

VIIRS Non-NCC Imagery EDR Release, Beta Data Quality
May 2012
Read-me for Data Users

The JPSS Algorithm Engineering Review Board released the VIIRS Non-Near Constant Contrast (NCC), Imagery Environmental Data Records to the public with a Beta level Maturity as of 7 February, 2012. Beta quality is defined as:

- Early release product
- Initial calibration applied
- Minimally validated and may still contain significant errors (additional changes are expected)
- Available to allow users to gain familiarity with data formats and parameters
- Product is not appropriate as the basis for quantitative scientific publications, studies and applications

The Board recommends that users be informed of the following product information and characteristics when evaluating the VIIRS Non-NCC Imagery EDR.

1. The VIIRS Imagery EDR comprises all 5 I-bands, 6 of the 16 M-bands, and the Day Night Band (DNB). The DNB is a special case, where the Imagery produced is referred to as Near Constant Contrast (NCC). NCC Imagery contains additional processing and therefore is considered independent of the other Imagery products. This memorandum applies only to the non-NCC, Imagery EDRs.
2. The Imagery EDR algorithm processes VIIRS SDRs and transfers radiance/reflectance/brightness temperature values on as Ground Track Mercator (GTM) projection. GTM uses the nearest pixel rather than an average of the surrounding pixels, unless an isolated pixel has a bad value.
3. Radiometric accuracy and sufficient geolocation, covered by the VIIRS SDR team, are prerequisites for Imagery to attain Beta data quality. The VIIRS SDRs formally achieved Beta status in mid-May 2012. Please refer to the VIIRS SDR Read-me for Beta Data Quality for information regarding characteristics and caveats of the VIIRS SDR.
4. The current capability of the Imagery EDR is at least qualitatively well characterized. Quantitative assessments are planned, but for the sake of attaining Beta, a qualitative analysis is sufficient. No serious artifacts are present in the VIIRS non-NCC Imagery EDR, and qualitative analysis of the associated geolocation has also revealed no issues. The remaining areas of concerns are as follows:
 - a. Minor striping has been noted either under extreme enhancement or in some cases where channel differences are produced. The overall impact has not yet been assessed, but under typical use, striping is not noticeable in non-NCC Imagery.
 - b. The majority of issues relating to Imagery have to do with data availability rather than actual sensor/algorithm performance. The use of imagery is of greatest interest to real-time users, but access to imagery in short time frames (less than two hours) is currently sharply limited.

- c. Unexpected triangles in the corners of the Imagery EDR may develop when missing data exists in an adjacent granule. This rare event usually occurs when an adjacent granule undergoes reprocessing, which in turn is tied to processing in the NPP Command, Control, and Communication System (C3S). The C3S is addressing the situation, and improvement has been evident over the last few months. Users should be aware however that these triangles containing fill values may still occur.
5. Additional Items to note:
- a. Instrument and spacecraft maneuvers and tests: maneuvers and special tests are still being performed on-orbit to better characterize the VIIRS instrument performance. These include but are not limited to the monthly lunar maneuver, quarterly blackbody WarmUp CoolDown (WUCD) tests. During such events, the VIIRS Imagery EDRs will not be optimal, and may not be useable. Data users are encouraged to contact the VIIRS SDR team if any related issues arise. See VIIRS SDR Read-me for Beta Data Quality for POC.
 - b. The VIIRS VisNIR band degradation has had no negative impact on the non-NCC Imagery EDRs. See VIIRS SDR readme for details on this anomaly.
 - c. When displaying adjacent Imagery EDR granules, lines of fill will be noted between the granules. This is expected and not an error, these lines of fill exist to ensure the file size of the Imagery EDR product remains constant, even though the number of Ground Track Mercator rows varies from granule to granule. It is up to the user to remove these lines if desired.
6. The next step in the Non-NCC Imagery EDR validation process is the move to provisional status, which depends on three factors: 1) the advancement of VIIRS SDRs to provisional, 2) feedback from operational users, and 3) more quantitative analyses from the Imagery team. In that regard, additional work on striping and comparisons to Imagery from other satellites is planned. Further multi-spectral analysis is also planned. The definition of provisional includes that the product may “not be optimal” but it is ready for “operational assessment”. The Imagery EDR is close to that point already, and expected to follow closely behind the VIIRS SDRs once they attain provisional status.

Additional information on VIIRS, algorithm theoretical basis documents (ATBDs), and examples of VIIRS Imagery is available at: <http://rammb.cira.colostate.edu/projects/npp/>

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