FILE = (Start File, Stop File) LAT = (Lower Latitude, Upper Latitude) LONG = (Lower Longitude, Upper Longitude) LOPRM = List of Land and Ocean Parameters ICEPRM = List of Sea Ice Parameters SICPRM = List of Land Snow and Ice Sheet Parameters
LOCSMMRP2	SMMR PARM LOCATION PLOTS Procedure for Producing Orbital Path Map at the Terminal or Line Printer	TAPE = Tape ID OUT = Output Device GRID = Grid Size FILE = (Start File, Stop File) LAT = (Lower Latitude, Upper Latitude) LONG = (Lower Longitude, Upper Longitude) LOPRM = List of Land and Ocean Parameters ICEPRM = List of Sea Ice Parameters SICPRM = List of Land Snow and Ice Sheet Parameters
LOCSMMRP3	SMMR PARM LOCATION PLOTS Procedure for Producing Orbital Path Map on the Graphics Terminal	TAPE = Tape ID FILE = (Start File, Stop File) LAT = (Lower Latitude, Upper Latitude) LONG = (Lower Longitude, Upper Longitude) LOPRM = List of Land and Ocean Parameters ICEPRM = List of Sea Ice Parameters SICPRM = List of Land Snow and Ice Sheet Parameters
SELFG2B1	FGGE II-b SELECT Procedure for Displaying Label of Disk File	None
SELFG2B2	FGGE II-b SELECT Procedure for Listing Data from Disk File	None
SELFG2B3	FGGE II-b SELECT Procedure for Listing Data from Tape	OUT = Output Device LAT = (Lower Latitude, Upper Latitude) LONG = (Lower Longitude, Upper Longitude) START = Start Time (YY,MM,DD,HH,MM,SS) END = End Time (YY,MM,DD,HH,MM,SS) UPASRC = List of Upper Air Sources ARCSRC = List of Aircraft Sources SFCSRC = List of Surface/Land Marine Sources SATSRC = List of Satellite Sources OCNSRC = List of Oceanographic Sources EXPSRC = List of Experimental Satellite Sources

Table 7. CDAS Procs and Parameters (2 of 2)

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Proc	Description	Parameters
SELFG2B4	FGGE II-b SELECT Procedure for Creating Disk File	None
SELFG2B5	FGGE II-b SELECT Procedure for Creating Subset Tape	None
SELFG3A1	FGGE III-a SELECT Procedure for Listing Data from Tape	OUT = Output Device LAT = (Lower Latitude, Upper Latitude) LONG = (Lower Longitude, Upper Longitude) START = Start Time (YY,MM,DD,HH,MM,SS) END = End Time (YY,MM,DD,HH,MM,SS) ATMPRM = List of Height/Atmospheric Pressure Parameter TMPPRM = List of Temperature Parameters VMTPRM = List of Vertical Motion Parameters WNDPRM = List of Wind Parameters FFFPRM = List of Fluid Flow Function Parameters MSTPRM = List of Moisture Parameters STBPRM = List of Stability Parameters MSCPRM = List of Miscellaneous Parameters OCNPRM = List of Oceanographic Parameters
SELFG3A2	FGGE III-a SELECT Procedure for Creating Subset Tape	None
SELSMMRP1	SMMR PARM SELECT Procedure for Displaying Label of Disk File	None
SELSMMRP2	SMMR PARM SELECT Procedure for Listing Data from Disk File	OUT = Output Device START = Start Time (YY,MM,DD,HH,MM,SS) END = End Time (YY,MM,DD,HH,MM,SS) LAT = (Lower Latitude, Upper Latitude) LONG = (Lower Longitude, Upper Longitude) LOPRM = List of Land and Ocean Parameters ICEPRM = List of Sea Ice Parameters SICPRM = List of Land Snow and Ice Sheet Parameters
SELSMMRP3	SMMR PARM SELECT Procedure for Listing Data from Tape	OUT = Output Device START = Start Time (YY,MM,DD,HH,MM,SS) END = End Time (YY,MM,DD,HH,MM,SS) LAT = (Lower Latitude, Upper Latitude) LONG = (Lower Longitude, Upper Longitude) LOPRM = List of Land and Ocean Parameters ICEPRM = List of Sea Ice Parameters SICPRM = List of Land Snow and Ice Sheet Parameters
SELSMMRP4	SMMR PARM SELECT Procedure for Creating Disk File	OUT = Output Device START = Start Time (YY,MM,DD,HH,MM,SS) END = End Time (YY,MM,DD,HH,MM,SS) LAT = (Lower Latitude, Upper Latitude) LONG = (Lower Longitude, Upper Longitude) LOPRM = List of Land and Ocean Parameters ICEPRM = List of Sea Ice Parameters SICPRM = List of Land Snow and Ice Sheet Parameters

storing information about the tapes that are archived as part of the CDAS. It contains information about the lastest version of the total tape data set made available to the CDAS by the project generating these tapes. (Thus only CDAS personnel should update this inventory.) The secondary inventory is provided for user tapes, subset tapes, or earlier releases of the tape data set.

A typical INVENTORY OPTIONS Menu is shown in Figure 9. It offers options for inserting a new entry into the inventory, modifying an existing entry, deleting an existing entry, searching the inventory and listing information about tapes meeting user specifications, or searching a particular tape without inventorying it and listing inventory type information about the tape.

To insert a new entry, the tape ID, the inventory type (master or secondary), the user's name, and the archival location must be specified. The user may also specify the output device for the listing of inventory information (terminal, printer, or both). Tape IDs within an inventory must be unique; if an entry already exists with the specified ID and data type, the system will stop processing and display an error message. If the entry is to be inserted into the master inventory and it duplicates data from a previous entry, the entry is also rejected and an error message is displayed. (Usually tapes do not overlap in time, but rules are different for different data types.) Other conditions which might indicate tape errors are also flagged with warning messages, and the user is asked whether the INSERT should continue. (Most tape data are arranged in time increasing order.) As the data are inserted into the inventory, the information being stored is displayed at the terminal and/or printer as specified by the user.

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```
---------- FGGE II-B INVENTORY ----------
                                  OPEN=NONE
-----------------------------------------------------------------

        **    INVENTORY OPTIONS    **

1....HELP
2....INSERT          (INVENTORY A TAPE)
3....MODIFY A TAPE'S INVENTORY ENTRY
4....DELETE          (REMOVE A TAPE FROM INVENTORY)
5....SEARCH AND LIST FROM TAPE
6....SEARCH AND LIST FROM INVENTORY
7....RETURN TO CDAS MAIN MENU

     ENTER REQUEST:
```

Figure 9. INVENTORY OPTIONS Menu

To modify an existing inventory entry, the user must specify the tape ID, the inventory type, and the new tape location. The system then displays a message indicating whether the process was completed successfully so the user will be aware of possible errors.

To remove a tape from an inventory (delete both the tape entry and lower level entries) the user must specify the tape ID and inventory type. The system then displays a message indicating whether the process was completed successfully so the user will be aware of possible problems.

Default specifications are provided for searching the inventory. The user is allowed to change these specifications in order to obtain information about only the tapes in which he is interested. Users may specify values for criteria such as data parameters, tape ID, or time range, and may specify whether only summary information about each tape meeting the criteria is output or more detailed information about each file or grid meeting the specifications is also output. Possible search criteria, the defaults for these, and possible user specifications are summarized in Table 8.

When the user indicates that he has made all specifications, the system searches the specified inventory and outputs the entries meeting all the search criteria. Two such searches of the FGGE II-b Inventory are shown in Figures 10 and 11. Figure 10 shows a tape level search, and Figure 11 shows a file-level search.

Table 8. INVENTORY Search Criteria

Search Criteria	Default	User Specification
Tape ID	All tapes	One particular tape ID
Data Format/Parameters	All formats and all parameters	Any combination of available formats and/or parameters
Inventory Type	Master, or last accessed	Master or secondary
Data Time Range	All available times	Start of a time range, end, or both
Time Archived Range	All available times	Start of a time range, end, or both
Archival Location	All locations	One particular location
Search Level	Tape	Tape or lower level, file or grid
Report Level	Output entries	Output entries or just a count of entries
Output Device	Terminal	Terminal, printer, or both

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```
                    ** PGSE II-B INVENTORY LISTING **

                      ** USER SPECIFICATIONS **

1. TAPE ID = NO RESTRICTION
2. TAPE FORMAT =   SSTEMP SSUINB WTRVAP TEMPRF SOUND  RESTRC
3. DATA SOURCE(S) =  ALL
4. INVENTORY = MASTER
5. DATA DATE/TIME:
     START = 79/ 1/ 1   0: 0: 0    STOP = 79/ 1/ 1   6: 0: 0
6. ENTRY DATE/TIME:
     START = EARLIEST              STOP = LATEST

        ** TEMPRF - STRATOSPHERIC TEMPERATURE PROFILES FROM NIMBUS-7 LIMS **

-------------------------------------------------------------------------------
 TAPE ID: P0164                                        DATE CREATED:   9 AUG 79
 ARCHIVE: PCDBMS          ARCHIVER: CLEVELAND          DATE ARCHIVED:  82/ 5/14  9:00
 START SYNOPTIC TIME: 79/ 1/ 1  0                      END SYNOPTIC TIME: 79/ 1/14   0
 NUMBER OF DATA FILES:       31                        START TIME:     79/ 1/ 1   0:46
 NUMBER OF   PROFILES :    9723                        STOP TIME:      79/ 1/14  23:33
-------------------------------------------------------------------------------

      **TEMPERATURE/HUMIDITY SOUNDINGS FROM TIROS-N (MSU.SSU.HIRS)**

-------------------------------------------------------------------------------
 TAPE ID: P0172
 ARCHIVE: PCDBMS          ARCHIVER: CLEVELAND          DATE ARCHIVED:  82/ 5/17 10:00
 START SYNOPTIC TIME: 79/ 1/ 1  0                      END SYNOPTIC TIME: 79/ 1/ 8   0
 NUMBER OF DATA FILES:       56                        START TIME:     79/ 1/ 1   2:32
 NUMBER OF   PROFILES :   47493                        STOP TIME:      79/ 1/ 7  23:59
-------------------------------------------------------------------------------

                        **RESTRUCTURED TAPE**

 TAPE ID: P0009                                        DATE CREATED:   1980- 2-10
 ARCHIVE: PCDBMS          ARCHIVER: CLEVELAND          DATE ARCHIVED:  82/ 4/14  9:00
 START SYNOPTIC TIME: 78/12/29  0                      END SYNOPTIC TIME: 79/ 1/ 1  18
-------------------------------------------------------------------------------
      DATA                NO. OF          START TIME OF  DATA          END TIME OF DATA
     SOURCE           OBSERVATIONS          YY/MM/DD/HH:MM               YY/MM/DD/HH:MM
-------------------------------------------------------------------------------
      RAWSON              6322          78/12/28 22: 0               79/ 1/ 1 21: 0
      PILOT               7120          78/12/28 22: 0               79/ 1/ 1 21: 0
      TWONAV                 3          78/12/29  2:22               78/12/31  2:16
      AIDS                4460          78/12/28 21: 1               79/ 1/ 1 21: 0
      AIREP              12030          78/12/28 21: 1               79/ 1/ 1 21: 0
      SYNOP              30449          78/12/28 22: 0               79/ 1/ 1 18: 0
      ASYNOP                20          78/12/29  0: 0               79/ 1/ 1 18: 0
      SHIPPX               477          78/12/28 22: 0               79/ 1/ 1 21: 0
      SHIPMB             14853          78/12/28 22: 0               79/ 1/ 1 21: 0
      BUOY                 886          78/12/28 22: 0               79/ 1/ 1 21: 0
      SATWND                52          78/12/28 22: 0               79/ 1/ 1 20: 0
      SSTEMP             21681          78/12/28 21:12               78/12/31 21: 0
      BATHY                270          78/12/28 21:30               79/ 1/ 1 21: 0
      TESAC                 40          78/12/29  0: 0               79/ 1/ 1 20:24
      DBUOY               2017          78/12/28 21: 3               79/ 1/ 1 20:43
-------------------------------------------------------------------------------
 NUMBER OF DATA FILES:      139                        START TIME:     78/12/28  22: 0
 NUMBER OF OBSERVATIONS:  109841                        STOP TIME:     79/ 1/ 1  20:43
-------------------------------------------------------------------------------
```

