

FIRE ASTEX Colorado State University (CSU) Langley DAAC Data Set Document



Summary:

The First ISCCP Regional Experiment has been designed to improve data products and cloud/radiation parameterizations used in general circulation models (GCMs). Specifically, the goals of FIRE are (1) to improve basic understanding of the interaction of physical processes in determining life cycles of cirrus and marine stratocumulus systems and the radiative properties of these clouds during their life cycles and (2) to investigate the interrelationships between the ISCCP data, GCM parameterizations, and higher space and time resolution cloud data.

To-date, four intensive field-observation periods were planned and executed: a cirrus IFO (October 13 - November 2, 1986); a marine stratocumulus IFO off the southwestern coast of California (June 29 - July 20, 1987); a second cirrus IFO in southeastern Kansas (November 13 - December 7, 1991); and a second marine stratocumulus IFO in the eastern North Atlantic Ocean (June 1 - June 28, 1992). Each mission combined coordinated satellite, airborne, and surface observations with modeling studies to investigate the cloud properties and physical processes of the cloud systems.

Colorado State University (CSU) has produced four FIRE ASTEX data sets that are archived at the Langley Distributed Active Archive Center (DAAC). This document provides information on these four data sets.

- FIRE_AX_CSU_CEILOM
- FIRE_AX_CSU_PRT6
- FIRE_AX_CSU_MET_SFC
- FIRE_AX_CSU_WNDPRFS

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1. Data Set Overview:

Data Set Identification:

These four data sets are available from the Langley DAAC:

FIRE_AX_CSU_CEILOM

First ISCCP Regional Experiment (FIRE) Atlantic
Stratocumulus Transition Experiment (ASTEX)



FIRE_AX_CSU_PRT6	Colorado State University (CSU) Ceilometer Data (FIRE_AX_CSU_CEILOM)
FIRE_AX_CSU_MET_SFC	First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Colorado State University (CSU) PRT-6 Data (FIRE_AX_CSU_PRT6)
FIRE_AX_CSU_WNDPRFS	First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Colorado State University (CSU) Meteorological and Radiation Surface Observations (FIRE_AX_CSU_MET_SFC)
	Colorado State University (CSU) Wind Profiler Data (FIRE_AX_CSU_WNDPRFS)

Data Set Introduction:

FIRE_AX_CSU_CEILOM

The Belfort Laser Ceilometer was operated during FIRE ASTEX on Porto Santo, Madeira. It utilized a 20 watt near-infrared Gallium-Arsenide laser operating at a wavelength of 0.91 microns to detect cloud base height. It employed 1024 range gates which yield a vertical resolution of 25 feet up to a maximum range of 25,600 feet. The fields of view of the transmitter and receiver are approximately 1 degree.

The ceilometer used a measured "noise level" to determine a "count" (-1,0,1) which is then summed for each gate. This "histogram" is the basic output from which the cloud base height is estimated.

FIRE_AX_CSU_PRT6

The PRT-6 radiometer is a chopped bolometer which can passively sense infrared targets within the spectral range of 2 to 20 microns. The radiometer is configured to accept optics with either a 2 or 20 degree field of view. The output is a voltage signal sampled at a frequency of 1/0.1 sec. The average of the sampled voltage was recorded every 10 seconds, which is nominally linear with respect to the incident radiant power.

For the FIRE ASTEX deployment the instrument was configured with a field of view of 2 degrees and made use of an interference filter. This filter effectively limited the spectral bandpass to 885 to 945 inverse centimeters. Most of the measurements were made with the instrument pointing vertically upward, although for brief intervals zenith angles of 15, 30, 45, 60, and 75 degrees were also utilized.

FIRE_AX_CSU_MET_SFC

The surface radiation and meteorological data collection employed data loggers from Campbell Scientific Inc. The Campbell Model 207 unit measured temperature and relative humidity using two sensors combined into one probe. Wind speed and direction were monitored using a propeller anemometer manufactured by R.M. Young. Irradiance (solar total and near infrared) were measured using an Eppley Pyranometer and infrared irradiance and dome and sink temperatures were measured using an Epply Pyrgeometer.

