

## GOES-16 ABI Level 1b Release, Beta Data Quality

March 6, 2017  
Read-Me for Data Users

The GOES-R Peer/Stakeholder Product Validation Review (PS-PVR) for ABI L1b Beta Maturity was held on February 28, 2017. As a result of this review, the PS-PVR panel recommended that the ABI L1b data be included in GRB. This was accomplished at 1500 UT on March 1, 2017.

The ABI L1b data products are calibrated and geo-located radiances of the 16 ABI bands over the Full Disk (FD) of the Earth, the Continental United States (CONUS) region, the Mesoscale (MESO) regions, and certain instrument calibration and engineer data. Beta maturity, by definition, means that:

- Initial calibration applied (L1b);
- Rapid changes in product input tables / algorithms can be expected;
- Product quick looks and initial comparisons with ground truth data 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 (via GRB);
- 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 L1b products for any reason, including but not limited to scientific and technical investigations, are encouraged to consult the NOAA ABI calibration scientists for feasibility of the planned applications.

Known issues being resolved include:

1. The coefficients that are stored in L1b and L2 CMIP files for converting from L1b to L2 CMIP values (Reflectance Factor or Brightness Temperature) are incorrect.
  - a. For the visible and near infrared (VNIR) channels (1-6), these are  $E_{sun}$  and  $K_0$ .
  - b. For the infrared (IR) channels (7-16), these are `planck_fk1`, `planck_fk2`, `planck_bc1`, and `planck_bc2`.
2. Navigation, especially in the east-west direction, may have large errors.
3. Channel-to-channel registration error, especially those between channels from the three groups of channels (1-6, 7-11, and 12-16 – they are in three different “focal plane assemblies” or FPA), can be large and unstable. For example, co-registration between Channel 2 and Channel 1 (same FPA) is often better than that between Channel 2 and Channel 7 (same FPA).
4. Frame-to-frame registration may be unstable, causing the features to “jump” in animation.
5. The radiances of some infrared channels for the three CONUS during the collection of one FD in Mode 3 seem to decrease progressively.
6. Significant stripes exist for some channels, currently Channel 7 and 12.
7. VNIR channels, especially Channel 3, suffer from “banding” such that the edge of a swath may appear brighter or darker than the adjacent swath.

8. Significant stray light exists for VNIR channels approximately one hour before and after satellite local midnight for approximately forty days during the eclipse season before the vernal (spring) equinox and after the autumnal (fall) equinox, and may exist in other days of the year.
9. Stray light exists for Channel 7 approximately one hour before and after satellite local midnight for approximately forty days during the eclipse season before the vernal (spring) equinox and after the autumnal (fall) equinox. The intensity of the stray light is less than the required, but may affect certain applications.
10. Channel 2 may have positive bias of up to 10%.