Figure 10. Sample INVENTORY Output (Tape Level)

** FGGE II-b INVENTORY LISTING **

** USER SPECIFICATIONS **

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1. TAPE ID = NO RESTRICTION
2. TAPE FORMAT = RESTRC
3. DATA SOURCE(S) = ALL
4. INVENTORY = MASTER
5. DATA DATE/TIME:
   START = 79/ 1/ 1 0: 0: 0 STOP = 79/ 1/ 1 6: 0: 0
6. ENTRY DATE/TIME:
   START = EARLIEST STOP = LATEST
7. TAPE LOCATION = NO RESTRICTION

RESTRUCTURED TAPE

TAPE ID: P0009 DATE CREATED: 1980- 2-10
ARCHIVE: PCDBMS ARCHIVER: CLEVELAND DATE ARCHIVED: 82/ 4/14 9:00
START SYNOPTIC TIME: 78/12/29 0 END SYNOPTIC TIME: 79/ 1/ 1 18

FILE #	SYNOPTIC TIME YY/MM/DD/HH	DATA SOURCE	# OF OBSV.	START TIME OF DATA YY/MM/DD HH:MM	END TIME OF DATA YY/MM/DD HH:MM
110	79/ 1/ 1 0	RAWSON	695	78/12/31 22: 0	79/ 1/ 1 1: 0
		PILOT	485	78/12/31 22: 0	79/ 1/ 1 3: 0
111	79/ 1/ 1 0	AIREP	774	78/12/31 21: 1	79/ 1/ 1 3: 0
112	79/ 1/ 1 0	AIDS	200	78/12/31 21: 1	79/ 1/ 1 2:57
113	79/ 1/ 1 0	SYNOP	2307	78/12/31 22: 0	79/ 1/ 1 3: 0
		ASYNOP	2	79/ 1/ 1 0: 0	79/ 1/ 1 0: 0
114	79/ 1/ 1 0	SHIPFX	28	78/12/31 22: 0	79/ 1/ 1 3: 0
		SHIPMB	973	78/12/31 22: 0	79/ 1/ 1 3: 0
		BUOY	55	78/12/31 22: 0	79/ 1/ 1 3: 0
115	79/ 1/ 1 0	SATWND	3	78/12/31 22: 0	79/ 1/ 1 0: 0
116	79/ 1/ 1 0	BATHY	21	78/12/31 22: 0	79/ 1/ 1 3: 0
		TESAC	3	78/12/31 21:40	79/ 1/ 1 0: 0
117	79/ 1/ 1 0	DBUOY	154	78/12/31 21:55	79/ 1/ 1 3: 0
118	79/ 1/ 1 6	RAWSON	50	79/ 1/ 1 4: 0	79/ 1/ 1 6: 0
		PILOT	405	79/ 1/ 1 4: 0	79/ 1/ 1 9: 0
119	79/ 1/ 1 6	AIREP	727	79/ 1/ 1 3: 1	79/ 1/ 1 9: 0
120	79/ 1/ 1 6	AIDS	211	79/ 1/ 1 3: 2	79/ 1/ 1 8:59
121	79/ 1/ 1 6	SYNOP	2404	79/ 1/ 1 4: 0	79/ 1/ 1 6: 0
		ASYNOP	2	79/ 1/ 1 6: 0	79/ 1/ 1 6: 0
122	79/ 1/ 1 6	SHIPFX	30	79/ 1/ 1 4: 0	79/ 1/ 1 9: 0
		SHIPMB	884	79/ 1/ 1 4: 0	79/ 1/ 1 9: 0
		BUOY	49	79/ 1/ 1 4: 0	79/ 1/ 1 9: 0
123	79/ 1/ 1 6	BATHY	13	79/ 1/ 1 4: 0	79/ 1/ 1 9: 0
		TESAC	1	79/ 1/ 1 4:56	79/ 1/ 1 4:56
124	79/ 1/ 1 6	DBUOY	217	79/ 1/ 1 3: 1	79/ 1/ 1 8:52
ALL	ALL	ALL	109041	78/12/28 22: 0	79/ 1/ 1 20:43

TOTAL # OF DATA FILES: 139
FGGE II-B SEARCH/LIST FROM INVENTORY COMPLETE

Figure 11. Sample INVENTORY Output (File Level)

To search a tape without inventorying it, the user must specify the tape ID and other search criteria as in the option for searching the inventory. The output is much the same as that of the previous option.

3.2 LOCATION PLOTS

The LOCATION PLOTS function allows users to obtain information about the spatial coverage of a data tape. A typical LOCATION PLOTS OPTIONS Menu is shown in Figure 12. It offers options for producing a spatial distribution chart or data coverage map (orbital path map for some data types). A spatial distribution chart lists the number of observations (scans/means) in specified files of a tape as a function of latitude and longitude. For BUV data, they may also be listed as a function of latitude and time. A data coverage map depicts the location of each observation of specified files of a tape on a latitude/longitude grid.

To produce a latitude/longitude distribution chart, the user specifies the ID of the tape to be processed, the location window (latitude/longitude ranges) of interest, the output device (terminal or printer), the parameters or sources of interest, the files of interest, and the grid size of the chart (1-by-1 degree grid, 2.5-by-2.5-degree grid, 4-by-5-degree grid, or 10-by-20-degree grid (default)). The output includes a header page, which contains information about the tape, such as the tape ID and the date the tape was created, and summary information about the data processed, such as the time range, the file range, the orbit range, and the total number of observations. A sample output for a BUV DTOZ tape is shown in Figure 13. The chart is output in strips if it is too large to fit along the width of one page or terminal screen.

To produce a latitude/time distribution chart (available only for BUV

MENU DISPLAY: CDAS$TAE:LOCSMMRP PAGE #1.

* SMMR PARM LOCATION PLOTS *

1) PRODUCE SPATIAL DISTRIBUTION CHART

2) PRODUCE DATA COVERAGE MAP (STANDARD OUTPUT)

3) PRODUCE DATA COVERAGE MAP (GRAPHICS OUTPUT)

4) EXIT TO FUNCTION MENU

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.

?

Figure 12. LOCATION PLOTS Menu

NIMBUS-4 BUV LOCATION PLOTS

DETAILED TOTAL OZONE (DTOZ)

TAPE ID: P8476
DATE TAPE CREATED: THU MAY 03,1979
TIME RANGE: 71/ 1/ 1 5:34:29 TO 71/ 1/ 1 21:58:20
FILE RANGE: 2 TO 11
ORBIT RANGE: 3696 TO 3705
TOTAL NUMBER OF SCANS: 776

