

GOES-19 ABI L2+ Cloud Optical Properties Release
Beta Data Quality
October 1, 2024
Read-Me for Data Users

The GOES-19 Advanced Baseline Imager (ABI) L2+ Cloud Optical Properties (optical depth and particle size; COMP) products were declared Beta maturity on October 1, 2024. No formal review was conducted because the algorithms are identical to GOES 16/17/18. Beta declaration of the ABI L1b and CMI therefore applies to the ABI L2+ products.

The ABI Cloud Optical Properties for both Daytime (DCOMP) and Nighttime (NCOMP) provide cloud optical depth (COD) and cloud particle size (CPS) over the Full Disk (FD) of the GOES-ABI domain, COD and CPS over the Continental United States (CONUS) region, and CPS over both Mesoscale (MESO) regions. They also include the processing information flags, parameter quality indicators, and error estimates in the intermediate product (IP) files. All products are created at a 2 km resolution.

A full description and format of the COMP products can be found 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 algorithms used to derive the DCOMP and NCOMP products from GOES-19 ABI observations are described in detail in the Algorithm Theoretical Basis Documents (ATBDs) "Algorithm Theoretical Basis Document for Daytime Cloud Optical and Microphysical Properties (DCOMP)" and "Algorithm Theoretical Basis Document for Nighttime Cloud Optical Depth, Cloud Particle Size, Cloud Ice Water Path, and Cloud Liquid Water Path", located on STAR's GOES-R ATBD webpage: https://www.star.nesdis.noaa.gov/goesr/documentation_ATBDs.php.

Beta maturity, by definition, means that:

- Rapid changes in product input tables/algorithms are expected;
- Product initial looks and validation may not be fully 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 may have been minimally validated and may still contain significant errors;
- Product is not optimized for operational use.

Beta users are responsible for inspecting the data prior to use and for the manner in which the data are utilized. Anyone desiring to use the GOES-19 ABI Beta-maturity COMP products for any reason, including but not limited to scientific and technical investigations, are encouraged to consult the NOAA Algorithm Working Group scientists for feasibility of the planned applications.

Known issues being resolved include:

1. All issues discussed in the cloud mask, cloud phase, and cloud height READMEs may impact the COMP products.
2. Mode 4 Level 1b data drop outs from the Product Distribution and Access (PDA) not evident in the GOES Rebroadcast (GRB).
3. Striping in the 3.9-radiances causes striping in COMP products.
4. Wrong cloud phase input will cause COMP errors from up to 50%, particular for CPS.
5. DCOMP shows an increased number of thick clouds with COD greater than 80. Information depth is low due to radiation saturation.
6. NCOMP heavily uses the radiative transfer model (RTM), which is impacted by the incorrect GOES-19 fast Planck coefficients that the Cloud team identified as an issue within the GOES-R Ground System (GS). Actual impacts may be masked by the over-icing in the cloud phase product, which is also affected by the same issue. The updated Planck coefficients will be installed to the GS prior Provisional evaluation. This issue was resolved on 23 October 2024 when updated Planck coefficients were installed in the GS.

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

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