FIRE ASTEX Readme

1.0 Introduction

This file contains information about the First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) sample read software and data files. The table below lists all of the data sets available through the Langley DAAC as well as the format of the data sets and if sample read software is also available. The data sets appear in the order as they became available to the user community. These are the data sets that are available through the Langley DAAC:

TABLE 1. Lists all data sets available through the Langley DAAC as well availability of Sample Read Software

Data Set Name	Sample Read Software Availability	Data Format
FIRE_AX_ER2_MAS	Yes	HDF netCDF
FIRE_AX_ER2_LIDAR	Yes	Binary
FIRE_AX_UW_C131A	No	ASCII
FIRE_AX_UW_DSCRT	No	ASCII
FIRE_AX_UW_GERB_1HZ	No	ASCII
FIRE_AX_UW_GERB_10HZ	No	ASCII
FIRE_AX_MALBAL_SONDE	Yes	ASCII
FIRE_AX_OCEANS_SONDE	Yes	ASCII
FIRE_AX_PORSAN_SONDE	Yes	ASCII
FIRE_AX_SANMAR_SONDE	Yes	ASCII
FIRE_AX_SUROIT_SONDE	Yes	ASCII
FIRE_AX_VALDIV_SONDE	Yes	ASCII
FIRE_AX_PSU_CEIL_MAL	Yes	ASCII
FIRE_AX_PSU_CEIL_SAN	Yes	ASCII
FIRE_AX_PSU_CEIL_VAL	Yes	ASCII
FIRE_AX_PSU_H2OVAP	Yes	ASCII
FIRE_AX_PSU_MALBAL	Yes	ASCII
FIRE_AX_PSU_WND_MAL	Yes	ASCII
FIRE_AX_CSU_WNDPRFS	Yes	ASCII
FIRE_AX_CSU_PRT6	Yes	ASCII
FIRE_AX_CSU_MET_SFC	Yes	ASCII
FIRE_AX_RWSONDE_LVL1	Yes	ASCII
FIRE_AX_RWSONDE_LVL2	Yes	ASCII

The University of Washington's data sets are in ASCII format, and hence do not require any specialized software to access the data. These are the data sets that start with the naming convention "FIRE_AX_UW." The

FIRE_AX_ER2_MAS data set currently on-line at the Langley Distributed Active Archive Center (DAAC) is in the National Center for Supercomputing Applications' (NCSA) HDF netCDF format. The FIRE_AX_ER2_LIDAR data set is in binary format. This "readme" file includes the following five other sections:

- Section 2.0 - describes all sample C programs (source files).
- Section 3.0 - discusses how to create the executables from the C programs.
- Section 4.0 - demonstrates how to invoke the run-time executables.
- Section 5.0 - provides general information on the data sets.
- Section 6.0 - provides more detailed implementation notes.

If users have questions while using the FIRE ASTEX sample read software, please contact the Langley User and Data Services (UDS) office. The UDS may be reached by E-Mail: userserv@eosdis.larc.nasa.gov, by telephone at (804)864-8656, or by FAX at (804)864-8807. The UDS mailing address is:

Langley DAAC User and Data Services Office
Mail Stop 157D
NASA Langley Research Center
Hampton, VA 23681-0001
USA

2.0 Read Software Files

Most of the sample read programs for FIRE ASTEX data sets are developed in the C language. These C programs have been tested on the 'Sun4 (OS 4.1.3)' and 'HP' UNIX-based workstations. All library functions in the C source codes are tested for ANSI C conformance. A 'Makefile' (called Makefile.fax) is included for the convenience of creating the executable files from the C source files. These files and their purposes are listed as follows:

- **Makefile.fax** - contains a set of commands to build the run-time executables.
- **mas_read_netcdf.c** - reads the FIRE HDF formatted files that were written using the NetCDF extensions. This is the C version of the read software.
- **mas_read_netcdf.f** - reads the FIRE HDF formatted files that were written using the NetCDF extensions. This is the FORTRAN 77 version of the read software. This code is also available from the data producer's home page. The URL is http://ltpwww.gsfc.nasa.gov/MODIS/MAS/sw.html.
- **mas_read_netcdf.i** - is the include file to be used with the FORTRAN 77 version of the read software for the program called mas_read_netcdf.f (listed above).This code is also available from the data producer's home page. The URL is http://ltpwww.gsfc.nasa.gov/MODIS/MAS/sw.html.
- **fax_read_er2_lidar.c** - reads the FIRE_AX_ER2_LIDAR data set.
- **faxrad_read.c** - reads all FIRE ASTEX Radiosonde data sets.
- **fax_psu_ceil_read.c** - reads all FIRE ASTEX Pennsylvania State University Ceilometer data sets.
- **fax_psu_h2ovap_read.c** - reads the FIRE ASTEX Pennsylvania State University Water Vapor data set.

- **fax_psu_malbal_read.c** - reads the FIRE ASTEX Pennsylvania State University Malcolm Baldrige data set.
- **fax_psu_wndmal_read.c** - reads the FIRE ASTEX Pennsylvania State University Malcolm Baldrige Wind Profiler data set.
- **fax_csu_wndprfs_read.c** - reads the FIRE ASTEX Colorado State University Wind Profiler data set.
- **fax_csu_prt6_read.c** - reads the FIRE ASTEX Colorado State University PRT-6 data set.
- **fax_csu_metsfc_read.c** - reads the FIRE ASTEX Colorado State University Meteorological and Radiation Surface Observations data set.
- **fax_raw_lvl1_read.c** - reads the FIRE ASTEX Rawinsonde Level 1 data set.
- **fax_raw_lvl1_read.f** - reads the FIRE ASTEX Rawinsonde Level 1 data set. This is a basic program on understanding the format of the data.
- **fax_raw_lvl2_read.c** - reads the FIRE ASTEX Rawinsonde Level 2 data set.
- **fax_raw_lvl2_read.f** - reads the FIRE ASTEX Rawinsonde Level 2 data set. This is a basic program on understanding the format of the data.

3.0 Creating C Executable Files

The user can have two ways of building the sample read program from the C source files. One is applying the 'make' command to the file 'Makefile,' which defines the C source files listed in Section 2.0. The other is using the C compiler 'cc' (or 'acc' for Sparc ANSI C compiler). Section 3.1 illustrates the first method, and Section 3.2 illustrates the second method. The first method is simpler to use than the second one. The symbol '**%**' in this section stands for UNIX command line prompt.

3.1 Create with 'make' command

To build the executable read programs for the FIRE ASTEX data sets which require specialized software type:

% **make -f Makefile.fax all**

The table below lists all of the executable files that Makefile.fax had created with the command listed above with respect to the data set(s).

Executable Name	Data Set Name(s)
mas_netcdf_read_c	FIRE_AX_ER2_MAS
fax_read_er2_lidar	FIRE_AX_ER2_LIDAR
faxrad_read	FIRE_AX_MALBAL_SONDE FIRE_AX_OCEANS_SONDE FIRE_AX_PORSAN_SONDE FIRE_AX_SANMAR_SONDE FIRE_AX_SUROIT_SONDE FIRE_AX_VALDIV_SONDE

Executable Name	Data Set Name(s)
fax_psu_ceil_read	FIRE_AX_PSU_CEIL_MAL FIRE_AX_PSU_CEIL_SAN FIRE_AX_PSU_CEIL_VAL
fax_psu_h2ovap_read	FIRE_AX_PSU_H2OVAP
fax_psu_malbal_read	FIRE_AX_PSU_MALBAL
fax_psu_wndmal_read	FIRE_AX_PSU_WND_MAL
fax_csu_wndprfs_read	FIRE_AX_CSU_WNDPRFS
fax_csu_prt6_read	FIRE_AX_CSU_PRT6
fax_csu_metsfc_read	FIRE_AX_CSU_MET_SFC
fax_raw_lvl1_read	FIRE_AX_RWSONDE_LVL1
fax_raw_lvl2_read	FIRE_AX_RWSONDE_LVL2

It will produce a total of twelve executable files. The other data sets do not require special read software. If by chance, the file Makefile.fax was renamed to the default file name of "Makefile" or "makefile," the following command compiles all code to create executables for each read program. The same executable files as listed in the table above will be created.

% **make all**

To build the executable, *mas_read_netcdf_c*, at the command line prompt, type:

% **make -f Makefile.fax mas_read_netcdf_c**

To build the executable, *fax_read_er2_lidar*, at the command line prompt, type:

% **make -f Makefile.fax fax_read_er2_lidar**

To build the executable, *faxrad_read*, at the command line prompt, type:

% **make -f Makefile.fax faxrad_read**

To build the executable, *fax_psu_ceil_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_psu_ceil_read**

To build the executable, *fax_psu_h2ovap_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_psu_h2ovap_read**

To build the executable, *fax_psu_malbal_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_psu_malbal_read**

To build the executable, *fax_psu_wndmal_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_psu_wndmal_read**

To build the executable, *fax_csu_wndprfs_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_csu_wndprfs_read**

To build the executable, *fax_csu_wndmal_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_csu_prt6_read**

To build the executable, *fax_csu_metsfc_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_csu_metsfc_read**

To build the executable, *fax_raw_lvl1_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_raw_lvl1_read**

To build the executable, *fax_raw_lvl1_read*f, at the command line prompt, type:

% **make -f Makefile.fax fax_raw_lvl1_readf**

To build the executable, *fax_raw_lvl2_read*, at the command line prompt, type:

% **make -f Makefile.fax fax_raw_lvl2_read**

To build the executable, *fax_raw_lvl2_readf*, at the command line prompt, type:

% **make -f Makefile.fax fax_raw_lvl2_readf**

The “Makefile” defines which math library should be used on your system. For example, the “Makefile” refers to the ‘Sun4’ and the ‘HP’ math libraries. **Please uncomment the specific math library that pertains to your system or insert your own math library path in the “Makefile.”**

3.2 Create with C compiler ‘cc’

To use the command line to compile the FIRE_AX_ER2_MAS read software, it is recommended to set a few environment variables to include some command line definitions, to specify the required HDF libraries, include directories, and math library. This would decrease the amount of typing required to recompile the read software. To set the environment variables (in the UNIX C shell - csh), type:

% setenv INCLUDE_DIR “-I/usr/local/hdf-3.3r4/mfhdf/libsrc -I/usr/local/hdf-3.3r4/mfhdf/port -I/usr/local/hdf-3.3r4/hdf/include”

% setenv LIB_DIR “-L/usr/local/hdf-3.3r4/mfhdf/libsrc -lnetcdf /usr/local/hdf-3.3r4/hdf/lib/ libdf.a”

NOTE: *Please make sure that you set the correct path for these include files and libraries before compiling this program.*

To build the executable for the FIRE_AX_ER2_MAS type:

% cc $INCLUDE_DIR -DNO_HAVE_PROTOTYPES -DNO_STDARG mas_read_netcdf.c $LIB_DIR

NOTE: The ANSI Version of the C compiler (acc) was used to compile this Version of the HDF Library (3.3r4). If you compile source code that accesses the HDF compiler of older versions, the other versions of the C compiler (cc) can be used.

To build the executable fax_read_er2_lidar type:

% cc -o fax_read_er2_lidar fax_read_er2_lidar.c

To build the executable faxrad_read type:

% cc -o faxrad_read faxrad_read.c

To build the executable fax_psu_ceil_read type:

% cc -o fax_psu_ceil_read fax_psu_ceil_read.c

To build the executable fax_psu_h2ovap_read type:

% cc -o fax_psu_h2ovap_read fax_psu_h2ovap_read.c

To build the executable fax_psu_malbal_read type:

% cc -o fax_psu_malbal_read fax_psu_malbal_read.c

To build the executable fax_psu_wndmal_read type:

% cc -o fax_psu_wndmal_read fax_psu_wndmal_read.c

To build the executable fax_csu_wndprfs_read type:

% cc -o fax_csu_wndprfs_read fax_csu_wndprfs_read.c

To build the executable fax_csu_prt6_read type:

% cc -o fax_csu_prt6_read fax_csu_prt6_read.c

To build the executable fax_csu_metsfc_read type:

% cc -o fax_csu_metsfc_read fax_csu_metsfc_read.c

To build the executable fax_raw_lvl1_read type:

% cc -o fax_raw_lvl1_read fax_raw_lvl1_read.c

To build the executable fax_raw_lvl1_readf type:

% f77 -o fax_raw_lvl1_readf fax_raw_lvl1_read.f

To build the executable fax_raw_lvl2_read type:

% cc -o fax_raw_lvl2_read fax_raw_lvl2_read.c

To build the executable fax_raw_lvl2_readf type:

% f77 -o fax_raw_lvl2_readf fax_raw_lvl2_read.f

4.0 Invoking Read Software

This section illustrates the invocation of the executable files. Section 4.1 describes how to run the read program for the FIRE_AX_ER2_MAS data set. Section 4.2 describes how to run the read program for the FIRE_AX_ER2_LIDAR data set. Section 4.3 describes how to run the read program for the FIRE ASTEX Radiosonde data sets. Section 4.4 describes how to run the read program for the FIRE ASTEX Pennsylvania State University Ceilometer data sets. Section 4.5 describes how to run the sample read program for the FIRE ASTEX Pennsylvania State University Water Vapor data set. Section 4.6 describes how to run the sample read program for the FIRE ASTEX Pennsylvania State University Malcolm Baldrige data set. Section 4.7 describes how to run the sample read program for the FIRE ASTEX Pennsylvania State University Malcolm Baldrige Wind Profiler data set. Section 4.8 describes how to run the sample read program for the FIRE ASTEX Colorado State University Wind Profiler data set. Section 4.9 describes how to run the sample read program for the FIRE ASTEX Colorado State University PRT-6 data set. Section 4.10 describes how to run the sample read program for the FIRE ASTEX Colorado State University Meteorological and Radiation Surface Observations data set. Section 4.11 describes how to run the sample read program for the FIRE ASTEX Rawinsonde Level 1 data set. Section 4.12 describes how to run the sample read program for the FIRE ASTEX Rawinsonde Level 2 data set.

4.1 Running the Read Program for the FIRE_AX_ER2_MAS Data Set

Currently, the executable mas_read_netcdf.c read program (C version) for the FIRE_AX_ER2_MAS data set does not accept command line arguments. When this program is executed, it requests an input filename. The output filename is automatically created by appending ".rpt" to the input file name. After entering the filename, the user is presented with a parameter selection list. Upon completing the parameter selection process, the user is provided the option of including the global parameters in the report file. At this point, the program generates the report file and exits. The following line will begin program execution:

% mas_read_netcdf_c

A sample of the interactive program execution is provide in Section 6.0.

4.2 Running the Read Program for the FIRE_AX_ER2_LIDAR Data Set

Currently, the executable fax_read_er2_lidar read program for the FIRE_AX_ER2_LIDAR data set does not accept command line arguments. When this program is executed, it requests an input filename. If a dash "-" is entered, the output will be directed to the screen. Otherwise, the specified filename will be checked. If a file by that name currently exists, the user can opt to exit the program, append to the existing file, or overwrite the existing file. If the user doesn't opt to exit the program, they are then presented a selection list which allows them to select the type of data records and channels which should be retrieved. Information pertaining to the number of records in the file is displayed, and a start record number is requested (Note: when a "-1" is specified all records in the file will be extracted). The program then requests an end record number.   The program then writes out the requested records and exits. The following line will begin program execution:

% fax_read_er2_lidar

A sample of the interactive program execution is provide in Section 6.0.

4.3 Running the Read Program for the FIRE ASTEX Radiosonde Data Sets

There are six data sets for this grouping of Radiosonde data. The data sets are FIRE_AX_MALBAL_SONDE, FIRE_AX_OCEANS_SONDE, FIRE_AX_PORSAN_SONDE, FIRE_AX_SANMAR_SONDE, FIRE_AX_SUROIT_SONDE, and FIRE_AX_VALDIV_SONDE. There is one sample read software program that is able to read these six data sets. The program is able to recognize which data set it is reading by the header information of each file. The program is an interactive program and will prompt the user for the information it needs to output data. The following line will begin program execution:

% faxrad_read

A sample of the interactive program execution is provide in Section 6.0.

4.4 Running the Read Program for the FIRE ASTEX Pennsylvania State University Ceilometer Data Sets

There are three data sets for this grouping of Pennsylvania State University Ceilometer data. The data sets are FIRE_AX_PSU_CEIL_MAL, FIRE_AX_PSU_CEIL_SAN, and FIRE_AX_PSU_CEIL_VAL. There is one sample read software program that is able to read these three data sets. The generic read program for the Pennsylvania State University Ceilometer data sets reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). The program, once invoked, prompts the user to make three choices for parameter selection. The first choice is "a or A" which displays all the parameters and their values on the screen. The second choice is "s or S" which lets the user select which parameters the users would like displayed on the screen. The user, at the prompt, enters the parameter numbers from the list of the parameters and units which are displayed on the screen. A "q or Q" ends the selection process and then the selected parameters are displayed on the screen. The third choice is "x or X" which will exit the user from the program. The "x or X" can be entered at any prompt and will have the same effect as above. The read program, as mentioned above, outputs the data to the screen. To execute the program, type:

% fax_psu_ceil_read

or

% fax_psu_ceil_read filename

A sample of the interactive program execution is provide in Section 6.0.

4.5 Running the Read Program for the FIRE ASTEX Pennsylvania State University

Water Vapor Data Set

The read program for the Pennsylvania State University Santa Maria Microwave Radiometer data sets reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). The program, once invoked, prompts the user to make three choices for parameter selection. The first choice is “a or A” which displays all the parameters and their values on the screen. The second choice is “s or S” which lets the user select which parameters the users would like displayed on the screen. The user, at the prompt, enters the parameter numbers from the list of the parameters and units which are displayed on the screen. A “q or Q” ends the selection process and then the selected parameters are displayed on the screen. The third choice is “x or X” which will exit the user from the program. The “x or X” can be entered at any prompt and will have the same effect as above. The read program, as mentioned above, outputs the data to the screen. To execute the program, type:

% fax_psu_h2ovap_read

or

% fax_psu_h2ovap_read filename

A sample of the interactive program execution is provide in Section 6.0.

4.6 Running the Read Program for the FIRE ASTEX Pennsylvania State University Malcolm Baldrige Data Set

There is one sample read software program able to read this data set, FIRE_AX_PSU_MALBAL. The read program reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). The program, once invoked, prompts the user to make three choices for parameter selection. The first choice is “a or A” which displays all the parameters and their values on the screen. The second choice is “s or S” which lets the user select which parameters the users would like displayed on the screen. The user, at the prompt, enters the parameter numbers from the list of the parameters and units which are displayed on the screen. A “q or Q” ends the selection process and then the selected parameters are displayed on the screen. The third choice is “x or X” which will exit the user from the program. The “x or X” can be entered at any prompt and will have the same effect as above. The read program, as mentioned above, outputs the data to the screen. To execute the program, type:

% fax_psu_malbal_read

or

% fax_psu_malbal_read filename

A sample of the interactive program execution is provide in Section 6.0.

4.7 Running the Read Program for the FIRE ASTEX Pennsylvania State University Malcolm Baldrige Wind Profiler Data Set

The read program for the Pennsylvania State University Malcolm Baldrige Wind Profiler data sets reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). The program, once invoked, prompts the user to make three choices for parameter selection. The first choice is "a or A" which displays all the parameters and their values on the screen. The second choice is "s or S" which lets the user select which parameters the users would like displayed on the screen. The user, at the prompt, enters the parameter numbers from the list of the parameters and units which are displayed on the screen. A "q or Q" ends the selection process and then the selected parameters are displayed on the screen. The third choice is "x or X" which will exit the user from the program. The "x or X" can be entered at any prompt and will have the same effect as above. The read program, as mentioned above, outputs the data to the screen. To execute the program, type:

% fax_psu_wndmal_read

or

% fax_psu_wndmal_read filename

A sample of the interactive program execution is provide in Section 6.0.

4.8 Running the Read Program for the FIRE ASTEX Colorado State University Wind Profiler Data Set

The read program for the Colorado State University Wind Profiler data sets reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). The program, once invoked, prompts the user to make three choices for parameter selection. The first choice is "a or A" which displays all the parameters and their values on the screen. The second choice is "s or S" which lets the user select which parameters the users would like displayed on the screen. The user, at the prompt, enters the parameter numbers from the list of the parameters and units which are displayed on the screen. A "q or Q" ends the selection process and then the selected parameters are displayed on the screen. The third choice is "x or X" which will exit the user from the program. The "x or X" can be entered at any prompt and will have the same effect as above. The read program, as mentioned above, outputs the data to the screen. To execute the program, type:

% fax_csu_wndprfs_read

or

% fax_csu_wndprfs_read filename

A sample of the interactive program execution is provide in Section 6.0.

4.9 Running the Read Program for the FIRE ASTEX Colorado State University PRT-6 Data Set

The read program for the Colorado State University PRT-6 data set reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). The program, once invoked, prompts the user to make three choices for parameter selection. The first choice is “a or A” which displays all the parameters and their values on the screen. The second choice is “s or S” which lets the user select which parameters the users would like displayed on the screen. The user, at the prompt, enters the parameter numbers from the list of the parameters and units which are displayed on the screen. A “q or Q” ends the selection process and then the selected parameters are displayed on the screen. The third choice is “x or X” which will exit the user from the program. The “x or X” can be entered at any prompt and will have the same effect as above. The read program, as mentioned above, outputs the data to the screen. To execute the program, type:

% fax_csu_prt6_read

or

% fax_csu_prt6_read filename

A sample of the interactive program execution is provide in Section 6.0.

