

First ISCCP Regional Experiment (FIRE) National Center for Atmospheric Research (NCAR) Kingair 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 (July 1 - July 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.

This document provides information for the following data sets:

- FIRE_CI2_KINGAIR
- FIRE_CI1_KINGAIR

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1. Data Set Overview:

Data Set Identification:

FIRE_CI1_KINGAIR:

First ISCCP Regional Experiment (FIRE) Cirrus 1 National Center for
Atmospheric Research (NCAR) Kingair Aircraft Data



FIRE_CI2_KINGAIR:

(FIRE_CI1_KINGAIR)

First ISCCP Regional Experiment (FIRE) Cirrus 2 National Center for Atmospheric Research (NCAR) Kingair Aircraft Data
(FIRE_CI2_KINGAIR)

Data Set Introduction:

FIRE_CI1_KINGAIR

Cirrus IFO-I was conducted from October 13 to November 2, 1986 in central Wisconsin. The NCAR King Air aircraft measured radiation and microphysical properties of the cloud layers, in addition to temperature, moisture, and air motions.

FIRE_CI2_KINGAIR

Cirrus IFO-II was conducted from November 9 to December 8, 1991 in Coffeyville, Kansas. The NCAR King Air aircraft measured radiation and microphysical properties of the cloud layers, in addition to temperature, moisture, and air motions.

Objective/Purpose:

...

Summary of Parameters:

Humidity
Ice
Irradiance
Liquid Water Content
Mixing Ratio
Temperature
Wind Direction
Wind Speed

Discussion:

...

Related Data Sets:

...

2. Investigator(s):

Investigator(s) Name and Title:

Andre 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 KINGAIR

Source/Platform Mission Objectives:

...

Key Variables:

Humidity
Ice
Irradiance
Liquid Water Content
Mixing Ratio
Temperature
Wind Direction
Wind Speed

Principles of Operation:

...

Sensor/Instrument Measurement Geometry:

...

Manufacturer of Sensor/Instrument:

...

Sensor/Instrument:

FSSP
GUST PROBE
HOT-WIRE
HYGROMETER
PHOTOMETER
PLATINUM RESISTANCE
PMS 2D-C PROBE
PMS 2D-P PROBE
PRT-5
PYRANOMETER
PYRGEOMETER
RADIOMETER

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:

<u>Data Set Name</u>	<u>Min Lat</u>	<u>Max Lat</u>	<u>Min Lon</u>	<u>Max Lon</u>
FIRE_CI1_KING AIR	40.36	46.82	-96.92	-87.00
FIRE_CI2_KING AIR	35.95	41.22	-105.31	-95.40

Spatial Coverage Map:

...

Spatial Resolution:

...

Projection:

...

Grid Description:

...

Temporal Characteristics:

Temporal Coverage:

<u>Data Set Name</u>	<u>Begin Date</u>	<u>End Date</u>
FIRE_CI1_KINGAIR	10-14-1986	11-02-1986
FIRE_CI2_KINGAIR	11-09-1991	12-06-1991

Temporal Coverage Map:

...



Temporal Resolution:

...

Data Characteristics:**Parameter/Variable:****FIRE_C11_KINGAIR**

Each of the 15 FIRE Cirrus 1 Kingair data files has 161 variables. Each variable is defined as a 4-byte unsigned integer. The unsigned integer values have to be converted to real numbers for correct reading. Usually the variables are sampled at 1 Hz (per genpro cycle), but some variables are sampled at a higher rate. The sample read routine automatically retrieves the information for all defined parameters, and interprets the binary data accordingly.

FIRE_C12_KINGAIR

Each of the 15 Kingair data files has 144 variables. Each variable is defined as a 4 bytes unsigned integer. The unsigned integer values have to be converted to real numbers for correct reading. Usually the variables are sampled at 1 Hz per second (per genpro cycle), but some variables are sampled at higher rate. The sample read routine automatically retrieves the information for all defined parameters, and interprets the binary data accordingly.

Variable Description/Definition:

...

Unit of Measurement:

See above.

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](#).

FIRE_C11_KINGAIR

Kingair data set has 15 header-data-file pairs for 13 flights because flight 7 has 3 header- data-file pairs. Each flight is named ci1_aircraft_flt#_flightdate, where "aircraft" is 'ka' to mean Kingair, and "flightdate" has the format of yymmdd, e.g., ci1_ka_flt01_861014. When the data from the entire flight is broken into two or more flights, they are labelled a, b, ... after the flight number. The flight number ranges from 01 to 14 for the Kingair. Flight 3 does not exist and flight 7 is numbered 7a, 7b, and 7c. The header files are named granule_name.hdr, and the data files are named granule.dat for Kingair data.

FIRE_C12_KINGAIR

Kingair data set has 15 header-data-file pairs for 15 flights. Each flight is named ci2_aircraft_flt#_flighttime, where "aircraft" is 'kng' to mean Kingair, flight# is ranging from 01 to 15 for Kingair, and "flighttime" has the format of yymmdd to indicate the date of the flight, e.g., ci2_kng_flt01_911109. The flight name is the same as granule name. The header files are named granule_name.hdr, and the data files are named granule_name.dat.

A header file contains the variable names (or called parameters), and the information regarding sampling rate, scale factors, data size, etc. for the parameters. The data file contains data values of parameters over a specified time period.

Data Format:

The data are written in GENPRO 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:

Images are not 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:

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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:

Sample read software is 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:

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 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 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
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 available at this time.

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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Document Curator:

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