

CERES CER_SSF_TRMM-PFM- VIRS_Edition2B-TransOps Data Quality Summary

Investigation: CERES
Data Product: Single Scanner Footprint TOA/Surface Fluxes and Clouds (SSF)
Data Set: TRMM (Instruments: CERES-PFM, VIRS)
Data Set Version: Edition2B-TransOps **-CAUTION ADVISED**

The purpose of this page is to inform you of instrument-related phenomena that make this data set somewhat different than the CERES TRMM Edition2B SSF data set. Edition2B-TransOps spans the CERES Transient Operations period from September 1998 through February 2000. During Transient Operations, the CERES instrument was powered on for relatively short periods of time. This caused small differences in the CERES radiance and flux values which may be scientifically important. The accuracies of the CERES radiance and flux fields in this Data Set Version have **NOT** been fully determined by the CERES Team. The software used to process the TRMM Edition2B and Edition2B-TransOps SSF data sets is identical. Therefore, users of the TRMM Edition2B-TransOps data should consult the [TRMM SSF Edition2B Data Quality Summary](#). The TRMM Edition2B SSF Data Quality Summary briefly summarizes key validation results, provides cautions where users might easily misinterpret the data, provides helpful links to further information about the data product, the algorithms, and the data accuracy, as well as information about planned data product improvements. This Edition2B-TransOps summary supplements that information and automates registration in order to keep you informed of new validation results, cautions, or improved data sets as they become available.

Please note that this document is a high-level summary and represents the minimum information for scientific users of this data product. We strongly urge authors, researchers, and reviewers of research papers to periodically re-check this URL for the latest status of this Data Set Version and particularly before publication of any scientific papers using it.

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Nature of the SSF Product

The **Edition2B-TransOps** data set refers to data collected during a period when CERES instrument operations were substantially reduced to conserve instrument life. At the end of August 1998, the power converters on the TRMM instrument were observed to operate outside the design range for voltage control. After a period of investigation and exploratory instrument operation, NASA instrument engineers and the CERES team concluded that this problem had not changed the instrument calibration. However, they did expect that the CERES TRMM instrument had a moderate risk of becoming inoperable if spacecraft power failed while the instrument was operating and then was restored. As a result, during the Transient Operations period, the CERES TRMM instrument was turned on about two days per month - with particular attention to obtaining data in support of intercomparison with the ScaRaB radiation budget observations and the INDOEX and NAURU99 field campaigns. Because of the brief periods when the instruments were turned on, the temperature of the detector heat sinks varied more than it did during continuous observations. The thermal non-equilibrium, in turn, changes the effective gain of the instruments by up to about 0.5%.

The CERES Team recommends caution in using the CERES TRMM Edition2B-TransOps data set for scientific investigations.

In all other regards, the Single Scanner Footprint (SSF) data set version Edition2B-TransOps for TRMM is identical in nature to the TRMM SSF Edition2B data set. Therefore, users are referred to the [TRMM SSF Edition2B Data Quality Summary](#) for additional discussion of the nature of this product.

When referring to a CERES data set, please include the satellite name and/or the CERES instrument name, the data set version, and the data product. Multiple files that are identical in all aspects of the filename except for the 6 digit configuration code (see Collection Guide) differ little, if any, scientifically. Users may, therefore, analyze data from the same satellite/instrument, data set version, and data product without regard to configuration code. This data set may be referred to as "CERES TRMM Edition2B-TransOps SSF."

Cautions When Using Data

Users are referred to the [TRMM SSF Edition2B Data Quality Summary](#) for a full list of cautions and helpful hints that apply to both TRMM Edition2B-TransOps and Edition2B SSFs. However, there is one additional caution the CERES Team notes regarding the use of this data set.



- During the two to three day observing period characteristic of the data collection in this data set, the heat sink temperatures varied more than they did during normal operation of the CERES instruments. The effect is roughly equivalent to a gain decrease of about 0.5% at the beginning of the observing period - although the exact "gain change" varies from channel to channel. As the instruments approach normal equilibrium operating conditions, this "gain change" decreases.

Accuracy and Validation

Because the heat sink temperature varies over the short observing periods covered by the granules in this data set, the uncertainties of the filtered radiances and of all the quantities that depend on them are somewhat larger than those in the typical CERES TRMM data sets and vary with time within the granules of this data set. Each channel is different in the amplitude of the "effective gain change". In addition, the CERES Team has not had sufficient time to evaluate the propagation of this change through the various fields in the data product. One could anticipate small changes in spectral corrections in going from filtered radiance to unfiltered. While it appears that the filtered radiances are only slightly affected by the transient thermal behavior of the instrument, the CERES team has not quantified the effect on parameters beyond the filtered radiances.

The accuracy and validation discussions are organized into sections. The TRMM Edition2B SSF accuracy and validation discussions on Aerosol properties, TOA fluxes, and Surface fluxes apply to this data set. The Cloud properties and Spatial matching discussions for Edition2A are applicable to Edition2B and Edition2B-TranOps. For convenience, links to these sections are provided here. Please read those sections which correspond to parameters of interest.

- [Cloud properties](#)
- [Aerosol properties](#)
- [Spatial matching of imager properties and broadband radiation](#)
- [TOA fluxes](#)
- [Surface fluxes](#)

Expected Reprocessing

The CERES Team expects to reprocess the SSF data product for TRMM one more time. This reprocessing is not expected to occur for several years. The 9 months of nominal TRMM data will be reprocessed first. Sometime later, the transient operations data will be reprocessed in the same manner.

Referencing Data in Journal Articles

The CERES Team has gone to considerable trouble to remove major errors and to verify the quality and accuracy of this 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, 1996: Clouds and the Earth's Radiant Energy System (CERES): An Earth Observing System Experiment, *Bull. Amer. Meteor. Soc.*, **77**, 853-868.

When Langley DAAC data are used in a publication, **we request the following acknowledgment be included:**

"These data were obtained from the NASA Langley Research Center EOSDIS Distributed Active Archive Center."

The Langley DAAC requests two reprints of any published papers or reports which cite the use of data that we have distributed.

This will help us determine the use of data that we distribute, which is helpful in optimizing product development. It also helps us to keep our product related references current.

Feedback and Questions

For questions or comments on the CERES Quality Summary, contact the [User and Data Services](#) staff at the Atmospheric Science Data Center.

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