4.10 Running the Read Program for the FIRE ASTEX Colorado State University Meteorological and Radiation Surface Observations Data Set

The read program for the Colorado State University Meteorological and Radiation Surface Observations data sets reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). The program, once invoked, prompts the user to make three choices for parameter selection. The first choice is “a or A” which displays all the parameters and their values on the screen. The second choice is “s or S” which lets the user select which parameters the users would like displayed on the screen. The user, at the prompt, enters the parameter numbers from the list of the parameters and units which are displayed on the screen. A "q or Q" ends the selection process and then the selected parameters are displayed on the screen. The third choice is "x or X" which will exit the user from the program. The "x or X" can be entered at any prompt and will have the same effect as above. The read program, as mentioned above, outputs the data to the screen. To execute the program, type:

% fax_csu_metsfc_read

or

% fax_csu_metsfc_read filename

A sample of the interactive program execution is provide in Section 6.0.

4.11 Running the Read Program for the FIRE ASTEX Rawinsonde Level 1 Data Set

The read program (C program) for the Rawinsonde Level 1 data set reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). Once the program has been invoked, the user will be presented to chose which parameters he would like to have printed out to the standard default (in this case, it is the screen). The user must enter how many parameters he wishes to be printed to the screen and then in what order should these parameters appear on the screen. The program will then print out all values until the end of file has been reached. A closing message will state that the end of file has been reached.

% fax_raw_lvl1_read

or

% fax_raw_lvl1_read filename

A sample of the interactive program execution is provide in Section 6.0.

The Fortran version of the read program was provided by the data producer. Once the program has been compiled, an executable file has been created. The user will type the executable name, fax_raw_lvl1_readf, and the code will prompt the user for the input data file name. The program just reads the data file. It will not produce any output. There are no write statements in the program. It is the user's responsibility to enter the write statements where he chose in the Fortran code. Therefore, this code will not be discussed in Section 6.0.

4.12 Running the Read Program for the FIRE ASTEX Rawinsonde Level 2 Data Set

The read program for the Rawinsonde Level 2 data set reads one data file at each invocation. The program can be executed in two different ways. One way to invoke the program is to type the name of the executable and hit the carriage control key. This will then prompt the user for the name of the data set which is to be read (include the path if the data file is not located in the current working directory). The second way to invoke the program is by typing the executable and the name of the file (full name of the data set including the path if the data set is not in the current working directory). The program, once invoked, prompts the user to make three choices for parameter selection. The first choice is “a or A” which displays all the parameters and their values on the screen. The second choice is “s or S” which lets the user select which parameters the users would like displayed on the screen. The user, at the prompt, enters the parameter numbers from the list of the parameters and units which are displayed on the screen. A “q or Q” ends the selection process and then the selected parameters are displayed on the screen. The third choice is “x or X” which will exit the user from the program. The “x or X” can be entered at any prompt and will have the same effect as above. The read program, as mentioned above, outputs the data to the screen. To execute the program, type:

% fax_raw_lvl2_read

or

% fax_raw_lvl2_read filename

A sample of the interactive program execution is provide in Section 6.0.

The Fortran version of the read program was provided by the data producer. Once the program has been compiled, an executable file has been created. The user will type the executable name, fax_raw_lvl1_readf, and the code will prompt the user for the input data file name. The program just reads the data file. It will not produce any output. There are no write statements in the program. It is the user’s responsibility to enter the write statements where he chose in the Fortran code. Therefore, this code will not be discussed in Section 6.0.

5.0 Data Sets Information

The following subsections provide information the FIRE ASTEX data sets on-line at the Langley DAAC.

TABLE 2. DATA SET DESCRIPTION SECTIONS

DATA SET NAME	SECTION
FIRE_AX_ER2_MAS	5.1
FIRE_AX_ER2_LIDAR	5.2
FIRE_AX_UW_C131A	5.3
FIRE_AX_UW_DSCRT	5.4
FIRE_AX_UW_GERB_1HZ	5.5
FIRE_AX_UW_GERB_10HZ	5.5
FIRE_AX_MALBAL_SONDE	5.6
FIRE_AX_OCEANS_SONDE	5.7

TABLE 2. DATA SET DESCRIPTION SECTIONS

Each set of data set's information was obtained from the data files, documents, or directly from the data producer/provider. The high-level data set descriptions, the data files, the variables in the data files, and the contacts for data production are given under each data set. Some data sets contain the data producer's/provider's responses to questions on the data contents. These questions and/or responses are collected under the "NOTES ON DATA" section.

5.1 FIRE_AX_ER2_MAS Data Set

This data set is written in NCSA's HDF netCDF format. The data files are organized by date of flight and straight line flight track.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) NASA ER-2 Moderate Resolution Imaging Spectrometer (MODIS) Airborne Simulator (MAS) Data (FIRE_AX_ER2_MAS)

FILE NAMING CONVENTION:

FIRE_AX_ER2_MAS data set files are prefixed with "ax_mas_" to indicate they belong to this data set. This is followed by a six digit number (yymmdd) that represents the year, month and day the data was collected. The name ends with a period, '.', followed by a three digit number which indicates which flight line is contained within the file.

VARIABLES:

This data set contains 34 global attributes and 37 HDF scientific data sets (i.e., variables) per data file.

The global variable names are:

title

CreationDate
ExperimentName
FlightDate
ClockUsedToProcess
FlightNumber
TotalFlightLines
Credits
MASDataUsersGuideSource
ClockProblemDescription
FIREClockOffset(INS-MAS)Hours
VIS/NIRCountSensitivityAdjustment
SoftwareVersion
CalibrationVersion
data_set
data_product
geog_flag
day_night_flag
granu le_version
metadata_version
producer_granule_id
data_quality
granule_size
begin_date
end_date
lat_LL
lon_LL
lat_UL
lon_UL
lat_UR
lon_UR
lat_LR
lon_LR

Sci. Var #	Data Type	Label(dimension lengths)
1	float	Left50%ResponseWavelength(12)
2	float	Central100%ResponseWavelength(12)
3	float	Right50%ResponseWavelength(12)
4	float	SolarSpectralIrradiance(12)
5	short	AnchorPointIndex(73)
6	char	DataSetHeader(4720)
7	short	DataFrameStatus(548)
8	short	RunNumber(548)
9	long	ScanLineCounter(548)
10	long	ThumbWheelSwitches(548)
11	short	ScanRate(548)
12	long	GreenwichMeanTime(548)
13	long	MasTime(548)
14	long	InsTime(548)

15	short	S-BendIndicator(548)
16	short	AircraftRollCount(548)
17	long	YearMonthDay(548)
18	float	ScanlineTime(548)
19	short	BlackBody1Temperature(548 X 12)
20	short	BlackBody2Temperature(548 X 12)
21	short	AmplifierGain(548 X 12)
22	short	BlackBody1Counts(548 X 12)
23	short	BlackBody2Counts(548 X 12)
24	float	CalibrationSlope(548 X 12)
25	float	CalibrationIntercept(548 X 12)
26	float	PixelLatitude(548 X 73)
27	float	PixelLongitude(548 X 73)
28	float	SensorZenithAngle(548 X 73)
29	float	SensorAzimuthAngle(548 X 73)
30	float	SolarZenithAngle(548 X 73)
31	float	SolarAzimuthAngle(548 X 73)
32	float	AircraftLatitude(548)
33	float	AircraftLongitude(548)
34	float	AircraftHeading(548)
35	float	AircraftAltitude(548)
36	float	AircraftPitch(548)
37	short	CalibratedData(548 X 12 X 716)

NOTES ON DATA:

Dimension lengths show above may vary between files due to variations in the amount of data collected per flight track.

These files also include some Level 0 MAS engineering data. The Level 0 data variables are identified in NASA Technical Memorandum 104594, Vol. 3, which is titled:

MODIS Technical Report Series, Volume 3, MODIS Airborne Simulator Level 1B Data User's Guide.

FIRST RECORD OF DATA FROM FIRST DATA GRANULE:

Sample data from the ax_mas_920529.001 file:

```
 This is the report file for the ax_mas_920529.001 file

 Left50%ResponseWavelength
       units = microns
0 , 0.529 , 0.688 , 0.81 , 0.852 , 0.926 , 3.659 , 12.539 , 9.452 , 10.259 ,
    10.791 , 11.799  ;

 Central100%ResponseWavelength
       units = microns
0 , 0.547 , 0.707 , 0.834 , 0.875 , 0.945 , 3.725 , 12.775 , 9.642 ,
    10.438 , 11.002 , 12.032  ;
```

Right50%ResponseWavelength
units = microns
0 , 0.572 , 0.729 , 0.852 , 0.893 , 0.969 , 3.81 , 12.986 , 9.877 ,
10.725 , 11.239 , 12.245 ;

SolarSpectralIrradiance
units = watts/meter2/micron
title = Sensor Weighted and Orbit Corrected Solar Spectral
Irradiance
0 , 1813.973 , 1353.598 , 1028.991 , 939.2146 , 769.5214 , 11.60004 ,
0.08751081 , 0.2722558 , 0.1944685 , 0.1555748 , 0.1166811 ;

AnchorPointIndex
1, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160,
170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300,
310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440,
450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580,
590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 716 ;

INSTRUMENTATION:

The MODIS Airborne Simulator (MAS) is a modified Daedalus Wildfire scanning spectrometer. The MAS spectrometer acquires high spatial resolution imagery in the wavelength range 0.55 to 14.3 microns. A total of 50 spectral bands are available in this range, and the digitizer can be configured to record any 12 of them during a flight.

CONTACT FOR DATA PRODUCT INFORMATION:

Mr. Paul A. Hubanks
MODIS Science Data Support Team
Research and Data Systems Corporation
7855 Walker Drive, Suite 400
Greenbelt, MD 20770
USA
Phone: (301) 982-3724
FAX: (301) 982-3749
E-Mail: hubanks@ltpsun.gsfc.nasa.gov

5.2 FIRE_AX_ER2_LIDAR Data Set

The FIRE_AX_ ER2_LIDAR data set is in a binary format. Each data file name begins with “ax_lidar_” which indicates that this is a data file associated with the FIRE ASTEX mission and it contains lidar data. The data file names all end with a six digit number which indicates the year, month, and day (yymmdd) the data were recorded. A total of eleven data files were created with data recorded between the periods of June 2, 1992 through June 23, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) NASA ER-2 Cloud Lidar System Data (FIRE_AX_ER2_LIDAR)

FILES:

A total of eleven data files were created with data recorded between the periods of June 2, 1992 through June 23, 1992.

VARIABLES:

FILE HEADER RECORD:

CLS DATA START TIME(UT)
CLS DATA END TIME(UT)
ER2 SORTIE START JULDAY(UT)
ER2 SORTIE END JULDAY(UT)
ER2 SORTIE NUMBER
DETECTOR NUMBER IN CHANNEL 1 POSITION
DETECTOR NUMBER IN CHANNEL 2 POSITION
DETECTOR NUMBER IN CHANNEL 3 POSITION
DETECTOR NUMBER IN CHANNEL 4(LINEAR AMP)
PRODUCTION DATE&TIME
FLIGHT NUMBER
CALENDAR/JULIAN DATE
SENSOR PACKAGE
AREA COVERED
AIRCRAFT #
MISSION SCIENTIST
SENSOR DATA:
    SENSOR TYPE
    SENSOR ID #
    QUALITY
    REMARKS
ANALYZED CLS DATA PRODUCTS INCLUDED ON THIS TAPE:
    NUMBER OF CLOUD LAYERS;
    BOUNDARIES FOR UP TO FIVE LAYERS;
    EARTH'S SURFACE DETECTION FLAG.

CLS CALIBRATED SIGNAL HEADER:

NAVIGATION SERIAL NUMBER
AM OR PM INDICATOR
TIME STATUS
JULIAN DATE
TIME OF DAY
LATITUDE IN 1/100 DEGREE
LONGITUDE IN 1/100 DEGREE
NORTH SOUTH SPEED IN 1/10 KNOTS

EAST WEST SPEED IN 1/10 KNOTS
TRUE HEADING IN 1/100 DEGREES
GROUND SPEED IN 1/10 KNOTS
TOTAL TEMPERATURE (CELSIUS)
ER2 ALTITUDE IN FEET
TRUE AIR SPEED IN 1/10 KNOTS
ER2 PITCH IN 1/100 DEGREES
ER2 ROLL IN 1/100 DEGREES
15 CLS ENGINEERING VALUES
1064NM SHOT ENERGY
POD ROLL IN 1/100 DEGREES
POD PITCH IN 1/100 DEGREES
SHOT NUMBER
532NUM ENERGY
CLS OPERATIONS FLAGS
INVALID SHOT AVERAGE - ONE VALUE PER CHANNEL
AVERAGED PRETRIGGER SIGNALS
AVERAGED BACKGROUND SIGNALS
1665 Values per channel for AVERAGED CLS Backscatter

CLS ANALYZED DATA RECORD
time in hours, UT from ER2 INS
decimal latitude; to 1/100 degree;INS
decimal longitude;l/100 degress;INS
ER2 pressure altitude;l/100 kms. INS
ER2 aircraft rool; 1/100 degrees, INS
Number of cloud layers detected;<=5~
Ground detection flag;l=TRUE;0=FALSE
top and bottom of detected layer 1
top and bottom of detected layer 2
occasional annotation of time,hhmmss
time in hours;matches time UT from ER2 INS above
top and bottom of detected layer 3
top and bottom of detected layer 4
top and bottom of detected layer 5
departure of height of earth's surface from 0

FIRST RECORD OF DATA FROM FIRST DATA GRANULE:

************** CLS DATA FILE HEADER RECORD **************

095942 = CLS DATA START TIME(UT)
103220 = CLS DATA END TIME(UT)
154 = ER2 SORTIE START JULDAY(UT)
154 = ER2 SORTIE END JULDAY(UT)
92102 = ER2 SORTIE NUMBER
2 = DETECTOR NUMBER IN CHANNEL 1 POSITION
1 = DETECTOR NUMBER IN CHANNEL 2 POSITION
3 = DETECTOR NUMBER IN CHANNEL 3 POSITION
1 = DETECTOR NUMBER IN CHANNEL 4(LINEAR AMP)

AT GSFC;PRODUCTION DATE&TIME->02/27/94 14:13:02.37
FLIGHT NUMBER 92102
CALENDAR/JULIAN DATE: 02 JUNE 1992/154
SENSOR PACKAGE: MODIS-N AIRBORNE SIMULATOR(MAS)
RADIATION MEASUREMENT SYSTEM(RAMS)
CLOUD LIDAR SYSTEM(CLS)
EO CAMERA(EOC)
AREA COVERED: N35.65->N37.07;W23.53->W22.12
AIRCRAFT #: 709
MISSION SCIENTIST: DR. DOUG JOHNSON
SENSOR DATA

SENSOR TYPE	SENSOR ID #	QUALITY	REMARKS
MAS	108	EXCEPTIONALLY GOOD	SATURATION 0.875&3.73 CLIPPING 0.66 &8.56
RAMS	112	NO DATA	DATA SYSTEM FAILED
CLS	113	WEAK SIGNAL	ALIGNMENT PROBLEMS PERMIT ONLY CLOUD TOP ALTITUDE DETERMINATION.
EOC		WORKED	SOME SATURATION ALL CHANNELS;50M RESOLUTION

ANALYZED CLS DATA PRODUCTS INCLUDED ON THIS TAPE:
NUMBER OF CLOUD LAYERS;BOUNDARIES FOR UP TO FIVE LAYERS;
EARTH'S SURFACE DETECTION FLAG.

*********** CLS Calibrated Signal Header Info RECORD #2***********

2 = NAVIGATION SERIAL NUMBER
0 = AM OR PM INDICATOR
0 = TIME STATUS
154 = JULIAN DATE
95946 = TIME OF DAY
3569 = LATITUDE IN 1/100 DEGREE
-2296 = LONGITUDE IN 1/100 DEGREE
3947 = NORTH SOUTH SPEED IN 1/10 KNOTS
1173 = EAST WEST SPEED IN 1/10 KNOTS
1554 = TRUE HEADING IN 1/100 DEGREES
4118 = GROUND SPEED IN 1/10 KNOTS
-10000 = TOTAL TEMPERATURE (CELSIUS)
64731 = ER2 ALTITUDE IN FEET
4062 = TRUE AIR SPEED IN 1/10 KNOTS
7 = ER2 PITCH IN 1/100 DEGREES
-40 = ER2 ROLL IN 1/100 DEGREES
===== 15 CLS ENGINEERING VALUES =====

770	1022	1038	9	1228
10	1520	-1526	146	1372
626	564	566	-4	576

196 = 1064NM SHOT ENERGY
0 = POD ROLL IN 1/100 DEGREES
0 = POD PITCH IN 1/100 DEGREES

51 = SHOT NUMBER
413 = 532NUM ENERGY
255 = CLS OPERATIONS FLAGS
===== INVALID SHOT AVERAGE - ONE VALUE PER CHANNEL =====
1 1 1 3
===== AVERAGED PRETRIGGER SIGNALS =====
1.5079E-03 6.3016E-03 8.7147E+00 -2.0640E-03
===== AVERAGED BACKGROUND SIGNALS =====
2.1436E-03 7.1894E-03 8.4650E-04 -2.4116E-03

===== 1665 Values per channel for AVERAGED CLS Backscatter =====

index	CHANNEL 1				
0	8.4308E-04	4.9380E-03	-1.8858E-03	-9.2203E-04	-1.6869E-04
5	-7.0689E-05	-7.3354E-04	-1.5062E-03	-4.9332E-04	-1.7197E-03
10	4.3103E-04	-1.2211E-03	-1.2180E-03	-2.7291E-03	-1.5963E-03
15	-1.7299E-03	-1.5739E-03	-1.3503E-03	-8.2801E-04	-1.3640E-03
20	-1.1796E-03	1.7261E-03	-2.5359E-04	-4.7111E-04	-6.9147E-04
25	-1.1439E-03	1.4621E-03	-1.7648E-03	-1.1713E-03	-4.6966E-04
30	-2.9315E-04	2.4222E-03	-3.1640E-04	-2.6955E-03	-4.3762E-04
35	-2.5573E-04	3.7569E-03	-1.9315E-03	-2.2198E-03	-1.2983E-03
40	8.2592E-04	-9.8094E-04	-2.5618E-03	5.6668E-03	-1.8927E-03
45	-4.6350E-04	-1.2301E-03	8.0708E-04	-8.6965E-04	-1.0384E-03
50	3.5790E-04	-8.7837E-04	-1.9121E-04	-1.7694E-03	-2.1647E-03
55	-5.9363E-04	4.3800E-04	-8.0856E-04	2.2112E-03	-5.0229E-04
60	4.5192E-04	1.6861E-03	3.6659E+00	7.9257E-01	1.9313E-06
65	1.3506E-06	1.3193E-06	2.0267E-06	2.2749E-06	1.9432E-06
70	1.7160E-06	1.7641E-06	1.1562E-06	8.9084E-07	7.3870E-07
75	7.7091E-07	6.8146E-07	4.7499E-07	3.8507E-07	2.5030E-07
80	9.2536E-08	6.4713E-08	4.5407E-07	7.6855E-07	8.7231E-07
85	1.5438E-07	-1.3749E-07	2.6332E-07	2.8895E-08	1.9981E-07
90	5.8701E-07	2.6149E-07	-7.3537E-08	5.0027E-07	9.8041E-07
95	1.7742E-06	1.0962E-06	-5.2195E-07	-5.3693E-08	-4.5350E-07
100	6.9151E-07	1.5196E-06	2.7034E-06	1.1420E-07	-1.3669E-06
105	-1.1489E-06	-1.2951E-06	-5.5098E-07	-1.1753E-06	5.8224E-06
110	1.4193E-06	-2.9824E-06	-1.7593E-06	2.3439E-07	5.9709E-06
115	-3.0982E-06	9.2011E-07	-1.3485E-06	-1.5668E-06	-3.3970E-06
120	-6.4501E-07	-3.4807E-06	4.8599E-07	-2.4012E-06	-2.8381E-06
125	-9.6922E-07	3.4280E-06	-3.0530E-06	-5.3922E-06	-1.8217E-06
130	-2.3135E-06	1.1714E-05	2.1356E-06	-3.8874E-06	9.7178E-06
135	-5.6492E-07	-2.7451E-09	1.6640E-06	5.7706E-06	5.9947E-07
140	2.0663E-05	-9.9076E-07	-6.8950E-06	-2.0694E-06	3.3072E-06
145	3.1594E-06	-6.0740E-06	-4.7849E-06	-4.0602E-06	2.8084E-06
150	1.0944E-05	-6.0829E-06	-6.6539E-06	-2.9714E-06	-9.0946E-06
155	-1.0596E-05	9.4806E-07	-2.7105E-06	1.9314E-06	7.7806E-06
160	-4.1664E-06	-1.3356E-05	-1.2165E-05	-8.5381E-06	-1.0928E-05
165	-7.0657E-06	-1.4182E-05	6.9555E-08	-5.9716E-06	3.9491E-06
170	3.7063E-06	-1.2573E-05	-1.1847E-05	-3.5396E-06	-6.0093E-06

