Obtaining CERES Data Products and User Help

James Koziana
Atmospheric Sciences Data Center (ASDC)
January 29-30, 2003
CERES Data Products Workshop
Norfolk, VA

User Services: larc@eos.nasa.gov
Web site: http://eosweb.larc.nasa.gov

Processing, archiving, and distributing Earth Science data at the NASA Langley Research Center
Topics

- Overview of ASDC
- Access to CERES Data Information
- Search and Order
- Subsetting CERES Data
- Visualization and Analysis Software
Atmospheric Sciences Data Center (ASDC)

- A full service data center for the **production, archival, and distribution** of Earth Science data in support of NASA’s Earth Observing System (EOS)
- Supports science disciplines:
  - Radiation Budget
  - Aerosols
  - Clouds
  - Tropospheric Chemistry
- Operations began in **January 1993**.
- Currently supports over 30 science projects (teams) with over **300 data sets**.
- In FY01, **5,347 Customers** representing all 50 US states and **124 other countries**
- Current archival system volume: **358 TB**.
Projects

Projects include:
• TRMM/Terra/Aqua Experiments: CERES, MISR and MOPITT
• Satellite Data: ERBE, LITE, MAPS, POAM, SAGE
• Field Experiments: FIRE, GTE, LASE
• Specialized Data Sets: ISCCP, SRB, SSE

ISSCP D2 Monthly Data Product

MISR
Clouds and The Earth’s Radiant Energy System (CERES)

TRMM (1 scanner-PFM1) launch November 1997
Terra [EOS-AM] (2 scanners FM1 and FM2), 10:30 a.m. sun-synchronous orbit, December 18, 1999.

Aqua [EOS-PM] (2 scanners FM3 and FM4), 1:30 p.m. sun-synchronous orbit, EOS Aqua on May 4, 2002.

Orbits:

**Terra:** 705 km altitude, 10:30 a.m. descending node sun-synchronous, near-polar

**Aqua:** 705 km altitude, 1:30 p.m. ascending node, sun-synchronous, near-polar

**TRMM:** 350 km altitude, 35° inclination

Spectral Channels:

- Solar Reflected Radiation (Shortwave): 0.3 - 5.0 µm
- Earth Emitted Thermal Radiation Window: 8 – 12 µm
- Total: 0.3 to > 100 µm