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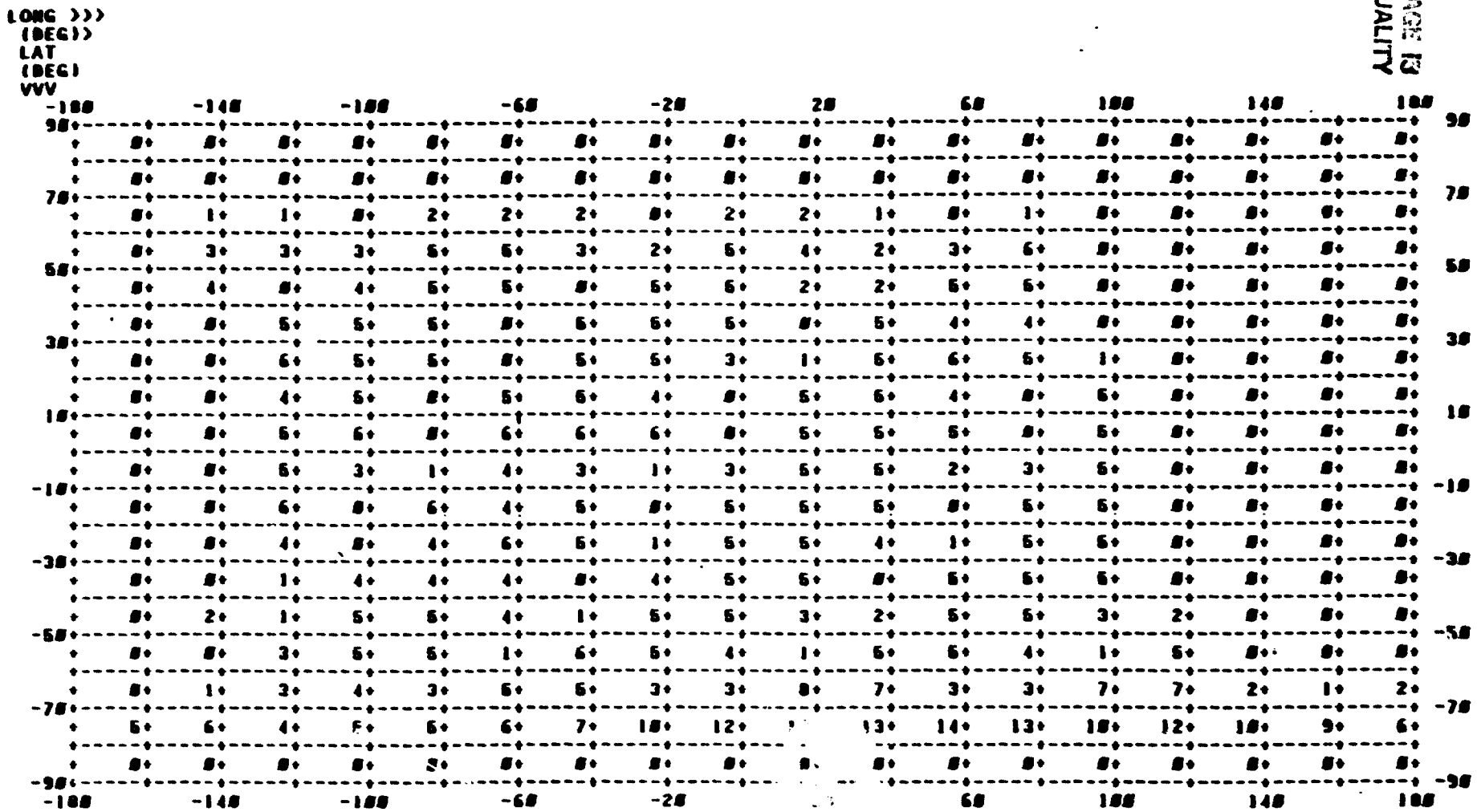

Figure 13. Sample Latitude/Longitude Distribution Chart

data), the user must specify the tape ID, data format, latitude range of interest, time range of interest, output device, files to be considered, and grid size for the output. The latitude may be displayed in units of 1 degree, 2.5 degrees, 4 degrees, or 10 degrees (default). The time may be displayed in units of 1 day, 7 days, or 28 days (default). The output includes a header page which contains information about the tape processed. If the chart is too large to fit along the width of the terminal screen or lineprinter, the chart is output in strips.

To produce a data coverage map, the user specifies the tape ID, location window of interest, files of interest, ouput device, and grid size (1-by-1-degree, 2.5-by-2.5-degree, 4-by-3-degree (default), or 4-by-5-degree). Figure 14 illustrates TAE tutors for these specifications. The output includes a header page, which contains information about the tape and a summary of data processed. Maps identify each observation's location by a character. ("A" indicates an observation in the first requested file/orbit, "B" in the second, and so on, up to "Z" for the 26th and all others; "*" indicates an observation from two or more files/orbits.) A sample data coverage map for a SMMR/FGGE tape is shown in Figure 15.

3.3 SELECT

The SELECT function allows a user to specify a set of criteria, such as time, location, geophysical parameter, and/or data source, and create a new data set containing only the data of interest. The selected data may be reformatted into a tabular structure and output to the user terminal, a disk file, or the system printer, or they may be output in the original format to a tape. The function offers several options, as indicated in the

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```
TUTOR DISPLAY:  COASSTAE:LOCSMMRP2                                  PAGE # 1+

        * SMMR PARM LOCATION PLOTS PRODUCE DATA COVERAGE MAP OPTION *

  KEY          DESCRIPTION                                  PARAMETER VALUE
  ---          -----------                                  ---------------

TAPE       TAPE ID

OUT        OUTPUT DEVICE:                                   "T"
             T(erminal) (Default)
             L(ineprinter)

GRID       GRID SIZE:                                                  3
             1) 1 x 1 degrees
             2) 2.5 x 2.5
             3) 4 x 3 (Default)
             4) 4 x 5

FILE       START FILE:                                                 2
           STOP FILE:                                                 15

LAT        LOWER LATITUDE(-90 to 90):                                -90
           UPPER LATITUDE(-90 to 90):                                 90

LONG       LOWER LONGITUDE(-180 to 180):                            -180
           UPPER LONGITUDE(-180 to 180):                             180

LOPRM      OCEAN PARAMETERS:                                           1
             1) SEA SURFACE WIND SPEED                                 2
             2) RAINFALL RATE                                          3
             3) TOT ATMOSPHERIC LIQ WATER                              4
             4) TOT ATMOSPHERIC WTR VAPOR                              5
             5) SEA SURFACE TEMPERATURE                                6
           LAND PARAMETERS:                                            7
             6) SOIL MOISTURE                                          8
             7) RAIN                                                   9
             8) OPEN WATER OVER LAND
             9) LAND SURFACE TEMPERATURE

ICEPRM     SEA ICE PARAMETERS:                                         1
             1) SEA ICE CONC (30km)                                    2
             2) SEA ICE CONC (60km)                                    3
             3) ICE FRACTION                                           4
             4) LIQUID WATER                                           5
             5) SURFACE TEMPERATURE

SICPRM     LAND SNOW PARAMETERS:                                       1
             1) DRY SNOW (Y/N)                                         2
             2) WATER FRACTION                                         3
             3) SURFACE TEMPERATURE                                    4
             4) SUBSFC TEMPERATURE                                     5
           ICE SHEET PARAMETERS:                                       6
             5) SNOW SUBSFC TEMP                                       7
             6) 1.7*A(1)*T(V) + B(1)*T(H)                              8
             7) 2.8*A(2)*T(V) + B(2)*T(H)
             8) SURFACE TEMPERATURE

