



First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus Transition Experiment (ASTEX) United Kingdom Meteorological Office C-130 Aircraft 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 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.

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1. Data Set Overview:

Data Set Identification:

FIRE_AX_UKMO_C130:

First ISCCP Regional Experiment (FIRE) Atlantic Stratocumulus
Transition Experiment (ASTEX) United Kingdom Meteorological Office
C-130 Aircraft Data Set Document



Data Set Introduction:

See Summary above.

Objective/Purpose:

...

Summary of Parameters:

Barometric Altitude
Cloud Top Temperature
Deiced Temperature
Dew/Frost Point Temperature
Droplet Concentration
Droplet Size
Effective Droplet Radius
Ice Water Content
Infrared Flux
Liquid Water Content
Static Pressure
Surface Temperature
Vertical Wind Speed
Wind Direction
Wind Speed

Discussion:

...

Related Data Sets:

...

2. Investigator(s):

Investigator(s) Name and Title:

...

Title of Investigation:

First ISCCP Regional Experiment (FIRE)

Contact Information:

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3. Theory of Measurements:

...

4. Equipment:

Sensor/Instrument Description:



Collection Environment:

...

Source/Platform:

UK C130

Source/Platform Mission Objectives:

...

Key Variables:

Barometric Altitude
Cloud Top Temperature
Deiced Temperature
Dew/Frost Point Temperature
Droplet Concentration
Droplet Size
Effective Droplet Radius
Ice Water Content
Infrared Flux
Liquid Water Content
Static Pressure
Surface Temperature
Vertical Wind Speed
Wind Direction
Wind Speed

Principles of Operation:

...

Sensor/Instrument Measurement Geometry:

...

Manufacturer of Sensor/Instrument:

...

Sensor/Instrument:

Chilled Mirror
FSSP
Gust Probe
Hot-Wire
Hygrometer
Platinum Resistance
PMS 2D-C Probe
PRT-4
Pyranometer
Pyrgeometer
Thermometer
Variable Capacitance

Calibration:

Specifications:

...

Tolerance:

...

Frequency of Calibration:

...



Other Calibration Information:

...

5. Data Acquisition Methods:

...

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_UKMO_C130	28.00	41.00	-28.00	-15.00

Spatial Coverage Map:

There are no maps available for these data sets.

Spatial Resolution:

1 - 100 meters

Projection:

...

Grid Description:

...

Temporal Characteristics:

Temporal Coverage:

Data Set	Begin Date	End Date
FIRE_AX_UKMO_C130	05-30-1992	06-23-1992

Temporal Coverage Map:

There are no maps available for these data sets.

Temporal Resolution:

1 - 64 Hertz



Data Characteristics:

Parameter/Variable:

...

Variable Description/Definition:

...

Unit of Measurement:

...

Data Source:

...

Data Range:

...

Sample Data Record:

...

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 are in Native binary 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:

The FSSP and PCASP are calibrated using glass beads of different known sizes. Both are cleaned and calibrated regularly.

The nominal range of concentrations measurable by the PCASP is 0 - 20,000 /cm³. However, the maximum is thought to be as high as 40,000 /cm³ for this probe. The maximum concentration measurable by the FSSP is limited by the speed of the electronics in processing a droplet. It will also depend on how many of the droplets actually pass through the beam within the depth of field of the instrument.

Confidence Level/Accuracy Judgement:

Statistical counting errors in the PCASP increase with particle size from <1 0.000000 or particles smaller than 0.3 µm to 10 0.000000 or particles of approximately 1 µm (Strapp et al., 1992).

The counting accuracy of the FSSP is mainly determined by uncertainties in the sample volume, although laser inhomogeneities and coincidence of droplets in the beam also affect the measurement accuracy. The total uncertainty is nominally 27(PMS). The sizing performance of the FSSP is nominally 28(PMS).

Measurement Error for Parameters:

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Additional Quality Assessments:

...

Data Verification by Data Center:

The Langley DAAC performs an inspection process on this data received by the data producer via ftp. The DAAC checks to see if the transfer of the data completed and were delivered in their entirety. An inspection software was developed by the DAAC to see if the code was able to read every granule. The code also checks to see if every parameter of data falls within the ranges which are included in the granule. This same code extracts the metadata required for ingesting the data into the IMS. If any discrepancies are found, the data producer is contacted. The discrepancies are corrected before the data are archived at the DAAC.

11. Notes:

Limitations of the Data:

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Known Problems with the Data:

...

Usage Guidance:

The PCASP measurements made when the aircraft was in cloud (that is, when droplets were being measured by the FSSP) should not be used, since its response to water droplets is unknown.

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:

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Procedures for Obtaining Data:

The Langley DAAC Information Management System (IMS) is an on-line system that features a graphical user interface (GUI) which allows users to query the Langley DAAC data set 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:

Medium Spec: 8mm EXABYTE

Format: ASCII

Quantity: Each tape contains several flights.

Status: Available.

Planned schedule: Additional data will be integrated periodically as they are received.

17. References:

Sorlie, S., February 1993. "Langley DAAC Handbook." NASA Langley Research Center, Hampton, Virginia.

18. Glossary of Terms:

[EOSDIS Glossary.](#)

19. List of Acronyms:

NASA - National Aeronautics Space Administration

URL - Uniform Resource Locator

[EOSDIS Acronyms.](#)

20. Document Information:

Document Revision Date:

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Document Curator:

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