175	-8.0495E-06	1.1982E-05	9.0137E-07	-1.1016E-05	-4.5098E-06
180	-1.2460E-05	1.2585E-05	-1.4777E-05	-3.6335E-06	-1.7896E-06
185	-3.7081E-06	-4.0561E-06	-1.3619E-05	-1.8157E-05	-1.4535E-05
190	-1.4287E-05	4.1082E-06	-6.3165E-06	3.8872E-06	-8.4186E-06
195	-5.8436E-06	-1.6460E-05	-6.2806E-06	3.5157E-06	1.9352E-05
200	-1.5219E-05	-2.3023E-05	-5.3937E-06	5.3888E-07	-2.6825E-05
205	-1.3987E-05	2.4602E-05	-4.5829E-06	-2.2262E-05	-1.8864E-05
210	-5.5770E-06	-1.7436E-05	-2.4343E-05	-1.9523E-05	-2.3250E-05
215	2.0634E-05	4.1271E-05	-2.0886E-05	-1.5191E-05	-2.1839E-05
220	-1.0214E-06	-1.0045E-05	-2.0888E-05	-6.5506E-06	-4.0048E-06
225	-2.7174E-05	-1.0142E-05	-1.5732E-05	-3.0361E-05	-1.1393E-05
230	3.1280E-06	-7.5394E-06	-1.7234E-05	-1.8442E-05	-2.0434E-05
235	-1.5801E-05	-1.4953E-05	7.8887E-05	-3.3444E-05	8.6990E-05
240	-8.8889E-06	-2.7069E-05	1.0629E-05	-7.2874E-06	1.9270E-06
245	-1.5051E-05	-4.9463E-05	-2.7933E-05	1.3301E-05	-5.6810E-06
250	-1.8606E-05	-4.1800E-06	-1.8105E-05	-1.3600E-05	4.6313E-06
255	-2.6505E-05	-3.2467E-05	2.1468E-05	-3.7909E-05	2.7085E-05
260	-1.9979E-05	-3.4796E-05	1.9242E-04	-3.5594E-07	-4.2271E-06
265	6.4794E-05	9.1040E-05	-1.5312E-05	-4.8284E-05	-5.6349E-05
270	-2.6996E-05	1.0016E-06	1.0560E-04	-2.8930E-05	-1.8952E-05
275	3.4756E-05	1.7509E-05	1.1452E-05	-3.5840E-05	-1.5587E-05
280	-7.5106E-06	8.1624E-06	-1.0149E-06	-1.9356E-05	-1.5971E-06
285	-2.6091E-05	-8.8995E-06	-5.9448E-05	-2.1184E-05	-3.8538E-05
290	-2.1214E-05	-3.3533E-06	9.4075E-06	2.2999E-05	-4.5330E-05
295	-4.0557E-05	-5.1667E-06	1.6824E-05	1.9417E-05	-5.2358E-05
300	-6.0930E-05	-2.9224E-05	1.3564E-05	-2.9933E-05	6.1289E-05
305	3.2062E-05	9.4140E-05	8.7187E-06	5.9726E-05	-1.5002E-05
310	6.4009E-06	2.2933E-05	-4.3785E-05	2.9638E-05	-2.4256E-05
315	-2.1405E-06	3.2407E-05	-7.5623E-05	-1.0362E-05	1.9735E-04
320	1.7905E-04	8.0901E-05	-4.6560E-05	-5.4270E-05	-1.9203E-05
325	-5.2978E-05	-6.9381E-05	2.4344E-06	-1.3679E-05	-4.7783E-05
330	-9.6690E-05	-1.6299E-05	-2.2005E-05	-3.4395E-05	-4.1816E-05
335	-5.4112E-05	5.7234E-05	5.1191E-05	-9.2931E-05	-1.4586E-05

----- and so on for a total of 1655 values for each of the four channels -----

----- This is followed by the second record of the Calibrated Signal and Analyzed Data record pairs as shown below -----

************** CLS ANALYZED DATA RECORD #3 **************

9.9961 = time in hours, UT from ER2 INS
35.69 = decimal latitude; to 1/100 degree;INS
-22.96 =decimal longitude;l/100 degress;INS
19.73 = ER2 pressure altitude;l/100 kms. INS
-0.40 = ER2 aircraft rool; 1/100 degrees, INS
2 = Number of cloud layers detected;<=5~
0 = Ground detection flag;l=TRUE;0=FALSE
14.990 14.885 = top and bottom of detected layer 1
1.190 1.070 = top and bottom of detected layer 2

095946 = occasional annotation of time,hhmmss
9.9961 = time in hours;matches time UT from ER2 INS above
-3.000 -3.000 = top and bottom of detected layer 3
-3.000 -3.000 = top and bottom of detected layer 4
-3.000 -3.000 = top and bottom of detected layer 5
-9.900 = departure of height of earth's surface from 0

INSTRUMENTATION:

The Cloud Lidar System (CLS) instrument was flown aboard the NASA ER-2 airplane. This instrument was used to determine cloud altitudes. Information pertaining to the number of cloud layers detected; the heights of the boundaries for up to 5 cloud layers; geophysical location information; and time were recorded.

Four channels of data were recorded. The first channel recorded wave lengths at 532 nanometers in the parallel plane. The second channel recorded wave lengths of 532 nanometers in the perpendicular plane. The third channel recorded wavelengths of 1064 nanometers total. The forth channel was a linear amplifier which received the digitized signal from one of the three previously
mentioned CLS detectors.

CONTACT FOR DATA PRODUCT INFORMATION:

Mission Scientist:

Dr. D. W. Johnson
Meteorological Research Flight
Y46 Building
DRA Farnborough,
Hampshire, GU14 6TD
ENGLAND
Phone: +44 252 395734
FAX: +44 252 375688
E-Mail: dwjohnson@email.meto.govt.uk

Technical Contact:

Bill Hart
Code 912
Goddard Space Flight Center
Greenbelt, MD 20771
USA
Phone: (301) 286-4936
FAX: (301) 286-1762
E-Mail: billhart@virl.gsfc.nasa.gov

NOTES ON DATA

The very last record in each file was duplicated. The read program takes this into account and ignores this last record. The read program will report an odd number of records in the file - one file header record plus a multiple of 2X data records (pairs of CLS Calibrated and Analyzed data records).

The latitude and longitude values in the file header record may specify a narrower range than the latitude and longitude values contained in the various CLS header records. This is due to the fact that the geographical coverage given in the header were based upon either the ASTEX operations summary report or a table of INS navigation information printed directly from the CLS backup tapes of raw data. When the operations report was used, information was extracted simply by looking at flight maps or tables. This method could have led to inaccuracies through misinterpretation. When the tables of INS navigation were used, inaccuracies could have resulted from the fact that the time resolution of the tables is fairly large. This would have led to a somewhat smaller region than found at a finer time resolution. The areal coverage contained in the file headers should be approximately correct and should be useful to any user of the data.

Some data records may occasionally contain garbled data. This seems to occur at the end of a flight segment just prior to the laser being turned off. These instances below, are identified by file name, record number, and problem type:

*********** LIDAR FILE ax_lidar_920608 ************
RECORD NO. 682 -bad Julian date-
RECORD NO. 683 -bad latitude/longitude value-
RECORD NO. 685 -bad latitude/longitude value-
RECORD NO. 15622 -bad Julian date-
*********** LIDAR FILE ax_lidar_920612 ************
RECORD NO. 7846 -garbled data-
RECORD NO. 7848 -garbled data-
RECORD NO. 9060 -garbled data-
RECORD NO. 9062 -garbled data-
RECORD NO. 9522 -garbled data-
RECORD NO. 9524 -garbled data-
RECORD NO. 11110 -bad Julian date-
RECORD NO. 11111 -bad latitude/longitude value-
RECORD NO. 11113 -bad latitude/longitude value-
RECORD NO. 11550 -garbled data-
RECORD NO. 11552 -garbled data-
RECORD NO. 12716 -garbled data-
RECORD NO. 12718 -garbled data-
RECORD NO. 13334 -garbled data-
RECORD NO. 13336 -garbled data-
RECORD NO. 15518 -garbled data-
RECORD NO. 15520 -garbled data-
*********** LIDAR FILE ax_lidar_920617 ************
RECORD NO. 2608 -garbled data-
RECORD NO. 2610 -garbled data-
RECORD NO. 3034 -garbled data-
RECORD NO. 3036 -garbled data-
RECORD NO. 11512 -garbled data-
RECORD NO. 11514 -garbled data-
*********** LIDAR FILE ax_lidar_920618 ************

RECORD NO. 2756 -garbled data-
RECORD NO. 2758 -garbled data-
RECORD NO. 5160 -garbled data-
RECORD NO. 5162 -garbled data-
RECORD NO. 6594 -garbled data-
RECORD NO. 6596 -garbled data-
RECORD NO. 8662 -garbled data-
RECORD NO. 8664 -garbled data-
*********** LIDAR FILE ax_lidar_920619 ************
RECORD NO. 1826 -garbled data-
RECORD NO. 1828 -garbled data-
RECORD NO. 3626 -garbled data-
RECORD NO. 3628 -garbled data-
RECORD NO. 5504 -garbled data-
RECORD NO. 5506 -garbled data-
RECORD NO. 7322 -garbled data-
RECORD NO. 7324 -garbled data-
RECORD NO. 9234 -garbled data-
RECORD NO. 9236 -garbled data-
RECORD NO. 10894 -garbled data-
RECORD NO. 10896 -garbled data-
RECORD NO. 12804 -garbled data-
RECORD NO. 12806 -garbled data-
RECORD NO. 14466 -garbled data-
RECORD NO. 14468 -garbled data-
RECORD NO. 16308 -garbled data-
RECORD NO. 16310 -garbled data-
RECORD NO. 18012 -garbled data-
RECORD NO. 18014 -garbled data-
RECORD NO. 19464 -garbled data-
RECORD NO. 19466 -garbled data-
RECORD NO. 20796 -garbled data-
RECORD NO. 20798 -garbled data-
RECORD NO. 21386 -garbled data-
RECORD NO. 21388 -garbled data-
*********** LIDAR FILE ax_lidar_920622 ************
RECORD NO. 1668 -garbled data-
RECORD NO. 1670 -garbled data-
RECORD NO. 3344 -garbled data-
RECORD NO. 3346 -garbled data-
RECORD NO. 4268 -garbled data-
RECORD NO. 4270 -garbled data-
RECORD NO. 6040 -garbled data-
RECORD NO. 6042 -garbled data-
RECORD NO. 8852 -garbled data-
RECORD NO. 8854 -garbled data-

These discrepencies were not observed in files not listed above.

5.3 FIRE_AX_UW_C131A Data Set

This data set is available in ASCII formatted files. The files are organized by date of flight.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) University of Washington C-131A Aircraft Flight Data (FIRE_AX_UW_C131A)

FILE NAMING CONVENTION:

The FIRE_AX_UW_C131A data set files are prefixed with “ax_uw_c131a_” to signify that these are files associated with the FIRE ASTEX University of Washington’s C131A data. This prefix is followed by the a six digit number representing the year, month, and day the flight occurred in a “yymmdd” format.

VARIABLES:

This data set’s files contain 25 variables each. In addition, there is a header line which identifies the flight number, date of flight and number of variables in the file These variables are:

Variable	Units
time	hhmmss (Z)
lat (gps)	deg N
lon (gps)	deg E
lat (omega)	deg N
lon (omega)	deg E
heading (omega)	deg
true airspeed	m/sec
pressure altitude	km
pressure	mb
temperature (reverse-flow)	C
temperature (Rosemount)	C
dewpoint (EG&G)	C
dewpoint (Ophir)	C
absolute humidity (Ophir)	g/m^3
turbulence	cm^(2/3)/sec
condensation nuclei	#/cm^3
droplet concentration (FSSP)	#/cm^3
liquid water (FSSP)	g/m^3
liquid water (Johnson-Williams probe)	g/m^3
liquid water (King probe)	g/m^3
sst	C
visible radiation (upward)	W/m^2
visible radiation (downward)	W/m^2
uv radiation	W/m^2
ozone	ppb

FIRST RECORD OF DATA FROM FIRST DATA GRANULE

[1] 26355

flight 1557 06/02/92 25

timeh	latgps	longps	latomg	lonomg	thdgo	tas	palt	pstat	tstatr	tstat	dp
hhmmss	deg	deg			deg	m/s	km	mb	deg C	deg C	deg C
085900	36.888	-25.199	36.91	-25.20	136.	80.9	0.875	908.	5.2	5.5	4.8

dp_o	rhovo	turb	cnc1	fsprt	lwfsp	lwjw	lwkg	irtemp	pyrup
degC	gm/m^3	cm^(2/3)/s	#/cm^3	#/cm^3	gm/m^3	gm/m^3	gm/m^3	deg C	W/m^2
6.0	7.28	0.8	1552.	148	0.062	0.107	*****	13.66	246.

pyrdn	uv	o3
W/m^2	w/m^2	ppb
18.	11.	29.2

NOTES ON DATA:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

INSTRUMENTATION:

The following instruments used to collect data for this data set were flown aboard the University of Washington’s Convair C-131 airplane. Instruments include the following: FSSP (Forward Scattering Spectrometer Probe); GPS (Global Positioning System); pressure sensors; cloud liquid water probe, JW Probe (Johnson-Williams probe); KING Probe; and the OMEGA Navigation System.

CONTACT FOR DATA PRODUCT INFORMATION:

Mission Scientist:

Dr. D. W. Johnson
Meteorological Research Flight
Y46 Building
DRA Farnborough,
Hampshire, GU14 6TD
ENGLAND
Phone: +44 252 395734
FAX: +44 252 375688
E-Mail: dwjohnson@email.meto.govt.uk

Technical Contact:

Dr. Dean Hegg
Department of Atmospheric Science AK-40
University of Washington
Seattle WA 98195
USA
Phone: (206) 685-1984
Fax: (206) 685-7160
E-Mail: deanhegg@atmos.washington.edu

5.4 FIRE_AX_UW_DSCRT Data Set

This data set is available in ascii formatted files. There are a total of 15 data files in this data set which contain discrete-sample data collected using the University of Washington's research aircraft.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) University of Washington C-131A Aircraft Discrete Sample Data (FIRE_AX_UW_DSCRT)

FILE NAMING CONVENTION:

The FIRE_AX_UW_DSCRT data set files are prefixed with "ax_uw_dscrt_" to signify that these are files associated with the FIRE ASTEX University of Washington's Discrete Sample and Aircraft data. This prefix is followed by a six digit number representing the year, month, and day on which the flight occurred in a "yymmdd" format.

VARIABLES:

This data set's files contain 21 variables each. Each file contains a header section with a text section describing what the file contains and the date the samples were collected. This is followed by a column header identifying the data and it's corresponding units. A sample of the column headers and the first record of data is provided in the subsection following the list of variables.

 # Variable/Description/Units

1 time: the time of sample collection; units are hh:mm LST.
2 altitude: pressure-altitude of aircraft; units are kilometers.
3 temperature: environmental temperature; units are degrees C.
4 temperature (humidity-corrected): units are degrees C.
5 potential temperature: units are degrees C.
6 moist static energy: the sum of the sample's enthalpy, gravitational potential energy and latent heat content; analogous to equivalent potential temperature; units are joules per gram of air.
7 liquid water content: measured with the Johnson-Williams probe; units are grams of water per cubic meter of air.
8 droplet concentration: atmospheric concentration of water droplets measured with the Forward Scattering Spectrometer Probe; units are number of droplets per cubic centimeter of air.
9 liquid water content: measured with the Forward Scattering Spectrometer Probe; units are grams per cubic meter.
10 effective droplet radius: measured with the Forward Scattering Spectrometer Probe; units are microns.
11 liquid water content: measured with the Gerber probe; units are grams per cubic meter.
12 effective droplet diameter: measured with the Gerber probe; units are microns.
13 carbon dioxide concentration: units are ppm.
14 carbon monoxide concentration: detection limit is 0.25 ppm.

15 ozone concentration: units are ppb
16 sulfur dioxide concentration: units are ppt; detection limit is 5 ppt.
17 dimethylsulfide concentration: units are ppt; detection limit is 2 ppt.
18 particulate sulfate concentration: units are micrograms of sulfate per cubic meter of air; detection limit is 0.005 micrograms per cubic meter.
19 condensation nuclei (particle) concentration: units are number of particles per cubic centimeter of air; particle size limit for detection is ~0.005 microns.
20 particle diameter: for particle spectra plots; measured with Differential Mobility Particle Spectrometer; units are microns.
21 dn/dlogd: particle number concentration per size increment for particle spectra plots; measured with Differential Mobility Particle Spectrometer; units are number per cubic centimeter. *****(**Please refer to the readme file which accompanies this data set. There is important information pertaining to the collected validity of the data.**)*****

FIRST RECORD OF DATA FROM FIRST GRANULE:

Note: Data column headers are included for reader’s convenience.

```
             |-- Temperatures -|
             |                 |
             |                 |
             |                 |
|time |  alt |  t  |thum |tpot |mse |
|-----|------|-----|-----|-----|----|
|     |      |     |     |     |    |
| LST |  km  |  C  |  C  |  C  | j/g|
|-----|------|-----|-----|-----|----|
|  1  |   2  |  3  |  4  |  5  |  6 |
------------------------------------|

 9:27  1.164   9.0   8.9  19.9  309.
       0.001   0.1   0.1   0.1    1.

|------------ Liquid Water ------------|
|                                      |
|  J-W |------ FSSP ------|-- Gerber --|
|      |                  |            |
|  lwc |drpc |  lwc |efra |  lwc |efdi |
|------|-----|------|-----|------|-----|
|  gm/ |  #/ |  gm/ |     |  gm/ |     |
|  m^3 |cm^3 |  m^3 |  um |  m^3 |  um |
|------|-----|------|-----|------|-----|
|  7   |  8  |   9  |  10 |  11  |  12 |
---------------------------------------
```

```
 0.000     0  0.000    ND  0.025    ND
 0.000     0  0.000        0.003

|----------- Gases ------------|-------- Particles -------|
|                              |                          |
|                  |----- Sulfur ----|      |--- DMPS ----|
|                  |           |     |      |             |
|  co2 |  co  |  o3 | so2 | dms |slft |  cn  |   d  |dndld |
|------|-----|-----|-----|-----|-----|------|------|------|
|      |     |     |     |     | ug/ |  #/  |      |   #/ |
|  ppm | ppm | ppb | ppt | ppt | m^3 | cm^3 |  um  | cm^3 |
|------|-----|-----|-----|-----|-----|------|------|------|
|  13  |  14 |  15 |  16 |  17 |  18 |  19  |  20  |  21  |
-----------------------------------------------------------

 371.6   BDL  40.3   ND    ND    ND    532    ND     ND
   0.6         0.5                       8
```

NOTES ON DATA

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

INSTRUMENTATION:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

CONTACT FOR DATA PRODUCT INFORMATION:

Mission Scientist:

Dr. D. W. Johnson
Meteorological Research Flight
Y46 Building
DRA Farnborough,
Hampshire, GU14 6TD
ENGLAND
Phone: +44 252 395734
FAX: +44 252 375688
E-Mail: dwjohnson@email.meto.govt.uk

Technical Contact:

Dr. Dean Hegg

Department of Atmospheric Science AK-40
University of Washington
Seattle WA 98195
USA
Phone: (206) 685-1984
Fax: (206) 685-7160
E-Mail: deanhegg@atmos.washington.edu

5.5 FIRE_AX_UW_GERB_10HZ and FIRE_AX_UW_GERB_1HZ Data Sets

These two data sets are discussed together because the FIRE_AX_UW_GERB_1HZ data set is the product of the FIRE_AX_UW_GERB_10HZ data set being averaged over approximately one second time intervals. These data sets are available in ASCII format.

LONG NAMES FOR THESE DATA SETS:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) University of Washington C-131A Aircraft Cloud Microphysics Data (10 Hertz) (FIRE_AX_UW_GERB_10HZ)

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) University of Washington C-131A Aircraft Cloud Microphysics Data (1 Hertz) (FIRE_AX_UW_GERB_1HZ)

FILE NAMING CONVENTION:

These data sets have directories which are named with the prefix “ax_gerb_10hz” and “ax_gerb_1hz” to indicate the data sets they are related to. This prefix is then followed by a six digit number representing the date of the flight in a “yymmdd” format. The “ax_gerb_10hz_yymmdd” directories contain files which are then named with the prefix “ASTEX”, signifying FIRE ASTEX data, followed by a 2 digit sequence number ranging from 01 through 47, and ending in the suffix “.10” (i.e., ASTEX##.10). The “ax_gerb_1hz” data directories contain the averaged one hertz data files which are similarly named, except they end with the suffix “.1HZ” (i.e., ASTEX##.1HZ). The chart below provides a cross reference of flight/date, time span, 10 hertz data file name, 1 hertz data file name, and data set directory names.