Enter key=value, key=, key=?, key=??, RUN, HELP, or EXIT. Press RETURN to page.
?
```

Figure 14. LOCATION PLOTS Specifications

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PAGE II-8 LOCATION PLOTS

SHNR SEA SURFACE TEMPERATURE (SSTEMP)

TAPE ID: P9981
DATE TAPE CREATED: 1982
START SYNOPTIC TIME: 79/ 2/15 0
STOP SYNOPTIC TIME: 79/ 2/22 0
TIME RANGE: 79/ 2/15 0:23 TO 79/ 2/16 22: 0
FILE RANGE: 3 TO 7
TOTAL NUMBER OF OBSERVATIONS: 7813

DATA COVERAGE MAP LEGEND

A = OBSERVATION FROM FILE 3
B = OBSERVATION FROM FILE 4
C = OBSERVATION FROM FILE 5
D = OBSERVATION FROM FILE 6
E = OBSERVATION FROM FILE 7
* = OBESERVATION FROM TWO OR MORE FILES

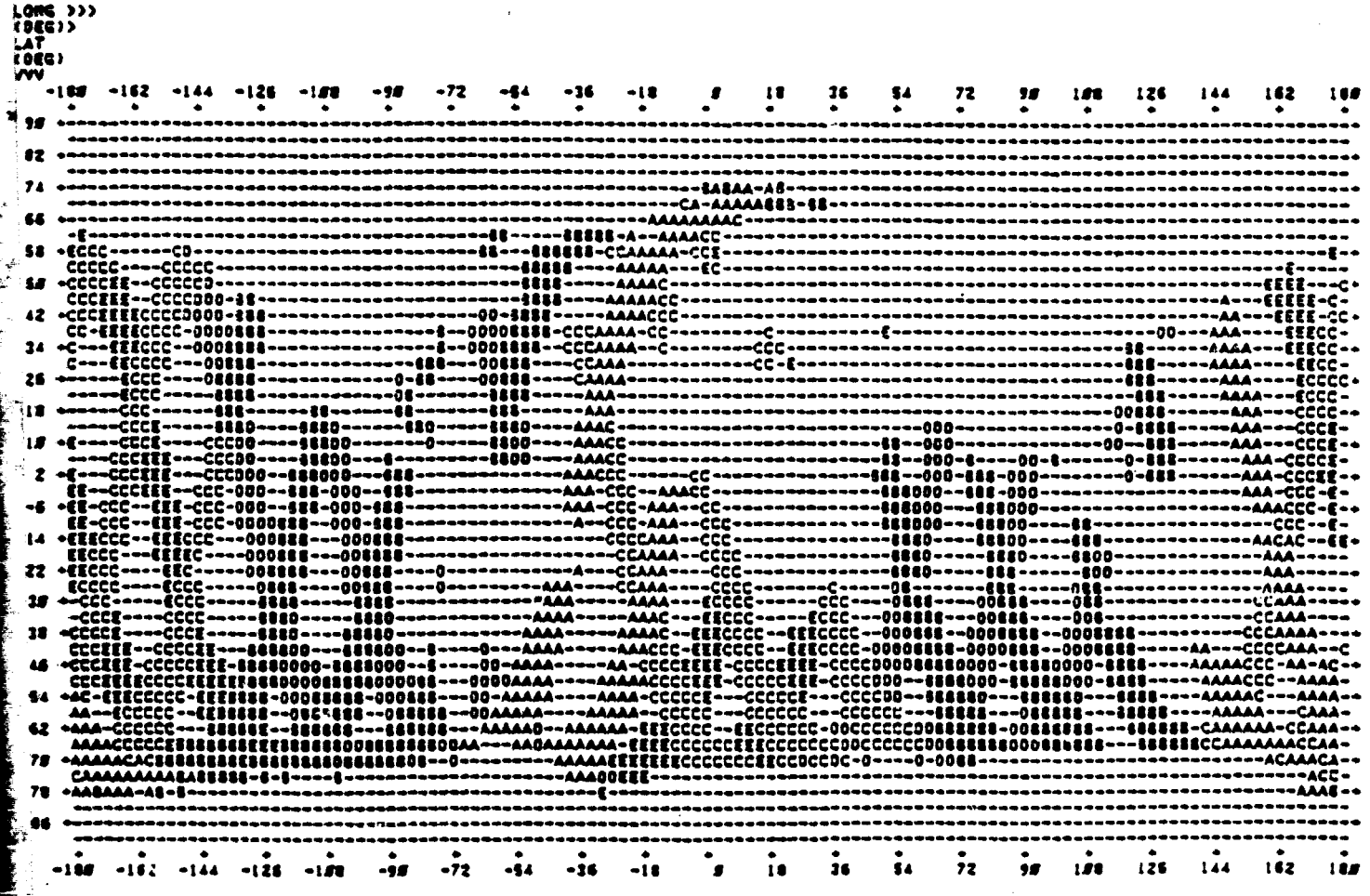

Figure 15. Sample Data Coverage Map

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MENU DISPLAY: COASSTAE:SELFG2B PAGE # 1.

* FGGE II-b SELECT *

1) DISPLAY LABEL OF DISK FILE

2) LIST DATA FROM DISK

3) LIST DATA FROM TAPE

4) CREATE DISK FILE

5) CREATE SUBSET TAPE

6) EXIT TO FUNCTION MENU

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
?

Figure 16. SELECT OPTIONS Menu

menu shown in Figure 16. These options allow the user to obtain a description of the latest disk file created by the function, to extract information from this SELECT disk file, to extract information directly from tape for display at the user terminal or output to the printer, to extract the data from tape and have them stored in a new SELECT disk file, or to output the new data set to tape in the original format.

At most one SELECT disk file is allowed for each data type, and this file is not currently designed for updates. Therefore, to create a new file for a particular data set, the old one is deleted. To get a description of those files currently existing, the user indicates in which file he is interested.

To obtain data from disk, the user specifies a time range, latitude and longitude range, and parameters and/or data sources of interest. The system then displays or prints a heading containing a legend for interpreting the data, the requested data, and a summary of the output.

To list data from tape, the user specifies the time range, the latitude and longitude ranges, and the parameters/data sources of interest. Some of these specifications are shown in Figure 17. The system then prompts for the ID of the first input tape. When the system has processed the tape, it prompts to determine whether the user wishes to select data from additional tapes using the same criteria. If so, the system prompts for the new tape ID and continues processing. When the user indicates that he does not wish to select data from additional tapes, the system outputs a summary of the selected data. A sample output is shown in Figure 18.

If the user wishes to create a new SELECT disk file (deleting the old one), he makes specifications as in the previous option, but the data are stored

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```
TUTOR DISPLAY:  CDASSTAE:SELFG283                                  PAGE # 1+

                * FGGE II-b SELECT LIST DATA FROM TAPE OPTION *

  KEY           DESCRIPTION                          PARAMETER VALUE
  ---           -----------                          ---------------

OUT         OUTPUT DEVICE:                              "T"
              T(erminal) (Default)
              L(ineprinter)
              B(oth)

LAT         LOWER LATITUDE(-90,90):                        -90
            UPPER LATITUDE(-90,90):                         90

LONG        LOWER LONGITUDE(-180,180):                    -180
            UPPER LONGITUDE(-180,180):                     180

START       START TIME (YY,MM,DD,HH,MM,SS):                 0
            (0 = earliest available)                        0
                                                            0
                                                            0
                                                            0
                                                            0

END         END TIME (YY,MM,DD,HH,MM,SS):                  99
            (99 = latest available)                        99
                                                           99
                                                           99
                                                           99
                                                           99

UPASRC      UPPER AIR SOURCES:                              1
              1) RAWINDSONDE                                2
              2) PILOT WIND                                 3
              3) TWOS RADAR SOUNDING                        4
              4) TWOS NAVAID SOUNDING                       5
              5) AIRCRAFT DROPWINDSONDE                     6
              6) CONSTANT LEVEL BALLOON                     7
              7) EXP SAT STRAT SOUNDING

ARCSRC      AIRCRAFT SOURCES:                               1
              1) ASDAR                                      2
              2) AIDS CASSETTE                              3
              3) CONVENTIONAL (AIREP)                       4
              4) CONVENTIONAL (CODAR)

SFCSRC      SURFACE/LAND MARINE SOURCES:                    1
              1) MANUAL LAND OBS (SYNOP)                    2
              2) AUTOMATIC LAND OBS (SYNOP)                 3
              3) FIXED SHIP OBS (SHIP)                      4
              4) MOBILE SHIP OBS (SHIP)                     5
              5) ENVIROMENTAL BUOY OBS

Enter key=value, key=, key=?, key=??, RUN, HELP, or EXIT. Press RETURN to page.
?
```

Figure 17. SELECT Specifications

```
                                    PGGE II-b SELECT
            NIMBUS-7 LIMB STRATOSPHERIC TEMPERATURE PROFILES (TEMPRF)

     SELECT CRITERIA:

       TIME RANGE OF INTEREST:    79/ 2/ 1 2#:2#: #  TO  79/ 2/ 1 2#:23: #

       LATITUDE RANGE (+=N,-=S):  -9#  TO  9#

       LONGITUDE RANGE (+=E,-=W): -18#  TO  18#

     PRESSURE TYPE LEGEND:  #2 - SIGNIFICANT LEVEL
                            1# - PGGE STANDARD LEVEL
                            12 - SIGNIFICANT AND STANDARD LEVEL

     QUALITY FLAG LEGEND:

         FIRST CHARACTER:    #  - CONTROL CHECK NOT MADE
                             1  - ERB OFF OR NOT SCANNING
                             2  - ERB ON AND SCANNING
         SECOND CHARACTER:   #  - CONTROL CHECK NOT MADE
                             1  - ESTIMATED REPEATABILITY #-1(DEG C)
                             2  - ESTIMATED REPEATABILITY 1-2(DEG C)
                             3  - ESTIMATED REPEATABILITY 2-3(DEG C)
                             4  - ESTIMATED REPEATABILITY 3-4(DEG C)
                             5  - ESTIMATED REPEATABILITY 4-6(DEG C)
                             6  - ESTIMATED REPEATABILITY 5-6(DEG C)
                             7  - ESTIMATED REPEATABILITY > 6(DEG C)

TAPE ID: P#168                                          DATE TAPE CREATED:
START SYNOPTIC TIME: 79/ 2/ 1  #                        STOP SYNOPTIC TIME: 79/ 2/28 18
```

TIME YY/MM/DD HH:NN	LAT (.#1 DEG) +N,-S	LONG +E,-W	PRESSURE TYPE	PRESSURE LEVEL (.1 MB)	TEMPERATURE (.1 DEG C)	QUALITY FLAG
79/ 2/ 1 2#:2#	6423	3873	#2	2137	-69#	##
			1#	2###	-589	##
			1#	15##	-586	##
			1#	1###	-579	##
			#2	826	-572	##
			1#	7##	-562	##
			1#	5##	-535	##
			#2	327	-48#	##
			1#	3##	-471	##
			1#	2##	-348	##
			#2	139	-18#	##
			1#	1##	-145	##
			#2	64	-96	##
			#2	29	-151	##
			#2	13	-226	##
			#2	6	-393	##
			#2	2	-619	##
79/ 2/ 1 2#:21	6#29	3695	#2	2##7	-631	##
			1#	2###	-631	##
			1#	15##	-628	##
			1#	1###	-619	##
			#2	763	-611	##
			1#	7##	-6#7	##
			1#	5##	-592	##
			1#	3##	-557	##
			#2	295	-557	##
			1#	2##	-453	##
			#2	123	-2#4	##
			1#	1##	-16#	##
			#2	57	11	##
			#2	28	74	##
			#2	13	6	##
			#2	6	-248	##
			#2	3	-488	##
			#2	1	-551	##
79/ 2/ 1 2#:22	5632	3769	#2	2113	-665	##
			1#	2###	-564	##
			1#	15##	-562	##
			1#	1###	-555	##
			#2	826	-546	##
			1#	7##	-533	##
			1#	5##	-505	##
			#2	332	-385	##
			1#	3##	-352	##
			1#	2##	-325	##
			#2	143	-256	##
			1#	1##	-21#	##
			#2	64	-2#9	##
			#2	29	-26	##
			#2	14	-234	##
			#2	6	-344	##
			#2	2	-62#	##

TOTAL NUMBER OF OBSERVATIONS SELECTED : 3

Figure 18. Sample SELECT Output

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on disk for further use instead of being listed at the terminal or line printer.

If the user wishes to create a subset tape, he makes specifications as above, but the selected data are stored on tape in the same format as the original data tape. Therefore, the subset tapes created by this option can be used in any CDAS function allowing tape input.

3.4 Summary of Capabilities

It is expected that users may wish to perform several different CDAS functions for one data type. Appendix A provides one possible scenario for using the capabilities of CDAS to obtain FGGE II-b data. The examples in the appendix show how a user might use INVENTORY, LOCATION PLOTS, and SELECT for FGGE II-b data, but all of these functions need not be used to obtain information from the system.

4. Future Enhancements

The data management system described in this report is utilized to support data requests of both in-house researchers and investigators funded under the Applications Notice distributed by the NASA GARP Project Office. Based upon the requirements of these users, new capabilities may be added, including both new functions and new data types. Possible enhancements were mentioned in the introduction.

The IED is now developing a more extensive data management system, the Pilot Climate Data Base Management System (PCDBMS). The long term objectives of the PCDBMS are to provide a comprehensive data catalog/inventory, a useful data base management system to support satellite weather and climate data, and related data access and manipulation capabilities. Plans also include a tie-in to other related data systems which can support climate research. Catalog, inventory, and data access capabilities now exist for several data types. The user interfaces to this system are provided by TAE. The capabilities described here are much the same as those of CDAS, in somewhat enhanced form, and the IED is incorporating some CDAS software (especially tape-read routines) within this system.

