CERES/GERB Shortwave and Longwave/Day Comparisons

Pamela E. Mlynczak[1]

G. Louis Smith[2]

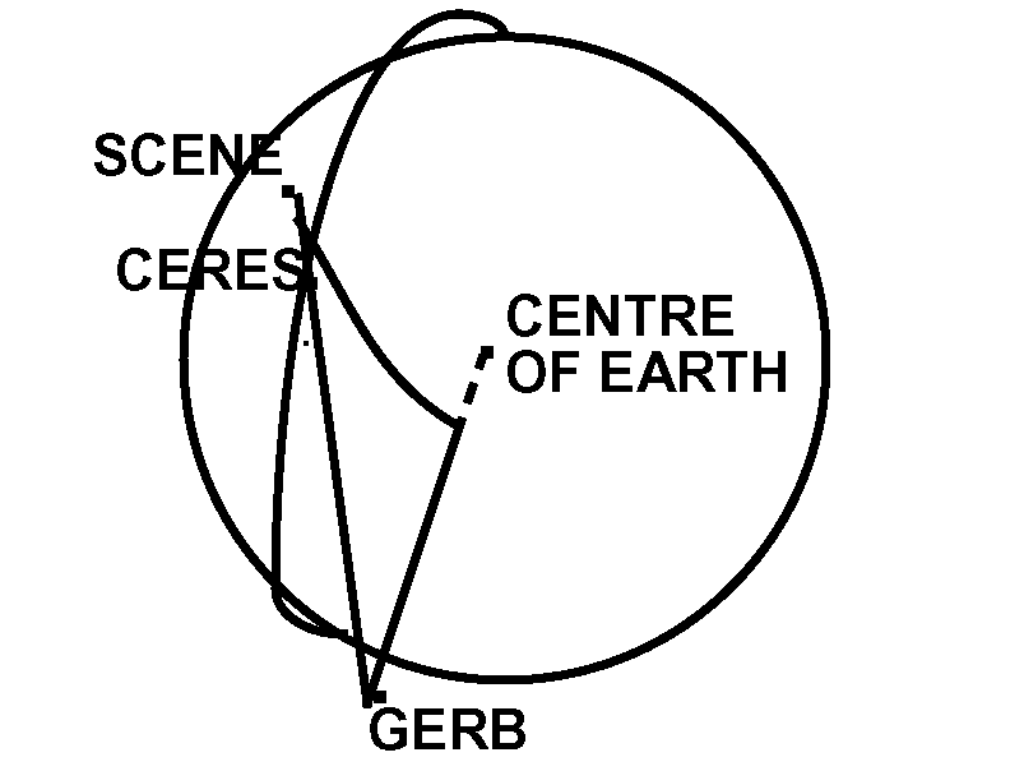
Z. Peter Szewczyk[1]