FLIGHT NO. & Day	INTERVAL NO.	U. OF WASH. TIME INTERVAL (hhmmss - hhmmss)	10 HZ DATA FILE	1 HZ DATA FILE
			ax_gerb_10hz_920602	ax_gerb_1hz_920602
1557	1	092900 - 100300	ASTEX01.10	ASTEX01.1HZ
2 June	2	101000 - 105656.1	ASTEX02.10	ASTEX02.1HZ
	3	112600 - 122000	ASTEX03.10	ASTEX03.1HZ
			ax_gerb_10hz_920604	ax_gerb_1hz_920604
1558	4	110500 - 115700	ASTEX04.10	ASTEX04.1HZ
4 June	5	123100 - 133300	ASTEX05.10	ASTEX05.1HZ
	6	140800 - 145200	ASTEX06.10	ASTEX06.1HZ

			ax_gerb_10hz_920608	ax_gerb_1hz_920608
1559	7	104333 - 104800	ASTEX07.10	ASTEX07.lHZ
8 June	8	115000 - 125600	ASTEX08.10	ASTEX08.1HZ
1560		NO CLOUDS		
10 June				
			ax_gerb_10hz_920612	ax_gerb_1hz_920612
1561	9	093600 - 101100	ASTEX09.10	ASTEX09.lHZ
12 June	10	102200 - 111200	ASTEX10.10	ASTEX10.lHZ
	11	113500 - 121800	ASTEX11.10	ASTEXll.lHZ
	12	131300 - 134500	ASTEX12.10	ASTEX12.lHZ
	13	142100 - 144000	ASTEX13.10	ASTEX13.lHZ
			ax_gerb_10hz_920613	ax_gerb_1hz_920613
1562	15	100900 - 101600	ASTEX15.10	ASTEX15.lHZ
13 June	16	110000 - 111000	ASTEX16.10	ASTEX16.lHZ
	17	114300 - 114900	ASTEX17.10	ASTEX17.lHZ
	18	125700 - 135800	ASTEX18.10	ASTEX18.lHZ
	19	140100 - 144900	ASTEX19.10	ASTEXl9.lHZ
			ax_gerb_10hz_920615	ax_gerb_1hz_920615
1563	20	151200 - 160500	ASTEX20.10	ASTEX20.lHZ
15 June	21	161100 - 165000	ASTEX21.10	ASTEX21.1HZ
			ax_gerb_10hz_920617	ax_gerb_1hz_920617
1564	22	115500 - 122500	ASTEX22.10	ASTEX22.lHZ
17 June	25	093700 - 103700	ASTEX25.10	ASTEX25.1HZ
	26	103700 - 113200	ASTEX26.10	ASTEX26.lHZ
	27 *	114500 - 123600	ASTEX27.10 ASTEX27.1	ASTEX27.lHZ
	28	125800 - 130100	ASTEX28.10	ASTEX28.lHZ
1566		NO CLOUDS		
19 June				
			ax_gerb_10hz_920620	ax_gerb_1hz_920620
1567	29	161500 - 161800	ASTEX29.10	ASTEX29.lHZ
20 June	31	200200 - 201200	ASTEX31.10	ASTEX31.1HZ
			ax_gerb_10hz_920621	ax_gerb_1hz_920621
1568	32	090100 - 090600	ASTEX32.10	ASTEX32.lHZ
21 June	33	093800 - 103800	ASTEX33.10	ASTEX33.1HZ
	34	103800 - 110000	ASTEX35.10	ASTEX35.lHZ
			ax_gerb_10hz_920622	ax_gerb_1hz_920622
1569	36	050800 - 051100	ASTEX36.10	ASTEX36.lHZ
22 June	37	053100 - 053300	ASTEX37.10	ASTEX37.lHZ
	38	055300 - 061100	ASTEX38.10	ASTEX38.lHZ
	39	070800 - 071100	ASTEX39.10	ASTEX39.lHZ
	40	072600 - 073000	ASTEX40.10	ASTEX40.lHZ
	41	081000 - 090600	ASTEX41.10	ASTEX41.lHZ
			ax_gerb_10hz_920623	ax_gerb_1hz_920623
1570	42	131500 - 135000	ASTEX42.10	ASTEX42.lHZ
23 June				

			ax_gerb_10hz_920626	ax_gerb_1hz_920626
1571	43	094200 - 104000	ASTEX43.10	ASTEX43.lHZ
26 June	44	104000 - 114000	ASTEX44.10	ASTEX44.lHZ
	45	114000 - 124000	ASTEX45.10	ASTEX45.lHZ
	46	124100 - 134200	ASTEX46.10	ASTEX46.lHZ
	47	140000 - 150200	ASTEX47.10	ASTEX47.lHZ

```
1572            NO CLOUDS
27 June
```

*** See NOTES ON DATA section below**

VARIABLES:

Please refer to the Sample Data Section below for variables and units contained within these data sets.

SAMPLE DATA FROM DATA SETS:

SAMPLE DATA: "ASTEX21 l0"

FLT 1563 June 15 Interval No. 21
U.W. Time frl61100 tol65000

time (S)	LWC (g/m^3)	PSA (cm^2/m^3)	r(eff) (um)
0.000	-0.008	-38.500	0.000
0.102	-0.008	-38.497	0.000
0.203	-0.008	-38.494	0.000
0.305	-0.008	-15.391	0.000
0.406	-0.008	-15.388	0.000
0.508	-0.008	-15.385	0.000
0.609	-0.008	-38.482	0.000
0.711	-0.008	-38.479	0.000
0.813	-0.008	-38.476	0.000
0.914	-0.008	-15.373	0.000
1.016	-0.008	-38.470	0.000
1.117	-0.008	-15.367	0.000
1.219	-0.008	-15.364	0.000
1.320	-0.008	-15.361	0.000
1.422	-0.013	-15.358	0.000
1.524	-0.008	-15.355	0.000
1.625	-0.008	-15.352	0.000
1.727	-0.008	-15.349	0.000
1.828	-0.008	-38.446	0.000
1.930	-0.008	-15.343	0.000
2.031	-0.008	-38.440	0.000

SAMPLE DATA: "ASTEX21.lHZ"

FLT 1563 June 15 Interval No.21

U.W. Time frl61100 tol65000 --

time	LWC	PSA	r(eff)	WITH DRIZZLE LWC	WITH DRIZZLE PSA	WITH DRIZZLE r(eff)
(s)	(g/m^3)	(cm^2/m^3)	(um)	(g/m^3)	(cm^2/m^3)	(um)
0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.016	-0.008	-29.243	0.000	-0.008	-29.243	0.000
2.031	-0.009	-19.973	0.000	-0.009	-19.973	0.000
3.047	-0.008	-24.564	0.000	-0.008	-24.564	0.000
4.063	0.009	26.286	0.000	0.009	26.286	0.000
5.078	0.003	10.147	0.000	0.003	10.147	0.000
6.094	0.000	-1.373	0.000	0.000	-1.373	0.000
7.008	0.000	-2.886	0.000	0.000	-2.886	0.000
8.024	-0.001	0.224	0.000	-0.001	0.224	0.000
9.039	-0.002	0.255	0.000	-0.002	0.255	0.000
10.055	0.000	-1.256	0.000	0.000	-1.256	0.000

NOTES ON DATA:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

INSTRUMENTATION:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Dr. H. Gerber
1643 Bentana Way
Reston, VA 22090
USA
Phone: (703) 742-9844
FAX: (703) 742-3374
E-Mail: gerber@access.digex.net

5.6 FIRE_AX_MALBAL_SONDE Data Set

This data set is available in ASCII format. Data are available from June 7, 1992 thru June 28, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Malcolm Baldrige Radiosonde Data (FIRE_AX_MALBAL_SONDE)

FILE NAMING CONVENTION:

This data set has directories which are named with the prefix "ax_malbal_snd_." This prefix is then followed by a six digit number representing a days worth of data in a "yymmdd" format. Each directory consists on one day's collection of data. The number of files under each directory vary.

As for the filenames within the sub directories, the first character that appears in the filename is the site identifier. In this case, "M" appears representing the Malcolm Baldrige site. The month is coded "JN" for June. The next four characters represent the day and year in "ddyy" format. The last character before the period represents the three sets of interpolated sounding data for each site. They are 5-second, 20-meter, and 2-millibar. The filenames are thus coded with either a "t", a "z", or a "p" representing time, height, and pressure interpolation, respectively. Finally, the suffix is "xxZ" where "xx" represents the official data time and is either 00, 03, 06, 09, 12, 15, 18, or 21 UTC.

VARIABLES:

TABLE 3. Parameters For This Data Set (Malcolm Baldrige)

Parameter	Units	Minimum Value	Maximum Value	Fill Value
Time	minutes	0	120	
Second	seconds	0	60	
AscRate	m/s	0.0	20.0	
Height	m	0	30000	
Pressure	hPa	10.0	1050.0	
Temperature	degC	-80.0	35.0	
Relative Humidity	%	0.0	100.0	-99.9
Dewpoint	degC	-99.9	30.0	-99.9
Mixing Ratio	g/kg	0.0	20.0	-9.999
Wind Direction	deg	0	360	-99
Wind Speed	m/s	0.0	100.0	-99.9

Please refer to the Sample Data Section below for the layout of this data set.

SAMPLE DATA FROM DATA SET:

There are five lines of information that are in every data file. The actual data starts on line number six. The first three lines of every data file represents header information. The first line states the site name. The second line represents the location, and the third represents the time when the data collection began (date and time). The fourth line consists of the parameter labels for every column of data. The fifth line consists of the units for every parameter. This sample data were extracted from the data file, MJN0792P.12Z.

```
MALCOLM BALDRIGE
28.83N   27.40W
9206071035
 Time    AscRate Hgt/MSL Pressure  Temp    RH    Dewp  Mix R.  Dir Speed
min  s    m/s      m       hPa    degC     %    degC   g/kg   deg   m/s
  0  0    0.0        7   1024.2   21.0   84.0   18.2  12.945   20   7.0
```

NOTES ON DATA:

Fill values are flagged for the following values: Relative Humidity, Dewpoint, and Wind Speed equal -99.9, Mixing Ratio equals -9.999, and Wind direction is -99.

The data producer stated that the minimum and maximum values defined for the Second parameter should be 0 and 59. However, after reviewing the data, it was found that 60 was the maximum. Please be aware of this!

There are three files that the data producer has provided for this data set. The files are ax_radiosonde_readme.1st, ax_malbal_snd.readme, and ax_malbal_snd.summary. Please refer to these files for detailed information pertaining to this data set.

INSTRUMENTATION:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.7 FIRE_AX_OCEANS_SONDE Data Set

This data set is available in ASCII format. Data are available from June 3, 1992 thru June 23, 1992.

LONG NAME FOR THIS DATA SET:

FILE NAMING CONVENTION:

This data set has directories which are named with the prefix “ax_oceans_snd_.” This prefix is then followed by a six digit number representing a days worth of data in a “yymmdd” format. Each directory consists on one day’s collection of data. The number of files under each directory vary.

As for the filenames within the sub directories, the first character that appears in the filename is the site identifier. In this case, “O” appears representing the Oceanus site. The month is coded “JN” for June. The next four characters represent the day and year in “ddyy” format. The last character before the period represents the three sets of interpolated sounding data for each site. hey are 5-second, 20-meter, and 2-millibar. The filenames are thus coded with either a “t”, a “z”, or a “p” representing time, height, and pressure interpolation, respectively. Finally, the suffix is “xxZ” where “xx” represents the official data time and is either 00, 03, 06, 09, 12, 15, 18, or 21 UTC.

VARIABLES:

TABLE 4. Parameters For This Data Set (Oceanus)

Parameter	Units	Minimum Value	Maximum Value	Fill Value
Time	minutes	0	120	
Second	seconds	0	59	
AscRate	m/s	0.0	20.0	
Height	m	0	30000	
Pressure	hPa	10.0	1050.0	
Temperature	degC	-80.0	35.0	
Relative Humidity	%	0.0	100.0	-99.9
Dewpoint	degC	-99.9	30.0	-99.9
Mixing Ratio	g/kg	0.0	20.0	-9.999
Wind Direction	deg	0	360	-99
Wind Speed	m/s	0.0	100.0	-99.9

Please refer to the Sample Data Section below for the layout of this data set.

SAMPLE DATA FROM DATA SET:

There are five lines of information that are in every data file. The actual data starts on line number six. The first three lines of every data file represents header information. The first line states the site name. The second line represents the location, and the third represents the time when the data collection began (date and time). The fourth line consists of the parameter labels for every column of data. The fifth line consists of the units for every parameter. This sample data were extracted from the data file, OJN0392P.21Z.

```
 OCEANUS
 37.65N   25.17W
 9206031945
  Time    AscRate Hgt/MSL Pressure  Temp     RH     Dewp  Mix R.  Dir Speed
 min  s    m/s      m       hPa    degC      %     degC   g/kg   deg   m/s
   0  0    0.0        5   1031.2   18.0   64.0    11.2   8.066  270   2.6
```

NOTES ON DATA:

Missing data are flagged with the following values: Relative Humidity, Dewpoint, and wind speed equal -99.9, Mixing Ratio equals -9.999, and wind direction is -99.

There are three files that the data producer has provided for this data set. The files are ax_radiosonde_readme.1st, ax_oceans_snd.readme, and ax_oceans_snd.summary. Please refer to these files for detailed information pertaining to this data set.

INSTRUMENTATION:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.8 FIRE_AX_PORSAN_SONDE Data Set

This data set is available in ASCII format. Data are available from June 1, 1992 thru June 29, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Porto Santo Radiosonde Data (FIRE_AX_PORSAN_SONDE)

FILE NAMING CONVENTION:

This data set has directories which are named with the prefix “ax_porsan_snd_.” This prefix is then followed by a six digit number representing a days worth of data in a “yymmdd” format. Each directory consists on one day’s collection of data. The number of files under each directory vary.

As for the filenames within the sub directories, the first character that appears in the filename si the site identifier. In this case, “P” appears representing the Porto Santo site. The month is coded “JN” for June. The next four characters represent the day and year in “ddyy” format. The last character before the period represents the three sets of interpolated sounding data for each site. hey are 5-second, 20-meter, and 2-millibar. The filenames are thus coded with either a “t”, a “z”, or a “p” representing time, height, and pressure interpolation, respectively. Finally, the suffix is “xxZ” where “xx” represents the official data time and is either 00, 03, 06, 09, 12, 15, 18, or 21 UTC.

VARIABLES:

TABLE 5. Parameters For This Data Set (Porto Santo)

Parameter	Units	Minimum Value	Maximum Value	Fill Value
Time	minutes	0	150	
Second	seconds	0	60	
AscRate	m/s	0.0	20.0	
Height	m	150	35000	
Pressure	hPa	10.0	1050.0	
Temperature	degC	-80.0	35.0	
Relative Humidity	%	0.0	100.0	-99.9
Dewpoint	degC	-99.9	30.0	-99.9
Mixing Ratio	g/kg	0.0	20.0	-9.999
Wind Direction	deg	0	360	-99
Wind Speed	m/s	0.0	100.0	-99.9

Please refer to the Sample Data Section below for the layout of this data set.

SAMPLE DATA FROM DATA SET:

There are five lines of information that are in every data file. The actual data starts on line number six. The first three lines of every data file represents header information. The first line states the site name. The second line represents the location, and the third represents the time when the data collection began (date and time). The fourth line consists of the parameter labels for every column of data. The fifth line consists of the units for every parameter. This sample data were extracted from the data file, PJN0192P.03Z.

```
 PORTO SANTO
 33.08N   16.35W
 9206010203
  Time    AscRate Hgt/MSL Pressure  Temp     RH     Dewp  Mix R.  Dir Speed
 min  s     m/s      m       hPa    degC      %     degC   g/kg   deg   m/s
   0  0     0.0       97   1005.8   16.8   74.0    12.1   8.874  350   1.5
```

NOTES ON DATA:

Missing data are flagged with the following values: Relative Humidity, Dewpoint, and wind speed equal -99.9, Mixing Ratio equals -9.999, and wind direction is -99.

The data producer stated that the minimum and maximum values defined for the Second parameter should be 0 and 59. However, after reviewing the data, it was found that 60 was the maximum. Please be aware of this! There are some granules that contained Wind Speed values greater than 100.0. These should be ignored. This parameter should have a -99.9 value assigned to them. Because the Wind Speed values that are greater than 100.0 should be flagged as bad data (-99.9) so should the Wind Direction in the same record. However, the flag for bad data for the Wind Direction should be -99.
Please be aware of these values!

There are three files that the data producer has provided for this data set. The files are ax_radiosonde_readme.1st, ax_porsan_snd.readme, and ax_porsan_snd.summary.Please refer to these files for detailed information pertaining to this data set.

INSTRUMENTATION:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.9 FIRE_AX_SANMAR_SONDE Data Set

This data set is available in ASCII format. Data are available from June 1, 1992 thru June 28, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Santa Maria Radiosonde Data (FIRE_AX_SANMAR_SONDE)

FILE NAMING CONVENTION:

This data set has directories which are named with the prefix “ax_sanmar_snd_.” This prefix is then followed by a six digit number representing a days worth of data in a “yymmdd” format. Each directory consists on one day’s collection of data. The number of files under each directory vary.

As for the filenames within the sub directories, the first character that appears in the filename si the site identifier. In this case, “S” appears representing the Santa Maria site. The month is coded “JN” for June. The next four characters represent the day and year in “ddyy” format. The last character before the period represents the three sets of interpolated sounding data for each site. hey are 5-second, 20-meter, and 2-millibar. The filenames are thus coded with either a “t”, a “z”, or a “p” representing time, height, and pressure interpolation, respectively. Finally, the suffix is “xxZ” where “xx” represents the official data time and is either 00, 03, 06, 09, 12, 15, 18, or 21 UTC.

VARIABLES:

TABLE 6. Parameters For This Data Set (Santa Maria)

Parameter	Units	Minimum Value	Maximum Value	Fill Value
Time	minutes	0	120	
Second	seconds	0	59	
AscRate	m/s	0.0	20.0	
Height	m	0	30000	
Pressure	hPa	10.0	1050.0	
Temperature	degC	-80.0	35.0	
Relative Humidity	%	0.0	100.0	-99.9
Dewpoint	degC	-99.9	30.0	-99.9
Mixing Ratio	g/kg	0.0	20.0	-9.999
Wind Direction	deg	0	360	-99
Wind Speed	m/s	0.0	100.0	-99.9

Please refer to the Sample Data Section below for the layout of this data set.

SAMPLE DATA FROM DATA SET:

There are five lines of information that are in every data file. The actual data starts on line number six. The first three lines of every data file represents header information. The first line states the site name. The second line represents the location, and the third represents the time when the data collection began (date and time). The fourth line consists of the parameter labels for every column of data. The fifth line consists of the units for every parameter. This sample data were extracted from the data file, SJN0192P.12Z. There is one difference in this data file compared to the other Radiosonde data and that is there is a blank line following every line of text and data. The sample read software has been written to skip the blank line in the data files.

```
STA MARIA

 36.99N   25.17W

 9206011039

  Time    AscRate Hgt/MSL Pressure  Temp    RH    Dewp  Mix R.  Dir Speed

 min  s    m/s      m       hPa    degC     %    degC   g/kg   deg   m/s

   0  0    0.0       50   1020.6   17.2   61.0    9.6   7.377  350   4.0
```

NOTES ON DATA:

Every other line in each data file is a blank line. The read software is set up to ignore this line and read the next line of data.

Missing data are flagged with the following values: Relative Humidity, Dewpoint, and Wind Speed equal -99.9, Mixing Ratio equals -9.999, and Wind Direction is -99.

There are three files that the data producer has provided for this data set. The files are ax_radiosonde_readme.1st, ax_sanmar_snd.readme, and ax_sanmar_snd.summary. Please refer to these files for detailed information pertaining to this data set.

INSTRUMENTATION:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building

University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.10 FIRE_AX_SUROIT_SONDE Data Set

This data set is available in ASCII format. Data are available from June 1, 1992 thru June 20, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) LE Suroit Radiosonde Data (FIRE_AX_SUROIT_SONDE)

FILE NAMING CONVENTION:

This data set has directories which are named with the prefix "ax_malbal_snd_." This prefix is then followed by a six digit number representing a days worth of data in a "yymmdd" format. Each directory consists on one day's collection of data. The number of files under each directory vary.

As for the filenames within the sub directories, the first character that appears in the filename si the site identifier. In this case, "L" appears representing the LE Suroit site. The month is coded "JN" for June. The next four characters represent the day and year in "ddyy" format. The last character before the period represents the three sets of interpolated sounding data for each site. hey are 5-second, 20-meter, and 2-millibar. The filenames are thus coded with either a "t", a "z", or a "p" representing time, height, and pressure interpolation, respectively. Finally, the suffix is "xxZ" where "xx" represents the official data time and is either 00, 03, 06, 09, 12, 15, 18, or 21 UTC.

VARIABLES:

TABLE 7. Parameters For This Data Set (LE Suroit)

Parameter	Units	Minimum Value	Maximum Value	Fill Value
Time	minutes	0	120	
Second	seconds	0	59	
AscRate	m/s	0.0	20.0	
Height	m	0	30000	
Pressure	hPa	10.0	1050.0	
Temperature	degC	-80.0	35.0	
Relative Humidity	%	0.0	100.0	-99.9
Dewpoint	degC	-99.9	30.0	-99.9

Parameter	Units	Minimum Value	Maximum Value	Fill Value
Mixing Ratio	g/kg	0.0	20.0	-9.999
Wind Direction	deg	0	360	-99
Wind Speed	m/s	0.0	100.0	-99.9

Please refer to the Sample Data Section below for the layout of this data set.

SAMPLE DATA FROM DATA SET:

There are five lines of information that are in every data file. The actual data starts on line number six. The first three lines of every data file represents header information. The first line states the site name. The second line represents the location, and the third represents the time when the data collection began (date and time). The fourth line consists of the parameter labels for every column of data. The fifth line consists of the units for every parameter. This sample data were extracted from the data file, LJN0192P.00Z.

```
 LE SUROIT
  37.05N   25.00W
  9205312317
   Time    AscRate Hgt/MSL Pressure  Temp    RH    Dewp  Mix R.  Dir Speed
  min  s    m/s     m       hPa     degC     %    degC   g/kg   deg   m/s
    0  0    0.0        5   1024.0   16.4   76.0   12.1   8.725   13   8.2
```

NOTES ON DATA:

Missing data are flagged with the following values: Relative Humidity, Dewpoint, and wind speed equal -99.9, Mixing Ratio equals -9.999, and Wind Direction is -99.

