Clouds and the Earth's Radiant Energy System (CERES) Time-Interpolated TOA/Surface Fluxes, Clouds and Aerosols (SSF1deg-Day/Month) Data Set Abstract

Table of Contents:

Data Set Description:

The Daily Time-Interpolated TOA/Surface Fluxes, Clouds, and Aerosols (SSF1deg-Day) products contains a day of space and time averaged single satellite flux and cloud parameters averaged temporally interpolated data over regions in a 1.0-degree equal angle grid,

The Monthly TOA/Surface Fluxes, Clouds, and Aerosols (SSF1deg-Month) product contains regional, zonal, and global monthly averages of the Daily Time-Interpolated TOA/Surface Fluxes, Clouds, and Aerosol (SSF1deg-Day) product.

The SSF1deg products contain daily regional and monthly regional, zonal, and global averages of the TOA and surface LW and SW fluxes, the observed cloud conditions, and aerosol for each 1-degree equal-angle region. The regional TOA fluxes are from a single CERES instrument in cross-track mode. The surface fluxes have been calculated from the TOA fluxes using parameterizations provided by the science team. No flux fields are calculated at levels between TOA and the surface.

SSF1deg-Day and SSF1deg-Month are archival products produced by Subsystem 10. There is one produced for each spacecraft. This product is written in HDF and contains metadata as well as gridded science data. The science data are SDSs with multiple records. Each record contains spatially averaged data for an individual region, zone and globe.

The SSF1deg-Day and SSF1deg-Month products include:

- Time and Position Data
- CERES TOA Radiances
- All and Clear-Sky TOA Fluxes
- Parameterized Surface Fluxes
- Surface Parameters (Elevation, Ocean Coverage, Snow and Ice Coverage, Surface Properties)
- Meteorological Parameters (Winds, Temperature, Pressure, Precipitable Water)
- Cloud Macro and Micro-Properties (Fraction, Temperature, Height, Pressure, Optical Depth, Radius, Path)
- MODIS land aerosols (VIIRS for S-NPP)
- MODIS ocean aerosols (VIIRS for S-NPP)

Additional information about the format and content of the SSF1deg-Day and SSF1deg-Month can be found in the CERES Data Products Catalog: SSF1deg-Day and SSF1deg-Month (PDFs).

Additional information about the quality of the content of the SSF1deg-Day, and SSF1deg-Month can be found in the Data Quality Summary (PDF).

Summary of Changes:

The CERES Data Management Team and the Atmospheric Sciences Data Center (ASDC) at Langley use a Sampling Strategy, a Production Strategy, and a Configuration Code (CCode) to track versions of CERES primary data products. In general, minor reprocessing changes are tracked by increasing the Configuration Code while major reprocessing changes result in a new Production Strategy. The Sampling Strategy identifies the satellite and instruments which acquired the data in the product.

A summary of changes made to the CERES SFC product is shown in the following tables

Modification History for: NPP | Aqua | Terra

Modification History of the CERES NPP SSF1deg Product

Sampling Strategy and Production Strategy	CCode	Available at ASDC	Impact on NPP SSF1deg Product
NPP-VIIRS_Edition1A(4)	100101	November 2015	• The NPP processing uses the same software as the Aqua/Terra Edition4A baseline..
Availability: (1) not available; (2) restricted to CERES analysts; (3) restricted to CERES Science Team and analysts; (4) public			

