GOES-19 ABI L2+ Land Surface Albedo
Beta Data Quality
October 1, 2024
Read-Me for Data Users

The GOES-19 Advance Baseline Imager (ABI) L2+ Land Surface Albedo was declared Beta on Oct 1, 2024. No formal review was conducted because the algorithms are identical to the ones running with GOES-16 and GOES-18, so the Beta declaration of the ABI L1b and CMI flows down to the ABI L2+ products.

The ABI L2+ LSA provides instantaneous shortwave broadband blue-sky Albedo over wavelengths between 0.4 and 3.0 µm. It is defined as the ratio between outgoing and incoming shortwave irradiance under natural illumination at the earth surface. The product includes associated data quality flags and percentage of each flag value, mean, maximum, minimum, and standard deviation of LSA. The LSA product provides spatial and temporal continuous surface albedo information. The LSA value under clear-sky condition is comparable and commits well with the ground measurements; while the LSA value under cloudy-sky conditions provides the contemporary surface status under clear-sky condition, not comparable with the simultaneous ground reference with influence from the cloud.

- *Measurement range*: 0-1
- *Temporal coverage*: Solar zenith angle at < 67 degrees. Daytime solar zenith angle
- *Refresh*: 10 minutes for FD, 5 minutes for CONUS, 1 minute for Meso
- *Spatial coverage*: Full Disk, CONUS, Meso
- *Spatial resolution*: 2 km
- *Quality*: Product accuracy is 0.08 Albedo Units and precision is 10%

The LSA algorithm requires a 10 day spin up period. LSA is expected to reach the required accuracy.

A full description and format of the ABI LSA product is available in the Product Definition and User's Guide (PUG) Volume 5 document (https://www.ospo.noaa.gov/resources/documents/goes-r.html). The algorithm used to derive the LSA product from GOES-19 ABI observations is described in detail in the "GOES-R Advanced Baseline Imager (ABI) Algorithm Theoretical Basis Document for Surface Albedo" (https://www.star.nesdis.noaa.gov/goesr/documentation_ATBDs.php).

Beta maturity, by definition, means that:
- Initial calibration applied (L1b).
- Rapid changes in product input tables, and possibly product algorithms, can be expected.
- Product quick looks and initial comparisons with ground truth data (if any) are not adequate to determine product quality.
- Anomalies may be found in the product and the resolution strategy may not exist.
- Products are made available to users to gain familiarity with data formats and parameters.
- Product has been minimally validated and may still contain significant errors.
- Product is not optimized for operational use.

Beta 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 Beta maturity LSA product 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. This product is sensitive to upstream processing, such as the quality of the calibration, navigation, or cloud mask.

Status of the current GOES-19 LSA product and any remaining known issues that are being resolved:

1. The algorithm uses the latest clear-sky TOA reflectance observations to simulate BRDF model being used in the following day's LSA retrieval. Thus, there is at least a one-day lag in reflecting some surface dynamic events, such as seasonal snow or fire, depending on the length of the previous cloud coverage period.

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

Contacts for specific information on the ABI L2+ LSA product:
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