

GOES-16 ABI L2+ Cloud Top Phase (CPH) Release, Beta Data Quality

June 10, 2017

Read-Me for Data Users

The GOES-R Peer/Stakeholder Product Validation Review (PS-PVR) for ABI L2+ Cloud Top Phase (CPH) Beta Maturity was held on May 16, 2017. As a result of this review, the PS-PVR panel recommended that the ABI Cloud Top Phase product be declared Beta. This was accomplished at 2030 UTC on May 16, 2017.

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.

Full description and format of the CPH product is 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 CPH from GOES-16 ABI observations is described in the "GOES-R Advanced Baseline Imager (ABI) Algorithm Theoretical Basis Document for Cloud Type and Cloud Phase" (http://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-16 ABI Beta maturity Cloud Top Phase 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. This product is sensitive to upstream processing, such as the quality of the calibration, navigation and cloud mask.

Known issues being resolved include:

1. Missing values occur randomly due to upstream L1b issues;
2. The upstream cloud detection algorithm can lead to clear regions being assigned a cloud thermodynamic phase or cloudy regions being classified as clear sky;

3. Optically thin cirrus clouds are sometimes misclassified as liquid water, supercooled liquid water or mixed phase;
4. The risk of misclassifying liquid water clouds as ice is greatest in regions with broken cumulus clouds;
5. 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.