Acknowledgements

The author wishes to acknowledge the valuable contributions to the CDAS design and implementation of Dr. Manju Bewtra, Mr. Mike Kozlowski, Mr. Todd Ross, Mr. Ben Robinson, Mr. Mark Allen, and Mr. Ken Young, all of Computer Sciences Corporation.

The author also wishes to thank those in the Information Management Branch who have contributed to the development of the system and reviewed this document. Special thanks to Ms. Karen Posey, in her role as head of the Data Management Section, for her valuable support and direction.

Many of the illustrations used in this report were prepared by Computer Sciences Corproation for the Climate Data Access System (CDAS) User's Guide (reference 18), a document written jointly by personnel from CSC and GSFC.

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GLOSSARY

Acronym	Description
AOIPS	Atmospheric and Oceanographic Information Processing System
BUV	Backscatter Ultraviolet Experiment
CPFL	Compressed Profiles
CTOZ	Compressed Total Ozone
CSC	Computer Sciences Corporation
DEC	Digital Equipment Corporation
DPFL	Detailed Profiles
DTOZ	Detailed Total Ozone
DRS	Data Retrieval System
DZM	Daily Zonal Means
DZP	Daily Zonal Profiles
EDS	Enviromental Data Services
FGGE	First GARP Global Experiment
GARP	Global Atmospheric Research Program
GISS	Goddard Institute for Space Sciences
GLAS	Goddard Laboratory for Atmoshperic Sciences
GSFC	Goddard Space Flight Center
GSFT	Geography Season Filter Tape
GWE	Global Weather Experiment
HIRS	High Resolution Infrared Radiometer Sounder
ICSU	International Council of Scientific Unions
IED	Information Extraction Division
ILT	Image Location Tape
LIMS	Limb Infrared Monitor of the the Stratosphere
MSU	Microwave Sounding Unit
NCAR	National Center for Atmospheric Research
NCC	National Climatic Center
NESS	National Enviromental Satellite Service
NMC	National Meteorological Center
NOAA	National Oceanic and Atmospheric Administration
NOPS	Nimbus Observation Processing System
NWS	National Weather Service
OPT	Ozone Processing Team
PCDBMS	Pilot Climate Data Base Management System
PDB	Primary Data Base
SBUV	Solar Backscatter Ultraviolet Instrument
SMMR	Scanning Multichannel Microwave Radiometer
SOP	Special Observing Period
SSU	Stratospheric Sounding Unit
TAE	Transportable Applications Executive
TAT	Temperature of Antenna Tapes
TOMS	Total Ozone Mapping Spectrometer
TOVS	TIROS Operational Vertical Sounder
UFO	User-Formatted Output
WDC-A	World Data Center-A (Meteorology)
WMC	World Meteorological Center
WMO	World Meteorological Organization
WWW	World Weather Watch

APPENDIX A

User Scenario

It is expected that users may wish to perform several different CDAS functions for one data type. The information in this appendix provides one possible scenario for using the capabilities of CDAS to obtain FGGE II-b data. The examples show how a user might use INVENTORY, LOCATION PLOTS, and SELECT for FGGE II-b data, but all of these functions need not be used to obtain information from the system.

In the sample scenario, rawindsonde data (wind components) for the North Atlantic region for January 19, 1979, is obtained. The left side of each page shows the expected display at the terminal; the right side provides additional comments. User inputs are underlined. (Note that all input must be followed by <CR>.)

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PAGE A-2 INTENTIONALLY BLANK

```
Username: REPH
Password:
        Welcome to VAX/VMX Version V2.5

     ****************************************
      ***<<<PCDBMS Development Facility>>>***
       ************************************
                        o
                        o
                        o

$ @[CDAS]MAIN

ENTER TERMINAL TYPE (VT1##,VT52,T4#27,OTHER) ? _

Transportable Applications Executive Prototype

      Version 3.2###

Product of NASA/Goddard Space Flight Center Code 933

   CCCCCCCC  DDDDDDDD      AAAAAA      SSSSSSSS
   CCCCCCCC  DDDDDDDD     AAAAAA       SSSSSSSS
 CC          DD      DD  AA      AA  SS
 CC          DD      DD  AA      AA  SS
 CC          DD      DD  AA      AA  SS
 CC          DD      DD  AA      AA  SS
 CC          DD      DD  AA      AA    SSSSSS
 CC          DD      DD  AA      AA    SSSSSS
 CC          DD      DD  AAAAAAAAAA          SS
 CC          DD      DD  AAAAAAAAAA          SS
 CC          DD      DD  AA      AA          SS
 CC          DD      DD  AA      AA          SS
   CCCCCCCC  DDDDDDDD    AA      AA    SSSSSSS
   CCCCCCCC  DDDDDDDD    AA      AA    SSSSSSS
```

A-4

The user signs on to the VAX. (The password is not echoed at the terminal.) Then he starts the CDAS.

The user enters his terminal type.

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```
MENU DISPLAY:  TAESMENU:ROOT.MDF                          PAGE # 1.

                        CLIMATE DATA ACCESS SYSTEM

                              FUNCTION MENU

    1)      INVENTORY

    2)      LOCATION PLOTS

    3)      SELECT


          For function descriptions use HELP FUNCTIONS.
          For database descriptions use HELP DATABASE.


Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? 1
```

The user first determines which of the FGGE II-b data tapes are of interest by performing the INVENTORY function.

```
MENU DISPLAY:  CDASSTAE:INV                               PAGE # 1

                        CLIMATE DATA ACCESS SYSTEM

                              DATA TYPE MENU

    1)      SMMR PARM

    2)      SMMR MAP

    3)      BUV

    4)      FGGE II-b

    5)      FGGE III-a

          For database descriptions use HELP DATABASE.


Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? 4
```

The user specifies the data type of interest.

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TUTOR DISPLAY: CDASSTAE:INVFG2B PAGE # 1.

* FGGE II-b INVENTORY *

THIS PROC HAS NO PARAMETERS

Enter RUN, HELP, or EXIT.
? RUN

The user issues the RUN command.

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```
------------------------------ FGGE II-B INVENTORY --------------------
-----------------------------------------------------------------------

                          INVENTORY STATUS

    MASTER:        EXISTS              STATUS IS NORMAL
    SECONDARY:     EXISTS              STATUS IS NORMAL



 TO CONTINUE, ENTER <CR>; TO RETURN TO CDAS MAIN MENU, ENTER -1: _
```

Since the inventory status indicates that the inventories are available, the user enters <CR> to continue with the function.

```
------------------------------ FGGE II-B INVENTORY --------------------
                                                          OPEN=NONE
-----------------------------------------------------------------------

                  **     INVENTORY OPTIONS     **

            1....HELP
            2....INSERT          (INVENTORY A TAPE)
            3....MODIFY A TAPE'S INVENTORY ENTRY
            4....DELETE          (REMOVE A TAPE FROM INVENTORY)
            5....SEARCH AND LIST FROM TAPE
            6....SEARCH AND LIST FROM INVENTORY
            7....RETURN TO CDAS MAIN MENU

                 ENTER REQUEST: 6
```

The user requests the SEARCH AND LIST (INVENTORY) option.

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```
------------------------------ FGGE II-B INVENTORY --------------------
FH=SEARCH/LIST(INV)                                          OPEN=NONE
-----------------------------------------------------------------------

                        CURRENT SEARCH CRITERIA

    1. TAPE ID = NO RESTRICTION
    2. TAPE FORMAT =   SSTEMP SSWIND WTRVAP TEMPRF SOUND  RESTRC
    3. DATA SOURCE(S) =  ALL
    4. INVENTORY = MASTER
    5. DATA DATE/TIME:
         START = EARLIEST                STOP = LATEST
    6. ENTRY DATE/TIME:
         START = EARLIEST                STOP = LATEST
    7. TAPE LOCATION = NO RESTRICTION
    8. SEARCH LEVEL = TAPE LEVEL
    9. REPORT LEVEL = REPORT EACH ENTRY
    10. OUTPUT DEVICE =TERMINAL ONLY

    SELECT DESIRED ACTION:  -1 = ABORT SEARCH/LIST FROM INVENTORY
                             N = RESET CRITERIA #N
                          <CR> = TO RUN SEARCH/LIST FROM INVENTORY
                         SELECTION > 2
```

The user requests to reset the data format criteria.


```
------------------------------ FGGE II-B INVENTORY --------------------
FH=SEARCH/LIST(INV)                                          OPEN=NONE
-----------------------------------------------------------------------

                      TAPE FORMAT(S) SELECT

    DEFAULT: A <CR> RESETS THE TAPE FORM TO "ALL"

    ENTER LIST OF FORMATS BY NUMBEOVER WHICH SEARCH IS TO BE
    CARRIED OUT, ACCORDING TO:                    1 = SSTEMP
                                                  2 = SSWIND
                                                  3 = WTRVAP
                                                  4 = TEMPRF
                                                  5 = SOUNDINGS
                                                  6 = RESTRUCTURED (MAIN)

    SEARCH/LIST WILL BE CONDUCTED IN THE ORDER OF ENTRY
    EXAMPLE: TO SELECT SSWIND,SSTEMP, AND TEMPRF ENTER 2,1,4
                                                  SELECTION > 6
 YOU MUST SELECT DATA SOURCE(S) FOR RESTRUCTURED TAPE
 ENTER <CR> TO CONTINUE: _
```

The user specifies the Restructured format.

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```
                        ************************
                        *FGGE II-b DATA SOURCES*
                        ************************
     Enter -1<CR> to return to options menu for current function.
     Default <CR> = All Sources.

     1.HELP
       *UPPER AIR*            *SURF/LAND MARINE*    *OCEANOGRAPHIC*
     2.Rawindsonde          13.Man Sr Ln(SYNOP)    23.Oceangrpc(BATHY)
     3.Pilot Wind           14.Aut Sr Ln(SYNOP)    24.Oceangrpc(TESAC)
     4.Twos Radar Sound     15.Sur Fix (SHIP)      25.Oceangrpc(X-BT)
     5.Twos Navaid Sond     16.Sur Mob (SHIP)      26.Oceangrpc(MBT)
     6.Aircrft Drpwndsd     17.Sur Env Buoys       27.Oceangrpc(STD/CTD)
     7.Const Lev Bal           *SATELLITE SOUND*   28.Ocean(Serial Dep)
     8.Exp Sat Strat Sd     18.Sat Sounding        29.Oceangrpc(BUOY)
       *AIRCRAFT*              *SAT CLEAR RAD*        *DRIFTING BUOY*
     9.ASDAR                19.Sat Clear Rad       30.Drifting Buoy
     10.Aids Cassette          *SAT WIND/SSTEMP*      *SAT SSWND/ATM WAT*
     11.Conv (AIREP)        20.Sat Wind            31.Sea Surf Wind Spd
     12.Conv (CODAR)        21.Sat Cloud           32.Tot Atm Water Vap
                            22.Sat Sea Sur Temp

     ENTER NUMBER(S) FOR DATA TYPE(S) > 2

   YOU HAVE SELECTED THE FOLLOWING DATA SOURCES:
     2

   ENTER <CR> TO CONTINUE OR -3<CR> TO REPEAT  MENU > _
```

The user specifies rawindsonde data.

