

GOES-18 EXIS EUVS Level 1b (L1b) Data Release
Full Data Quality
Read-Me for Data Users
November 21, 2023

The GOES-R Peer Stakeholder Product Validation Review (PS-PVR) for GOES-18 EXIS EUVS Level 1b (L1b) Full Maturity was held on November 17, 2023. As a result of this review, the PS-PVR panel chair declared that the GOES-18 EXIS EUVS L1b data be promoted to Full Validation Maturity.

The L1b data products derived from EXIS Extreme Ultraviolet Sensor (EUVS) observations are solar line irradiances, the Magnesium II index, and an EUV proxy spectra. EUVS measures solar spectral irradiance at discrete wavelengths between 25 and 141 nm and in the vicinity of 280 nm. The product formats are defined in the GOES-R Product User Guide (PUG), but the PUG may not be fully up-to-date. A science-quality GOES-18 EUVS dataset is available from the NCEI website (listed below). This updated dataset retrospectively corrects the data to September 9, 2022; earlier science-quality data may be provided at a later date. In addition to L1b data, Level 2 (L2) data products, such as averages and plots, based on this scientific data set, are also released at this site. Users are strongly encouraged to use these science-quality data sets rather than the operational data.

Full validation means:

- Validation, quality assurance, and anomaly resolution activities are ongoing.
- Incremental product improvements may still be occurring.
- Users are engaged and user feedback is assessed
- Product performance for all products is defined and documented over a wide range of representative conditions via ongoing ground-truth and validation efforts.
- Products are operationally optimized, as necessary, considering mission parameters of cost, schedule, and technical competence as compared to user expectations.
- All known product anomalies are documented and shared with the user community.
- Product is operational.

The following is the list of known caveats for the GOES-18 EUVS L1b data at Full Maturity status. Solutions are in development and testing.

1. During lunar transits, the irradiances and Mg II ratio are improperly set to fill values.
2. Model bins that use the 121 nm line in the daily average have errors of approximately 5% due to incorrect inclusion of the line irradiance during periods of geocoronal absorption.
3. Solar array currents are incorrect.
4. There is an annual cycle oscillation in EUVS-B line irradiances with a magnitude of about 1%.
5. The signals and currents variables should have long names that note that these are "corrected currents/signals".
6. Calibrations for all products will have future revisions.
7. The data is currently not flagged when the satellite is in the penumbra.
8. The data is not clearly flagged when calibrations occur.

9. There are small discrepancies in some of the line irradiances after eclipses due to uncorrected temperature impacts.
10. The ECEF_Z range needs to be increased.
11. The Mg II index may have small improvements in the future to account for non-linear behavior in the wings and lines and spikes in the data.

Users of the GOES-18 EUVS data bear responsibility for inspecting the data and understanding the known caveats prior to use.

Contact for further information: OSPO User Services at SPSD.UserServices@noaa.gov

NCEI contacts for specific information on the EUVS L1b data:

Scientific issues: James Mothersbaugh III (james.mothersbaugh@noaa.gov), Janet Machol (janet.machol@noaa.gov)

Data access issues: Pamela Wyatt (pamela.wyatt@noaa.gov)

NCEI website for GOES-R Space Weather data (daily aggregations of science-quality and operational EUVS L1b and L2 data, plots and documentation):

<https://www.ngdc.noaa.gov/stp/satellite/goes-r.html>