[1]SAIC Hampton, VA

[2]National Institute of Aerospace Hampton, VA

4th CERES-II Meeting
November 1-3, 2005

CERES Scan Plane Rotates to Contain GERB, Thus Observe Same Radiance



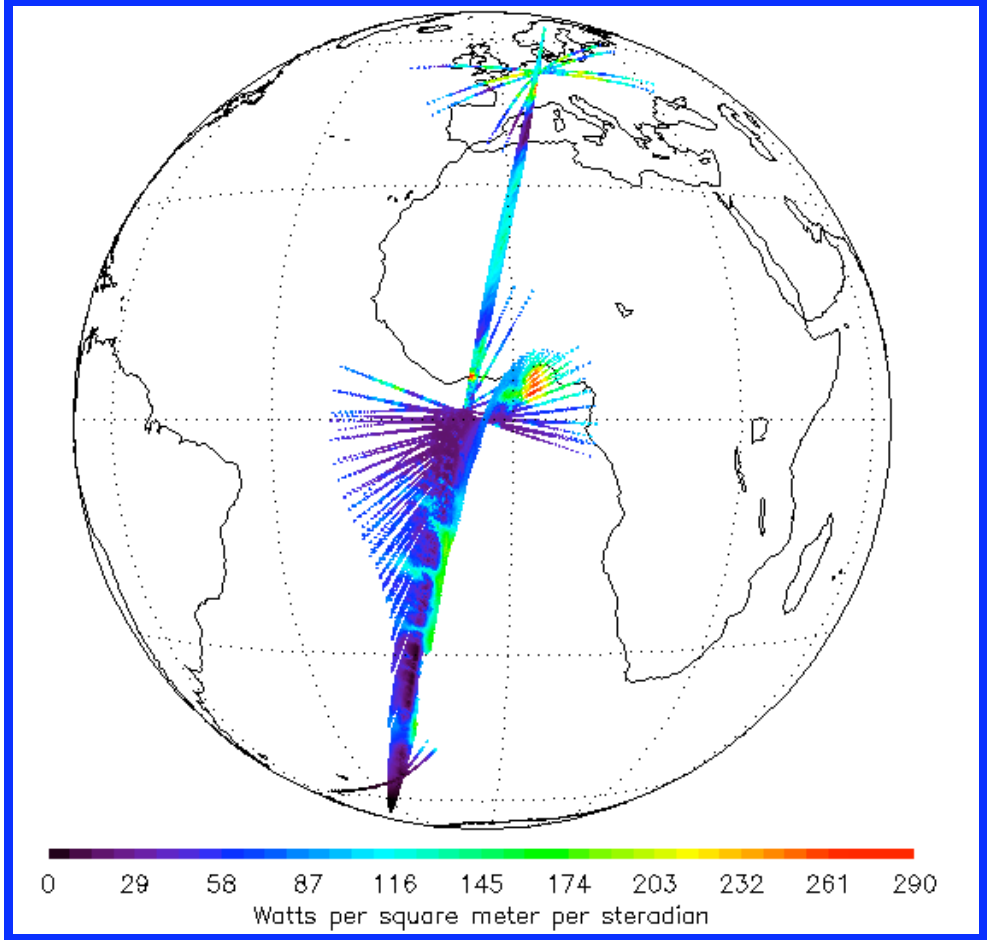
Criteria for SW Matches

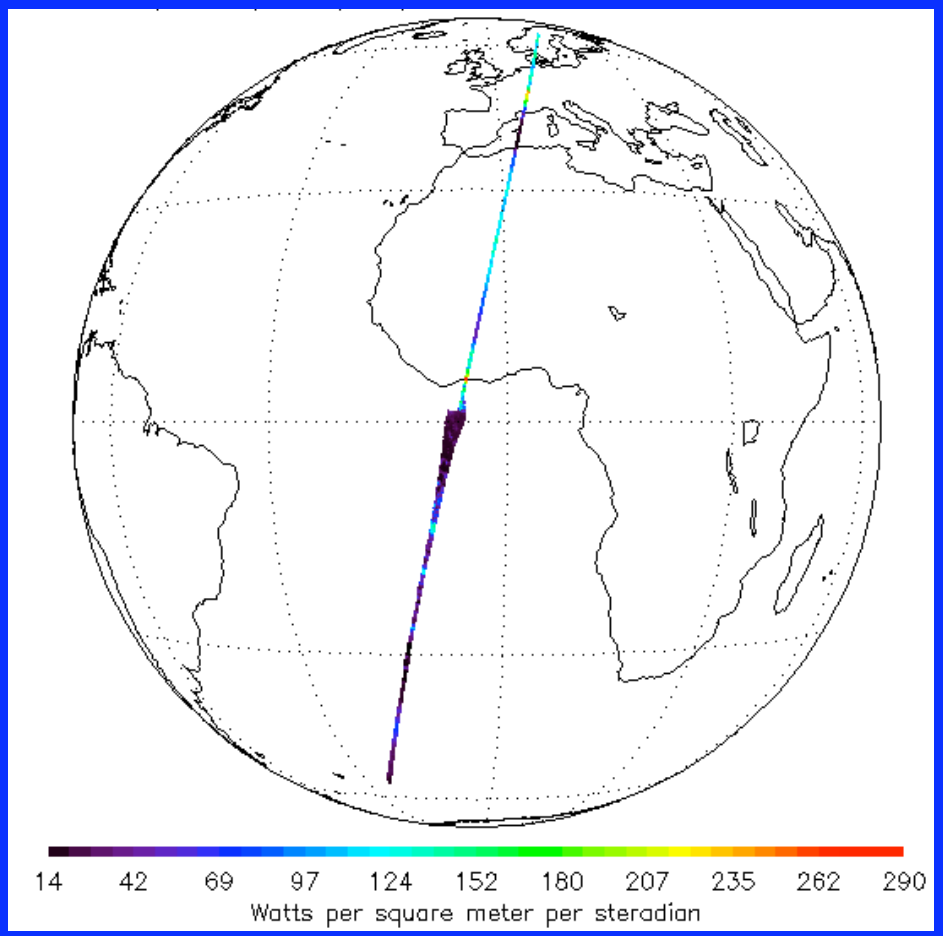
- Use GERB L1.5 NANRGs for time
- Use RMIB's unfiltered SW radiances, angles, and geolocations for GERB
- Use CERES Edition 2 Revision 1 ES8s
- View zenith and relative azimuth angles within 5°
- Near GERB subsatellite point, accept matches within 10° angle between GERB & CERES rays
- Comparison is based on each GERB detector

GERB/CERES
Special Operations

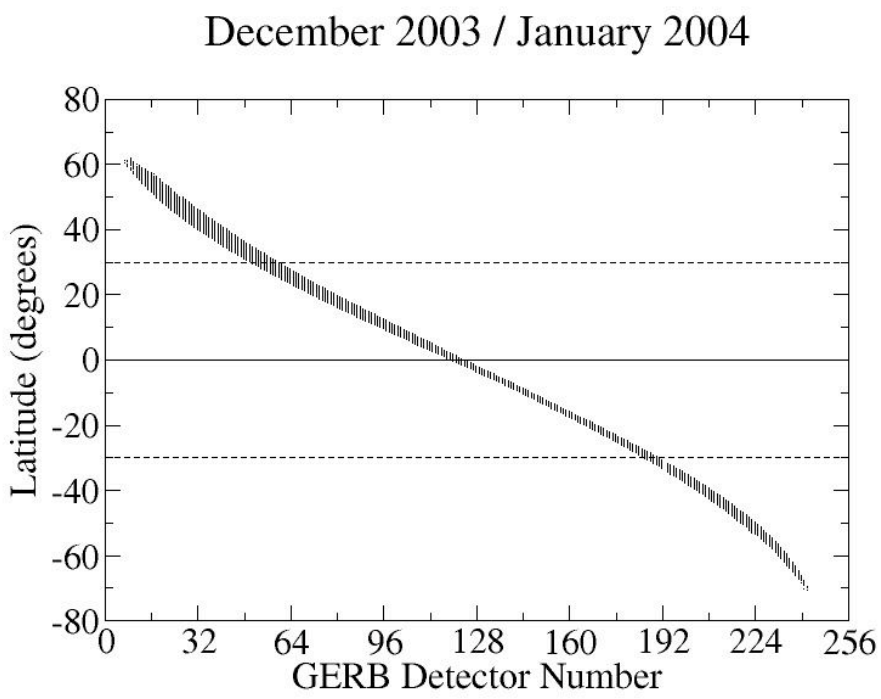
- December 2003/January 2004 15 days
- June/July 2004 27 days
- December 2004/January 2005 26 days
- June 2005 21 days

