GOES-17 ABI L2+ Binary Cloud Mask (BCM) Release
Provisional Data Quality
May 6, 2019
Read-Me for Data Users

The GOES-R Peer/Stakeholder Product Validation Review (PS-PVR) for the GOES-17 Advanced Baseline Imager (ABI) L2+ Binary Cloud Mask (BCM) is considered Provisional Maturity for the cold periods of the day as of the Provisional PS-PVR on May 6, 2019.

Up to date information on the GOES-17 cooling system issue can be found on the following web sites:
https://www.goes-r.gov/users/GOES-17-ABI-Performance.html
http://cimss.ssec.wisc.edu/goes-r/abi-/band_statistics_imagery.html

The table shown below is pulled from the above web site and is an estimate of cooling system impacts for 2019. The table lists time periods of potential saturation. Users should be vigilant for potential anomalies during these times. The BCM may be usable during some of these time blocks.

Date Range	Saturation increase/decrease	Time of Day
1 Jan - 26 Feb	Channel saturation goes from marginal to unusable by 26 Feb.	Saturation can occur between 0830 - 1730 UTC.
26 Feb - 20 Mar	Channel saturation goes from unusable to marginal.	Saturation can occur between 0900 - 1700 UTC.
20 Mar - 13 Apr	Channel saturation goes from marginal to unusable by 13 Apr.	Saturation can occur between 0900 - 1700 UTC.
13 Apr - 26 May	Channel saturation goes from unusable to marginal.	Saturation can occur between 0900 - 1700 UTC.
26 May - 20 Jul	No Channel saturation	
20 Jul - 30 Aug	Channel saturation goes from marginal to unusable by 30 Aug.	Saturation can occur between 0900 - 1700 UTC.
30 Aug - 23 Sep	Channel saturation goes from unusable to marginal.	Saturation can occur between 0930 - 1630 UTC.
23 Sep - 16 Oct	Channel saturation goes from marginal to unusable by 16 Oct.	Saturation can occur between 0900 - 1700 UTC.
16 Oct - 12 Dec	Channel saturation goes from unusable to marginal.	Saturation can occur between 0900 - 1700 UTC.

The GOES-R Series Level I Requirements (LIRD) are not yet updated to reflect the operational Mode 6; however, for completeness the LIRD requirements are stated here: Cloud Mask shall be produced every 15 minutes for Full Disk, 5 minutes for CONUS, and 5 minutes for Mesoscale.

GOES-17 was placed into Mode 6 on April 2, 2019. The cadence of L2 products for Mode 6 are different from Mode 3 and the official requirements defined in the GOES-R L1RD. Cloud Mask is now produced every 10 minutes for Full Disk, every 5 minutes for CONUS, and every 1 minute for Mesoscale.

The ABI Cloud Mask products provide a binary cloud presence decision over the Full Disk (FD) of the Earth, the Continental United States (CONUS) region, the Mesoscale (MESO) regions. The products include 4–level mask and cloud mask test decisions, which are included in the intermediate product files. A full description and format of the BCM products 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 BCM from GOES-R ABI observations is described in detail in the "GOES-R Advanced Baseline Imager (ABI) Algorithm Theoretical Basis Document for ABI Cloud Mask" (https://www.goes-r.gov/products/ATBDs/baseline/Cloud_CldMask_v2.0_no_color.pdf).

Provisional maturity, as defined by the Readiness, Implementation and Management Plan (RIMP) means that:

- Validation activities are ongoing and the general research community is now encouraged to participate;
- Severe algorithm anomalies are identified and under analysis. Solutions to anomalies are in development and testing;
- Incremental product improvements may still be occurring;
- Product performance has been demonstrated through analysis of a small number of independent measurements;
- Product analysis is sufficient to communicate to users.
- Documentation of product performance exists.
- Testing has been fully documented;
- Product is ready for operational use and for use in comprehensive cal/val activities and product optimization.

Persons desiring to use the GOES-17 ABI Provisional maturity BCM for any reason, including but not limited to scientific and technical investigations, are encouraged to consult the NOAA/NESDIS/STAR Algorithm Working Group (AWG) scientists for feasibility of the planned applications.

Status of the current BCM products and any remaining known issues still seeking resolution are as follows:

1. During the peak saturation hours (~local midnight) period of the sensor operations, users can

expect significantly degraded results. This is due to the known thermal cooling issue with ABI affecting the thermal IR and Water Vapor channels. At night, the BCM use the 3.75, 7.0, 11, and 12 µm infrared channels. The 7.0, 11 and 12 µm infrared channels are the ones which are most affected. Please refer to the above table for worst case scenarios.

2. Mitigation efforts are currently being investigated to reduce the effect during this time period due to the saturation of the 7.0 and 12 µm channel as well as the increase in noise in the 11µm channel during these periods.
3. Some blocks on land around unmarked inland water due to the RFMFT.
4. False Cloud (PFMFT/ETROP tests along coast lines).
5. Warm snow is misclassified as cloud.
6. Missed Cloud (warm low stratus at night).
7. Terminator Performance.

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

Contacts for specific information on the ABI L2 BCM product:
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