**Swath Dimensions:** Limb to limb

**Angular Sampling:** Spatial Resolution: 20 km at nadir (10 km for TRMM)
# CERES Primary Archival Products

<table>
<thead>
<tr>
<th>Product Codes</th>
<th>Name</th>
<th>Frequency</th>
<th>Size, mb</th>
<th>Key Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDS</td>
<td>Bi-directional Scans (1B)</td>
<td>1/Day</td>
<td>845</td>
<td>Geolocated and calibrated filtered radiances for Total, SW and WN</td>
</tr>
<tr>
<td>ES8</td>
<td>ERBE-like Instantaneous TOA Estimates (2)</td>
<td>1/Day</td>
<td>480</td>
<td>ERBE-like instantaneous unfiltered radiances and fluxes</td>
</tr>
<tr>
<td>ES9</td>
<td>ERBE-like Monthly Regional Averages (3)</td>
<td>1/Month</td>
<td>1099</td>
<td>Instantaneous regional gridded mean and monthly regional mean ERBE-like TOA fluxes</td>
</tr>
<tr>
<td>ES4</td>
<td>ERBE-Like Monthly Geographical Averages (3)</td>
<td>1/Month</td>
<td>27</td>
<td>Monthly mean regional, zonal and global mean ERBE-like TOA fluxes</td>
</tr>
<tr>
<td>SSF</td>
<td>Single Scanner Footprint TOA/Surface Fluxes and Clouds (2)</td>
<td>1/Hour</td>
<td>258</td>
<td>Instantaneous TOA radiances, TOA and surface fluxes and cloud properties</td>
</tr>
<tr>
<td>CRS</td>
<td>Clouds and Radiative Flux (2)</td>
<td>1/Hour</td>
<td>354</td>
<td>Instantaneous surface, atmospheric and TOA fluxes</td>
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<tr>
<td>SYN</td>
<td>Synoptic Radiative Fluxes and Clouds (3)</td>
<td>1/3-Hours</td>
<td>1920</td>
<td>Regional LW, SW and WN fluxes for the surface, atmospheric layers and TOA and cloud properties</td>
</tr>
<tr>
<td>FSW</td>
<td>Monthly Gridded Radiative Fluxes and Clouds (3)</td>
<td>1/Month</td>
<td>20,349</td>
<td>Gridded surface, Atmospheric layers and TOA fluxes and cloud properties</td>
</tr>
<tr>
<td>SFC</td>
<td>Monthly Grided TOA/Surface Fluxes and Clouds (3)</td>
<td>1/Month</td>
<td>11,069</td>
<td>Instantaneous regional gridded mean TOA radiances, TOA and surface fluxes and cloud properties</td>
</tr>
<tr>
<td>AVG</td>
<td>Monthly Regional Radiative Fluxes and Clouds (3)</td>
<td>1/Month</td>
<td>1189</td>
<td>Averaged surface, atmospheric layers and TOA fluxes and cloud properties</td>
</tr>
<tr>
<td>ZAVG</td>
<td>Monthly Zonal and Global Radiative Fluxes and Clouds (3)</td>
<td>1/Month</td>
<td>3.3</td>
<td>Averaged surface, atmospheric layers and TOA fluxes and cloud properties</td>
</tr>
<tr>
<td>SRBAVG</td>
<td>Monthly TOA/Surface Averages (3)</td>
<td>1/Month</td>
<td>4722</td>
<td>Monthly regional mean TOA radiances, TOA and surface fluxes and cloud properties</td>
</tr>
</tbody>
</table>
CERES Data Sets

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS) program. The CERES instrument provides radiometric measurements of the Earth's atmosphere from three broadband channels. The CERES instruments are improved models of the Earth Radiation Budget Experiment (ERBE) sensor instruments, which operated from 1984 through 1990 on NASA's Earth Radiation Budget Satellite (ERBS) and on NOAA's operational weather satellites NOAA-9 and NOAA-10.

The first CERES instrument was launched from Tanegashima, Japan, on November 27, 1997, as part of the Tropical Rainfall Measuring Mission (TRMM). Two CERES instruments were launched into polar orbit on board the EOS satellite Terra on December 18, 1999, and two additional CERES instruments were launched on board EOS Aqua on May 4, 2002.

Note that these data sets are affected by CERES Operations in Orbit.

**Join our Mailing list for CERES News!**

**CERES User Workshop** - January 29-30, 2003, at the Airport Hilton in Norfolk, VA.

**Order CERES Data via the Langley Web Ordering Tool.**

<table>
<thead>
<tr>
<th>Documentation</th>
<th>Data Manipulation Tools</th>
<th>Relevant Links</th>
<th>Images</th>
</tr>
</thead>
<tbody>
<tr>
<td>CERES Data Products Catalog Page</td>
<td>view HDF Tool</td>
<td>CERES Home Page</td>
<td>Earth Outgoing Longwave Radiation from CERES Instrument on Terra (01/01/2000 - 02/28/2001) Data Animation: 8 Minutes</td>
</tr>
<tr>
<td>CERES Collection Guides</td>
<td></td>
<td>CERES Brochure (PDF)</td>
<td>15 Minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CERES Terra Home Page</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CERES TRMM Home Page</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CERES ARM Validation Experiment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CERESARMOCEX Experiment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CERESARM Radiation Experiment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CERES Surface Properties</td>
<td></td>
</tr>
</tbody>
</table>

The CERES data are written in the HDF format. The sample read software packages that are provided with the data are able to read the HDF format. However, you will need to obtain the HDF libraries. (Get information on the HDF Libraries.)

If you are interested in ordering any of these data products, select the data set name, and this link will take you directly to the ordering system for you to place your order via the Java Version of the Langley Web Ordering Tool. You can also use the tool to order the following data products, CRS, ES-8, and SSF, by parameter.