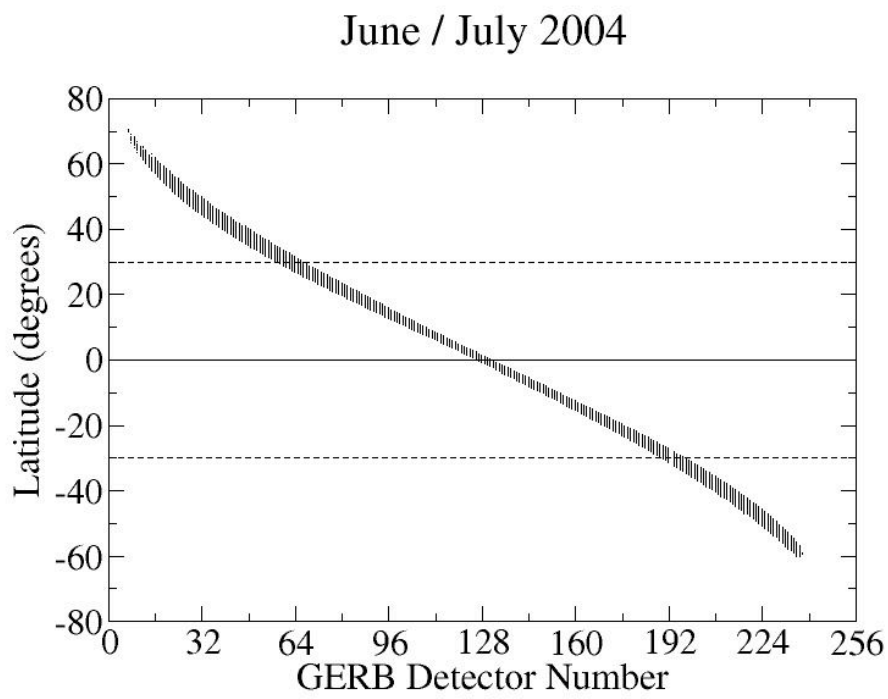
CERES Matches for June 11, 2004



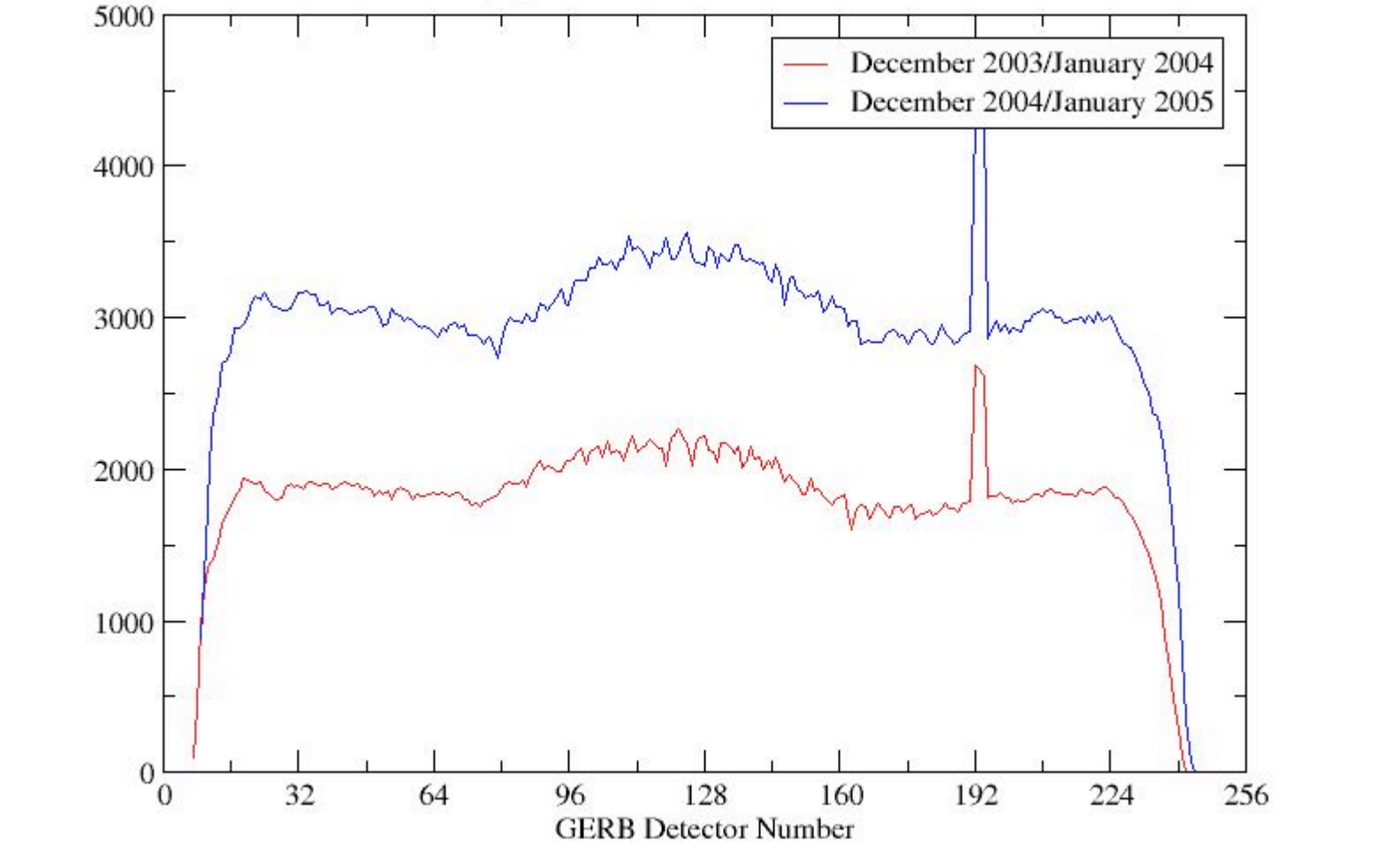