There are granules that contained Wind Speed values greater than 100.0. These should be ignored. This parameter should have a -99.9 value assigned to them. Because the Wind Speed values that are greater than 100.0 should be flagged as bad data (-99.9) so should the Wind Direction in the same record. However, the flag for bad data for the Wind Direction should be -99.
Please be aware of these values!

All of the wind speed values are bad in the data file, LJN2092P.12Z (as referred to at the Langley DAAC). In fact, all wind data from that time are bad.

There are three files that the data producer has provided for this data set. The files are ax_radiosonde_readme.1st, ax_suroit_snd.readme, and ax_suroit_snd.summary. Please refer to these files for detailed information pertaining to this data set.

INSTRUMENTATION:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.11 FIRE_AX_VALDIV_SONDE Data Set

This data set is available in ASCII format. Data are available from May 28 1992 thru June 22, 1992.

LONG NAMEs FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Valdivia Radiosonde Data (FIRE_AX_VALDIV_SONDE)

FILE NAMING CONVENTION:

This data set has directories which are named with the prefix “ax_malbal_snd_.” This prefix is then followed by a six digit number representing a days worth of data in a “yymmdd” format. Each directory consists on one day’s collection of data. The number of files under each directory vary.

As for the filenames within the sub directories, the first character that appears in the filename si the site identifier. In this case, “V” appears representing the Valdivia site. The month is coded either “MY” for May or “JN” for June. The next four characters represent the day and year in “ddyy” format. The last character before the period represents the three sets of interpolated sounding data for each site. hey are 5-second, 20-meter, and 2-millibar. The filenames are thus coded with either a “t”, a “z”, or a “p” representing time, height, and pressure interpolation, respectively. Finally, the suffix is “xxZ” where “xx” represents the official data time and is either 00, 03, 06, 09, 12, 15, 18, or 21 UTC.

VARIABLES:

TABLE 8. Parameters For This Data Set (Oceanus)

Parameter	Units	Minimum Value	Maximum Value	Fill Value
Time	minutes	0	120	
Second	seconds	0	60	
AscRate	m/s	0.0	20.0	
Height	m	0	30000	
Pressure	hPa	10.0	1050.0	
Temperature	degC	-80.0	35.0	
Relative Humidity	%	0.0	100.0	-99.9
Dewpoint	degC	-99.9	30.0	-99.9
Mixing Ratio	g/kg	0.0	20.0	-9.999
Wind Direction	deg	0	360	-99
Wind Speed	m/s	0.0	100.0	-99.9

Please refer to the Sample Data Section below for the layout of this data set.

SAMPLE DATA FROM DATA SET:

There are five lines of information that are in every data file. The actual data starts on line number six. The first three lines of every data file represents header information. The first line states the site name. The second line represents the location, and the third represents the time when the data collection began (date and time). The fourth line consists of the parameter labels for every column of data. The fifth line consists of the units for every parameter. This sample data were extracted from the data file, VMY2892.12Z. There is one difference in this data file compared to the other Radiosonde data and that is there is a blank line following every line of text and data. The sample read software has been written to skip the blank line in the data files.

```
VALDIVIA

39.08N   12.40W

9205281112

 Time    AscRate Hgt/MSL Pressure  Temp    RH    Dewp  Mix R.  Dir  Speed

min   s    m/s      m       hPa    degC     %    degC   g/kg   deg   m/s

  0   0    0.0       15   1007.3   14.4   94.0   13.4   9.663  213   2.3
```

NOTES ON DATA:

Every other line in each data file is a blank line. The read software is set up to ignore this line and read the next line of data.

Missing data are flagged with the following values: Relative Humidity, Dewpoint, and wind speed equal -99.9, Mixing Ratio equals -9.999, and wind direction is -99.

There are three files that the data producer has provided for this data set. The files are ax_radiosonde_readme.1st, ax_malbal_snd.readme, and ax_malbal_snd.summary. Please refer to these files for detailed information pertaining to this data set.

There were three files that contained a “^Z” at the end of the data files. These files were VJN0592P.18Z, VJN0592T.18Z, and VJN0592Z.18Z. At the data producer’s request, the DAAC removed this character from these files.

INSTRUMENTATION:

Please refer to the “readme” file that accompanies this data set. This file has been provided by the data producer.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.12 FIRE_AX_PSU_MAL Data Set

This data set is available in ASCII format. Data are available from June 1, 1992 thru June 27, 1992.

Read software is not available for this data set.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University Malcolm Baldrige Ceilometer Data (FIRE_AX_PSU_MAL)

FILE NAMING CONVENTION:

There are 28 granules in this data set. The granule naming convention for this data set consists of the following: ax_psuceil_malyymmdd, where `ax' represents ASTEX, `psuceil_mal' represents Pennsylvania State University Malcolm Baldrige Ceilometer data, and `yymmdd' represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

Information regarding the variables can be found in the ax_psu_ceilom.readme file which was provided by the data producer.

SAMPLE DATA FROM DATA SET:

One record of data has been extracted from the data granule, ax_psuceil_mal920601.

```
0 050  -999 0
```

NOTES ON DATA:

The first parameter, Time, consists of the hour, minutes, and seconds. Please be aware of where the values appear in the columns. For numbers less than 10, these digits were presented as “ #” where # represents a single number. The data less than 10 should have been represented as “0#” so that the time would be a consistent value of six digits.

Information regarding the data can be found in the ax_psu_ceilom.readme file.

INSTRUMENTATION:

Information regarding the data can be found in the ax_psu_ceilom.readme file.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.13 FIRE_AX_PSU_SAN Data Set

This data set is available in ASCII format. Data are available from June 3, 1992 thru June 28, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University Santa Maria Ceilometer Data (FIRE_AX_PSU_SAN)

FILE NAMING CONVENTION:

There are 26 granules in this data set. The granule naming convention for this data set consists of the following: ax_psuceil_sanyymmdd, where `ax' represents ASTEX, `psuceil_san' represents Pennsylvania State University Santa Maria Ceilometer data, and `yymmdd' represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

Information regarding the variables can be found in the ax_psu_ceilom.readme file.

SAMPLE DATA FROM DATA SET:

One record of data has been extracted from the data granule, ax_psuceil_san920603.

```
101129  -999 0
```

NOTES ON DATA:

The first parameter, Time, consists of the hour, minutes, and seconds. Please be aware of where the values appear in the columns. For numbers less than 10, these digits were presented as " #" where # represents a single number. The data less than 10 should have been represented as "0#" so that the time would be a consistent value of six digits.

The minimum and maximum range for the cloud base is 0 and 3800 meters, respectively. Negative numbers indicate missing data. More information regarding the data can be found in the ax_psu_ceilom.readme file.

INSTRUMENTATION:

Information regarding the variables can be found in the ax_psu_ceilom.readme file.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.14 FIRE_AX_PSU_VAL Data Set

This data set is available in ASCII format. Data are available from June 5, 1992 thru June 25, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University Valdivia Ceilometer Data (FIRE_AX_PSU_VAL)

FILE NAMING CONVENTION:

There are 21 granules in this data set. The granule naming convention for this data set consists of the following: ax_psuceil_valyymmdd, where `ax' represents ASTEX, `psuceil_val' represents Pennsylvania State University Valdivia data, and `yymmdd' represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

Information regarding the variables can be found in the ax_psu_ceilom.readme file.

SAMPLE DATA FROM DATA SET:

One record of data has been extracted from the data granule, ax_psuceil_val920605.

```
193123  1783 1
```

NOTES ON DATA:

The first parameter, Time, consists of the hour, minutes, and seconds. Please be aware of where the values appear in the columns. For numbers less than 10, these digits were presented as " #" where # represents a single number. The data less than 10 should have been represented as "0#" so that the time would be a consistent value of six digits.

The minimum and maximum range for the cloud base is 0 and 3800 meters, respectively. Negative numbers indicate missing data. More information regarding the data can be found in the ax_psu_ceilom.readme file.

INSTRUMENTATION:

Information regarding the instrumentation can be found in the ax_psu_ceilom.readme file.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.15 FIRE_AX_PSU_H2OVAP Data Set

This data set is available in ASCII format. Data are available from June 1, 1992 thru June 27, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University Water Vapor Data (FIRE_AX_PSU_H2OVAP)

FILE NAMING CONVENTION:

There are 27 granules in this data set. The granule naming convention for this data set consists of the following: ax_psu_h2ovap_yymmdd, where 'ax' represents ASTEX, 'psu_h2ovap' represents Pennsylvania State University Water Vapor data, and 'yymmdd' represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

Information regarding the variables can be found in the ax_psu_h2ovap.readme file.

SAMPLE DATA FROM DATA SET:

One record of data has been extracted from the data granule, ax_psu_h2ovap_920602.

HOUR	VAP(CM)	LIQ(CM)	VAP(1M)	LIQ(1M)	VAP(5M)	LIQ(5M)
0.0083	1.5684	-0.0034	-9.9999	-9.9999	-9.9999	-9.9999

Note: The text information represents the header of the data granule. Every granule's first line consists of the same text information.

NOTES ON DATA:

The minimum and maximum range for the cloud base is 0 and 3800 meters, respectively.

Negative numbers indicate missing data. More information regarding the data can be found in the ax_psu_h2ovap.readme file.

INSTRUMENTATION:

Information regarding the instrumentation can be found in the ax_psu_h2ovap.readme file.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.16 FIRE_AX_PSU_MALBAL Data Set

This data set is available in ASCII format. Data are available from June 6, 1992 thru June 28, 1992. There is only one granule for this data set which covers 23 days of data.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University Malcolm Baldrige Data (FIRE_AX_PSU_MALBAL)

FILE NAMING CONVENTION:

There is 1 granule in this data set. The granule naming convention for this data set consists of the following: ax_psu_mal_yymmdd_dd, where 'ax' represents ASTEX, 'psu_malbal' represents Pennsylvania State University Malcom Baldrige data, and 'yymmdd' represents year, month, and day, respectively, in numerical representation of the begin date of when the data were collected, and the '_dd' represents the last day of data collection.

VARIABLES:

Information regarding the variables can be found in the ax_psu_malbal.readme file.

SAMPLE DATA FROM DATA SET:

One record of data has been extracted from the data granule, ax_psu_h2ovap_920602.

```
 Date   GMT   Us  U10  Tru  Rel  Hed   Ts    T    qs     q   Hsc  Hsi  Hsb  Hlc  Hli  Hlb
   Tuc   Tui   Tub    Rs    Rl   Rain  J  Oph Tlt   Ct      Cq      Cu      Cw      To     Qo    Tr
   Re    Ab    Tau   f(0)    W    Zb    Zt    Lat  Lon


 6 Jun 00:38  7   6.8   87  352  102  20.0  20.3  14.2   8.8   32   17   -4  169  145  118   .118
  .094   .065     0  321     0   0   4  14  2.9E-03  2.2E-02  3.1E-02  3.7E-02   20.4    8.8 -9.99
-9.99 -9.99   -9.99 -9.99    2.42 -999. -999. 3015 3623
```

Note: The text information represents the order of parameters for this data set.

NOTES ON DATA:

Missing values have been tagged -9.99 or as -999.

The following are the maximum and minimum ranges for the parameters in the data set:

US	8	0	U10	9.3	0.6
Tru	359	0	Rel	359	0

Hed	357	1	Ts	26.4	17.9
T	21.7	16.4	Qs	21	12.4
Q	13.8	6.7	Hsc	63	-9
Hsi	50	-7	Hsb	37	-4
Hlc	209	-91	Hli	446	6
Hlb	158	7	Tuc	0.345	-0.079
Tui	0.158	0.001	Tub	0.138	0.001
Rs	973	0	Rl	392	302
Rain	0	0	J	1	0
Oph	99	0	Tlt	54	1
Ct	0.0057	0.00017	Cq	0.13	0.00028
Cu	0.048	0.0044	Cw	0.074	0.0062
To	21.9	15.7	Qo	13.6	6.8
Tr	1.12	-9.99	Re	0.79	-9.99
Ab	0.19	-9.99	Tau	24.82	-9.99
f(0)	1	-9.99	W	1013.95	-9.99
Zb	3338	-999	Zt	2416	-999
Lat	3724	2719	Lon	3623	2152

INSTRUMENTATION:

Information regarding the instrumentation can be found in the ax_psu_malbal.readme file.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.17 FIRE_AX_PSU_WND_MAL Data Set

This data set is available in ASCII format. Data are available from June 12, 1992 thru June 28, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University Malcolm Baldrige Wind Profiler Data (FIRE_AX_PSU_WND_MAL)

FILE NAMING CONVENTION:

There are 34 granules in this data set. The granule naming convention for this data set consists of the following: ax_psuwnd_hi_yymmdd and ax_psuwnd_lo_yymmdd, where ‘ax’ represents ASTEX, ‘psuwnd’ represents Pennsylvania State University Malcolm Baldrige Wind Profiler data, ‘hi’ or ‘lo’ reflects the resolution profiles, and ‘yymmdd’ represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

The variables found in this data set are: hour, height (m), wind speed (m/s), and wind direction (deg).

SAMPLE DATA FROM DATA SET:

An example of the high profile from ax_psuwnd_hi_920612:

hour	height (m)	wind speed (m/s)	wind dir (deg)
22.5000	106.000	-99.9000	-99.0000

An example of the lo profile from ax_psuwnd_lo_920613:

hour	height (m)	wind speed (m/s)	wind dir (deg)
0.500000	141.000	6.10000	26.0000

NOTES ON DATA:

The following are the minimum and maximum ranges for the variables:
GMT time: 0.5 mins to 23.5 mins
height - lo (m): 141 to 3884
height- hi (m) : 106 to 1730
wind speed: non-negative
wind direction: 0.0 359.0

All missing values have been tagged as -99.

The wind direction was stated as being between 0 and 359 degrees. There were some instances in the data granules where there were values greater than 359.0 degrees. The PI has stated that we note this in this document instead of him reprocessing the data to correct this problem. The list below consists of the data granules and where the data value has been found out of range.

```
GRANULE NAME: ax_psuwnd_hi_920620
Wind direction is greater than 359.0 at record#: 186
Wind direction is greater than 359.0 at record#: 190
Wind direction is greater than 359.0 at record#: 209
Wind direction is greater than 359.0 at record#: 229
Wind direction is greater than 359.0 at record#: 259
Wind direction is greater than 359.0 at record#: 264
Wind direction is greater than 359.0 at record#: 317
Wind direction is greater than 359.0 at record#: 489
Wind direction is greater than 359.0 at record#: 490
```

```
Wind direction is greater than 359.0 at record#: 561
Wind direction is greater than 359.0 at record#: 594
Wind direction is greater than 359.0 at record#: 711
Wind direction is greater than 359.0 at record#: 712


GRANULE NAME: ax_psuwnd_hi_920621
Wind direction is greater than 359.0 at record#: 189
Wind direction is greater than 359.0 at record#: 190
Wind direction is greater than 359.0 at record#: 719


GRANULE NAME: ax_psuwnd_hi_920622
Wind direction is greater than 359.0 at record#: 598
Wind direction is greater than 359.0 at record#: 690


GRANULE NAME: ax_psuwnd_hi_920623
Wind direction is greater than 359.0 at record#: 286
Wind direction is greater than 359.0 at record#: 287
Wind direction is greater than 359.0 at record#: 378
Wind direction is greater than 359.0 at record#: 677
Wind direction is greater than 359.0 at record#: 687


GRANULE NAME: ax_psuwnd_lo_920618
Wind direction is greater than 359.0 at record#: 322


GRANULE NAME: ax_psuwnd_lo_920619
Wind direction is greater than 359.0 at record#: 374


GRANULE NAME: ax_psuwnd_lo_920620
Wind direction is greater than 359.0 at record#: 72
Wind direction is greater than 359.0 at record#: 84
Wind direction is greater than 359.0 at record#: 108
Wind direction is greater than 359.0 at record#: 128
Wind direction is greater than 359.0 at record#: 147
Wind direction is greater than 359.0 at record#: 324
Wind direction is greater than 359.0 at record#: 336
Wind direction is greater than 359.0 at record#: 344
Wind direction is greater than 359.0 at record#: 347
Wind direction is greater than 359.0 at record#: 369
Wind direction is greater than 359.0 at record#: 426


GRANULE NAME: ax_psuwnd_lo_920621
Wind direction is greater than 359.0 at record#: 26


GRANULE NAME: ax_psuwnd_lo_920622
Wind direction is greater than 359.0 at record#: 143


GRANULE NAME: ax_psuwnd_lo_920623
Wind direction is greater than 359.0 at record#: 89
```

```
Wind direction is greater than 359.0 at record#: 143


GRANULE NAME: ax_psuwnd_lo_920624
Wind direction is greater than 359.0 at record#: 286
```

INSTRUMENTATION:

Information regarding the instrumentation can be found in the ax_psuwnd_mal.readme file.

CONTACT FOR DATA PRODUCT INFORMATION:

Technical Contact:

Mr. William J. Syrett
Pennsylvania State University
503 Walker Building
University Park, PA 16802
USA
Phone: (814) 863-2473
FAX: (814) 865-3663
E-Mail: syrett@essc.psu.edu

5.18 FIRE_AX_CSU_WNDPRFS Data Set

This data set is available in ASCII format. Data are available from May 30, 1992 thru June 28, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Colorado State University Wind Profiler Data (FIRE_AX_CSU_WNDPRFS)

FILE NAMING CONVENTION:

There are 30 granules in this data set. Each granule is a directory which consists of several files. There are 655 files for this data set. The granule naming convention for this data set consists of the following: ax_csu_wndprf_yymmdd, where 'ax' represents ASTEX, 'csu_wndprf' represents Colorado State University Wind Profiler data, and 'yymmdd' represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

Information regarding the variables can be found in the README.PSwind file.

SAMPLE DATA FROM DATA SET:

The first data record was extracted from 92053012.wp:

92053012
6 0.584 3.709 -3.354

NOTES ON DATA:

Missing values have been tagged as -9999.

Paul Hein writes "data above 15 km - There is not much above 15 km and most of the data should already be marked as bad. I guess I would consider the data above 15 km as good (though I wonder). I am not certain any more how high the profiler went. (Definitely not much higher.)"

INSTRUMENTATION:

Information regarding the instrumentation can be found in the README.PSwind file.

CONTACT FOR DATA PRODUCT INFORMATION:

Mr. Paul Hein
Department of Atmospheric Science
Colorado State University
Fort Collins, CO 80523
USA
Phone: (303) 491-8714
FAX: (303) 491-8449
E-Mail: hein@trueno.atmos.colostate.edu

5.19 FIRE_AX_CSU_PRT6 Data Set

This data set is available in ASCII format. Data are available from June 01, 1992 thru June 29, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Colorado State University PRT-6 Data (FIRE_AX_CSU_PRT6)

FILE NAMING CONVENTION:

There are 29 granules in this data set. The granule naming convention for this data set consists of the following: ax_csu_prt6_yymmdd, where 'ax' represents ASTEX, 'csu_prt6' represents Colorado State University PRT-6 data, and 'yymmdd' represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

Information regarding the variables can be found in the fire_ax_csu_prt6.readme file.

SAMPLE DATA FROM DATA SET:

This sample record of data was printed from ax_csu_prt6_920601:

153.0179901   260.065

NOTES ON DATA:

There are temporal gaps in the data. Missing and extreme values of data have been tagged as -9999. The brightness temperatures below 150K should be considered bad.

INSTRUMENTATION:

Information regarding the instrumentation can be found in the ax_psuwnd_mal.readme file.

CONTACT FOR DATA PRODUCT INFORMATION:

Mr. Paul Hein
Department of Atmospheric Science
Colorado State University
Fort Collins, CO 80523
USA
Phone: (303) 491-8714
FAX: (303) 491-8449
E-Mail: hein@trueno.atmos.colostate.edu

5.20 FIRE_AX_CSU_MET_SFC Data Set

This data set is available in ASCII format. Data are available from May 30, 1992 thru June 30, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Colorado State University Meteorological and Radiation Surface Observations (FIRE_AX_CSU_MET_SFC)

FILE NAMING CONVENTION:

There are 32 granules in this data set. The granule naming convention for this data set consists of the following: ax_csu_metsfc_yymmdd, where 'ax' represents ASTEX, 'csu_metsfc' represents Colorado State University Meteorological and Radiation Surface Observations data, and 'yymmdd' represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

Information regarding the variables can be found in the fire_ax_csu_met_sfc.readme file.

SAMPLE DATA FROM DATA SET:

The first record from the granule **ax_csu_metsfc_920601** is represented below:

152.000000 3.544682 313.200012 17.700001 87.500000 -3.004391 -3.021147
317.309418 290.100006 290.100006 0

NOTES ON DATA:

Missing data have been tagged as -9999. The radiometer values below 0 W/m^2 are bad. This is due to a calibration that is a best fit of the calibration data.

INSTRUMENTATION:

Information regarding the instrumentation can be found in the fire_ax_csu_met_sfc.readme file.

