

## **A Comparative Examination of *SORCE* and *TSIS-1* TSI Data during the Overlap Period**

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Daily TSI measurements are being used to process data acquired from CERES instruments onboard Terra and Aqua satellites for deriving CERES Edition-4 TOA and surface radiation budget parameters. Combined CERES Terra and Aqua period extends from 01 March 2000 to the present. Daily *SORCE* measurements have been available over most of this period with a latency of seven days making it eminently suitable for timely processing of CERES data. *SORCE* Version-15 was used at the start of CERES Edition-4 processing. The period prior to the start of *SORCE* was covered with WRC data. The period of *SORCE* interruption during 2013-14 was covered with TSI data from the RMIB-composite dataset. Use of *SORCE* data was resumed after the interruption though with later versions. Data from later versions of *SORCE* and other datasets were normalized to Version-15 level. Gaps in *SORCE* and other dataset were filled by linear interpolation.

Starting in January 2018, another parallel stream of TSI data, namely *TSIS-1*, became available with a latency of five days. Simultaneous availability of two low latency streams allowed development of an innovative method of filling gaps that frequently occur in both streams. The gap-filling method makes use of the high temporal coherence exhibited by both streams allowing to fill gaps in one stream when a good value for that day is present in the other. Gaps simultaneously present in both streams are still filled by linear interpolation. Comparison of the two streams also showed that mean of *TSIS-1* values was about  $0.48 \text{ Wm}^{-2}$  higher than that for *SORCE* Version-15.