GOES-16 SUVI Level 1b Release, Beta Data Quality
April 19, 2017
Read-Me for Data Users

The GOES-R Peer Stakeholder Product Validation Review (PS-PVR) for SUVI L1b Beta Maturity was held on April 19, 2017. As a result of this review, the PS-PVR panel recommended that the SUVI L1b data be included in GRB. The data flow in GRB commenced at 1825 UT on April 20, 2017.

The L1b data products are Extreme Ultraviolet (EUV) Solar Imagery in the following bands:

- 94 Å – Fe XVII
- 131 Å – Fe XXI
- 171 Å – Fe IX/X
- 195 Å – Fe XI/XII
- 284 Å – Fe XV
- 304 Å – He II

There are also two different exposure times represented in the SUVI L1b data products: 1 second and 5 milliseconds. We recommend to the user to reference the 'CMD_EXP' keyword in order to reference the exposure time value (the 'EXP_TIME' keyword provides exact exposure time, while 'CMD_EXP' provides delineation between the two target times).

Users should be aware that the metadata values derived from the image content, including IMGTII, IMGTIR, IMG_SDEV, IMG_MAX, IMG_MIN, and IMG_MEAN, are computed before the images are rescaled using the BZERO and BSCALE FITS keywords. As a result, these values may differ very slightly from similar quantities computed direct from the image data contain in SUVI files.

NCEI strongly advises against using SUVI L1b data available in CLASS prior to the Provisional Maturity declaration, April 19, 2017. Due to instrument issues and artifacts of erroneous processing, these L1b data are in general not suitable for scientific analysis prior to this date. Users bear all responsibility for inspecting the data prior to use and for the manner in which the data are utilized. NCEI plans on reprocessing some pre-Provisional data as the instrument configuration permits. If you are interested in these pre-Provisional data, please contact the instrument scientists at jonathan.darnel@noaa.gov and daniel.seaton@noaa.gov. The NCEI website for GOES-R Space Weather data, which will eventually provide reprocessed data for the Beta time period, is https://www.ngdc.gov/stp/satellite/goes-r.html.

The GOES-16 SUVI Level 1b (L1b) products are at a Beta level of maturity, meaning that these data are preliminary and non-operational. These data are currently undergoing testing and initial calibration and validation. The products are made available to users to gain familiarity with data formats and parameters in accordance with the GOES-R Product User Guide (PUG). Beta products have been minimally validated and may still contain significant errors. They are not optimized for operational or research. Users bear all responsibility for inspecting the data prior to use and for the manner in which the data are utilized.

Known issues under work for resolution:

1. The flatfield correction has not been finalized – expect artifacts to exist.
2. The correction for dark current and CCD Bias is currently not being applied, so all images include a zero-offset and reported radiometric values are not reliable.
3. Images are left-right reversed about their vertical axis.

4. Currently 'BUNIT' is not present in FITS headers, so the data units are not clear. Users should be aware that image values are reported in radiometric units not instrument units (DN).
5. Numerous metadata/keyword values related to image navigation are known to be incorrect. These keywords include:
   - CRPIX1/CRPIX2
   - CRVAL1/CRVAL2 (correctly specified, but issues with the coordinate system specification still needed)
   - PC1_1, PC1_2, PC2_1, PC2_2
   - CROTA occasionally includes a superfluous 360° rotation, but the offset angle is otherwise calculated correctly and can be used for image registration.