Latitude Coverage

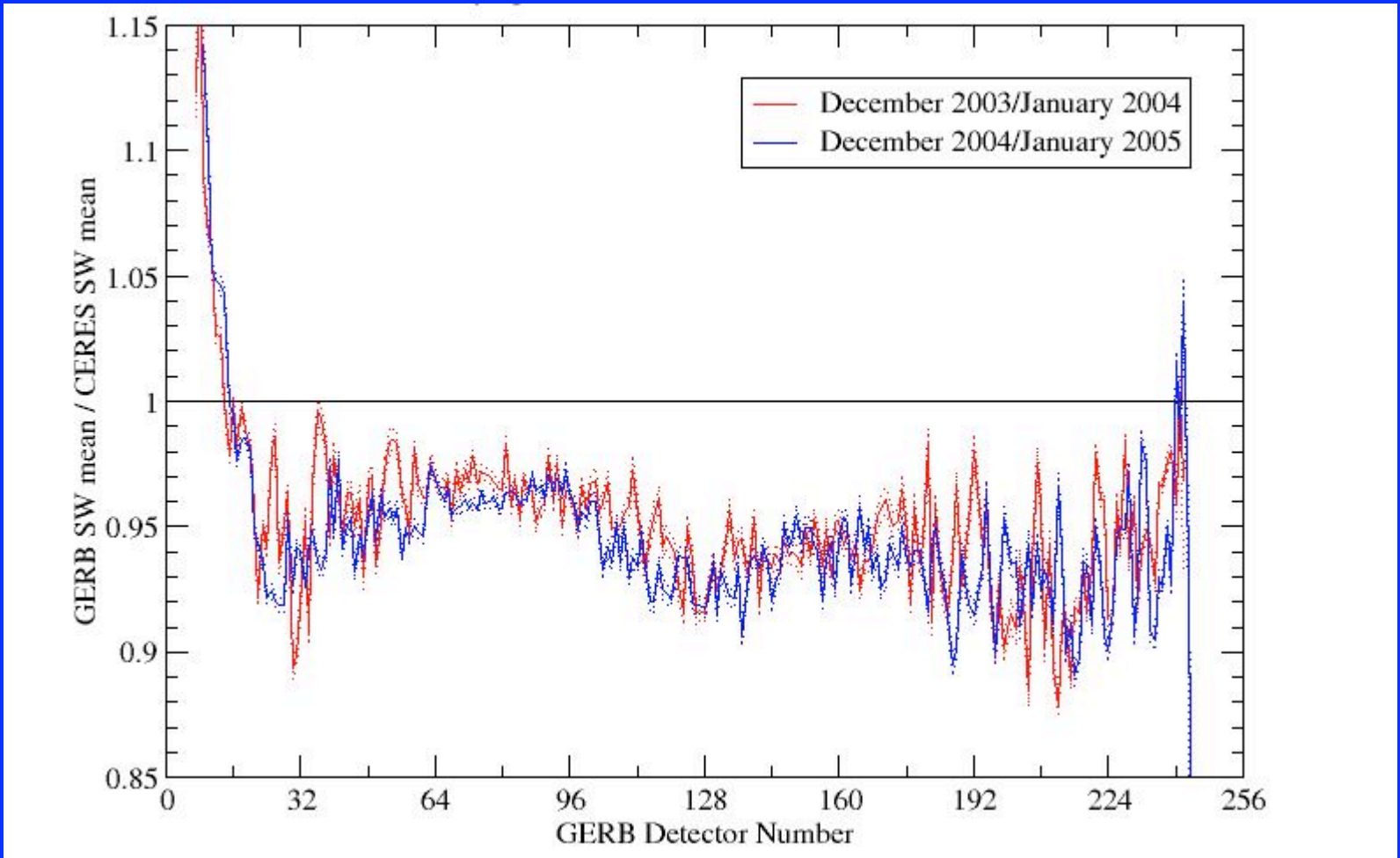




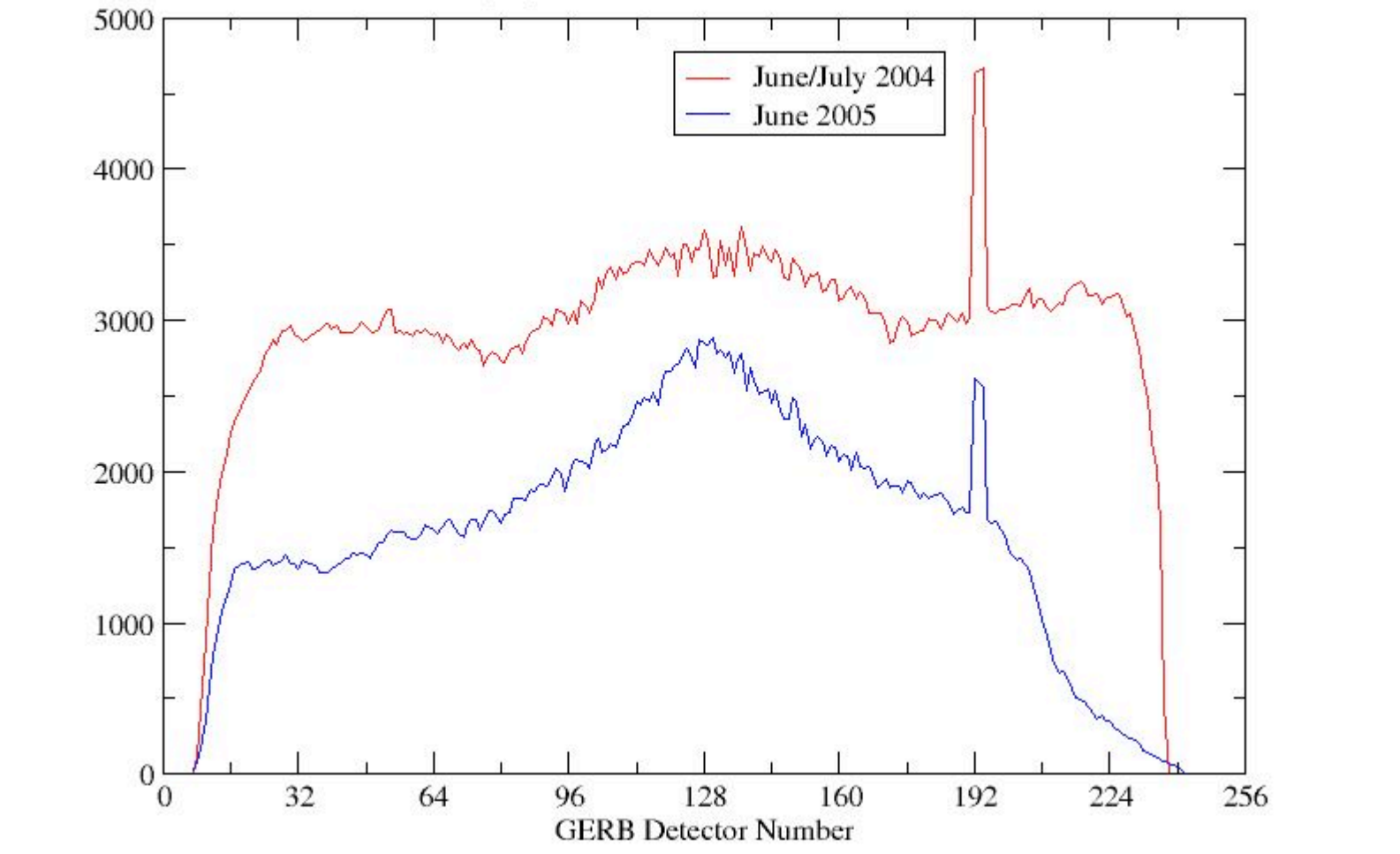
Number of Matches for