CONTACT FOR DATA PRODUCT INFORMATION:

Mr. Paul Hein
Department of Atmospheric Science
Colorado State University
Fort Collins, CO 80523
USA
Phone: (303) 491-8714
FAX: (303) 491-8449
E-Mail: hein@trueno.atmos.colostate.edu

5.21 FIRE_AX_RWSONDE_LVL1 Data Set

This data set is available in ASCII format. Data are available from June 01, 1992 thru June 28, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Rawinsonde Level 1 Data (FIRE_AX_RWSONDE_LVL1)

FILE NAMING CONVENTION:

There are 28 granules in this data set. Each granule is a directory which consists of several files. The granule naming convention for this data set consists of the following: ax_rwsnd_lvl1_yymmdd, where ‘ax’ represents ASTEX, ‘rwsnd_lvl1’ represents Rawinsonde Level 1 data, and ‘yymmdd’ represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

Information has been provided in the fax_raw_lvl.readme file which was provided by the data producer.

SAMPLE DATA FROM DATA SET:

The first record from the granule **06010245.dat** is represented below:

TIME	PMB	TEMP	TDEW	RH%	GEOPM	AZDEG	ELDEG	SPEED	DIR	E.TIME
02:03:04.89	1005.80	16.80	12.13	74.00	97	137.52	-0.90	1.5	350	0.00

NOTES ON DATA:

-99.99 is a flag for missing data.

There are data files which contain RH values less than 5% and Wind Speeds >100.0 should be considered bad data.
Paul Hein writes “For RH values <5% - the instrument becomes unreliable at low humidities. I believe that 5% is the manufacturer's lower bound. The values should be considered unreliable.

Wind speeds>100 - 100m/s winds at that location and time of year is very unlikely if not impossible. The data should be considered bad”

INSTRUMENTATION:

Ceilometer and balloon.

CONTACT FOR DATA PRODUCT INFORMATION:

Mr. Paul Hein
Department of Atmospheric Science
Colorado State University
Fort Collins, CO 80523

USA
Phone: (303) 491-8714
FAX: (303) 491-8449
E-Mail: hein@trueno.atmos.colostate.edu

5.22 FIRE_AX_RWSONDE_LVL2 Data Set

This data set is available in ASCII format. Data are available from June 01, 1992 thru June 28, 1992.

LONG NAME FOR THIS DATA SET:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Rawinsonde Level 2 Data (FIRE_AX_RWSONDE_LVL2)

FILE NAMING CONVENTION:

There are 28 granules in this data set. Each granule is a directory which consists of several files. The granule naming convention for this data set consists of the following: ax_rwsnd_lvl2_yymmdd, where 'ax' represents ASTEX, 'rwsnd_lvl2' represents Rawinsonde Level 2 data, and 'yymmdd' represents year, month, and day, respectively, in numerical representation when the data were collected.

VARIABLES:

The variables for this data set are: geopotential height (m), pressure (mb), temperature (C), dew point temperature (C), wind speed (m/s), and wind direction (deg).

SAMPLE DATA FROM DATA SET:

The first record from the granule **06010245.prc** is represented below:

	z(m)	p(mb)	t(c)	td(c)	wind speed (m/s)	wind direction (deg)
1	97.	1005.80	16.80	12.13	1.50	350.00

NOTES ON DATA:

-99.99 is a flag for missing data.

Paul Hein writes "For RH values <5% - the instrument becomes unreliable at low humidities. I believe that 5% is the manufacturer's lower bound. The values should be considered unreliable. Wind speeds>100 - 100m/s winds at that location and time of year is very unlikely if not impossible. The data should be considered bad"

INSTRUMENTATION:

Ceilometer and balloon.

CONTACT FOR DATA PRODUCT INFORMATION:

Mr. Paul Hein
Department of Atmospheric Science
Colorado State University
Fort Collins, CO 80523
USA
Phone: (303) 491-8714
FAX: (303) 491-8449
E-Mail: hein@trueno.atmos.colostate.edu

6.0 Implementation Notes

There is no software provided for the University of Washington's ASCII formatted data sets.

6.1 FIRE_AX_ER2_MAS Read Program

There are currently two versions of the read programs available for this data set. The FORTRAN version, mas_read_hdf.f, has been supplied by the data provider and is documented in the "NASA Technical Memorandum 104594, Vol. 3, MODIS Technical Report Series, Volume 3, MODIS Airborne Simulator Level 1B Data User's Guide."

The following represents a sample execution of the C program, mas_read_netcdf.c. User inputs are in "**bold**:"

sorcerer% **mas_read_netcdf_c**

This program reads the FIRE_ASTEX and FIRE_MAS netCDF data.

Please enter Q to Quit or C to continue **c**

Please enter netCDF file name to read:

ax_mas_920529.001
Report file name is: ax_mas_920529.001.rpt

```
 Item    Data Type       Label(dimension lengths)
 ====   =========     =========================
```

1	float	Left50%ResponseWavelength(12)
2	float	Central100%ResponseWavelength(12)
3	float	Right50%ResponseWavelength(12)
4	float	SolarSpectralIrradiance(12)
5	short	AnchorPointIndex(73)
6	char	DataSetHeader(4720)
7	short	DataFrameStatus(548)
8	short	RunNumber(548)
9	long	ScanLineCounter(548)
10	long	ThumbWheelSwitches(548)
11	short	ScanRate(548)
12	long	GreenwichMeanTime(548)
13	long	MasTime(548)
14	long	InsTime(548)
15	short	S-BendIndicator(548)

Please choose the numbers of the data items you wish to dump
Enter -1 to display additional items or zero to end selection process

NOTE: if you enter 0 as very first entry, all variables will be displayed
-1

Item	Data Type	Label(dimension lengths)
====	=========	========================
16	short	AircraftRollCount(548)
17	long	YearMonthDay(548)
18	float	ScanlineTime(548)
19	short	BlackBody1Temperature(548 X 12)
20	short	BlackBody2Temperature(548 X 12)
21	short	AmplifierGain(548 X 12)
22	short	BlackBody1Counts(548 X 12)
23	short	BlackBody2Counts(548 X 12)
24	float	CalibrationSlope(548 X 12)
25	float	CalibrationIntercept(548 X 12)
26	float	PixelLatitude(548 X 73)
27	float	PixelLongitude(548 X 73)
28	float	SensorZenithAngle(548 X 73)
29	float	SensorAzimuthAngle(548 X 73)
30	float	SolarZenithAngle(548 X 73)

Please choose the numbers of the data items you wish to dump
Enter -1 to display additional items or zero to end selection process

-1

Item Data Type Label(dimension lengths)

```
 ====   =========    =======================

  31        float         SolarAzimuthAngle(548 X 73)
  32        float        AircraftLatitude(548)
  33        float        AircraftLongitude(548)
  34        float        AircraftHeading(548)
  35        float        AircraftAltitude(548)
  36        float        AircraftPitch(548)
  37        short        CalibratedData(548 X 12 X 716)
```

Please choose the numbers of the data items you wish to dump
Enter -1 or zero to terminate selection process
32
0
Would you like the global attributes included in the report? (Y/N)**y**

sorcerer%

The desired output is then written to the report file (ax_mas_920529.001.rpt in the above example).

6.2 FIRE_AX_ER2_LIDAR Read Program

The following represents a sample execution of the C program, fax_read_er2_lidar.c. User inputs are in "**bold**:"

sorcerer% f**ax_read_er2_lidar**
Enter Lidar file name: **ax_lidar_920602**
Enter Output file name (a dash defaults to screen): **lidar.out**

```
*****************************************************************
*                                                               *
*   WARNING FILE EXISTS - PLEASE CHOOSE OPTION BELOW           *
*                                                               *
*   1 - stop now                                               *
*   2 - append to existing file lidar.out                      *
*   3 - overwrite file lidar.out                               *
*                                                               *
*****************************************************************
```

Please enter number of action to take (1-3): **3**

```
*****************************************************************
*                                                               *
*            Customized Output Menu                            *
*            ======================                            *
*                                                               *
*  1) File Header                                              *
*  2) CLS Analyzed Data Header                                 *
*  3) CLS Calibrated Signal Header                             *
```

```
*  4) Channel 1 data                                                    *
*  5) Channel 2 data                                                    *
*  6) Channel 3 data                                                    *
*  7) Channel 4 data                                                    *
*                                                                       *
*                                                                       *
*  enter 0 (zero) to indicate selection process complete               *
*                                                                       *
*************************************************************************


    Please enter number of desired selection (1-7) (0 = done): 1
2
3
0

 There are 3079 records in this file. The first record is the file
 header.  This is followed by pairs of CLS Calibrated Signal & CLS
 Analyzed Data Headers.  Please indicate start and end record
 numbers to extract.  If you enter -1 for the starting record, all
 records will be examined and extracted in accordance with the
 previously specified criteria. NOTE - if the File Header was
 requested, it will be output reguardless of starting record number

 Please enter starting record number (-1 or 3079 >= number >= 1): 1
enter last record to examine ( 3079 >= number >= 1):  3
*************************************************************************
*                                                                       *
*                  program complete                                     *
*                                                                       *
*************************************************************************
sorcerer%
```

6.3 FIRE ASTEX Radiosonde Read Program (faxrad_read.c)

The following represents a sample execution of the C program, faxrad_read.c. User inputs are in “**bold**:”

```
sorcerer 64: faxrad_read MJN0792P.12Z
**************************************************
*                                                *
*      FIRE ASTEX Radiosonde Read Program        *
*             for the location(s) of             *
*                                                *
*                 LE Suroit                      *
*              Malcolm Baldrige                  *
```

```
*                  Oceanus                          *
*                Porto Santo                        *
*                Santa Maria                        *
*                 Valdivia                          *
*                                                   *
* Version 1.0                         July 28, 1995 *
*****************************************************


****************************************************************
*                                                              *
*      NOTE TO USER FROM THE DATA PRODUCER!!!                  *
*                                                              *
* When working with the FIRE ASTEX Radiosonde data, please     *
* READ the summary files for each location.  These files       *
* include information concerning the data when collected.      *
*                                                              *
* Notes for each location:                                     *
* LE Suroit:  All of the wind speed values are bad from the    *
*             data file, LJN2092P.12Z (as named at the         *
*             Langley DAAC.  In fact, all wind data from       *
*             that time are bad.                               *
* ALL Locations:  All wind speeds greater than 100.0 are BAD.  *
*             When working with the data files, any wind speed *
*             value >100.0 should be changed to -99.9 and then *
*             the wind direction should be changed to -99.     *
*                                                              *
* Version 1.0                                    July 28, 1995 *
****************************************************************




The location of this data collection:   MALCOLM BALDRIGE
The beginning latitude and longitude values:   28.83N   27.40W
The beginning date of data collection:   9206071035


There are ten parameters of information
for each event.  These parameters are:

    No.    Parameter          Units
    ---    ---------          -----
     1.    Minutes & Seconds   min  s
                 Past Launch
     2.    Ascent Rate         m/s
     3.    Height              m
     4.    Pressure            hPa
     5.    Temperature         degC
     6.    Relative Humidity   percent
     7.    Dewpoint            degC
     8.    Mix Ratio           g/kg
     9.    Wind Direction      deg
    10.    Wind Speed          m/s


How many parameters would you like to have printed out
```

```
with each event/record?  3

Enter parameter #1 --> 3

Enter parameter #2 --> 2

Enter parameter #3 --> 1
Height AscRate   Time
 7 0.0 0 0
 9 1.0 0 1
 26 3.0 0 6
 42 3.4 0 10
 59 3.8 0 15
 76 4.1 0 19
 93 4.3 0 22
 110 4.5 0 26
 127 4.5 0 30
 144 4.5 0 34
 161 4.5 0 38
 ...
...
...
The output continues.  The user will know that the end of the program has
been reached when the following information appears on the screen.

...
...
...
 12098 3.1 68 1
 12161 3.2 68 21
 12225 3.2 68 41
 12289 3.5 69 0


~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~ End of file has been reached.        ~
~ There are a total of 416 records in  ~
~ this file.                           ~
~ Program has completed successfully!  ~
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

6.4 FIRE ASTEX Pennsylvania State University Ceilometer Read Program (fax_psu_ceil_read.c)

This sample read program is able to read the three data sets, FIRE_AX_PSU_CEIL_MAL, FIRE_AX_CEIL_SAN, and FIRE_AX_CEIL_VAL. The following represents a sample execution of the C program, fax_psu_ceil_read.c. The read program prompts the user for the name of the data file. The list of parameters and their corresponding units is then displayed for the user. The user then selects the number of parameters to be displayed on the screen. If the user only requests some of the parameters to be displayed to the screen, the user then chooses the parameters by number and halts the selection process by typing a ‘q’ after which the selected parameters are displayed. The user can exit the program by typing a ‘x’ at any prompt.

User inputs are in “**bold**:”

sorcerer 59: **fax_psu_ceil_read**

```
 ***************************************************************
*                                                             *
*       FIRE ASTEX PENNSYLVANIA STATE UNIVERSITY (PSU)        *
*              CEILOMETER DATA READ PROGRAM FOR               *
*              THE FOLLOWING LOCATIONS:                       *
*                                                             *
*                   Malcolm Baldrige                          *
*                   Santa Maria                               *
*                   Valdivia                                  *
*                                                             *
* Version 1.0                                  09-18-95   *
***************************************************************
```

Please enter the name of the data set to be read: **ax_psuceil_mal920601**

The data set to be read is ax_psuceil_mal920601

The following are the parameters on this data set:

```
No.   Parameter                                Units
---   ---------                                -----

 1.   Time                                     hhmmss
 2.   Cloud Base                                 m
 3.   Ceilometer code                           n/a
```

Do you want all parameters to be printed
Please select: a or A for All; S for Some; X to eXit: **A**

```
  Time        Cloud Base    Ceil. Code

   0 050          -999       0

   0 119          -999       0

   0 149          -999       0

   0 218          -999       0

   0 249          -999       0

   0 318          -999       0

   0 349          -999       0

   0 418          -999       0

   0 449          -999       0

   0 518          -999       0

   0 549          -999       0

   0 619          -999       0
```

```
   0 649          -999       0

   0 718          -999       0

   0 749          -999       0

   0 819          -999       0

   0 849          -999       0

   0 918          -999       0

   0 949          -999       0

   01019          -999       0

   01049          -999       0

   01118          -999       0

   01149          -999       0

                ...
                ...
                ...
                ...
  235614          -999       0

  235643          -999       0

  235714          -999       0

  235743          -999       0

  235814          -999       0

  235843          -999       0

  235914          -999       0


****************************************************
*                                                  *
*              END OF FILE ENCOUNTERED             *
*                                                  *
*          2875 records of data were read          *
*                                                  *
*  EXECUTION OF PROGRAM COMPLETED AND SUCCESSFUL   *
*                                                  *
****************************************************
```

6.5 FIRE ASTEX Pennsylvania State University Water Vapor Read Program

(fax_psu_h2ovap_read.c)

This sample read program is able to read the data set, FIRE_AX_PSU_H2OVAP. The following represents a sample execution of the C program, fax_psu_h2ovap_read.c.

User inputs are in "**bold**:"

```
***************************************************************
*                                                             *
*     FIRE ASTEX Pennsylvania State University Water Vapor    *
*                                                             *
*                         READ PROGRAM                        *
*                                                             *
* Version 1.0                             September 18, 1995 *
***************************************************************


Please enter the name of the data set to be read:  ax_psu_h2ovap_920601


The data set to be read is ax_psu_h2ovap_920601



The following are the parameters on this data set:


No.   Parameter                                Units
---   ---------                                -----

 1.   Hour                                      GMT
 2.   Vapor                                     CM
 3.   Liquid                                    CM
 4.   Vapor-1 minute                            CM
 5.   Liquid-1 minute                           CM
 6.   Vapor-5 minute                            CM
 7.   Liquid-5 minute                           CM


 Do you want all parameters to be printed
 Please select: a or A for All; S for Some; X to eXit: A
  Hour      VAP(CM)   LIQ(CM)   VAP(1M)   LIQ(1M)   VAP(5M)   LIQ(5M)

 0.0083   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0167   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0250   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0333   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0417   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0500   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0583   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0667   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0750   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0833   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.0917   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
 0.1000   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999   -9.9999
```

0.1083	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1167	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1250	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1333	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1417	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1500	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1583	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1667	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1750	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1833	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.1917	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2000	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2083	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2167	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2250	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2333	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2417	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2500	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2583	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2667	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2750	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2833	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.2917	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.3000	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.3083	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.3167	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.3250	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.3333	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.3417	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.3500	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999
0.3583	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999	-9.9999

....

....

....

....

23.7917	1.5130	0.0000	1.5485	0.0013	1.5335	0.0012
23.8000	1.5783	0.0001	1.5295	0.0012	1.5274	0.0018
23.8083	1.4972	0.0034	1.5134	0.0016	1.5202	0.0022
23.8167	1.4648	0.0012	1.4577	0.0037	1.5208	0.0021
23.8250	1.4112	0.0066	1.4885	0.0023	1.5209	0.0023
23.8333	1.5895	-0.0009	1.5036	0.0042	1.5279	0.0016
23.8417	1.5102	0.0069	1.5201	0.0038	1.5391	0.0015
23.8500	1.4605	0.0054	1.5189	0.0038	1.5329	0.0014
23.8583	1.5859	-0.0011	1.5371	0.0013	1.5362	0.0006
23.8667	1.5648	-0.0003	1.5941	-0.0018	1.5394	0.0001
23.8750	1.6318	-0.0040	1.6110	-0.0017	1.5427	-0.0005
23.8833	1.6364	-0.0007	1.5925	-0.0021	1.5278	-0.0008
23.8917	1.5094	-0.0015	1.5599	-0.0025	1.5316	-0.0015
23.9000	1.5340	-0.0054	1.5145	-0.0035	1.5273	-0.0023
23.9083	1.5000	-0.0036	1.4939	-0.0033	1.5135	-0.0021
23.9167	1.4477	-0.0009	1.4578	-0.0026	1.4946	-0.0019
23.9250	1.4256	-0.0033	1.4751	-0.0016	1.4942	-0.0021
23.9333	1.5520	-0.0007	1.4633	-0.0026	1.4844	-0.0022
23.9417	1.4124	-0.0037	1.4663	-0.0010	1.4854	-0.0024
23.9500	1.4344	0.0013	1.4011	-0.0001	1.4746	-0.0019
23.9583	1.3564	0.0020	1.4730	-0.0013	-9.9999	-9.9999
23.9667	1.6282	-0.0072	1.5044	-0.0022	-9.9999	-9.9999

```
 23.9750   1.5287   -0.0014   1.5591   -0.0039   -9.9999   -9.9999
 23.9833   1.5204   -0.0033   1.4878   -0.0017   -9.9999   -9.9999
 23.9917   1.4143   -0.0005   -9.9999   -9.9999   -9.9999   -9.9999


****************************************************
*                                                  *
*              END OF FILE ENCOUNTERED             *
*                                                  *
*          2879 records of data were read          *
*                                                  *
*  EXECUTION OF PROGRAM COMPLETED AND SUCCESSFUL   *
*                                                  *
****************************************************
```

6.6 FIRE ASTEX Pennsylvania State University Malcolm Baldrige Read Program (fax_psu_malbal_read.c)

This sample read program is able to read the data set, FIRE_AX_PSU_MALBAL. The following represents a sample execution of the C program, fax_psu_malbal_read.c. The read program prompts the user for the name of the data file. The program then opens the data file and extracts the header. The list of parameters and their corresponding units is then displayed for the user. The user then selects the number of parameters to be displayed on the screen. If the user only requests some of the parameters to be displayed to the screen, the user then chooses the parameters by number and halts the selection process by typing a ‘q’ after which the selected parameters are displayed. The user can exit the program by typing a ‘x’ at any prompt.

User inputs are in “**bold**.”

sorcerer 245: **fax_psu_malbal_read**

```
*************************************************************
*                                                           *
* FIRE ASTEX Pennsylvania State University Malcolm Baldrige *
*                                                           *
*                        READ PROGRAM                       *
*                                                           *
* Version 1.0                           September 19, 1995 *
*************************************************************


Please enter the name of the data set to be read:  ax_psu_mal_920606_28


The data set to be read is ax_psu_mal_920606_28


The following are the parameters on this data set:


No.  Parameter/Description                       Units
---  ---------------------                       -----

 1.  Date                                    Day and Month
 2.  GMT                                         hr:min
```

```
 3.  Us:  Ship speed                           m/s
 4.  U10: True ship speed at 10m height        m/s
 5.  Tru: True wind direction rel. to N        deg
 6.  Rel: Relative wind direction              deg
 7.  Hed: Direction of ships bow               deg
 8.  Ts:  Sea surface temperature               C
 9.  T:   Temperature                           C
10.  qs:  Sea surface specific humidity        g/kg
11.  q:   Vaisala air specific humidity        g/kg
12.  Hsc: Covariance sensible heat flux       W/m^2
13.  Hsi: Initial sensible heat flux          W/m^2
14.  Hsb: Bulk sensible heat flux             W/m^2
15.  Hlc: Covariance latent heat flux         W/m^2
16.  Hli: Inertial latent heat flux           W/m^2
17.  Hlb: Bulk latent heat flux               W/m^2
18.  Tuc: Covariance surface stress           N/m^2
19.  Tui: Inertial-dissipation surface stress N/m^2
20.  Tub: Bulk surface stress                 N/m^2
21.  Rs:  Solar irradiance                    W/m^2
22.  Rl:  Longwave irradiance                 W/m^2
23.  Rain:Rain rate                           mm/hr
24.  J:   Ship maneuver/contamination index
25.  Oph: Stddev OPHIR hygrometer clear channel counts
26.  Tlt: Mean wind vector tilt
27.  Ct:  Sonic temperature               k^2/m^0.667
28.  Cq:  Water vapor                 (g/m^3)^2/m^0.667)
29.  Cu:  Streamwise velocity          (m/s/^2/m^0.667)
30.  Cw:  Vertical velocity            (m/s/^2/m^0.667)
31.  To:  OPHIR air temperature                C
32.  Qo:  OPHIR specific humidity             g/kg
33.  Tr:  solar transmittance
34.  Re:  solar reflectance
35.  Ab:  Solar absorbtance
36.  Tau: System optical depth
37.  f(0):Overhead cloud fraction
38.  W:   Liquid water path                  g/m^2
39.  Zb:  Cloud base                           m
40.  Zt:  Cloud top                            m
41.  Lat: Latitude
42.  Lon: Longitude