FIRE_AX_CSU_WNDPRFS

The CSU wind profiler is a five beam wind profiler with high and low modes of operation. The wind profiler is a clear air doppler radar and operates at a frequency of 404.37 MHz. It operated with a height resolution of 250m and measured radial velocities up to about 15km.

Objective/Purpose:

Information not available at this time.

Summary of Parameters:

FIRE_AX_CSU_CEILOM:	Clouds
FIRE_AX_CSU_PRT6:	Brightness Temperature
FIRE_AX_CSU_MET_SFC:	Dome Temperature
	Humidity
	Irradiance
	Sink Temperature
	Temperature
	Wind Direction



FIRE_AX_CSU_WNDPRFS: Wind Speed
Wind Speed

Discussion:

FIRE_AX_CSU_CEILOM:
FIRE_AX_CSU_PRT6:
FIRE_AX_CSU_MET_SFC:
FIRE_AX_CSU_WNDPRFS:

Related Data Sets:

Information not available at this time.

2. Investigator(s):

Investigator(s) Name and Title:

Stephen Cox, Ph. D.

Title of Investigation:

First ISCCP Regional Experiment (FIRE) ASTEX

Contact Information:

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3. Theory of Measurements:

Information is not available at this time.

4. Equipment:

Sensor/Instrument Description:

Collection Environment:

Information not available at this time.

Source/Platform:

FIRE_AX_CSU_CEILOM: Ground Station
FIRE_AX_CSU_PRT6: Ground Station
FIRE_AX_CSU_MET_SFC: Ground Station
FIRE_AX_CSU_WNDPRFS: Ground Station



Source/Platform Mission Objectives:

Information not available at this time.

Key Variables:

Information not available at this time.

Principles of Operation:

Information not available at this time.

Sensor/Instrument Measurement Geometry:

Information not available at this time.

Manufacturer of Sensor/Instrument:

Information not available at this time.

Sensor/Instrument:

FIRE_AX_CSU_CEILOM:	Ceillometer
FIRE_AX_CSU_PRT6:	PRT-6
FIRE_AX_CSU_MET_SFC:	207 Probe Propeller Anemometer Pyranometer Pyrgeometer
FIRE_AX_CSU_WNDPRFS:	Wind Profiler

Calibration:**Specifications:**

Information not available at this time.

Tolerance:

Information not available at this time.

Frequency of Calibration:

Information not available at this time.

Other Calibration Information:

Information not available at this time.

5. Data Acquisition Methods:

Information not available at this time.

6. Observations:**Data Notes:**

Information not available at this time.

Field Notes:

Information not available at this time.

7. Data Description:

Spatial Characteristics:

Spatial Coverage:

Data Set Name	Min Lat.	Max Lat.	Min Lon.	Max Long.
FIRE_AX_CSU_CEIL OM	33.08	33.08	-16.35	-16.35
FIRE_AX_CSU_PRT 6	33.08	33.08	-16.35	-16.35
FIRE_AX_CSU_MET _SFC	33.08	33.08	-16.35	-16.35
FIRE_AX_CSU_WN DPRFS	33.08	33.08	-16.35	-16.35

Spatial Coverage Map:

There are no maps for these data sets.

Spatial Resolution:

Point data.

Projection:

Not applicable.

Grid Description:

Not applicable.

Temporal Characteristics:

Temporal Coverage:

Data Set Name	Begin Date	End Date
FIRE_AX_CSU_CEILOM	05-31-1992	06-29-1992
FIRE_AX_CSU_MET_SFC	05-30-1992	06-30-1992
FIRE_AX_CSU_PRT6	06-01-1992	06-29-1992
FIRE_AX_CSU_WNDPRF S	05-29-1992	07-03-1992

Temporal Coverage Map:

There are no maps available for these data sets.

Temporal Resolution:

Each granule consists of one day of data.

Data Characteristics:

Parameter/Variable:

FIRE_AX_CSU_CEILOM:	Clouds
FIRE_AX_CSU_MET_SFC:	Dome Temperature Humidity



Irradiance
Sink Temperature
Temperature
Wind Direction
Wind Speed
Brightness Temperature
Clouds

FIRE_AX_CSU_PRT6:

FIRE_AX_CSU_WNDPRFS:

Variable Description/Definition:

Information not available at this time.

