First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University (PSU) Langley DAAC Data Set Document

Summary:

The First ISCCP Regional Experiments have been designed to improve data products and cloud/radiation parameterizations used in general circulation models (GCMs). Specifically, the goals of FIRE are (1) to seek the 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.

All data sets discussed in this document were produced by Pennsylvania State University (PSU). These data sets are:

- FIRE_AX_PSU_CEIL_MAL
- FIRE_AX_PSU_CEIL_SAN
- FIRE_AX_PSU_CEIL_VAL
- FIRE_AX_PSU_H2OVAP
- FIRE_AX_PSU_MALBAL
- FIRE_AX_PSU_WND_MAL

Table of Contents:

1. Data Set Overview:

Data Set Identification:

FIRE_AX_PSU_CEIL_MAL	First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University (PSU) Malcolm Baldrige Ceilometer Data (FIRE_AX_PSU_CEIL_MAL)
FIRE_AX_PSU_CEIL_SAN	First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University (PSU) Santa Maria Ceilometer Data (FIRE_AX_PSU_CEIL_SAN)
FIRE_AX_PSU_CEIL_VAL	First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University (PSU) Valdivia Ceilometer Data (FIRE_AX_PSU_CEIL_VAL)
FIRE_AX_PSU_H2OVAP	First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University (PSU) Santa Maria Microwave Radiometer Data (FIRE_AX_PSU_H2OVAP)
FIRE_AX_PSU_MALBAL	First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University (PSU) Malcolm Baldrige Data (FIRE_AX_PSU_MALBAL)
FIRE_AX_PSU_WND_MAL	First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) Pennsylvania State University (PSU) Malcolm Baldrige Wind Profiler Data (FIRE_AX_PSU_WND_MAL)

Data Set Introduction:

FIRE_AX_PSU_CEIL_MAL
FIRE_AX_PSU_CEIL_SAN
FIRE_AX_PSU_CEIL_VAL
FIRE_AX_PSU_H2OVAP
FIRE_AX_PSU_MALBAL
FIRE_AX_PSU_WND_MAL

Objective/Purpose:

...

Summary of Parameters:

...

Discussion:

...

Related Data Sets:

...

2. Investigator(s):

Investigator(s) Name and Title:

...

Title of Investigation:

First ISCCP Regional Experiment (FIRE)

Contact Information:

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

3. Theory of Measurements:

...

4. Equipment:

Sensor/Instrument Description:

Collection Environment:

...

Source/Platform:

FIRE_AX_PSU_CEIL_MAL	Ship
FIRE_AX_PSU_CEIL_SAN	Ground Station
FIRE_AX_PSU_CEIL_VAL	Ship
FIRE_AX_PSU_H2OVAP	Ground Station
FIRE_AX_PSU_MALBAL	Ship
FIRE_AX_PSU_WND_MAL	Ship

Source/Platform Mission Objectives:

...

Key Variables:

FIRE_AX_PSU_CEIL_MAL	Clouds
FIRE_AX_PSU_CEIL_SAN	Clouds
FIRE_AX_PSU_CEIL_VAL	Clouds
FIRE_AX_PSU_H2OVAP	Liquid Water Content
	Water Vapor
FIRE_AX_PSU_MALBAL	Clouds
	Irradiance
	Latent Heat Flux
	Liquid Water Content
	Precipitation Rate
	Sea Surface Temperature
	Sensible Heat Flux
	Solar Absorptance
	Solar Reflectance
	Solar Transmittance
	Specific Humidity
	Surface Stress
	System Optical Depth
	Temperature
	Wind Direction
	Wind Speed
FIRE_AX_PSU_WND_MAL	Height
	Wind Direction
	Wind Speed

Principles of Operation:

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Sensor/Instrument Measurement Geometry:

...

Manufacturer of Sensor/Instrument:

...

Sensor/Instrument:

FIRE_AX_PSU_CEIL_MAL	Ceilometer
FIRE_AX_PSU_CEIL_SAN	Ceilometer
FIRE_AX_PSU_CEIL_VAL	Ceilometer
FIRE_AX_PSU_H2OVAP	Microwave Radiometer
FIRE_AX_PSU_MALBAL	Ceilometer Hygrometer
	Microwave Radiometer
	Pyranometer
	Pyrgeometer
	Rain Guage
	Sonic Anemometer
	Thermistor
	Thermometer
	Wind Profiler
FIRE_AX_PSU_WND_MAL	Wind Profiler

Calibration:

Specifications:

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Tolerance:

...

Frequency of Calibration:

...

Other Calibration Information:

...

