GOES-19 ABI L2+ Downward Shortwave Radiation: Surface (DSR), Reflected Shortwave
Radiation: TOA (RSR), and Photosynthetically Active Radiation (PAR) Release
Beta Data Quality
October 1, 2024
Read-Me for Data Users

The GOES-19 Advanced Baseline Imager (ABI) L2+ Downward Shortwave Radiation: Surface (DSR),
Reflected Shortwave Radiation: TOA (RSR), and Photosynthetically Active Radiation (PAR) products were
declared Beta maturity on Oct 1, 2024. No formal review was conducted because the algorithms are
identical to the ones running with GOES-16, GOES-17, and GOES-18, so the Beta declaration of the ABI
L1b and CMI flows down to the ABI L2+ products.

The ABI L2+ DSR, RSR, and PAR products include the downwelling shortwave radiation at the surface
(DSR), the shortwave radiation reflected at the top of the atmosphere (RSR), and downwelling
photosynthetically active radiation at the surface (PAR). The DSR, RSR, and PAR retrievals are produced
during daytime with view and solar zenith angles less than 90 degrees. Data over the Full Disk (FD) of the
Earth is available at 2-km ABI fixed grid every 10 minutes. The spatial and temporal resolution of this
data is superior to those in the previous Baseline products, so data in the Continental United States
(CONUS) or mesoscale (MESO) domains are no longer produced.

A full description and format of the RSR and DSR products from the Baseline Algorithm is in the Product
Definition and User's Guide (PUG) Volume 5: Level 2+ Products, located on OSPO's GOES-R documents
webpage: https://www.ospo.noaa.gov/Organization/Documents/goes-r.html. The Enterprise Algorithm
descriptions for RSR, DSR, and PAR will be added to a future PUG version. The Enterprise Algorithm used
to derive DSR, RSR, and PAR from GOES-19 ABI observations is described in the "GOES-R Advanced
Baseline Imager (ABI) Algorithm Theoretical Basis Document for Downward Shortwave Radiation
(Surface), and Reflected Shortwave Radiation (TOA), Enterprise Processing System (EPS) Version",
located on STAR's GOES-R ATBD webpage:
https://www.star.nesdis.noaa.gov/goesr/documentation_ATBDs.php.

GOES-19 ABI DSR, RSR, and PAR were compared to corresponding GOES-16 and GOES-18 products, when
they were available, and showed a reasonable consistency with products from these satellites in the
overlap regions.

Beta maturity, by definition, means that:
- Rapid changes in product input tables / algorithms can be expected;
- Product quick looks and initial comparisons with ground truth data were not adequate to
  determine product quality;
- Anomalies may be found in the product and the resolution strategy may not exist;
- Product is made available to users to gain familiarity with data formats and parameters;
- Product has been minimally validated and may still contain significant errors; and
- Product is not optimized for operational use.

Users bear all responsibility for inspecting the data prior to use and for the manner in which the data are
utilized. Persons desiring to use the GOES-19 ABI DSR, RSR, and PAR products for any reason, including
but not limited to scientific and technical investigations, are encouraged to consult the NOAA algorithm
working group (AWG) scientists for feasibility of the planned applications. The DSR, RSR, and PAR

products are sensitive to upstream processing, such as the quality of calibration, navigation, and cloud mask.

Known product and documentation issues (as of Oct 18, 2024):

1. The retrieval algorithm uses coefficients for converting narrowband ABI reflectances to broadband albedos that were derived for GOES-16 not for GOES-19.
2. DQF attributes 'percent_good_retrieval_qf' and 'percent_bad_retrieval_qf' may occasionally have incorrect values.
3. The continuous dynamic ancillary data, the 29-day clear-sky instantaneous TOA albedo time-series at each observation time, is being reset and thus loses past data from time to time; this negatively impacts retrieval quality.
4. Occasionally, bands of missing data may be present in the product files.
5. The current version (v2.5, June 2024) of the Product Definition and User's Guide (PUG) Volume 5 document (https://www.ospo.noaa.gov/Organization/Documents/goes-r.html) describes the Baseline radiation products and thus it does not include PAR.

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

Contact for specific information on the ABI L2+ DSR, RSR, & PAR data:
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