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```
---------- FGGE II-B INVENTORY ----------

                    CURRENT SEARCH CRITERIA

  1. TAPE ID = NO RESTRICTION
  2. TAPE FORMAT =   RESTRC
  3. DATA SOURCE(S) = AS SELECTED BY USER
  4. INVENTORY = MASTER
  5. DATA DATE/TIME:
       START = EARLIEST              STOP = LATEST
  6. ENTRY DATE/TIME:
       START = EARLIEST              STOP = LATEST
  7. TAPE LOCATION = NO RESTRICTION
  8. SEARCH LEVEL = TAPE LEVEL
  9. REPORT LEVEL = REPORT EACH ENTRY
  10. OUTPUT DEVICE =TERMINAL ONLY

  SELECT DESIRED ACTION:  -1 = ABORT SEARCH/LIST FROM INVENTORY
                           N = RESET CRITERIA #N
                       <CR> = TO RUN SEARCH/LIST FROM INVENTORY
                       SELECTION > 5
```

The user requests to reset the data date/time parameter.

```
---------- FGGE II-B INVENTORY ----------

                    DATA DATE/TIME SELECT

  DEFAULTS: <CR> RESETS START TO "EARLIEST" CONSISTENT WITH
                              OTHER ACTIVE SPECIFICATIONS
            <CR> RESETS STOP TO "LATEST" CONSISTENT WITH OTHER
                              ACTIVE SPECIFICATIONS

  FORMAT FOR DATE: 1979 JAN 12 = 79,1,12 (EXAMPLE)
  FORMAT FOR TIME: 14:40 UT = 14,40 (EXAMPLE)

      START DATE > 79,1,19
      START TIME > 8,0
      STOP DATE > 79,1,19
      STOP TIME > 12,0
```

The user specifies the date and time for which data are desired.

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```
------------------------- FGGE II-B INVENTORY -------------------------
-----------------------------------------------------------------------

                      CURRENT SEARCH CRITERIA

    1. TAPE ID = NO RESTRICTION
    2. TAPE FORMAT =   RESTRC
    3. DATA SOURCE(S) = AS SELECTED BY USER
    4. INVENTORY = MASTER
    5. DATA DATE/TIME:
         START = 79/ 1/19   0: 0: 0     STOP = 79/ 1/19  12: 0: 0
    6. ENTRY DATE/TIME:
         START = EARLIEST               STOP = LATEST
    7. TAPE LOCATION = NO RESTRICTION
    8. SEARCH LEVEL = TAPE LEVEL
    9. REPORT LEVEL = REPORT EACH ENTRY
    10. OUTPUT DEVICE =TERMINAL ONLY

    SELECT DESIRED ACTION:  -1 = ABORT SEARCH/LIST FROM INVENTORY
                             N = RESET CRITERIA #N
                        <CR> = TO RUN SEARCH/LIST FROM INVENTORY
                        SELECTION > 8
```

The user requests to reset the search level criteria.

```
------------------------- FGGE II-B INVENTORY -------------------------
-----------------------------------------------------------------------

                    SEARCH LEVEL SELECTION

    DEFAULT: <CR> RESETS SEARCH   LEVEL TO "TAPE" LEVEL

    SEARCH LEVEL, ACCORDING TO:
                                    1 = TAPE LEVEL
                                    2 = FILE LEVEL
                                          SELECTION > 2
```

The user specifies a search at the file level.

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```
------------------------ FGGE II-B INVENTORY -------------------------
-----------------------------------------------------------------------

                      CURRENT SEARCH CRITERIA

    1. TAPE ID = NO RESTRICTION
    2. TAPE FORMAT =   RESTRC
    3. DATA SOURCE(S) = AS SELECTED BY USER
    4. INVENTORY = MASTER
    5. DATA DATE/TIME:
       START = 79/ 1/19   0: 0: 0     STOP = 79/ 1/19  12: 0: 0
    6. ENTRY DATE/TIME:
       START = EARLIEST               STOP = LATEST
    7. TAPE LOCATION = NO RESTRICTION
    8. SEARCH LEVEL = FILE LEVEL
    9. REPORT LEVEL = REPORT EACH ENTRY
    10. OUTPUT DEVICE =TERMINAL ONLY

    SELECT DESIRED ACTION:  -1 = ABORT SEARCH/LIST FROM INVENTORY
                             N = RESET CRITERIA #N
                         <CR> = TO RUN SEARCH/LIST FROM INVENTORY
                        SELECTION > _
```

Since the current search criteria are satisfactory, the user enter <CR> to execute the option.

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```
                        **RESTRUCTURED TAPE**

TAPE ID: P##14                                DATE CREATED:   198#- 2-1#
ARCHIVE: PCDBMS     ARCHIVER: CLEVELAND       DATE ARCHIVED:   82/ 4/13 13:#
START SYNOPTIC TIME: 79/ 1/18  #              END SYNOPTIC TIME: 79/ 1/21  18
-----------------------------------------------------------------------
 FILE # SYNOPTIC TIME  DATA    # OF START TIME OF DATA END TIME OF DATA
        YY/MM/DD/HH  SOURCE  OBSV.  YY/MM/DD/HH:MM     YY/MM/DD/HH:MM
-----------------------------------------------------------------------
   6#    79/ 1/19  6  RAWSON     67  79/ 1/19  4: #    79/ 1/19  9: #
                      PILOT     442  79/ 1/19  4: #    79/ 1/19  9: #
   72    79/ 1/19 12  RAWSON     772  79/ 1/19 1#: #    79/ 1/19 16: #
                      PILOT     561  79/ 1/19 1#: #    79/ 1/19 14: #
  ALL      ALL        ALL     277899 79/ 1/17 22: #    79/ 1/21 2#:48
-----------------------------------------------------------------------
TOTAL # OF DATA FILES:    19#
FGGE II-B SEARCH/LIST FROM INVENTORY COMPLETE
HIT <CR> TO CONTINUE _
```

The user notes the ID of tape meeting his specifications and the files of the tape containing data of interest.

```
---------------------------- FGGE II-B INVENTORY --------------------
--------------------------------------------------------------------

                          INVENTORY STATUS

     MASTER:        EXISTS              STATUS IS NORMAL
     SECONDARY:     EXISTS              STATUS IS NORMAL



 TO CONTINUE, ENTER <CR>; TO RETURN TO CDAS MAIN MENU, ENTER -1: -1

---------------------------- FGGE II-B INVENTORY --------------------
--------------------------------------------------------------------

                          ++ EXIT INVFG2B ++

PRESS RETURN KEY FOR MENU _
```

Because the user has determined which data tapes are of interest, he returns to TAE.

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MENU DISPLAY: CDASSTAE:INV

PAGE # 1.

The user requests to return to the function menu.

CLIMATE DATA ACCESS SYSTEM

DATA TYPE MENU

1) SMMR PARM

2) SMMR MAP

3) BUV

4) FGGE II-b

5) FGGE III-a

For database descriptions use HELP DATABASE.

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? BACK

ORIGINAL PAGE IS
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MENU DISPLAY: TAESMENU:ROOT.MBF

PAGE # 1.

The user requests the LOCATION PLOTS function in order to obtain information about the coverage of data on the tape of interest.

CLIMATE DATA ACCESS SYSTEM

FUNCTION MENU

1) INVENTORY

2) LOCATION PLOTS

3) SELECT

For function descriptions use HELP FUNCTIONS.
For database descriptions use HELP DATABASE.

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? 2

MENU DISPLAY: CDASSTAE:LOC

PAGE # 1.

The user specifies the data type of interest.

CLIMATE DATA ACCESS SYSTEM

DATA TYPE MENU

1) SNMR PARM

2) BUV

3) FGGE II-b

For database descriptions use HELP DATABASE.

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? 1

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TUTOR DISPLAY: CDASSTAE:LOCFG2B

PAGE # 1.

The user issues the RUN command.

* FGGE II-b LOCATION PLOTS *

THIS PROC HAS NO PARAMETERS

Enter RUN, HELP, or EXIT.
? RUN

---------- FGGE II-B LOCATION PLOTS ----------

*** LOCATION PLOTS OPTIONS **

1. HELP
2. PRODUCE DISTRIBUTION CHART
3. PRODUCE DATA COVERAGE MAP
4. RETURN TO CDAS MAIN MENU

SELECTION > 3

The user requests the option for producing a data coverage map.