5. Data Acquisition Methods:

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6. Observations:

Data Notes:

...

Field Notes:

...

7. Data Description:

Spatial Characteristics:

Spatial Coverage:

Data Set	Min Lat	Max Lat	Min Lon	Max Lon
FIRE_AX_PSU_CEIL_MAL	20.00	60.00	-70.00	0.00
FIRE_AX_PSU_CEIL_SAN	36.99	36.99	-25.17	-25.17
FIRE_AX_PSU_CEIL_VAL	20.00	60.00	-70.00	0.00
FIRE_AX_PSU_H2OVAP	36.99	36.99	-25.17	-25.17
FIRE_AX_PSU_MALBAL	20.00	60.00	-70.00	0.00
FIRE_AX_PSU_WND_MAL	20.00	60.00	-70.00	0.00

Spatial Coverage Map:

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Spatial Resolution:

...

Projection:

...

Grid Description:

...

Temporal Characteristics:

Temporal Coverage:

Data Set	Begin Date	End Date
FIRE_AX_PSU_CEIL_MAL	06-01-1992	06-28-1992
FIRE_AX_PSU_CEIL_SAN	06-03-1992	06-28-1992
FIRE_AX_PSU_CEIL_VAL	06-05-1992	06-25-1992
FIRE_AX_PSU_H2OVAP	06-01-199	06-27-1992
FIRE_AX_PSU_MALBAL	06-06-1992	06-28-1992
FIRE_AX_PSU_WND_MAL	06-12-1992	06-28-1992

Temporal Coverage Map:

There is no temporal coverage map available for these data sets.

Temporal Resolution:

...

Data Characteristics:

Parameter/Variable:

FIRE_AX_PSU_CEIL_MAL
FIRE_AX_PSU_CEIL_SAN
FIRE_AX_PSU_CEIL_VAL
FIRE_AX_PSU_H2OVAP
FIRE_AX_PSU_MALBAL

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
Hl	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

FIRE_AX_PSU_WND_MAL

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

Variable Description/Definition:

See table above.

Unit of Measurement:

See table above.

Data Source:

See table above.

Data Range:

See table above.

Sample Data Record:

FIRE_AX_PSU_CEIL_MAL

```
0 050  -999 0
```

```
FIRE_AX_PSU_CEIL_SAN

101129  -999 0

FIRE_AX_PSU_CEIL_VAL

193123  1783 1

FIRE_AX_PSU_H2OVAP

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

FIRE_AX_PSU_MALBAL

 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

FIRE_AX_PSU_WND_MAL

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

8. Data Organization:

Data Granularity:

A general description of data granularity as it applies to the IMS appears in the EOSDIS Glossary.

Data Format:

All data sets' granules are in ASCII format.

9. Data Manipulations:

Formulae:

Derivation Techniques and Algorithms:

...

Data Processing Sequence:

Processing Steps:

...

Processing Changes:

...

Calculations:

Special Corrections/Adjustments:

...

Calculated Variables:

...

Graphs and Plots:

There are no graphs or plots available for these data sets.

10. Errors:

Sources of Error:

...

Quality Assessment:

Data Validation by Source:

...

Confidence Level/Accuracy Judgement:

...

Measurement Error for Parameters:

...

Additional Quality Assessments:

...

Data Verification by Data Center:

...

11. Notes:

Limitations of the Data:

...

Known Problems with the Data:

...

Usage Guidance:

...

Any Other Relevant Information about the Study:

...

12. Application of the Data Set:

...

13. Future Modifications and Plans:

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

14. Software:

Software Description:

There are sample read software available for these data sets. The codes are written in C. A makefile and readme file are also available. These files allow the users to compile and work with the data easily.

Software Access:

The software can be obtained through the Langley DAAC. Please refer to the contact information below. The software can also be obtained at the same time the user is 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
URL: http://eosweb.larc.nasa.gov

Procedures for Obtaining Data:

The Langley DAAC Information Management System (IMS) is an on-line system that features a graphical user interface (GUI) that allows to query the Langley DAAC dataset holdings, to view pre-generated browse products, and to order specific data products. Users may also request data by letter, telephone, electronic mail (INTERNET), or personal visit.

The Langley DAAC User and Data Services (UDS) staff provides technical and operational support for users ordering data. The Langley DAAC Handbook is available in a postscript file through the IMS for users who want detailed information about the Langley DAAC holdings. Users may also obtain a copy by contacting:

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
URL: http://eosweb.larc.nasa.gov

Data Center Status/Plans:

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

16. Output Products and Availability:

There are no output products for these data sets.

17. References:

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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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