

GOES-19 ABI L2+ Enterprise Cloud Mask (ECM) Release
Provisional Data Quality
18 February 2025
ReadMe for Data Users

The GOES-R Peer/Stakeholder Product Validation Review (PS-PVR) for the GOES-19 Advanced Baseline Imager (ABI) L2+ Enterprise Cloud Mask (ECM) was held on 29 January 2025. As a result of this review, the panel chair declared that this product meets the criteria for Provisional Maturity.

The ABI ECM provides a binary cloud presence decision over the Full Disk (FD) of the Earth, the Continental United States (CONUS) region, and for Mesoscale (MESO) sectors. In addition, there are three other variables within the file:

- 4-Level Mask - The Clear Sky Mask (CSM) combines spectral and spatial tests to produce a 4-level classification of cloudiness at each pixel location. The 4 levels are:
 - 0 = Clear
 - 1 = Probably Clear
 - 2 = Probably Cloudy
 - 3 = Cloudy
- Cloud Probability - Likelihood of a cloud at a given pixel location (range: 0.0 - 1.0)
- Data Quality Flag
 - 0 - Good quality cloud mask
 - 1 - Bad quality
 - 2 - Invalid pixel due to space view
 - 3 - Not used
 - 4 - Not used
 - 5 - Not used
 - 6 - Degraded due to out of range focal plane temperature (FPT) or missing channel

A full description and format of the ECM can be found in the Product Definition and User's Guide (PUG) Volume 5 (<https://www.ospo.noaa.gov/resources/documents/goes-r.html>). The algorithm used to derive the ECM from GOES-R ABI observations is described in detail in the "GOES-R Advanced Baseline Imager (ABI) Algorithm Theoretical Basis Document for A Naïve Bayesian Cloud Mask Delivered to NOAA Enterprise". ATBDs are available at https://www.star.nesdis.noaa.gov/goesr/documentation_ATBDs.php.

By definition, Provisional maturity 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.

GOES-19 ABI ECM users, 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 ECM product and any remaining known issues still seeking resolution are as follows:

1. No major ECM performance issues were noted during this review cycle.

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

Contacts for specific information on the ABI L2 ECM product:

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