Suomi NPP Data Product Maturity and Validation Status

Introduction

Data from the JPSS satellite suite are processed into sensor and environmental data records (SDRs and EDRs) that are disseminated to the customer and user community for integration into a multitude of applications, including forecasting, military applications, and climate studies. To ensure quality of the JPSS data products, the JPSS Ground Project has established a Calibration/Validation Program consisting of multiple discipline teams led by community experts that have extensive knowledge of the sensors, extensive subject matter expertise, and heritage experience with space-based environmental measurements. Documented Suomi National Polar-orbiting Partnership (SNPP) Cal/Val Plans explain the detailed activities planned for the assessment, improvement, and validation of the Suomi NPP SDRs and EDRs.

The Suomi NPP Data Product Maturity definitions (Tables 1 and 2) are based on heritage NASA Earth Observing System (EOS) classifications, in support of consistency and continuity with the EOS mission. Additionally, the JPSS definitions include conditions to meet product requirements. Each SDR (Level 1 equivalent), EDR (Level 2 equivalent), and intermediate product is individually assessed for maturity, as defined by the specific exit criteria and translate the general definitions to specific definitions for each product. The JPSS Program maintains an Algorithm Maturity Matrix (AMM) which defines the actual or projected dates that each of the data products has reached or will reach the various levels of maturity. Note that these dates reflect when the necessary algorithm modifications that will result in generation of the beta, provisional, or validated products have been identified; implementation of these changes into the operational system may be delayed anywhere from 1 week to several months depending on the complexity of the necessary changes. Inter-algorithm dependencies are also tracked with the AMM tool to ensure consistency between maturity advancement schedules and quick assessment of impacts of delays in validation efforts.

Upon implementation of the necessary algorithm modifications for ‘beta’ level maturity, each of the Suomi NPP data products, are made available to the community from the NOAA Comprehensive Large Array-data Stewardship System (CLASS). Members of the scientific community are encouraged to obtain these data from the archive and participate in the JPSS validation efforts as they progress to the provisional and validated maturity levels.

Acronyms

- **Cris** – Cross-track Infrared Sounder
- **ATMS** – Advanced Technology Microwave Sounder
- **VIIRS** – Visible Infrared Imaging Radiometer Suite
- **OMPS** – Ozone Mapping and Profiler Suite

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**Table 1**

<table>
<thead>
<tr>
<th>Data Product Maturity Status</th>
<th>Beta</th>
<th>Provisional</th>
<th>Validated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beta</strong></td>
<td>•Ready release product</td>
<td>•Product quality may not be optimal</td>
<td>•Product quality is well defined over a range of representative conditions</td>
</tr>
<tr>
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<td></td>
<td>•Incremental product improvements are still occurring</td>
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**Table 2**

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EDR Performance Examples

VIIRS Day-Night Band Imagery

Artifacts in the DNB SDR are inherited by the NCC Imagery EDR. Before August 2013 the most significant of these was a stray light issue with the DNB on the dark side of the terminator. The DNB SDR algorithm was adjusted to correct for this error in August 2013. The impact on the NCC Imagery EDR was profound. The removal of the stray light is evident in the bottom image, taken from the granule over the upper Midwest of the United States on 9 August 2013. As a reference, Lake Michigan may be seen in the middle of the granule.

VIIRS Cloud Products

CrMSS AVMP/AVTP

VIIRS Ocean Color

VIIRS Sea Surface Temperature

VIIRS Land Surface Temperature

A summary of the SNPP data product maturity status is illustrated above. In addition, detailed maturity status, as well as schedule for future milestones, is available from the NOAA STAR website:


All SNPP data products are available for download from CLASS:


Users can also find an individual ‘read me’ file for each SNPP data product at this website, detailing the analysis completed to date and performance attributes.

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**VIIRS Day-Night Band Imagery**

28 December 2013

VIIRS Ocean Color

VIIRS Sea Surface Temperature

VIIRS Land Surface Temperature

VIIRS Ice Surface Temperature

VIIRS Cloud Products

CrMSS AVMP/AVTP