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```
---------- FGGE II-B LOCATION PLOTS ----------
 FN = DATA COVERAGE MAP
-----------------------------------------------------------------

   ANY -1 RESPONSE RETURNS TO FGGE II-B LOCATION PLOTS MENU

   6 CHARACTER TAPE ID:                                  > P0814

   LATITUDE RANGE: XXX,YYY
        WHERE XXX IS THE LOWER BOUND (-90 TO 90)
          AND YYY IS THE UPPER BOUND (-90 TO 90)
        DEFAULT: -90 TO 90

                                                  RANGE > 40,75

   LONGITUDE RANGE: XXXX,YYYY
        WHERE XXXX IS THE LOWER BOUND (-180 TO 180)
          AND YYYY IS THE UPPER BOUND (-180 TO 180)
        DEFAULT: -180 TO 180

                                                  RANGE > 20,75
```

The user specifies the tape ID, a latitude range of interest, and a longitude range of interest.

```
---------- FGGE II-B LOCATION PLOTS ----------
 FN = DATA COVERAGE MAP
-----------------------------------------------------------------

   ANY -1 RESPONSE RETURNS TO FGGE II-B LOCATION PLOTS MENU

   OUTPUT DEVICE:
                  1. TERMINAL (DEFAULT)
                  2. LINE PRINTER
                  3. GRAPHICS TERMINAL

                                              SELECTION > 1

   FILE RANGE: XXXX,YYYY
        WHERE XXXX IS THE START FILE (XXXX > 1)
          AND YYYY IS THE STOP FILE (YYYY > 1)
        DEFAULT: ALL DATA FILES

                                                  RANGE > 62,72
```

The user specifies that the map should be displayed at the terminal. The inventory listing indicates that files 62 and 72 contain data of interest; therefore, the user enters a file range containing these files.

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```
------------------------ FGGE II-B LOCATION PLOTS ---------------------
  FN = DATA COVERAGE MAP
-----------------------------------------------------------------------

    ANY -1 RESPONSE RETURNS TO FGGE II-B LOCATION PLOTS MENU

    RESOLUTION:
                    1. 1 X 1 DEGREES

                    2. 2.5 X 2.5 DEGREES

                    3. 4 X 3 DEGREES (DEFAULT)

                    4. 4 X 5 DEGREES
                                                SELECTION > 1

      INPUT TAPE P##14  MOUNTED ON DRIVE _MTA#:
```

Because the user has chosen a small window, he may choose a small resolution. Therefore, he requests the 1-by-1-degree resolution.

The system indicates which tape drive is being used.

```
                        **************************
                        *FGGE II-b DATA SOURCES*
                        **************************
    Enter -1<CR> to return to options menu for current function.
    Default <CR> = All Sources.

    1.HELP
      *UPPER AIR*              *SURF/LAND MARINE*     *OCEANOGRAPHIC*
    2.Rawindsonde          13.Man Sr Ln(SYNOP)    23.Oceangrpc(BATHY)
    3.Pilot Wind           14.Aut Sr Ln(SYNOP)    24.Oceangrpc(TESAC)
    4.Twos Radar Sound     15.Sur Fix (SHIP)      25.Oceangrpc(X-BT)
    5.Twos Navaid Sond     16.Sur Mob (SHIP)      26.Oceangrpc(MBT)
    6.Aircrft Drpwndsd     17.Sur Env Buoys       27.Oceangrpc(STD/CTD)
    7.Const Lev Bal           *SATELLITE SOUND*   28.Ocean(Serial Dep)
    8.Exp Sat Strat Sd     18.Sat Sounding        29.Oceangrpc(BUOY)
      *AIRCRAFT*              *SAT CLEAR RAD*        *DRIFTING BUOY*
    9.ASDAR                19.Sat Clear Rad       3#.Drifting Buoy
    1#.Aids Cassette          *SAT WIND/SSTEMP*      *SAT SSWND/ATM WAT*
    11.Conv (AIREP)        2#.Sat Wind            31.Sea Surf Wind Spd
    12.Conv (CODAR)        21.Sat Cloud           32.Tot Atm Water Vap
                           22.Sat Sea Sur Temp

    ENTER NUMBER(S) FOR DATA TYPE(S) > 2

    YOU HAVE SELECTED THE FOLLOWING DATA SOURCES: 2

    ENTER <CR> TO CONTINUE OR -3<CR> TO REPEAT  MENU > __

 PROCESSING.....
```

The system notes that the requested tape is a Restructured tape, containing many data sources. Therefore, the system prompts the user for the data sources of interest.

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RESTRUCTURED TAPE

```
TAPE ID:                        P##14
DATE TAPE CREATED:              198#- 2-1#
START SYNOPTIC TIME:            79/ 1/18  #
STOP SYNOPTIC TIME:             79/ 1/21 18
TIME RANGE:                     79/ 1/19  6: # TO 79/ 1/19 12: #
FILE RANGE:                     6# TO   72
TOTAL NUMBER OF OBSERVATIONS:    126
DATA SOURCES REQUESTED:  RAWSON
```

The system displays summary information about the tape and the data processed and a legend for interpretting the map.

DATA COVERAGE MAP LEGEND

```
A = OBSERVATION FROM FILE   6#
B = OBSERVATION FROM FILE   72
* = OBESERVATION FROM TWO OR MORE FILES
```

PRESS <CR> TO CONTINUE:__

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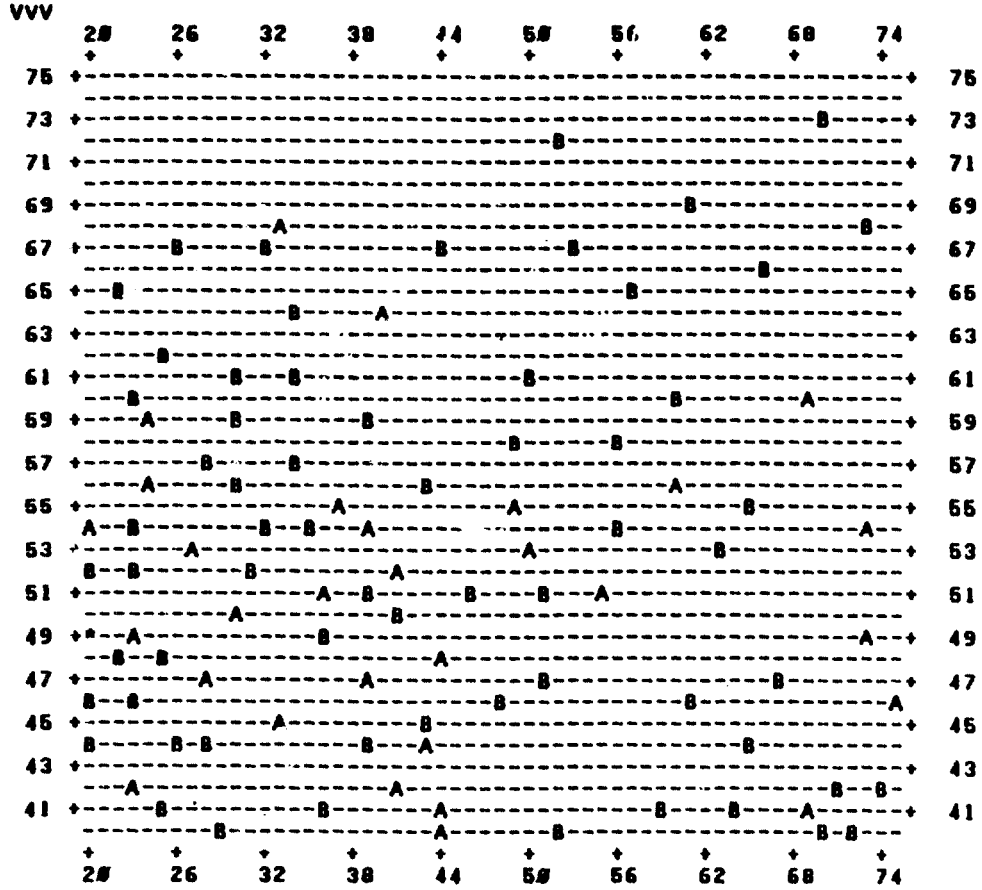
FGGE II-B LOCATION PLOTS



PRESS <CR> TO CONTINUE: _

The user now studies the map to determine any areas of special interest. When he is finished, he presses <CR> to continue.

ORIGINAL PAGE IS
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---------- FGGE II-B LOCATION PLOTS ----------

*** LOCATION PLOTS OPTIONS **

1. HELP
2. PRODUCE DISTRIBUTION CHART
3. PRODUCE DATA COVERAGE MAP
4. RETURN TO CDAS MAIN MENU

SELECTION > 4

PRESS RETURN KEY FOR MENU __

The user indicates that he has completed this option.

MENU DISPLAY: CDASSTAE:LOC PAGE # 1.

CLIMATE DATA ACCESS SYSTEM

DATA TYPE MENU

1) SHMR PARM

2) BUV

3) FGGE II-b

For database descriptions use HELP DATABASE.

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? BACK

The user indicates that he wants to return to the function menu.

ORIGINAL PAGE IS
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MENU DISPLAY: TAESMENU:ROOT.MDF

PAGE # 1.

To obtain some actual data, the user requests the SELECT function.

CLIMATE DATA ACCESS SYSTEM

FUNCTION MENU

1) INVENTORY

2) LOCATION PLOTS

3) SELECT

For function descriptions use HELP FUNCTIONS.
For database descriptions use HELP DATABASE.

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? 3

MENU DISPLAY: CDASSTAE:SEL

PAGE # 1.

The user specifies the data type.

CLIMATE DATA ACCESS SYSTEM

DATA TYPE MENU

1) SMMR PARM

2) FGGE II-b

3) FGGE III-a

For database descriptions use HELP DATABASE.

Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? 2

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```
MENU DISPLAY:  CDASSTAE:SELFG2B                          PAGE # 1.