Currently available data sets: EDS | CRS | ES-8 | ES-9 | FTW | SPC | SRBAVG | SSF

**BiDirectional Scan (BDS)**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Spacecraft</th>
<th>Data Set Name</th>
<th>Guide Document</th>
<th>Sample Software</th>
<th>Temporal Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instr Engineering Parameters, Shortwave Detector, SW Filtered Radiance, Total Detector, TCT Filtered Radiance, Window Detector, WN Filtered Radiance</td>
<td>CERES_Test_BDS</td>
<td>Description</td>
<td>Readme</td>
<td>Read Package (C)</td>
<td>08/03/1998 (Daily)</td>
</tr>
<tr>
<td>TRMM</td>
<td>CER_EDS_TRMM_FFM_Edison, Quality Summary</td>
<td>Description/Abstract</td>
<td>Readme</td>
<td>Read Package (C)</td>
<td>02/27/1997 - 08/31/1998 (Daily)</td>
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<tr>
<td>Terra</td>
<td>CER_EDS_Terra_FSM1_Edison1, CER_EDS_Terra_FSM1_Edison2, Quality Summary</td>
<td>Description/Abstract</td>
<td>Readme</td>
<td>Read Package (C)</td>
<td>01/11/2000 - Current Production (Daily)</td>
</tr>
<tr>
<td></td>
<td>CER_EDS_Terra_FSM2_Edison1, CER_EDS_Terra_FSM2_Edison2, Quality Summary</td>
<td>Description/Abstract</td>
<td>Readme</td>
<td>Read Package (C)</td>
<td>01/11/2000 - Current Production (Daily)</td>
</tr>
<tr>
<td></td>
<td>CER_EDS_Terra_FSM1_Edison1, CER_EDS_Terra_FSM1_Edison2, Quality Summary</td>
<td>Description/Abstract</td>
<td>Readme</td>
<td>Read Package (C)</td>
<td>01/11/2000 - Current Production (Daily)</td>
</tr>
</tbody>
</table>
Langley Web Ordering Tool – Java Version
(http://eosweb.larc.nasa.gov/HBDOCS/Langley_web_tool.html)

Enter Your Login ID:

Enter Your Password

Select Java Version
Login

Searches

Search Results

Select Data Set(s)
Keyword Search

- List of all: sensors, source and parameter keywords
- Can choose multiple keywords (searches use the “AND” relation for all keywords)
- Can add additional keywords (user types them in)
- Used to restrict the amount of data returned

Then select Data Set and then Search Files Button
Geographical Area

- Geographic coverage for a selected data set will be identified by the white rectangular box.
- Geographic region (rectangular box) may be moved and/or resized.
- Bounding latitude and longitude are also displayed in the Search and Order Window.
- Zoom In (increase the magnification) and Zoom Out (decrease the magnification).
- Used to restrict the amount of data returned.
## Data Set Information

<table>
<thead>
<tr>
<th>Data Set Name</th>
<th>Min/Max Lat</th>
<th>Min/Max Lon</th>
<th>Start/End Date</th>
<th>Description</th>
<th>Other Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>CER_ES4_PPM+FM1+FM2_Edition2</td>
<td>50.0</td>
<td>180.0</td>
<td>2000-03-01</td>
<td>CERES ERBE-like Monthly Regional Averages (ES-4) in HDF</td>
<td>Quality Summary</td>
</tr>
<tr>
<td>CER_SSF_Terra-FM2-MODIS_Edition1A</td>
<td>55.0</td>
<td>180.0</td>
<td>2001-07-31</td>
<td>CERES Single Scanner Satellite Footprint, TOA, Surface Fluxes and Clouds (SSF) data in HDF.</td>
<td>Quality Summary</td>
</tr>
</tbody>
</table>

[CERES ERBE-like Monthly Regional Averages (ES-4) in HDF](http://ecorec.larc.nasa.gov/ORDER/Info/cerset4_datasetinfo.html)
Ordering Data via Langley Web Ordering Tool

File Selection

- Individual
- All Files

File Information on previously selected files (table)