Modification History for: NPP | Aqua | Terra

Modification History of the CERES Aqua SSF1deg Product

Sampling Strategy and Production Strategy	CCode	Available at ASDC	Impact on NPP SSF1deg Product
Aqua-MODIS_Edition4A(4)	400403	September 2015	• Updated to use Edition4A gridded inputs.
Aqua-MODIS_Edition3A(4)	300309, 301309, 302309, 303309	October 2015	• Corrected accesses February overlap data in March.
Aqua-MODIS_Edition3A(2)	300308, 301308, 302308, 303308	August 2015	• Added additional cloud parameters. • Individual cloud layer SDSs are combined into four layers and total, • Added additional surface and MOA variables. • Removed variables no longer needed. • Interpolation is performed in GMT. • Improved computation of the solar zenith angle and fluxes.
Aqua-MODIS_Edition3A(2)	300300, 301300, 302300, 303300, 303305, 303307	October 2013	• The products have been renamed from SRBAVG to SSF1deg-Month. • Created daily average product SSF1deg-Day • Single satellite monthly files can contain data from multiple CERES instruments therefore, the instrument identifier previously included in the Sampling Strategy is dropped in the file name. • Dropped GEO clouds from the product. • Consolidated all data in one file.
Availability: (1) not available; (2) restricted to CERES analysts; (3) restricted to CERES Science Team and analysts; (4) public			

Modification History of the CERES Terra SSF1deg Product

Sampling Strategy and Production Strategy	CCode	Available at ASDC	Impact on Terra SSF1deg Product
Terra-MODIS_Edition4A[4]	400403	September 2015	• Updated to use Edition4A gridded inputs.
Terra-MODIS_Edition3A[4]	300309, 301309, 302309, 303309	October 2015	• Corrected accesses February overlap data in March.
Terra-MODIS_Edition3A[2]	300308, 301308, 302308, 303308	August 2015	• Added additional cloud parameters. • Individual cloud layer SDSs are combined into four layers and total, • Added additional surface and MOA variables. • Removed variables no longer needed. • Interpolation is performed in GMT. • Improved computation of the solar zenith angle and fluxes.
Terra-MODIS_Edition3A[2]	300300, 301300, 302300, 303300, 303305, 303307	October 2013	• The products have been renamed from SRBAVG to SSF1deg-Month. • Created daily average product SSF1deg-Day • Single satellite monthly files can contain data from multiple CERES instruments therefore, the instrument identifier previously included in the Sampling Strategy is dropped in the file name. • Dropped GEO clouds from the product. • Consolidated all data in one file.
Availability: (1) not available;(2) restricted to CERES analysts; (3) restricted to CERES Science Team and analysts; (4) public			

References:

An overview of the temporal interpolation and spatial averaging algorithms used for CERES can be found in the following reference:

Young, D. F., P. Minnis. D. R. Doelling, G. G. Gibson, and T. Wong, 1998: Temporal Interpolation Methods for the Clouds and Earth's Radiant Energy System (CERES) Experiment. *J. Appl. Meteorol.*, **37**, 572-590

Contact Information:

Investigator(s) Name and Title	Technical Contact(s)	Data Center
Norman G. Loeb CERES Interdisciplinary Principal Investigator E-mail: norman.g.loeb@nasa.gov Telephone: (757) 864-5688	David R. Doelling E-mail: david.r.doelling@nasa.gov Telephone: (757) 864-2155 Atmospheric Science Research Mail Stop 420 NASA Langley Research Center Hampton, Virginia 23681-2199 USA FAX: (757) 864-7996	User and Data Services Office Atmospheric Science Data Center 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

Acknowledgement:

The requested form of acknowledgment for any publication in which these data are used is:

"These data were obtained from the NASA Langley Research Center Atmospheric Science Data Center."

The Langley Data Center requests a reprint of any published papers or reports or a brief description of other uses (e.g., posters, oral presentations, etc.) of data that we have distributed. This will help the Data Center determine the use of data distributed, which is helpful in optimizing product development. It also helps us to keep our product related references current.

Reference:

The CERES Team has gone to considerable trouble to remove major errors and to verify the quality and accuracy of these data. Please provide a reference to the following paper when you publish scientific results with the CERES data:

Wielicki, B. A., B. R. Barkstrom, E. F. Harrison, R. B. Lee III, G. L. Smith, and J. E. Cooper, "Clouds and the Earth's Radiant Energy System (CERES): An Earth Observing System Experiment," *Bull. Amer. Meteor. Soc*., **77**, 853-868, 1996

Document Information:

Document Creation Date: October 2, 2015
Last Date Modified:
Review Date:
Document ID:
Author: User and Data Services, Langley ASDC
ASDC Help Desk: Phone (757) 864-8656; E-mail support-asdc@earthdata.nasa.gov