                        * FGGE II-b SELECT *

1)  DISPLAY LABEL OF DISK FILE
2)  LIST DATA FROM DISK
3)  LIST DATA FROM TAPE
4)  CREATE DISK FILE
5)  CREATE SUBSET TAPE
6)  EXIT TO FUNCTION MENU


Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? 1
```

The user requests the option for listing data from tape.

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```
TUTOR DISPLAY:  CDASSTAE:SELFG2B3                                PAGE # 1+

                * FGGE II-b SELECT LIST DATA FROM TAPE OPTION *

  KEY           DESCRIPTION                                  PARAMETER VALUE
  ---           -----------                                  ---------------

OUT         OUTPUT DEVICE:                                   "T"
              T(erminal) (Default)
              L(ineprinter)
              B(oth)

LAT         LOWER LATITUDE(-90,90):                          -90
            UPPER LATITUDE(-90,90):                           90

LONG        LOWER LONGITUDE(-180,180):                      -180
            UPPER LONGITUDE(-180,180):                       180

Enter key=value, key=, key=?, key=??, RUN, HELP, or EXIT. Press RETURN to page.
? LAT=45,60
? LONG=20,25
? _
```

The user limits the latitude and longitude ranges appropriately.


```
TUTOR DISPLAY:  CDASSTAE:SELFG2B3                                PAGE # 1+

                * FGGE II-b SELECT LIST DATA FROM TAPE OPTION *

  KEY           DESCRIPTION                                  PARAMETER VALUE
  ---           -----------                                  ---------------

START       START TIME (YY,MM,DD,HH,MM,SS):                          0
            (0 = earliest available)                                 0
                                                                     0
                                                                     0
                                                                     0
                                                                     0

END         END TIME (YY,MM,DD,HH,MM,SS):                           99
            (99 = latest available)                                 99
                                                                    99
                                                                    99
                                                                    99
                                                                    99

Enter key=value, key=, key=?, key=??, RUN, HELP, or EXIT. Press RETURN to page.
? START=79,1,19,0,0,0
? END=79,1,19,12,0,0
? _
```

The user specifies the time range of interest.

ORIGINAL PAGE IS
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TUTOR DISPLAY: CDAS$TAE:SELFG2B3 PAGE # 3

* FGGE II-b SELECT LIST DATA FROM TAPE OPTION *

KEY	DESCRIPTION	PARAMETER VALUE
UPASRC	UPPER AIR SOURCES:	1
	1) RAWINDSONDE	2
	2) PILOT WIND	3
	3) TWOS RADAR SOUNDING	4
	4) TWOS NAVAID SOUNDING	5
	5) AIRCRAFT DROPWINDSONDE	6
	6) CONSTANT LEVEL BALLOON	7
	7) EXP SAT STRAT SOUNDING	
ARCSRC	AIRCRAFT SOURCES:	1
	1) ASDAR	2
	2) AIDS CASSETTE	3
	3) CONVENTIONAL (AIREP)	4
	4) CONVENTIONAL (CODAR)	
SFCSRC	SURFACE/LAND MARINE SOURCES:	1
	1) MANUAL LAND OBS (SYNOP)	2
	2) AUTOMATIC LAND OBS (SYNOP)	3
	3) FIXED SHIP OBS (SHIP)	4
	4) MOBILE SHIP OBS (SHIP)	5
	5) ENVIROMENTAL BUOY OBS	
SATSRC	SATELLITE SOURCES:	1
	1) SAT SOUNDINGS	2
	2) SAT CLEAR RADIANCES	3
	3) SAT WIND	4
	4) SAT CLOUD	5
	5) SAT SEA SFC TEMPERATURE	
OCNSRC	OCEANOGRAPHIC SOURCES:	1
	1) BATHY	2
	2) TESAC	3
	3) X-BT	4
	4) MBT	5
	5) STD/CTD	6
	6) SERIAL DEPTH	7
	7) BUOY	8
	8) DRIFTING BUOY	

Enter key=value, key=, key=?, key=??, RUN, HELP, or EXIT. Press RETURN to page.
? UP=1
? ARC=0
? SFC=0
? SAT=0
? OCN=0
? RUN

The user specifies the data sources of interest, and then he issues the RUN command.

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```
---------- FGGE II-b SELECT ----------
FN=LIST DATA FROM TAPE
--------------------------------------------------------------------------------

     ENTER -1<CR> TO RETURN TO FGGE II-b SELECT MENU

     INPUT TAPE:  Enter 6 character tape ID:                P##14

     INPUT TAPE P##14  MOUNTED ON DRIVE _MTA#:
```

The user specifies the ID of the tape of interest.

The system indicates which tape drive is being used for processing the tape.

```
********************************************************************************
                              FGGE II-b SELECT
                        FGGE II-b RESTRUCTURED DATA
********************************************************************************

        SELECT CRITERIA:

         TIME RANGE OF INTEREST:    79/ 1/19  8: #: #  TO  79/ 1/19 12: #: #

         LATITUDE RANGE (+=N,-=S):   45  TO  5#

         LONGITUDE RANGE (+=E,-=W):   2# TO   25

         DATA SOURCES REQUESTED:  RAWSON

           General features of listing:
          - Each report ID is listed in 2 lines and contains a report counter,
            data source index number and name, date/time, other items unique to
            The data format, and the number of data records contained in the report.
          - Data records within a report are identified by type.
          - Each item within a data record is identified by an abbreviated
            name or unit (i.e., LVL=LEVEL, mb=millibars, m=meters, K=degrees Kelvin).
          - Quality codes are listed in parentheses following the item(s) referenced.

            For more information about data formats and codes, see the FGGE Data
            Management Plan, Volume 3, Implementation Operations Plan, Appendix 1# --
            Formats for the International Exchange of Level II Data Sets During
            the FGGE.

 ENTER <CR> TO CONTINUE: _
```

The system displays general information about the data.

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```
TAPE ID: P##14                                  DATE TAPE CREATED: 1988- 2-18
START SYNOPTIC TIME: 79/ 1/18  #                STOP SYNOPTIC TIME: 79/ 1/21 18

OBS#    1     DSI=11    RAWINDSONDE DATA
/9/#1/19 11:## 49.#3N/ 2#.32E STATION=11952 EL=#7#6M  INSTR=99 #RECS=   37
UPPER-AIR LEVEL DATA RECORDS:
LVL=1#   1###.##MB    ##231M(#1)    T=-99.9C(99)  DPD=-99.9C(99)  WIND=-99,-99(99)
LVL=#1    942.#0MB    ##7#6M(#1)    T= -6.1C(#1)  DPD=  #.8C(#1)  WIND=###,###(#1)
LVL=#2    92#.##MB    -9999M(99)    T= -8.6C(#1)  DPD=  1.8C(#1)  WIND=-99,-99(99)
LVL=#2    89#.##MB    -9999M(99)    T= -2.9C(#1)  DPD=  3.1C(#1)  WIND=-99,-99(99)
  o          o           o             o             o             o
  o          o           o             o             o             o
  o          o           o             o             o             o
LVL=#2     23.##MB    -9999M(99     T=-73.1C(#1)  DPD=-99.9C(99)  WIND=-99,-99(99)
LVL=1#     2#.##MB    2586#M(#3)    T=-73.1C(#1)  DPD=-99.9C(99)  WIND=31#,#25(#1)
LVL=12     1#.##MB    2991#M(#1)    T=-73.7C(#1)  DPD=-99.9C(99)  WIND=-99,-99(99)

OBS#    2     DSI=11    RAWINDSONDE DATA
/9/#1/19 11:## 46.25N/ 2#.1#E STATION=12982 EL=##84M  INSTR=99 #RECS=   41
UPPER-AIR LEVEL DATA RECORDS:
LVL=#1   1#17.#0MB    ##884M(#1)    T= -2.3C(#1)  DPD=  3.4C(#1)  WIND=34#,##3(#1)
  o          o           o             o             o             o
  o          o           o             o             o             o
  o          o           o             o             o             o

OBS#    6     DSI=11    RAWINDSONDE DATA
/9/#1/19 12:## 48.27N/ 25.97E STATION=33658 EL=#214M  INSTR=14 #RECS=   42
UPPER-AIR LEVEL DATA RECORDS:
LVL=#1   1##4.##MB    ##214M(#1)    T= -4.3C(#1)  DPD=  3.6C(#1)  WIND=315,##2(#1)
LVL=1#   1#0#.##MB    ##246M(#1)    T= -4.7C(#1)  DPD=  3.3C(#1)  WIND=-99,-99(99)
LVL=#2    967.##MB    ##588M(#1)    T= -7.3C(#1)  DPD=  2.7C(#1)  WIND=-99,-99(99)
  o          o           o             o             o             o
  o          o           o             o             o             o
  o          o           o             o             o             o
LVL=#2     27.##MB    24#68M(#1)    T=-73.6C(#1)  DPD=  7.#C(#1)  WIND=-99,-99(99)
LVL=#2     25.2#MB    24476M(#1)    T=-72.3C(#1)  DPD=-99.9C(99)  WIND=-99,-99(99)
LVL=#4     25.2#MB    24476M(#1)    T=-99.9C(99)  DPD=-99.9C(99)  WIND=3##,#23(#1)
CLOUD-LEVEL DATA RECORDS:
LVL=25  CL,CH(Mh)=## Sc,St,Cb(CL)=## BASE=#8 Ac,As,Ns(CM)=#2 Cs,Cc(CH)=-9
-------------------------------------------------------------------------------
Total number of observations selected for       RAWSON .....      6

DIVIDING OF TAPE IN PROGRESS

PRESS CARRIAGE RETURN FOR MENU _
```

The system displays the data of interest.

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```
MENU DISPLAY:  CDAS$TAE:SELFG2B                          PAGE # 1.

                        * FGGE II-b SELECT *

   1)  DISPLAY LABEL OF DISK FILE
   2)  LIST DATA FROM DISK
   3)  LIST DATA FROM TAPE
   4)  CREATE DISK FILE
   5)  CREATE SUBSET TAPE
   6)  EXIT TO FUNCTION MENU


Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? 6
```

The user requests to return to the function menu.

```
                     CLIMATE DATA ACCESS SYSTEM
                          FUNCTION MENU

   1)      INVENTORY
   2)      LOCATION PLOTS
   3)      SELECT


        For function descriptions use HELP FUNCTIONS.
        For database descriptions use HELP DATABASE.


Enter option number, BACK, MENU, TOP, COMMAND, HELP, or LOGOFF.
? LO

        **************************
        *ALL PROCESSING COMPLETE*
        **************************

CDAS     LOGGED OUT AT 13-SEP-1982 17:51:44.97
```

The user logs off the system.

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