Practicing for Science Team Meeting

17-18 Nov. 2003  CERES Science Team Meeting
GERB/CERES Comparisons

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CERES Science Team Meeting
17-18 November 2003
Bibliography of Measurement Comparisons for Radiation Budget Data Sets


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CERES Scan Plane Rotation to Match GERB Radiance

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CERES Underpass
24 May 9:00-9:30

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CERES Underpass
24 May 10:40-11:10
CERES Underpass
24 May 12:15-12:45

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Geolocation Problem - Causes

The geolocation error is due to errors in east-west and north-south directions.
The north-south error is due to tilt of S/C spin axis relative to orbit. It will decrease as orbit is brought to 0 inclination.
The east-west error is due to time of start of line Tsol variations caused by axis tilt and sunlight refracted by atmosphere.
Geolocation Problem - Activities

ESA, Alcatel and RAL working aspects of problem.

Goal (September) was to work most of problem by November and at latest by December.

Martin Bates (RAL) has developed algorithm for doing geolocation. Very time consuming.
Difference (GERB - FM2) for All Scene Types

SW unfiltered radiance; Number of averaged footprints: G≥3 C≥7

\[ \mu_{FM2} = 70.8 \text{ Wm}^{-2} \text{sr}^{-1} \]

All days with geolocation errors

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Difference (GERB - FM2) for All Scene Types

SW unfiltered radiance; Number of averaged footprints: G>3 C>7; May 24 only

\[ \mu_{FM2} = 68.3 \text{ Wm}^{-2} \text{sr}^{-1} \]
\[ \Delta = -1.3 \text{ Wm}^{-2} \text{sr}^{-1} \]

* # of matched gridpoints

24 May — Good geolocations

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GERB and CERES radiances for 31 May 2002 (Bad geolocations)
Histogram of GERB and CERES Measurements

6 June 2003: Bad Geolocations
Histogram of GERB and CERES Measurements
24 May 2003: Good Geolocations
SEASONS, SOLAR DECLINATION AND WHEN TO COMPARE GERB AND CERES RADIANCES

December Solstice
- Earth axis
- Max Illuminated
  - Latitude = 67°
- GERB FOV Limit
- Solar Terminator

Equinox
- 8.7° SZA

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Insolation at June Solstice
Summary

- Preliminary Results of GERB/CERES Comparisons are Mixed.
- Software being Developed for Further Analysis.
- GERB/CERES Comparison Work is Ongoing.
- A Campaign is Needed in December for Southern Latitudes.
- Geolocation is a major problem.