Media Type

- UNIX
- Compressed

Include

- Read Package
- metadata files

Click Submit to Order
## File Information

<table>
<thead>
<tr>
<th>File Name</th>
<th>File Size(Bytes)</th>
<th>Min/Max Lat</th>
<th>Min/Max Lon</th>
<th>Start/End Date</th>
<th>Browse Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>CER_CRS_TRMM_FFIM-VIRS_Edited2B_010013.199803619</td>
<td>103454382</td>
<td>-38.45</td>
<td>164.23</td>
<td>1998-03-16 19:00:01.0</td>
<td>NONE</td>
</tr>
</tbody>
</table>

CLOSE
Login Dialog Window

Enter Login

Enter Password

Click Login
Order Information
Successfully Placed Order

Dear James Koziana,

Your order #9922584 has been successfully submitted.
You will receive notification about your order via your e-mail address j.v.koziana@hrc.nasa.gov.
If you have any questions regarding this order, please contact the Langley ASDC User Services.

Phone: (757) 864-8555
E-mail: harc@eos.nasa.gov

Your ability to effectively find and order the data you want from our holdings is an important measure of our success. Please indicate the general nature of your experience by clicking the appropriate button below.

[Make New Order] [Favorable Experience] [Unfavorable Experience]

[NASA Web Site Privacy Statement] [Feedback on Langley Products and Services]
Responsible NASA Official: Barry R. Stankis, Ph.D. Site Administrator: NASA Langley ASDC User Services (harc@eos.nasa.gov)
Last Updated: Fri Jan 24 11:30:09 GMT-0500 (Eastern Standard Time) 2003
Where is my Data??

Email Notification

Date: Fri, 24 Jan 2003 11:21:29 -0500
To: xnombre@larc.nasa.gov
CC: xname@larc.nasa.gov
From: Langley AASO oxname@larc.nasa.gov
Subject: Your Langley DAAC FTP Order #9925844

Welcome to the NASA DAAC
Your FTP order 9925844 has been placed in a staging account for pickup.

Use the entry "ftp" to download your order.
The username, logid and password are:
username: xnombre
password: xname
ftp password: xname

Please type "get" followed by 'ftp' to download your files.
The command "get ftp" will give you a list of files.
Default ftp server name is 'ftp.larc.nasa.gov'.
This account is valid for 7 days, after which time it will be deleted.

NOTE: You can also access your ordered file from the following URL
http://data.larc.nasa.gov/ftp/order_tools/PROCCESS_FILES/ftp/9925844-100984-19747

Access Information

Access Information

Html Access Information

Access Information

Acknowledgments

When data from the Langley Atmospheric Sciences Data Center are used in a publication, we request the following acknowledgment be included: "Data were obtained from the NASA Langley Research Center Atmospheric Sciences Data Center."

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Redistribution of Data: To assist the Langley Data Center in providing the best service to the scientific community, we request notification if you transmit these data to other researchers.

Langley Atmospheric Sciences Data Center
Your FTP order **9922584** is ready for downloading!

- On Pentium based PCs and Unix Systems: Hold the RIGHT Mouse Button on the hyper text link and select "Save Link As" to start downloading.
- On Macintosh systems: Hold the Mouse Button on the hyper text link and select "Save Link" to start downloading.

You may want to have your files *Linux tar*d for a single download. This operation will take a minimum time of 3.91 seconds and a maximum time of 81.50 seconds. You also have the option to ftp the data using the account and password as stated in the e-mail.

Information about The ordered files

<table>
<thead>
<tr>
<th>Ordered Files</th>
<th>Size (Bytes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEP CRS TRMM-PTM-VIRS Edition2B D10013.199503162R</td>
<td>102387457</td>
</tr>
<tr>
<td>CRS SampleRead_R3-291.zip</td>
<td>145514</td>
</tr>
<tr>
<td>readme per ccr pls-trmm-vprn-virs10000h</td>
<td>17697</td>
</tr>
</tbody>
</table>

Langley DAAC User Services
Phone: (757) 864-8656
E-mail: User_Services
Html Access Page

Expired

Your FTP order **992204** is ready for downloading!