Each Detector Winter Campaigns



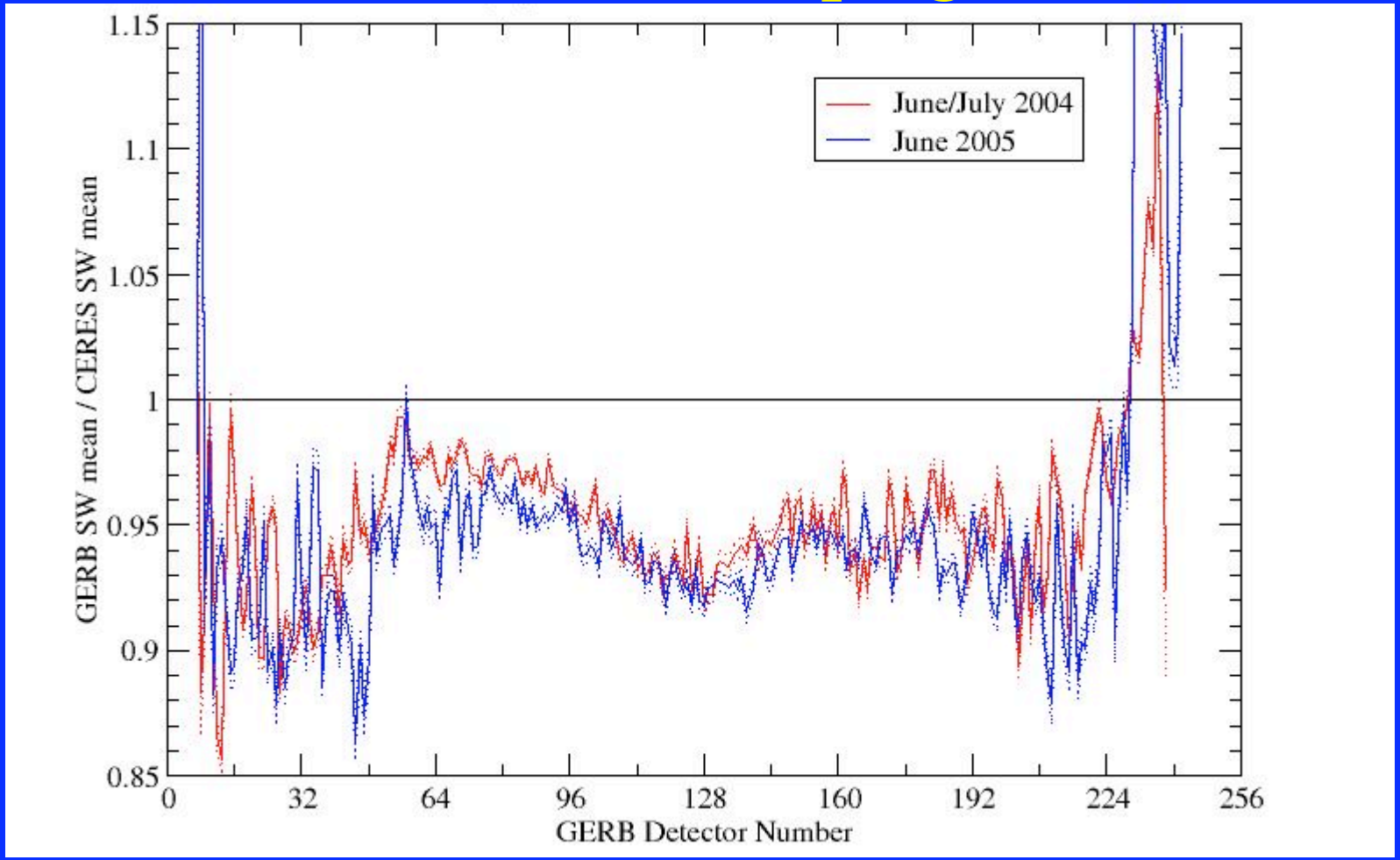
GERB SW Mean/CERES SW Mean Winter Campaigns



