First ISCCP Regional Experiment (FIRE) Langley Research Center (LARC) Eight Inch Lidar 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 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 system.

This document provides information for the following data sets:

- FIRE_CI1_LARC8_LIDAR
- FIRE_CI2_LARC8_LIDAR

Table of Contents:

1. Data Set Overview:

Data Set Identification:

FIRE_CI1_LARC8_LIDAR:	First ISCCP Regional Experiment (FIRE) Cirrus 1 Langley Research Center (LARC) Eight Inch Lidar (FIRE_CI1_LARC8_LIDAR)
FIRE_CI2_LARC8_LIDAR:	First ISCCP Regional Experiment (FIRE) Cirrus 2 Langley Research

Data Set Introduction:

The Langley Research Center (LARC) Cloud Lidar is a dual-channel polarization sensitive lidar using a frequency doubled Nd: YAG laser as a linearly polarized transmitter and an eight inch Cassegrainian telescope as a receiver. Backscattered laser light collected by the receiver is collimated, directed through a half wave plate, and then passed through polarizing optics which decompose the signal into two components, one parallel and the other perpendicular to the polarization plane of the transmitted beam. Separate amplification and digitization paths are employed for each component, resulting in two arrays of back scatter data for each measured laser pulse. The LARC Cloud Lidar is designed for optimum cloud monitoring operations at altitudes between 3 km and 18 km. To prevent saturation of the detectors at lower altitudes, a gating circuit is used to delay the activation of the first dynode in the Photomultiplier (PMT). The PMT is brought to full sensitivity only after this delay time has elapsed.

Objective/Purpose:

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Summary of Parameters:

FIRE_CI1_LARC8_LIDAR : Aerosol Backscattering Coeff
FIRE_CI2_LARC8_LIDAR : Aerosol Backscattering Coeff

Discussion:

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Related Data Sets:

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2. Investigator(s):

Investigator(s) Name and Title:

Jose Alvarez (retired)
Mail Stop 417
NASA Langley Research Center
Hampton, VA 23681
USA

Title of Investigation:

First ISCCP Regional Experiment (FIRE) Cirrus 2 Langley Research Center (LARC)

3. Theory of Measurements:

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4. Equipment:

Sensor/Instrument Description:

Collection Environment:

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Source/Platform:

FIRE_CI1_LARC8_LIDAR : Ground Station
FIRE_CI2_LARC8_LIDAR : Ground Station

Source/Platform Mission Objectives:

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Key Variables:

FIRE_CI1_LARC8_LIDAR : Aerosol Backscattering Coeff
FIRE_CI2_LARC8_LIDAR : Aerosol Backscattering Coeff

Principles of Operation:

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Sensor/Instrument Measurement Geometry:

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Manufacturer of Sensor/Instrument:

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Sensor/Instrument:

LIDAR

Calibration:

Specifications:

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Tolerance:

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Frequency of Calibration:

...

Other Calibration Information:

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5. Data Acquisition Methods:

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6. Observations:

Data Notes:

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Field Notes:

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7. Data Description:

Spatial Characteristics:

Spatial Coverage:

Data Set Name	Min Lat	Max Lat	Min Lon	Max Lon
FIRE_CI1_LARC8_LIDAR	43.96	43.96	-90.76	-90.76
FIRE_CI2_LARC8_LIDAR	37.18	37.18	-95.07	-95.07

Spatial Coverage Map:

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Spatial Resolution:

FIRE_CI1_LARC8_LIDAR: Point Measurements
FIRE_CI2_LARC8_LIDAR: Point Measurements

Projection:

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Grid Description:

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Temporal Characteristics:

Temporal Coverage:

Data Set Name	Begin Date	End Date
FIRE_CI1_LARC8_LIDAR	10-16-1986	11-02-1986
FIRE_CI2_LARC8_LIDAR	11-13-1991	12-07-1991

Temporal Coverage Map:

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Temporal Resolution:

FIRE_CI1_LARC8_LIDAR: Daily
FIRE_CI2_LARC8_LIDAR: 6-Hour Average

Data Characteristics:

Parameter/Variable:

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Variable Description/Definition:

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Unit of Measurement:

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Data Source:

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Data Range:

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Sample Data Record:

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8. Data Organization:

Data Granularity:

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

Data Format:

FIRE_CI1_LARC8_LIDAR: The data are in native format.
FIRE_CI2_LARC8_LIDAR: The data are in image binary format.

9. Data Manipulations:

Formulae:

Derivation Techniques and Algorithms:

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Data Processing Sequence:

Processing Steps:

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Processing Changes:

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Calculations:

Special Corrections/Adjustments:

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Calculated Variables:

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Graphs and Plots:

Sample browse image files are available for these data sets.

10. Errors:

Sources of Error:

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Quality Assessment:

Data Validation by Source:

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Confidence Level/Accuracy Judgement:

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Measurement Error for Parameters:

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Additional Quality Assessments:

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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:

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Usage Guidance:

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Any Other Relevant Information about the Study:

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12. Application of the Data Set:

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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.

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:

Data Center Identification and Contact Information:

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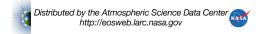Telephone: (757) 864-8656
FAX: (757) 864-8807
E-mail: support-asdc@earthdata.nasa.gov

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.

The Langley DAAC User and Data Services staff provides technical and operational support for users ordering data.

Langley DAAC User and Data Services Office
NASA Langley Research Center

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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:

Browse images are available for each granule. These files can be obtained the same way as the data granules.

17. References:

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18. Glossary of Terms:

EOSDIS Glossary.

19. List of Acronyms:

EOSDIS Acronyms.

20. Document Information:

- **Document Revision Date:** Oct 17, 1996; May 28, 1997, Aug 14, 1997; Nov 24, 1997
- **Document Review Date:** Oct 17, 1996
- **Document ID:**
- **Citation:**
- **Document Curator:** Langley DAAC User and Data Services Office
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