

# SORCE TIM Release Notes for Version 19 (FINAL)

## Data Product Description

The Total Irradiance Monitor (TIM) measures the total solar irradiance (TSI), monitoring the incident radiant energy powering the Earth's climate system. The TIM uses an ambient-temperature active cavity radiometer providing long-term repeatability with estimated uncertainties of approximately 0.014 W/m<sup>2</sup>/yr (10 ppm/yr). Accuracy varies with time depending on instrument operating conditions and on-orbit effects, such as degradation due to solar exposure. Estimates of the TIM's time-dependent uncertainties are provided in the data file. The available Level 3 TSI data products produced by the SORCE program consist of daily and 6-hourly average irradiances reported at a mean solar distance of 1 astronomical unit (AU) and zero relative line-of-sight velocity with respect to the Sun. At-Earth values are also included for climate researchers to use as inputs to models.

Two TSI data files are available. One contains the daily means and the other the four 6-hourly means. Due to the small size of the data files and to maximize ease of use to end-users, each delivered TSI product contains science results for the entire mission. Lower-level data products (e.g. Level 2) have limited scientific value due to frequent gaps caused by the Earth and/or S/C anomalies, and are therefore not publicly available from the GES DISC. Short time ranges of these data are, however, available upon request for specific, directed science-focused efforts.

## Data Quality Description

Version 19 is the final data release supported under the SORCE mission. The TIM team regularly tracked instrument degradation and calibrated the instrument servo system on-orbit. The data processing system has been updated with the final set of calibration values, concluding the process of periodic updates.

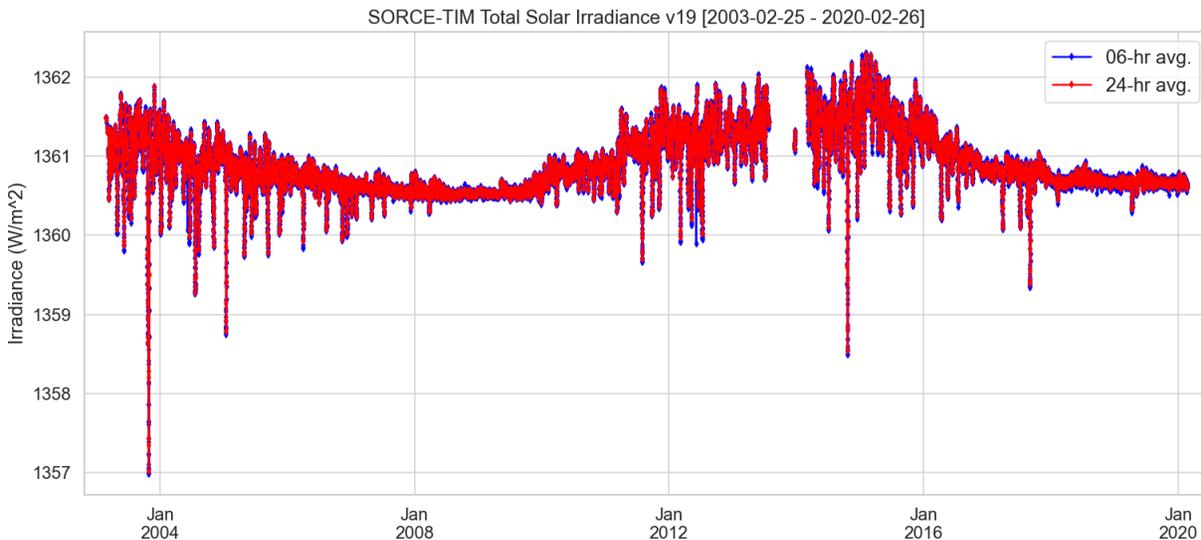
## Data Access

SORCE data products are available for public access. SORCE data may be accessed from three different locations:

Location		URL	Content
SORCE Web Site	Primary	<a href="http://lasp.colorado.edu/home/sorce/data/tsi-data/">http://lasp.colorado.edu/home/sorce/data/tsi-data/</a>	Full product documentation and direct downloads.
LISIRD Web Site	Alternate	<a href="http://lasp.colorado.edu/lisird/">http://lasp.colorado.edu/lisird/</a>	Solar irradiance data from SORCE and other missions via interactive tools and common interfaces.
GES DISC	Archive	<a href="https://disc.gsfc.nasa.gov/datasets?project=SORCE">https://disc.gsfc.nasa.gov/datasets?project=SORCE</a>	Archived Level 0 and Level 3 science products.

## Data Availability

Significant temporal gaps in the daily and 6-hourly averages occurred between 2013-07-15 and 2014-03-05 due to S/C anomalies. Occasional multi-day occurred due to similar causes. The final V19 data release covers 2003-02-25 through 2020-02-25, with 94.7% of the daily and 93.6% of the 6-hourly samples available.



*Final release of the SORCE TIM total solar irradiance (version 19).*

## Citing the Data

Product	Citation
24-hr	Kopp, G. (2020), SORCE Level 3 Total Solar Irradiance Daily Means, version 019, Greenbelt, MD, USA: NASA Goddard Earth Science Data and Information Services Center (GES DISC), Accessed <Enter User Data Access Date> at doi:10.5067/7C82ZHS0OPFR
06-hr	Kopp, G. (2020), SORCE Level 3 Total Solar Irradiance 6-Hourly Means, version 019, Greenbelt, MD, USA: NASA Goddard Earth Science Data and Information Services Center (GES DISC), Accessed <Enter User Data Access Date> at doi:10.5067/T6IX3V0XGBAN

## Data Version 19 Notes

- Final public release of SORCE TIM data
- Updated servo gain calibration
- Updated time-dependent degradation correction for the primary cavity
- Improved data quality determination logic
- Minor software fixes and performance improvements