 Do you want all parameters to be printed
 Please select: a or A for All; S for Some; X to eXit: A
  Date    GMT    Us     U10    Tru    Rel    Hed    Ts     T      qs     q      Hsc    Hsi
Hsb    Hlc    Hli    Hlb    Tuc    Tui    Tub    Rs     Rl     Rain   J      Oph    Tlt
Ct     Cq     Cu     Cw     To     Qo     Tr     Re     Ab     Tau    f(0)   W      Zb
Zt      Lat      Lon
 6 Jun    00:38   7  6.8 87   352   102   20.0 20.3 14.2 8.8 32    17    -4    169    145
118    0.118 0.094 0.065 0    321    0    0    4    14    2.9E-03    2.2E-02    3.1E-02
3.7E-02    20.4 8.8 -9.99 -9.99 -9.99 -9.99 -9.99 1073962024    -999.000000   -9   000000
3015    3623
 6 Jun    01:30   7  6.7 90   355   100   20.0 20.2 14.2 9.1 38    19    -4    209    160
110    0.054 0.096 0.063 0    331    0    0    5    15    3.5E-03    2.5E-02    3.1E-02
4.7E-02    20.3 9.0 -9.99 -9.99 -9.99 -9.99 -9.99 1072168960    -999.000000   -9   000000
3012    3608
```

```
 6 Jun    02:21   7  6.1 88   354   100   20.0 20.0 14.2 8.5 33    19    -2    191    157
118    0.047 0.086 0.054 0    316    0    0    5    15    3.3E-03    2.3E-02    2.6E-02
3.4E-02    20.1 8.4 -9.99 -9.99 -9.99 -9.99 -9.99 1074187468    -999.000000   -9  000000
3009    3552
 6 Jun    03:13   7  5.5 80   351   100   20.0 19.9 14.2 8.9 16    16    -1    131    119
98    0.056 0.062 0.043 0    328    0    0    5    15    2.7E-03    1.7E-02    1.9E-02
2.6E-02    20.0 8.7 -9.99 -9.99 -9.99 -9.99 -9.99 1074538741    -999.000000   -99  00000
3007    3536
 6 Jun    04:04   7  4.9 75   349   100   20.0 19.9 14.2 9.2 32    19    0    141    121
81    -0.026 0.067 0.033 0    354    0    0    6    16    3.0E-03    1.4E-02    2.1E-02
2.6E-02    19.9 8.9 -9.99 -9.99 -9.99 -9.99 -9.99 1077137244    -999.000000   -99  00000
3004    3520
 6 Jun    04:56   7  5.6 60   342   100   20.0 19.7 14.2 9.3 29    15    1    178    121
94    0.091 0.065 0.045 0    334    0    0    5    14    2.4E-03    1.5E-02    2.0E-02
2.6E-02    19.7 9.0 -9.99 -9.99 -9.99 -9.99 -9.99 1078086860    -999.000000   -999  0000
3004    3520
...
...
...
...
 28 Jun    00:46   7  6.1 239   320   328   21.1 20.4 15.2 12.3 0    13    4    46    48
62    0.066 0.044 0.053 0    342    0    0    4    10    1.9E-03    3.8E-03    1.3E-02
1.9E-02    20.4 11.8 -9.99 -9.99 -9.99 -9.99 0.28 1073039278    472.000000   582.0  00
3358    2254
 28 Jun    01:38   7  6.7 242   319   328   21.3 20.4 15.4 12.4 1    13    6    50    49
70    0.085 0.047 0.067 0    338    0    0    6    10    1.7E-03    3.7E-03    1.5E-02
2.0E-02    20.4 11.8 -9.99 -9.99 -9.99 -9.99 0.11 1076067041    412.000000   522.0  00
3410    2303
 28 Jun    02:30   7  7.2 247   321   326   21.2 20.5 15.4 12.1 5    10    5    66    63
79    0.086 0.058 0.078 0    339    0    0    8    10    1.1E-03    5.5E-03    1.8E-02
2.3E-02    20.4 11.4 -9.99 -9.99 -9.99 -9.99 0.17 1071644672    533.000000   943.0  00
3422    2312
 28 Jun    03:21   7  6.8 250   326   321   20.6 20.5 14.8 12.1 1    7    0    53    53
59    0.054 0.054 0.066 0    341    0    0    8    10    8.8E-04    5.1E-03    1.8E-02
2.2E-02    17.5 11.2 -9.99 -9.99 -9.99 -9.99 0.11 1073165107    510.000000   820.00  0
3434    2321
 28 Jun    04:13   7  6.1 240   322   321   20.5 20.2 14.7 12.3 -2    10    0    33    47
46    0.068 0.061 0.051 0    338    0    0    6    11    1.1E-03    3.4E-03    1.9E-02
2.3E-02    20.3 11.6 -9.99 -9.99 -9.99 -9.99 0.05 1075377602    472.000000   512.  000
3446    2330
 28 Jun    05:04   7  6.3 238   320   321   20.5 20.2 14.7 12.4 0    12    1    29    50
48    0.071 0.074 0.056 0    338    0    0    6    11    1.2E-03    3.1E-03    2.3E-02
2.7E-02    20.2 11.6 -9.99 -9.99 -9.99 -9.99 0.00 1075907133    -999.000000   -999  0000
3458    2339


****************************************************
*                                                  *
*              END OF FILE ENCOUNTERED             *
*                                                  *
*          390 records of data were read          *
*                                                  *
*  EXECUTION OF PROGRAM COMPLETED AND SUCCESSFUL   *
*                                                  *
****************************************************
```

6.7 FIRE ASTEX Pennsylvania State University Malcolm Baldrige Wind Profiler Read Program (fax_psu_wndmal_read.c)

The read program prompts the user for the name of the data file. The program then opens the data file and extracts the header which wraps around to cover two and a half lines. The list of parameters and their corresponding units is then displayed for the user. The user then selects the number of parameters to be displayed on the screen. If the user only requests some of the parameters to be displayed to the screen, the user then chooses the parameters by number and halts the selection process by typing a ‘q’ after which the selected parameters are displayed. The user can exit the program by typing a ‘x’ at any prompt.

User inputs are in “**bold**.”

sorcerer% **fax_psu_wndmal_read**

```
*******************************************************
*                                                     *
* FIRE ASTEX WIND PROFILE OF MALCOLM BALDRIGE DATA SET *
*                                                     *
*                    READ PROGRAM                     *
*                                                     *
* Version 1.0                      September 19, 1995 *
*******************************************************


Please enter the name of the data set to be read:  ax_psuwnd_hi_920612


The data set to be read is ax_psuwnd_hi_920612


The following are the parameters on this data set:


No.   Parameter                           Units
---   ---------                           -----

 1.   Hour                                 hour
 2.   Height                               m
 3.   Wind speed                           m/s
 4.   Wind direction                       deg


 Do you want all parameters to be printed
 Please select: a or A for All; S for Some; X to eXit: a
     Hour       Height (m)   Wind speed (m/s)  Wind dir (deg)
     22.500000     106.0000       -99.9000       -99.0000
     22.500000     162.0000       -99.9000       -99.0000
     22.500000     218.0000       -99.9000       -99.0000
     22.500000     274.0000       -99.9000       -99.0000
     22.500000     330.0000       4.2000       18.0000
     22.500000     386.0000       5.0000       22.0000
     22.500000     442.0000       5.5000       22.0000
     22.500000     498.0000       5.7000       23.0000
     22.500000     554.0000       5.6000       24.0000
     22.500000     610.0000       5.4000       29.0000
```

```
22.500000    666.0000     4.9000     33.0000
22.500000    722.0000     5.4000     47.0000
22.500000    778.0000     5.5000     42.0000
22.500000    834.0000     -99.9000     -99.0000
22.500000    890.0000     -99.9000     -99.0000
22.500000    946.0000     -99.9000     -99.0000
22.500000    1002.0000     -99.9000     -99.0000
22.500000    1058.0000     -99.9000     -99.0000
22.500000    1114.0000     -99.9000     -99.0000
22.500000    1170.0000     7.2000     55.0000
22.500000    1226.0000     -99.9000     -99.0000
22.500000    1282.0000     -99.9000     -99.0000
22.500000    1338.0000     -99.9000     -99.0000
22.500000    1394.0000     -99.9000     -99.0000
22.500000    1450.0000     8.4000     49.0000
22.500000    1506.0000     8.1000     52.0000
22.500000    1562.0000     7.3000     61.0000
22.500000    1618.0000     -99.9000     -99.0000
22.500000    1674.0000     -99.9000     -99.0000
22.500000    1730.0000     -99.9000     -99.0000
23.500000    106.0000     -99.9000     -99.0000
23.500000    162.0000     -99.9000     -99.0000
23.500000    218.0000     -99.9000     -99.0000
23.500000    274.0000     -99.9000     -99.0000
23.500000    330.0000     4.3000     16.0000
23.500000    386.0000     3.9000     20.0000
23.500000    442.0000     5.0000     23.0000
23.500000    498.0000     5.1000     27.0000
23.500000    554.0000     5.1000     31.0000
23.500000    610.0000     5.1000     38.0000
23.500000    666.0000     6.0000     38.0000
23.500000    722.0000     5.9000     46.0000
23.500000    778.0000     5.8000     49.0000
23.500000    834.0000     6.9000     38.0000
23.500000    890.0000     6.2000     43.0000
23.500000    946.0000     6.6000     46.0000
23.500000    1002.0000     6.5000     37.0000
23.500000    1058.0000     7.9000     46.0000
23.500000    1114.0000     8.0000     43.0000
23.500000    1170.0000     8.0000     40.0000
23.500000    1226.0000     6.5000     41.0000
23.500000    1282.0000     7.9000     39.0000
23.500000    1338.0000     8.0000     40.0000
23.500000    1394.0000     7.1000     46.0000
23.500000    1450.0000     5.6000     37.0000
23.500000    1506.0000     6.6000     46.0000
23.500000    1562.0000     7.1000     53.0000
23.500000    1618.0000     6.9000     53.0000
23.500000    1674.0000     -99.9000     -99.0000
23.500000    1730.0000     -99.9000     -99.0000


****************************************************
*                                                  *
*              END OF FILE ENCOUNTERED             *
*                                                  *
*          60 records of data were read          *
```

```
*                                                  *
*  EXECUTION OF PROGRAM COMPLETED AND SUCCESSFUL   *
*                                                  *
****************************************************
```

6.8 FIRE ASTEX Colorado State University Wind Profiler Read Program (fax_csu_wndprfs_read.c)

The read program prompts the user for the name of the data file. The program then opens the data file and extracts the header which consists of the month, year, day, and hour (UTC) the data was collected. The list of parameters and their corresponding units is then displayed for the user. The user then selects the number of parameters to be displayed on the screen. If the user only requests some of the parameters to be displayed to the screen, the user then chooses the parameters by number and halts the selection process by typing a 'q' after which the selected parameters are displayed. The user can exit the program by typing a 'x' at any prompt.

User inputs are in "**bold**."

```
sorcerer 124: fax_csu_wndprfs_read
***************************************************************
*                                                             *
* FIRE ASTEX Colorado State University Wind Profiler Data Set *
*                                                             *
*                        READ PROGRAM                         *
*                                                             *
* Version 1.0                              September 19, 1995 *
***************************************************************


Please enter the name of the data set to be read:  92061003.wp


The data set to be read is 92061003.wp


The following are the parameters on this data set:


No.   Parameter                           Units
---   ---------                           -----

 1.   Minute                               min
 2.   Height above mean sea level          km
 3.   u-wind component                     m/s
 4.   v-wind component                     m/s


 Do you want all parameters to be printed
 Please select: a or A for All; S for Some; X to eXit: a
  92061003

Min    Height    u          v
 22    0.584    -1.480    -4.198
```

```
 22    0.834    -2.385    -5.163
 22    1.084    -1.447    -5.487
 22    1.334    -1.644    -5.694
 22    1.584    -2.335    -4.943
 22    1.834    -2.855    -4.279
 22    2.084    -1.276    -7.138
 22    2.334    -0.227    -7.366
 22    2.584    0.346    -8.378
 22    2.834    0.590    -7.629
 22    3.084    2.216    -8.258
 22    3.334    2.963    -7.305
 22    3.584    4.031    -5.028
 22    3.834    5.680    -9.042
 22    4.084    6.905    -7.872
 22    4.334    7.898    -6.615
 22    4.584    7.117    -7.214
 22    4.834    8.024    -6.940
 22    5.084    8.814    -5.058
 22    5.334    9.270    -6.088
 22    5.584    12.180    -5.915
 22    5.834    12.340    -4.095
 22    6.084    12.526    -3.730
 22    6.334    13.780    -4.399
 22    6.584    12.052    -4.209
 22    6.834    13.542    -3.481
 22    6.997    13.930    -3.111
 22    7.084    14.178    -2.564
 22    7.247    14.115    -2.930
 22    7.334    16.231    -3.318
 22    7.497    13.442    -2.986
 22    7.584    -9999.000    -9999.000
....
....
....
....
 44    12.497    -9999.000    -9999.000
 44    12.747    -9999.000    -9999.000
 44    12.997    -9999.000    -9999.000
 44    13.247    -9999.000    -9999.000
 44    13.497    -9999.000    -9999.000
 44    13.747    -9999.000    -9999.000
 44    13.997    23.654    1.470
 44    14.247    24.279    1.795
 44    14.497    23.573    2.094
 44    14.747    22.702    0.023
 44    14.997    -9999.000    -9999.000
 44    15.247    -9999.000    -9999.000
 44    15.497    -9999.000    -9999.000
 44    15.747    -9999.000    -9999.000


****************************************************
*                                                  *
*              END OF FILE ENCOUNTERED             *
*                                                  *
*          216 records of data were read          *
*                                                  *
```

```
*  EXECUTION OF PROGRAM COMPLETED AND SUCCESSFUL   *
*                                                  *
****************************************************
```

6.9 FIRE ASTEX Colorado State University PRT-6 Read Program (fax_csu_prt6_read.c)

The read program prompts the user for the name of the data file. The program then opens the data file and displays to the user the parameters and their corresponding units. The user then selects the number of parameters to be displayed on the screen. If the user only requests some of the parameters to be displayed to the screen, the user then chooses the parameters by number and halts the selection process by typing a ‘q’ after which the selected parameters are displayed. The user can exit the program by typing a ‘x’ at any prompt.

User inputs are in **"bold."**

```
sorcerer 203: fax_csu_prt6_read
***************************************************************
*                                                             *
*     FIRE ASTEX Colorado State University PRT-6 Data Set     *
*                                                             *
*                       READ PROGRAM                          *
*                                                             *
* Version 1.0                            September 19, 1995 *
***************************************************************


Please enter the name of the data set to be read:  ax_csu_prt6_920601


The data set to be read is ax_csu_prt6_920601



The following are the parameters on this data set:


No.   Parameter                               Units
---   ---------                               -----

 1.   Julian day                       Includes fraction of day
 2.   Brightness Temperature                   K


 Do you want all parameters to be printed
 Please select: a or A for All; S for Some; X to eXit: a


  Julian Day        Brightness Temperature

 153.0179901   260.065
 153.0181122   262.986
```

```
 153.0182343   267.140
 153.0183411   269.034
 153.0184631   269.858
 153.0185699   269.192
 153.0186920   269.175
 153.0188141   268.502
 153.0189209   267.031
 153.0190430   266.886
 153.0191498   266.430
 153.0192719   266.064
 153.0193939   264.916
 153.0195007   262.117
 153.0196228   259.804
 153.0197296   258.811
 153.0198517   256.317
 153.0199585   251.740
 153.0200806   251.102
 153.0202026   251.921
 153.0203094   250.873
 153.0204315   249.202
 153.0205383   249.108
 153.0206604   249.366
 153.0207825   247.969
 153.0208893   246.275
 153.0210114   245.140
 153.0211182   244.062
 153.0212402   245.214
....
....
....
....
 153.9978638   229.417
 153.9979858   229.721
 153.9980927   229.812
 153.9982147   233.106
 153.9983215   238.914
 153.9984436   242.917
 153.9985657   236.886
 153.9986725   231.608
 153.9987946   245.015
 153.9989014   255.249
 153.9990234   244.841
 153.9991455   236.301
 153.9992523   238.153
 153.9993744   248.493
 153.9994812   252.662
 153.9996033   246.055
 153.9997101   232.169
 153.9998322   226.794
 153.9999542   227.231


****************************************************
*                                                  *
*              END OF FILE ENCOUNTERED             *
*                                                  *
*          5321 records of data were read          *
```

```
*                                                    *
*  EXECUTION OF PROGRAM COMPLETED AND SUCCESSFUL    *
*                                                    *
******************************************************
```

6.10 FIRE ASTEX Colorado State University Meteorological nad Radiation Surface Observations Read Program (fax_csu_metsfc_read.c)

The read program prompts the user for the name of the data file. The program then opens the data file and displays to the user the parameters and their corresponding units. The user then selects the number of parameters to be displayed on the screen. If the user only requests some of the parameters to be displayed to the screen, the user then chooses the parameters by number and halts the selection process by typing a ‘q’ after which the selected parameters are displayed. The user can exit the program by typing a ‘x’ at any prompt.

User inputs are in **“bold.”**

```
sorcerer 203: fax_csu_metsfc_read

***************************************************************
*                                                             *
*  FIRE ASTEX Colorado State University Meteorological and    *
*              Radiation Suface Observations                  *
*                                                             *
*                        READ PROGRAM                         *
*                                                             *
* Version 1.0                              September 19, 1995 *
***************************************************************


Please enter the name of the data set to be read:  ax_csu_metsfc_920530


The data set to be read is ax_csu_metsfc_920530


The following are the parameters on this data set:


No.   Parameter                          Units
---   ---------                          -----

 1.   Time                         Fraction of Julian day
 2.   Wind speed                          m/s
 3.   Wind direction                      deg
 4.   Temperature                          C
 5.   Relative humidity                 Percent
 6.   Solar total irradiance              W/m2
 7.   Near infrared irradiance            W/m2
 8.   Infrared irradiance                 W/m2
 9.   Dome temperature                     K
10.   Sink temperature                     K
```

```
11.   Hour-minute                        hhmm


 Do you want all parameters to be printed
 Please select: a or A for All; S for Some; X to eXit: a
  time        wnd_speed   wnd_dir     temp        rel_hum    sol_tot_irr  near_inf_irr
inf_irr     dome_temp    sink_temp    hour_min
 152.000000   3.544682   313.200012   17.700001   87.500000   -3.004391   -3.021147
317.309418   290.100006   290.100006   0
 152.001389   3.865431   329.700012   17.719999   87.300003   -3.004391   -3.021147
316.839935   290.100006   290.100006   2
 152.002777   3.659822   322.700012   17.709999   87.099998   -3.004391   -3.021147
318.404907   290.000000   290.100006   4
 152.004166   3.493794   334.100006   17.670000   87.099998   -3.004391   -3.323262
318.404907   290.000000   290.100006   6
 152.005554   3.333934   320.899994   17.650000   87.099998   -3.004391   -3.323262
318.170135   290.000000   290.100006   8
 152.006943   3.437766   327.100006   17.639999   87.199997   -3.004391   -3.625376
319.109131   290.000000   290.100006   10
 152.008331   3.549822   316.600006   17.620001   87.199997   -3.004391   -3.323262
319.343842   290.000000   290.100006   12
 152.009720   3.074354   308.100006   17.639999   87.400002   -3.004391   -3.323262
319.578613   290.000000   290.100006   14
 152.011108   3.280476   320.500000   17.650000   87.599998   -3.004391   -3.625376
319.813354   290.000000   290.100006   16
 152.012497   3.422859   306.399994   17.620001   87.400002   -3.004391   -3.625376
321.845459   289.899994   290.100006   18
 152.013885   3.064587   328.200012   17.610001   87.500000   -3.004391   -3.625376
319.492279   289.899994   290.000000   20
 152.015274   2.918092   302.000000   17.600000   87.800003   -3.004391   -3.625376
321.135468   289.899994   290.000000   22
 152.016663   3.296924   309.100006   17.600000   88.099998   -3.004391   -3.625376
324.187103   289.899994   290.000000   24
 152.018051   2.994681   314.399994   17.610001   88.300003   -3.004391   -3.323262
322.624481   290.000000   290.000000   26

....
....
....
....
....
 152.981949   3.201831   325.600006   16.930000   84.699997   -2.657730   -3.021147
372.380432   288.600006   288.799988   2334
 152.983337   2.986456   294.100006   16.980000   84.699997   -3.004391   -3.021147
378.254883   288.399994   288.799988   2336
 152.984726   3.050195   327.600006   16.959999   84.699997   -3.004391   -3.021147
370.848145   288.700012   288.799988   2338
 152.986115   2.551081   319.700012   17.070000   84.800003   -2.311070   -3.021147
370.114777   288.700012   288.899994   2340
 152.987503   2.935054   346.500000   17.049999   84.699997   -2.657730   -3.323262
359.345795   288.700012   288.799988   2342
 152.988892   3.417205   329.799988   17.139999   84.599998   -3.004391   -3.323262
348.627808   288.799988   288.899994   2344
 152.990280   3.238840   348.299988   17.090000   84.699997   -3.466605   -3.323262
343.588928   288.700012   288.899994   2346
 152.991669   2.819914   331.399994   17.139999   84.900002   -3.004391   -4.028196
337.360199   288.799988   288.899994   2348
```

