First ISCCP Regional Experiment (FIRE) Cirrus 2 Sabreliner 2D Probe Concentrations 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 system.
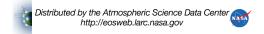
Table of Contents:

1. Data Set Overview:

Data Set Identification:

FIRE_CI2_SABRE_2D: First ISCCP Regional Experiment (FIRE) Cirrus 2 Sabreliner 2D Probe Concentrations Data

Data Set Introduction:

...

Objective/Purpose:

...

Summary of Parameters:

Particle Number Concentration

Discussion:

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Related Data Sets:

...

2. Investigator(s):

Investigator(s) Name and Title:

Dr. Andrew J. Heymsfield

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:

NCAR Sabreliner

Source/Platform Mission Objectives:

...

Key Variables:

Particle Number Concentration

Principles of Operation:

The PMS 2D-C and 2D-P probes illuminate a linear array of photodiodes with a He-Ne laser. As a particle passes through this focused beam, a shadow image is cast on the diodes and a count of the total number of occulted diodes represents the particle size.

Sensor/Instrument Measurement Geometry:

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Manufacturer of Sensor/Instrument:

...

Sensor/Instrument:

PMS 2D-C PROBE
PMS 2D-P PROBE

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 Name	Min Lat	Max Lat	Min Lon	Max Lon
FIRE-CI2_SABR LNR_2D	27.08	38.95	-99.25	-92.67

Spatial Coverage Map:

...

Spatial Resolution:

Not applicable.

Projection:

...

Grid Description:

...

Temporal Characteristics:

Temporal Coverage:

Data Set Name	Begin Date	End Date
FIRE-CI2_SABRLNR_2D	11-17-1991	12-07-1991

Temporal Coverage Map:

...

Temporal Resolution:

Daily

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.

The data is organized on a single flight basis, for both the Kingair and the Sabreliner. Relevant portions of the header from the raw binary files are included. Each data file contains processed concentration data based on habit type and area ratio.

Data Format:

Native

9. Data Manipulations:

Formulae:

Derivation Techniques and Algorithms:

...

Data Processing Sequence:

Processing Steps:

...

Processing Changes:

...

Calculations:

Special Corrections/Adjustments:

...

Calculated Variables:

...

Graphs and Plots:

...

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:

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:

...

Any Other Relevant Information about the Study:

...

12. Application of the Data Set:

...

13. Future Modifications and Plans:

...

14. Software:

Software Description:

...

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

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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:

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NASA Langley Research Center
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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:

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16. Output Products and Availability:

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17. References:

Heymsfield, A. J., 1977: Precipitation development in stratiform ice clouds: A microphysical and dynamical study. J. Atmos. Sci., 34, 284--295.

Heymsfield, A. J. and J. L. Parrish, 1978: A computational technique for increasing the effective sampling volume of the PMS 2-D particle size spectrometer. J. Appl. Meteor., 17, 1566-1572.

Parrish, J. L., and A. J. Heymsfield, 1985: A user guide to a particle growth and trajectory model (Using one-dimensional and three-dimensional wind fields). NCAR Tech Note NCAR/TN-259+1A, 69 pp.

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:

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        August 18, 1997; November 24, 1997
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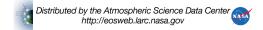   ...
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