

GOES-17 ABI L2+ Cloud Top Phase (CPH) Release
Beta Data Quality
September 28, 2018
Read-Me for Data Users

The GOES-17 Advanced Baseline Imager (ABI) L2+ Cloud Top Phase (CPH) product was declared Beta maturity on August 27, 2018. No formal review was conducted because the algorithms are identical to the ones running with GOES-16, so the Beta declaration of the ABI L1b and CMI flows down to the ABI L2+ products.

The ABI L2+ Cloud Top Phase product assigns each earth-navigated pixel one of the following classifications: clear sky (based on the ABI clear sky mask), liquid water, supercooled liquid water, mixed phase, ice phase, or unknown cloud phase. Aside from the clear sky designation, the classification is relative to the highest cloud layer present. Only infrared channels are used to determine the cloud thermodynamic phase. The cloud top phase product is generated for every ABI Full Disk (FD) of the Earth, Continental United States (CONUS) region, and the Mesoscale (MESO) regions.

A full description and format of the Cloud Top Phase product can be found in the Product Definition and User's Guide (PUG) document (<http://www.goes-r.gov/products/docs/PUG-L2+-vol5.pdf>). The algorithm used to derive the Cloud Top Phase product from GOES-16 ABI observations is described in detail in the "GOES-R Advanced Baseline Imager (ABI) Algorithm Theoretical Basis Document for Cloud Top Phase" (https://www.goes-r.gov/products/ATBDs/baseline/Cloud_CldType_v2.0_no_color.pdf).

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.

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-17 ABI Beta maturity Cloud Top Phase 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 calibration and navigation.

Known issues at the Beta validation stage include:

1. Missing values occur randomly due to upstream L1b issues;

2. Focal Plane Module (FPM) overheating significantly impacts the GOES-17 ABI infrared channels utilized by the baseline cloud top phase algorithm. Product accuracy will be significantly degraded and missing values will be common during overheating periods.
3. Co-registration errors commonly cause misclassifications at cloud edges and in convective clouds.
4. The upstream cloud detection algorithm can lead to clear regions being assigned a cloud thermodynamic phase or cloudy regions being classified as clear sky;
5. Optically thin cirrus clouds are sometimes misclassified as liquid water, supercooled liquid water or mixed phase;
6. The risk of misclassifying liquid water clouds as ice is greatest in regions with broken cumulus clouds;
7. The ability to correctly identify clouds that have both liquid water and ice, within the portion of the cloud influencing the measured ABI radiances, is limited.
8. The baseline cloud phase classification is sometimes inconsistent with near-infrared based assessments of cloud phase, such as false color imagery constructed with phase sensitive near-infrared spectral channels.

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

Contacts for specific information on the ABI L2 CPH product:

Michael Pavolonis: michael.pavolonis@noaa.gov

Jaime Daniels: jaime.daniels@noaa.gov