Number of Matches for Each Detector Summer Campaigns

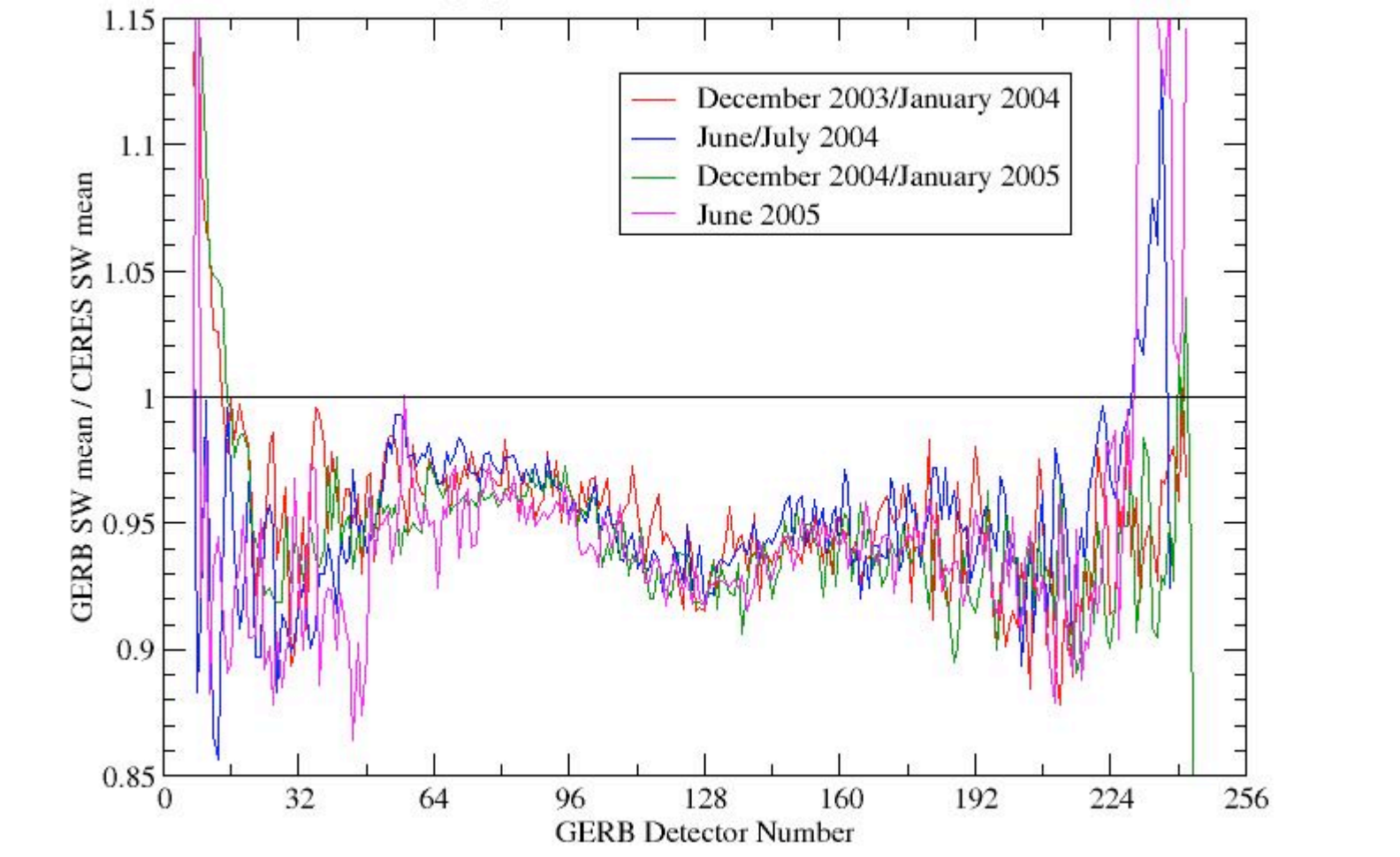


GERB SW Mean/CERES SW Mean Summer Campaigns



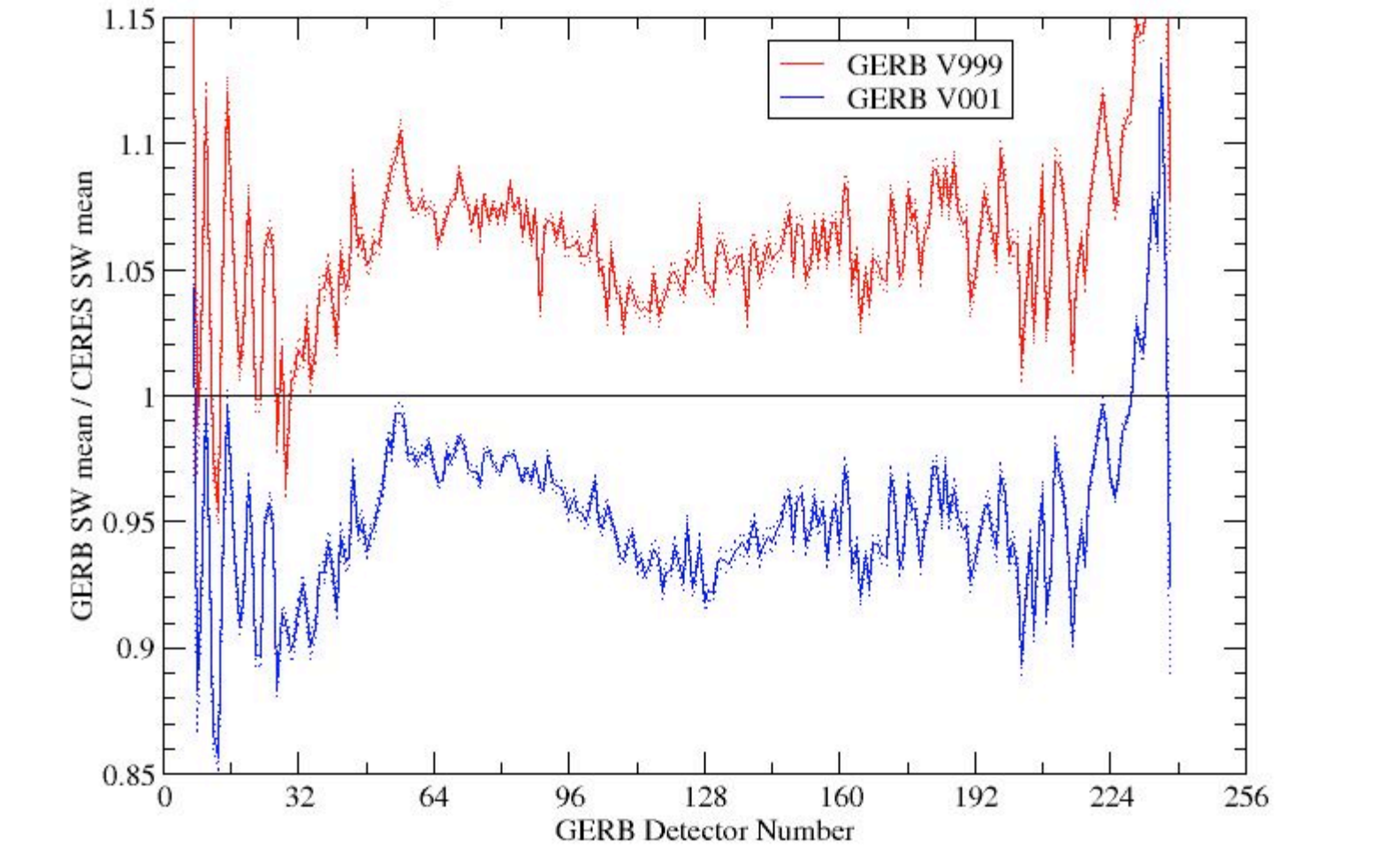
4th CERES-II Meeting
November 1-3, 2005

GERB SW Mean/CERES SW Mean
All Campaigns



4th CERES-II Meeting
November 1-3, 2005

GERB SW Mean/CERES SW Mean June/July 2004 – Both GERB Versions

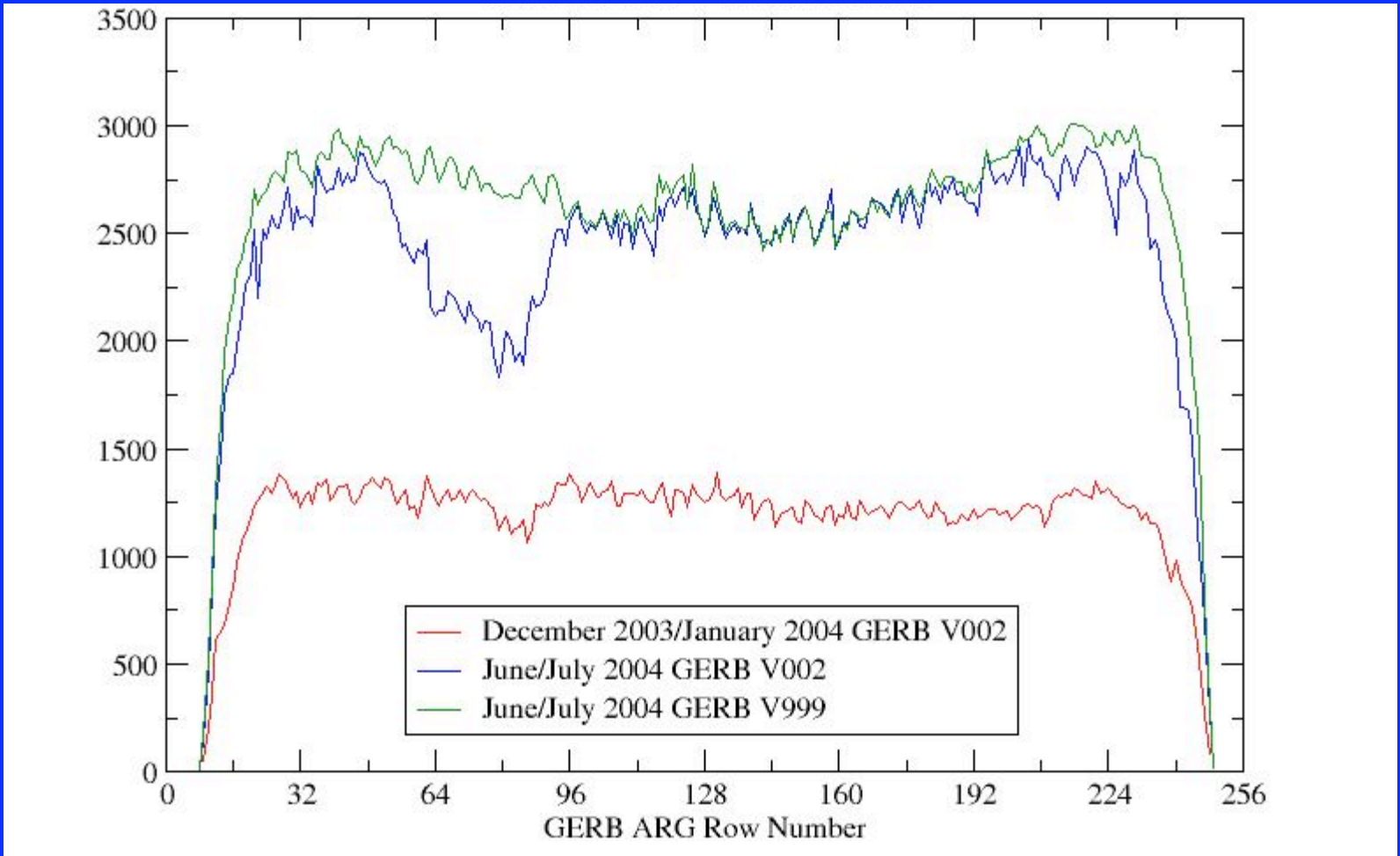


4th CERES-II Meeting
November 1-3, 2005

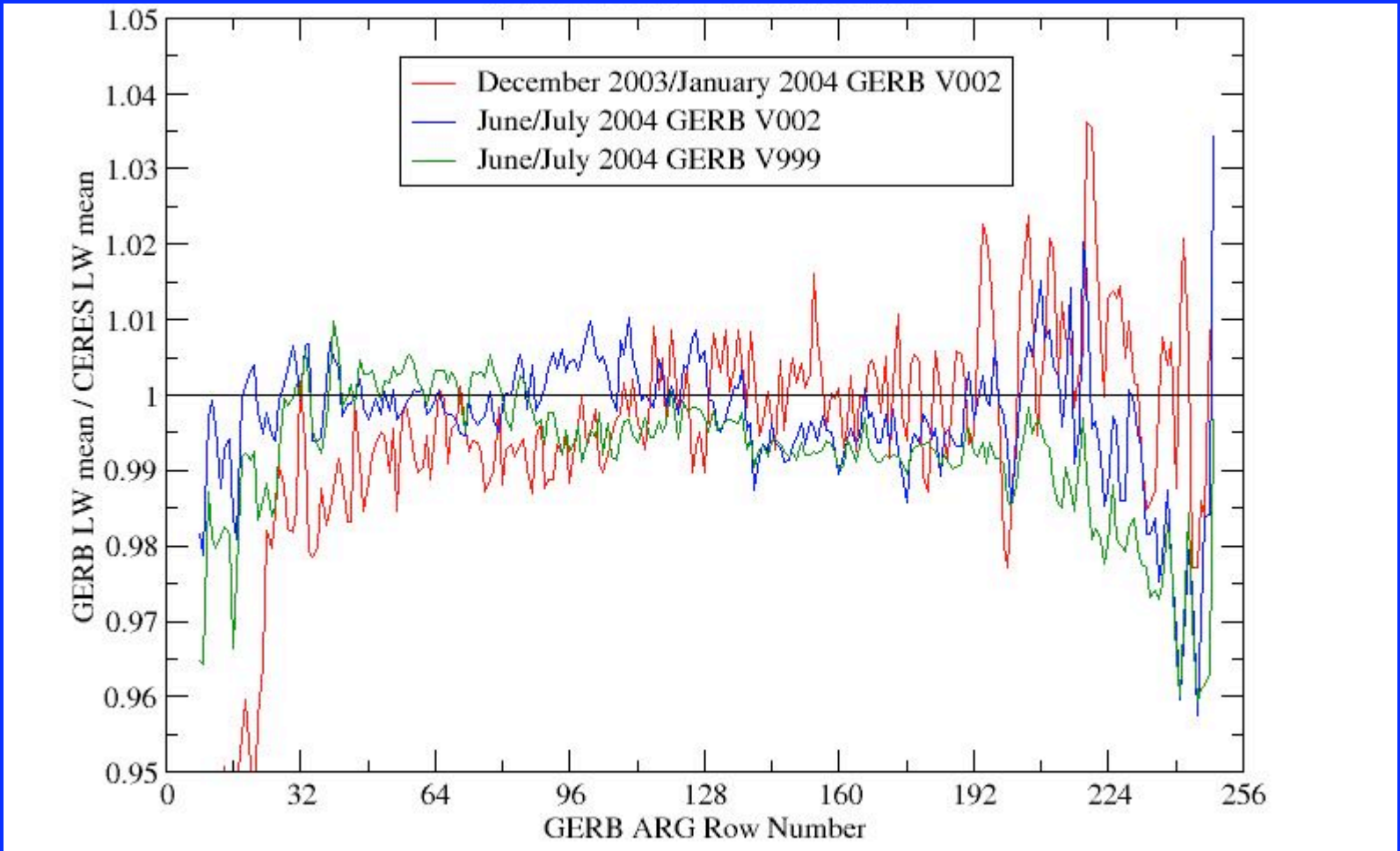
Criteria for LW Matches

- Use GERB L2.0 ARGs for LW radiances & time
- Use RMIB's geolocations for GERB
- Use CERES Edition 2 ES8s
- View zenith angles within 5°
- Now comparison is based on the row in the ARG array, not GERB detector number

Number of Matches for Each ARG Row



GERB LW Mean/CERES LW Mean



Conclusions

- CERES has been operated in 4 campaigns to measure radiances which are co-aligned with GERB during 2 NH winters & 2 NH summers.
- CERES serves as a transfer radiometer in comparing the 256 GERB detectors.
- These conclusions apply to detectors 49-174. For detectors 1-48 and 175-256, the sampling and results are not as good.
- GERB detectors vary by ±2% among themselves.

Conclusions (cont.)

- Between adjacent detectors for SW, there is a random uncorrelated change of ~_% and a long range structure (over a score or more) of ±2% superimposed.
- For SW radiances, GERB/CERES is in range of 0.93 to 0.97.
- Comparisons are reproducible within ±1% among campaigns.
- For LW radiances, GERB/CERES is in range of 1.00 ± 0.01.