Unit of Measurement:

Information not available at this time.

Data Source:

Information not available at this time.

Data Range:

Information not available at this time.

Sample Data Record:

FIRE_AX_CSU_CEILOM:

This sample record of data was printed from ax_csu_ceilom_920615:

167.00000,-1

FIRE_AX_CSU_MET_SFC:

This sample record of data was printed from ax_csu_metsfc_920601:

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

FIRE_AX_CSU_PRT6:

This sample record of data was printed from ax_csu_prt6_920601:

153.0179901 260.065

FIRE_AX_CSU_WNDPRFS:

This sample record of data was printed from ax_csu_wndprf_920530:

92053012
6 0.584 3.709 -3.354

8. Data Organization:

Data Granularity:

A general description of data granularity as it applies to the IMS appears in the [EOSDIS Glossary](#). Each granule consists of one day of data.

Data Format:

The data are in ASCII format.

9. Data Manipulations:



Formulae:**Derivation Techniques and Algorithms:**

Information not available at this time.

Data Processing Sequence:**Processing Steps:**

Information not available at this time.

Processing Changes:

Information not available at this time.

Calculations:**Special Corrections/Adjustments:**

Information not available at this time.

Calculated Variables:

Information not available at this time.

Graphs and Plots:

No graphs or plots are available for these data sets.

10. Errors:**Sources of Error:**

Information not available at this time.

Quality Assessment:**Data Validation by Source:**

Information not available at this time.

Confidence Level/Accuracy Judgement:

Information not available at this time.

Measurement Error for Parameters:

Information not available at this time.

Additional Quality Assessments:

Information not available at this time.

Data Verification by Data Center:

Information not available at this time.

11. Notes:**Limitations of the Data:**

Information not available at this time.

Known Problems with the Data:

Information not available at this time.



Usage Guidance:

Information not available at this time.

Any Other Relevant Information about the Study:

Information not available at this time.

12. Application of the Data Set:

Information not available at this time.

13. Future Modifications and Plans:

There are no plans for future modifications of these data sets.

14. Software:

Software Description:

Sample read software are available for these data sets. The codes are written in C. A makefile and readme file are also available. These files allow users to compile and output the data.

Software Access:

The software can be obtained through the Langley DAAC User Services Office. Please refer to the contact information in Section 15. The software can also be ordered through the on-line system while ordering these data sets.

15. Data Access:

Contact Information:

Langley DAAC User and Data Services Office
NASA Langley Research Center
Mail Stop 157D
Hampton, Virginia 23681-2199
USA
Telephone: (757) 864-8656
FAX: (757) 864-8807
E-mail: support-asdc@earthdata.nasa.gov

Data Center Identification:

Langley DAAC User and Data Services Office
NASA Langley Research Center
Mail Stop 157D
Hampton, Virginia 23681-2199
USA
Telephone: (757) 864-8656
FAX: (757) 864-8807
E-mail: support-asdc@earthdata.nasa.gov

Procedures for Obtaining Data:

The data are available from the [Langley Data Center web site](#).

Data Center Status/Plans:

The Langley DAAC will continue to archive these data sets. There are no plans to reprocess.

16. Output Products and Availability:

No output products were produced from these data sets.

17. References:



Cox, S., C. Cornwall, W. Cotton, J. Davis, J. Kleist, T. McKee, Q. Shao, D. Randall, W. Schubert, D. Wood, S. Frisch, M. Hardesty, R. Kropfli, J. Snider and P. Anikin, 1993: *CSU/NOAA-WPL FIRE II - ASTEX Field Experiment: Description of Field Deployment Phase*. Colorado State University Department of Atmospheric Science Paper No. 523, 100pp.

18. Glossary of Terms:

[EOSDIS Glossary](#).

19. List of Acronyms:

NASA - National Aeronautics Space Administration

URL - Uniform Resource Locator

[EOSDIS Acronyms](#).

20. Document Information:

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Document Curator:

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