

CERES Software Bulletin 96-02

CERES Release 2 SSF

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Purpose:

There seems to be some confusion about whether one or two SSF files will be created for an hour of data that contains data from both fixed azimuth scans and rotating azimuth scans. This is an attempt to document the agreement which has been reached. There will only be one SSF file per hour; a single SSF product may contain data from both fixed and rotating azimuth scans.

Introduction:

During the TRMM mission, the CERES instrument will operate in a cycle that includes two days of operating in a fixed azimuth plane scan and one day of operating in a rotating azimuth plane scan. It is assumed that the instrument will not switch over from one azimuth scan mode to the other at exactly midnight. Therefore, there could be an hour which contains both types of azimuth scans whenever a switch between modes occurs.

The SSF is a data product which contains CERES footprints sorted by along-track angle, for one hour of satellite data. Each footprint is independent of the others. Any information which is common to all footprints in the hour is stored in the header. The remainder of this discussion assumes an understanding of the SSF data product.

There are two possible ways of dealing with an hour which contains data from both types of azimuth scans. One way is to open two SSF files for the hour and place all the rotating azimuth scan data in one and all the fixed azimuth scan data in the other. The second way is to create a single hourly SSF data product which contains all the data for the hour.

Discussion:

Generating two hourly SSF data products for the same hour presents some logistical problems. Therefore, a decision has been made to keep all the footprints which fall into an hour in one SSF data product, regardless of how those footprints were generated. Every footprint on the SSF should contain enough information for users to determine just about anything which relates to the footprint, including the azimuth and elevation scan patterns of the instrument. The scan patterns, as well as other instrument information, are embedded in the IES quality flag. In addition, the SSF will follow the example of the IES. In each data product header, the azimuth scan mode for that hour will be identified as Fixed Azimuth Plane Scans (FAPS), Rotating Azimuth Plane Scans (RAPS), or a combination of both. This will allow users who are concerned about the azimuth scan mode to easily identify which files are of interest to them.

In addition, there are two related side notes. First, it is important for users to be aware that

the SSF is NOT a time ordered sequence of footprints. Therefore, a file which contains data from both FAPS and RAPS will have the footprints from these scan modes intermixed. Stated another way, it is not sufficient to simply search for a change in scan mode and assume that all footprints before the change are from one scan mode and all the footprints which follow are from the other scan mode.

Secondly, one should never assume that crosstrack scanning and scanning in a fixed azimuth plane are the same thing. A crosstrack scan is a fixed azimuth plane scan in which the azimuth plane is perpendicular to the along-track. However, a fixed azimuth plane scan can also occur at all other angles. To determine the angle of the azimuth plane, the user must access the clock angle.