- On Pentium based PC's and Unix Systems:
  Hold the RIGHT Mouse Button on the hyper text link and select "Save Link As" to start downloading.
- On Macintosh systems:
  Hold the Mouse Button on the hyper text link and select "Save Link" to start downloading.

You may want to have your files **tar**d for a single download. This operation will take a minimum time of 0.00 seconds and a maximum time of 0.00 seconds. You also have the option to ftp the data using the account and password as stated in the e-mail.

Total volume of data ordered: **0.00 Mb (0 Bytes)**.

Sorry, Your order 9922204 has not been staged or has expired.

Please contact User Services at (757) 864-8656 or by e-mail for info regarding this order.

<table>
<thead>
<tr>
<th>Ordered Files</th>
<th>Size (Bytes)</th>
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</thead>
</table>

Langley DAAC User Services
Phone: (757) 864-8656
E-mail: User Services
CERES Subset

- Available through the Langley Web Ordering Tool (Java)
- **Products**: ES-8, CRS and SSF
- **Subset Type**: Area, Time, Parameter Criterion and Output Parameter
1. Select Data Set
2. Choose Subset Type
3. Apply Subset
4. Click Submit (returns to main ordering page)
EOS Data Gateway (EDG)
(http://edg.larc.nasa.gov/~imswww/imswelcome/)

Welcome to the
Atmospheric Sciences Data Center
NASA Langley Research Center, Hampton, Virginia

Attention MISR users: Please see the hints and tips regarding ordering MISR data at
http://eosweb.larc.nasa.gov/cgi/PRODDESC/user/edg_user_tips.html

Earth Observing System
Data Gateway

Search for and order earth science data products from NASA and affiliated centers

What's New
(October 1, 2002)
New Data Sets
Data Gateway News
EOS Program News

How-to
User Support
FAQ
Tutorial
Browser check-out

More...
Sample data
Related links
Outreach and education
Information for data providers

Use of this site constitutes an agreement to US government security policy and US government privacy policy.

Community, Questions, or Problems? Email us
Created by EOS Data Gateway, Version 3.2.1
NASA Task Representative: Robin Pfister (Mail Code 483, NASA/GSFC, Greenbelt, MD 20771)
Use of Data from the Langley Data Center

Acknowledgments:

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Please contact us at larc@eos.nasa.gov for instructions on mailing reprints.

Redistribution of Data:

To assist the Langley Data Center in providing the best service to the scientific community, we request notification if you transmit these data to other researchers.
view-hdf: Visualization and Analysis Tool

- Visualization and Analysis Tool for CERES Data Files (HDF)
- **Purpose:** To Generate Science Data Products from Instrument Measurements
- Written in Interactive Data Language (IDL)
- **Capabilities:**
  - Select and subset variables from either Science Data Sets (SDS) or Vdata structures
  - Render both two and three dimensional graphics
  - Plots gelocated CERES data onto various world map projections
  - **Exports** data to a file in ASCII or HDF format
  - Portable to platforms supporting IDL, HDF libraries and a C compiler
- Developed by the CERES Data Management Team and Distributed free of charge by ASDC.

  [http://eosweb.larc.nasa.gov/HPDOCS/view_hdf.html](http://eosweb.larc.nasa.gov/HPDOCS/view_hdf.html)
2.5 Degree Regional Monthly Hourly Averages (Total Sky)
(CER-ES4-FM1_Edition1_019018.200101)

Solar Incidence

Shortwave Flux

Longwave Flux

Albedo

Net Radiance Flux

Geographic Scene Type
Now What?

User Services: larc@eos.nasa.gov

Web site: http://eosweb.larc.nasa.gov

• Atmospheric Sciences
• Data Center

Processing, archiving, and distributing Earth Science data at the NASA Langley Research Center
Tire Kicking Session

- 2:00 PM today
- User Services personnel
- Computers for hands on experience
  - Search and Order
  - CERES Subsetting
  - view-hdf
- Demonstrations
- Questions