```
 152.993057   2.834820   336.100006   17.160000   84.900002   -3.004391   -4.028196
343.671997   288.799988   289.000000   2350
 152.994446   2.962297   339.899994   17.160000   84.699997   -2.657730   -3.625376
350.948975   288.799988   289.000000   2352
 152.995834   2.860522   327.600006   17.139999   85.099998   -3.004391   -3.323262
352.933197   288.899994   289.000000   2354
 152.997223   2.423090   342.299988   17.129999   85.000000   -3.466605   -3.323262
343.569763   288.899994   288.899994   2356
 152.998611   2.615334   326.500000   17.110001   84.599998   -3.466605   -3.625376
337.161713   288.899994   289.200012   2358


****************************************************
*                                                  *
*              END OF FILE ENCOUNTERED             *
*                                                  *
*          720 records of data were read          *
*                                                  *
*  EXECUTION OF PROGRAM COMPLETED AND SUCCESSFUL   *
*                                                  *
****************************************************
```

6.11 FIRE ASTEX Rawinsonde Level 1 Read Program (fax_raw_lvl1_read.c)

User inputs are in “**bold.**”

```
sorcerer 203: fax_raw_lvl1_read
*****************************************************
*                                                   *
* FIRE ASTEX Rawinsonde Level 1 Sample Read Program *
*                                                   *
*                                                   *
* Version 1.0                    September 20, 1995 *
*****************************************************


Please enter the input data file name --> 06010245.dat


The input filename is 06010245.dat
The first line of this data file consists of:
    TIME       PMB       TEMP    TDEW     RH%     GEOPM  AZDEG   ELDEG   SPEED   DIR
E.TIME


There are eleven parameters of information
for each event.  These parameters are:

    No.      Parameter        Units
    ---      ---------        -----
     1.      TIME             min  s
     2.      PMB              mb
     3.      TEMP             C
     4.      TDEW             C
```

```
     5.       RH                percent
     6.       GEOPM             m
     7.       AZDEG             degrees
     8.       ELDEG             degrees
     9.       SPEED             m/s
    10.       DIR               degrees
    11.       E.TIME            degrees


How many parameters would you like to have printed out
with each event/record?  11
02:03:04.89   1005.80   16.80   12.13   74.00   97   137.52   -0.90   1.5   350   0.00
02:03:05.96   1004.83   16.74   12.41   75.69   105   140.82   7.45   1.5   350   1.07
02:03:09.18   1002.24   16.87   12.38   74.89   127   150.43   24.23   4.4   341   6.43
02:03:11.37   1000.97   16.84   12.34   74.82   138   147.60   28.58   4.8   340   8.62
02:03:13.52   999.61   16.78   12.24   74.67   150   151.45   32.60   5.2   341   10.77
02:03:15.71   998.59   16.68   12.17   74.74   158   152.75   33.78   5.5   341   12.96
02:03:17.91   997.53   16.59   12.06   74.64   167   154.05   36.20   5.7   341   15.16
02:03:20.11   996.36   16.52   11.96   74.52   177   153.13   36.45   5.4   342   17.36
02:03:22.25   995.09   16.43   11.83   74.30   188   154.30   38.03   5.2   342   19.50
02:03:24.45   994.27   16.35   11.71   74.09   195   156.13   38.25   5.0   342   21.70
02:03:26.64   992.91   16.26   11.64   74.13   207   155.05   39.67   5.1   342   23.89
02:03:28.78   991.91   16.18   11.46   73.65   216   156.82   40.05   4.5   346   26.03
02:03:30.98   990.55   16.11   11.16   72.52   227   155.88   40.67   4.6   345   28.23
02:03:33.18   989.32   16.02   11.19   73.07   238   157.00   41.30   4.5   347   30.43
02:03:35.32   988.26   15.91   11.05   72.91   247   157.55   41.50   4.0   348   32.57
02:03:37.52   987.39   15.82   11.35   74.82   254   159.13   42.50   3.8   349   34.77
02:03:39.72   986.00   15.71   11.50   76.11   266   159.50   42.00   4.1   348   36.97
02:03:41.91   984.75   15.61   11.42   76.21   277   159.80   42.92   4.2   349   39.16
02:03:44.11   983.92   15.50   11.38   76.53   284   160.30   42.35   4.1   348   41.36
02:03:46.31   982.49   15.41   11.31   76.60   297   159.60   42.50   4.3   348   43.56
02:03:48.50   981.71   15.32   11.29   76.97   303   159.88   42.25   4.3   348   45.75
02:03:50.70   980.56   15.23   11.28   77.40   313   160.27   42.10   4.3   348   47.95
02:03:52.90   979.28   15.14   11.15   77.13   324   160.27   42.00   4.4   348   50.15
02:03:55.09   978.22   15.05   11.20   77.81   334   160.23   41.92   4.4   348   52.34
02:03:57.35   977.15   14.95   11.23   78.46   343   161.23   41.97   4.7   347   54.60
02:03:59.54   976.15   14.86   11.25   79.06   352   161.32   42.05   4.4   347   56.79
02:04:01.80   974.98   14.77   11.33   79.92   362   161.18   42.25   4.4   346   59.05
02:04:03.99   973.65   14.68   11.37   80.66   373   161.40   42.33   4.5   345   61.24
....
....
....
....
03:05:09.17   72.51   -63.42   -71.05   31.41   18377   96.43   26.80   999.0   999
3726.42
03:05:11.31   72.38   -63.53   -71.15   31.42   18388   96.43   26.83   999.0   999
3728.56
03:05:13.51   72.22   -63.41   -71.04   31.42   18402   96.38   26.83   999.0   999
3730.76
03:05:15.71   72.11   -63.35   -70.99   31.42   18411   96.40   26.83   999.0   999
3732.96
03:05:17.85   71.97   -63.23   -70.88   31.42   18423   96.40   26.85   999.0   999
3735.10
03:05:20.05   71.78   -63.10   -70.76   31.42   18439   96.40   26.83   999.0   999
3737.30
03:05:22.24   71.65   -63.04   -70.71   31.41   18450   96.45   26.83   999.0   999
3739.49
```

```
03:05:24.38   71.53   -62.94   -70.63   31.41   18460   96.40   26.83   999.0   999
3741.63
03:05:26.58   71.35   -62.86   -70.55   31.41   18476   96.40   26.83   999.0   999
3743.83
03:05:28.78   71.20   -62.73   -70.44   31.41   18489   96.40   26.80   999.0   999
3746.03
03:05:30.92   71.03   -62.66   -70.37   31.41   18504   96.40   26.80   999.0   999
3748.17


~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~ End of file has been reached.        ~
~ There are a total of 1673 records in  ~
~ this file.                            ~
~ Program has completed successfully!  ~
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

6.12 FIRE ASTEX Rawinsonde Level 2 Read Program (fax_raw_lvl2_read.c)

The read program prompts the user for the name of the data file. The program then opens the data file and extracts the header which consists of the first three lines of the data file. The list of parameters and their corresponding units is then displayed for the user. The user then selects the number of parameters to be displayed on the screen. If the user only requests some of the parameters to be displayed to the screen, the user then chooses the parameters by number and halts the selection process by typing a 'q' after which the selected parameters are displayed. The user can exit the program by typing a 'x' at any prompt.

User inputs are in **"bold."**

sorcerer 203: **fax_raw_lvl2_read**

```
***************************************************************
*                                                             *
*               FIRE ASTEX RAWINSONDE LEVEL II                *
*                                                             *
*                        READ PROGRAM                         *
*                                                             *
* Version 1.0                              September 20, 1995 *
***************************************************************


Please enter the name of the data set to be read:  06010245.prc


The data set to be read is 06010245.prc


The following are the parameters on this data set:


No.   Parameter                Units
---   ---------                -----

 1.   Geopotential Height       m
 2.   Pressure                  mb
```

```
 3.   Temperature               C
 4.   Dew point temperature     C
 5.   Wind speed                m/s
 6.   Wind direction            deg


 Do you want all parameters to be printed
 Please select: a or A for All; S for Some; X to eXit: a
         z(m)    p(mb)    t(c)    td(c)   m/s     degrees
   1     97.00   1005.80   16.80   12.13   1.50   350.00
   2     100.00   1005.44   16.79   12.21   23.31   310.03
   3     110.00   1004.26   16.77   12.42   12.75   334.46
   4     120.00   1003.08   16.83   12.41   6.47   344.19
   5     130.00   1001.89   16.87   12.39   1.36   38.86
   6     140.00   1000.71   16.83   12.33   2.79   345.17
   7     150.00   999.54   16.76   12.25   3.43   341.47
   8     160.00   998.36   16.66   12.16   3.51   342.73
   9     170.00   997.18   16.57   12.05   4.02   340.83
   10     180.00   996.00   16.49   11.94   3.84   339.78
....
....
....
....
   1828     18360.00   72.42   -63.48   -71.80   3.16   239.66
   1829     18370.00   72.30   -63.47   -71.79   2.96   258.16
   1830     18380.00   72.18   -63.39   -71.71   4.03   333.84
   1831     18390.00   72.07   -63.33   -71.66   7.67   333.56
   1832     18400.00   71.95   -63.23   -71.57   11.94   289.53
   1833     18410.00   71.83   -63.13   -71.47   13.54   140.54
   1834     18420.00   71.72   -63.07   -71.42   13.74   75.96
   1835     18430.00   71.60   -63.00   -71.37   13.27   14.39
   1836     18440.00   71.48   -62.93   -71.30   12.26   319.11
   1837     18450.00   71.37   -62.86   -71.24   10.16   168.10
   1838     18460.00   71.25   -62.75   -71.13   7.83   114.56
   1839     18470.00   71.14   -62.67   -71.07   5.78   57.55


****************************************************
*                                                  *
*              END OF FILE ENCOUNTERED             *
*                                                  *
*          1839 records of data were read          *
*                                                  *
*  EXECUTION OF PROGRAM COMPLETED AND SUCCESSFUL   *
*                                                  *
****************************************************
```

APPENDIX

A-1: Output from running ‘make all’ on HP workstation

The following is the output from running makefile to build FIRE ASTEX read programs on a HP9000:

NOTE: The FORTRAN version of the program which reads the netcdf data sets was not able to compile with the current version of the compiler. Many system variables that were defined in the code are included in the current version of HDF.

HP% make -f Makefile.fax all

```
rm -f mas_read_netcdf_c
cc  -g -Aa -DHPUX      -DNO_HAVE_PROTOTYPES -DNO_STDARG -I../HDF3.3r4/mfhdf/libsrc -o fhdf_netcdf fhdf_netcdf.c -L../HDF3.3r4/hdf/lib -lnetcdf ../HDF3.3r4/hdf/lib/libdf.a
rm -f fax_read_er2_lidar
cc  -g -Aa  -DHPUX      -o fax_read_er2_lidar fax_read_er2_lidar.c
rm -f faxrad_read
cc  -g -Aa  -DHPUX      -o faxrad_read faxrad_read.c
rm -f fax_psu_ceil_read
cc  -g -Aa  -DHPUX      -o fax_psu_ceil_read fax_psu_ceil_read.c
rm -f fax_psu_h2ovap_read
cc  -g -Aa  -DHPUX      -o fax_psu_h2ovap_read fax_psu_h2ovap_read.c
rm -f fax_psu_malbal_read
cc  -g -Aa  -DHPUX      -o fax_psu_malbal_read fax_psu_malbal_read.c
rm -f fax_psu_wndmal_read
cc  -g -Aa  -DHPUX      -o fax_psu_wndmal_read fax_psu_wndmal_read.c
rm -f fax_csu_wndprfs_read
cc  -g -Aa  -DHPUX      -o fax_csu_wndprfs_read fax_csu_wndprfs_read.c
rm -f fax_csu_prt6_read
cc  -g -Aa  -DHPUX      -o fax_csu_prt6_read fax_csu_prt6_read.c
rm -f fax_csu_metsfc_read
cc  -g -Aa  -DHPUX      -o fax_csu_metsfc_read fax_csu_metsfc_read.c
rm -f fax_raw_lvl1_read
cc  -g -Aa  -DHPUX      -o fax_raw_lvl1_read fax_raw_lvl1_read.c
rm -f fax_raw_lvl1_readf
f77 -g -Aa -DHPUX    -o fax_raw_lvl1_readf fax_raw_lvl1_read.f
fax_raw_lvl1_read.f:
MAIN examrd:
rm -f fax_raw_lvl2_read
cc  -g -Aa  -DHPUX      -o fax_raw_lvl2_read fax_raw_lvl2_read.c
rm -f fax_raw_lvl2_readf
f77 -g -Aa -DHPUX    -o fax_raw_lvl2_readf fax_raw_lvl2_read.f
fax_raw_lvl2_read.f:
MAIN rdl2:
```

A-2: Output from running 'make all' on SUN4 workstation:

The following is the output from running makefile to build FIRE ASTEX on a SUN:

NOTE: The ANSI Version of the C compiler (acc) was used to compile this Version of the HDF Library (3.3r4). If you compile source code that accesses the HDF compiler of older versions, the other version of the C compiler (cc) can be used.

SUNOS% make -f Makefile.fax all

```
rm -f mas_read_netcdf_f

f77 -g -DSUNOS   -sun4 -DNO_HAVE_PROTOTYPES -DNO_STDARG -I/usr/local/hdf-3.3r4/mfhdf/lib-
src -I/usr/local/hdf-3.3r4/mfhdf/port -I/usr/local/hdf-3.3r4/hdf/include -o mas_read_netcdf_f
mas_read_netcdf.f -L/usr/local/hdf-3.3r4/mfhdf/libsrc -lnetcdf /usr/local/hdf-3.3r4/hdf/lib/libdf.a

mas_read_netcdf.f:
 MAIN:
"mas_constant.i", line 155: Warning: local variable "dfntf_pcdfntf_convex" never used
rm -f fax_read_er2_lidar
acc -g -DSUNOS     -sun4 -o fax_read_er2_lidar fax_read_er2_lidar.c
rm -f faxrad_read
acc -g -DSUNOS     -sun4 -o faxrad_read faxrad_read.c
rm -f fax_psu_ceil_read
acc -g -DSUNOS     -sun4 -o fax_psu_ceil_read fax_psu_ceil_read.c
rm -f fax_psu_h2ovap_read
acc -g -DSUNOS     -sun4 -o fax_psu_h2ovap_read fax_psu_h2ovap_read.c
rm -f fax_psu_malbal_read
acc -g -DSUNOS     -sun4 -o fax_psu_malbal_read fax_psu_malbal_read.c
rm -f fax_psu_wndmal_read
acc -g -DSUNOS     -sun4 -o fax_psu_wndmal_read fax_psu_wndmal_read.c
rm -f fax_csu_wndprfs_read
acc -g -DSUNOS     -sun4 -o fax_csu_wndprfs_read fax_csu_wndprfs_read.c
rm -f fax_csu_prt6_read
acc -g -DSUNOS     -sun4 -o fax_csu_prt6_read fax_csu_prt6_read.c
rm -f fax_csu_metsfc_read
acc -g -DSUNOS     -sun4 -o fax_csu_metsfc_read fax_csu_metsfc_read.c
rm -f fax_raw_lvl1_read
acc -g -DSUNOS     -sun4 -o fax_raw_lvl1_read fax_raw_lvl1_read.c
rm -f fax_raw_lvl1_readf
f77 -g -DSUNOS   -sun4 -o fax_raw_lvl1_readf fax_raw_lvl1_read.f
fax_raw_lvl1_read.f:
 MAIN examrd:
rm -f fax_raw_lvl2_read
acc -g -DSUNOS     -sun4 -o fax_raw_lvl2_read fax_raw_lvl2_read.c
rm -f fax_raw_lvl2_readf
f77 -g -DSUNOS   -sun4 -o fax_raw_lvl2_readf fax_raw_lvl2_read.f
fax_raw_lvl2_read.f:
 MAIN rdl2:
```

A-3: Summary of Files necessary to work with every data set:

The table that is included in this section lists all files a user will need in addition to the granules to work with the FIRE ASTEX data sets archived at the Langley DAAC.

Data Set Name	Read Software Files	Executable Filename	Readme Files
FIRE_AX_ER2_MAS	Makefile.fax mas_read_netcdf.c mas_read_netcdf.f mas_read_netcdf.i	 mas_read_netcdf_c mas_read_netcdf_f	fire_ax.readme.ps er2_mas.readme.ps
FIRE_AX_ER2_LIDAR	Makefile.fax fax_read_er2_lidar.c	 fax_read_er2_lidar	fire_ax.readme.ps fire_ax_er2_lidar.readme
FIRE_AX_UW_C131A	****	****	fire_ax.readme.ps ax_uw_c131a.readme
FIRE_AX_UW_DSCRT	****	****	fire_ax.readme.ps ax_uw_dscrt.readme
FIRE_AX_UW_GERB_1HZ	****	****	fire_ax.readme.ps ax_gerb_1hz.readme
FIRE_AX_UW_GERB_10HZ	****	****	fire_ax.readme.ps ax_gerb_10hz.readme
FIRE_AX_MALBAL_SONDE	Makefile.fax faxrad_read.c	 faxrad_read	fire_ax.readme.ps ax_malbal_snd.readme ax_malbal_snd.summary ax_radiosonde_readme.1st
FIRE_AX_OCEANS_SONDE	Makefile.fax faxrad_read.c	 faxrad_read	fire_ax.readme.ps ax_oceans_snd.readme ax_oceans_snd.summary ax_radiosonde_readme.1st
FIRE_AX_PORSAN_SONDE	Makefile.fax faxrad_read.c	 faxrad_read	fire_ax.readme.ps ax_porsan_snd.readme ax_porsan_snd.summary ax_radiosonde_readme.1st
FIRE_AX_SANMAR_SONDE	Makefile.fax faxrad_read.c	 faxrad_read	fire_ax.readme.ps ax_sanmar_snd.readme ax_sanmar_snd.summary ax_radiosonde_readme.1st
FIRE_AX_SUROIT_SONDE	Makefile.fax faxrad_read.c	 faxrad_read	fire_ax.readme.ps ax_suroit_snd.readme ax_suroit_snd.summary ax_radiosonde_readme.1st

Data Set Name	Read Software Files	Executable Filename	Readme Files
FIRE_AX_VALDIV_SONDE	Makefile.fax faxrad_read.c	 faxrad_read	fire_ax.readme.ps ax_valdiv_snd.readme ax_valdiv_snd.summary ax_radiosonde_readme.1st
FIRE_AX_PSU_CEIL_MAL	Makefile.fax fax_psu_ceil_read.c	 fax_psu_ceil_read	fire_ax.readme.ps ax_psu_ceilom.readme
FIRE_AX_PSU_CEIL_SAN	Makefile.fax fax_psu_ceil_read.c	 fax_psu_ceil_read	fire_ax.readme.ps ax_psu_ceilom.readme
FIRE_AX_PSU_CEIL_VAL	Makefile.fax fax_psu_ceil_read.c	 fax_psu_ceil_read	fire_ax.readme.ps ax_psu_ceilom.readme
FIRE_AX_PSU_H2OVAP	Makefile.fax fax_psu_h2ovap_read.c	 fax_psu_h2ovap_read	fire_ax.readme.ps fire_ax_psu_h2ovap.readme
FIRE_AX_PSU_MALBAL	Makefile.fax fax_psu_malbal_read.c	 fax_psu_malbal_read	fire_ax.readme.ps fire_ax_psu_malbal.readme
FIRE_AX_PSU_WND_MAL	Makefile.fax fax_psu_wndmal_read.c	 fax_psu_wndmal_read	fire_ax.readme.ps fire_ax_psuwnd_mal.readme
FIRE_AX_CSU_WNDPRFS	Makefile.fax fax_csu_wndprfs_read.c	 fax_csu_wndprfs_read	fire_ax.readme.ps fire_ax_csu_wndprfs.readme
FIRE_AX_CSU_PRT6	Makefile.fax fax_csu_prt6_read.c	 fax_csu_prt6_read	fire_ax.readme.ps fire_ax_csu_prt6.readme
FIRE_AX_CSU_MET_SFC	Makefile.fax fax_csu_metsfc_read.c	 fax_csu_metsfc_read	fire_ax.readme.ps fire_ax_csu_met_sfc.readme
FIRE_AX_RWSONDE_LVL1	Makefile.fax fax_raw_lvl1_read.c fax_raw_lvl1_read.f	 fax_raw_lvl1_read fax_raw_lvl1_reaadf	fire_ax.readme.ps ax_rawinsonde_summary.tbl ax_porsan_lvl1.cat ax_rwsnd_lvl1.readme
FIRE_AX_RWSONDE_LVL2	Makefile.fax fax_raw_lvl2_read.c fax_raw_lvl2_read.f	 fax_raw_lvl2_read fax_raw_lvl2_readf	fire_ax.readme.ps ax_rawinsonde_summary.tbl ax_porsan_lvl2.cat ax_rwsnd_lvl2.readme

**** Indicates that sample read software is not available for a particular data set.