



MEMORANDUM FOR: The Record
FROM: Menghua Wang, VIIRS OCC EDR Team Lead
SUBJECT: VIIRS ocean color product Validated maturity status and public release
DATE: 12/15/2016

Validated maturity status declaration for VIIRS ocean color product

Maturity Review Date: 3/27/2015
Effective Date: 5/1/2015
Operational System: NOAA-MSL12, Version 1.0.2

The JPSS Algorithm Maturity Readiness Review Board approved the release of the VIIRS Ocean Color Chlorophyll Environmental Data Record (EDR) to the public with a Validated maturity level quality as of 5/1/2015, based on JPSS Validation Maturity Review held on 3/27/2015 (http://www.star.nesdis.noaa.gov/jpss/documents/AMM/VIIRS_OCC_Val.pdf).

1. Maturity stage definition

- Product quality may not be optimal
- Incremental product improvements are still occurring
- Version control is in affect
- General research community is encouraged to participate in the QA and validation of the product, but need to be aware that product validation and QA are ongoing
- Users are urged to consult the EDR product status document prior to use of the data in publications
- Ready for operational evaluation

2. The Board recommends that users be informed of the following product information and characteristics when evaluating the product:

- The VIIRS Ocean Color EDR Product produced at IDPS is being replaced by the NOAA-MSL12 EDR Product which is currently being produced at NOAA STAR. Information about the Ocean Color MSL12 product, algorithm, and team can be found by following the Ocean Color links at: <http://www.star.nesdis.noaa.gov/jpss/Teams.php>. The NOAA-MSL12 product achieved validated maturity in March of 2015.
- OCC EDR data were produced since November 21, 2011, but data before February 6, 2012 were not reliable because the SDR were not correctly calibrated.
- The chlorophyll-a algorithm was changed from Carder algorithm to OC3V since implementation in operations on December 9, 2011.
- Significant sensor near-infrared/shortwave infrared (NIR/SWIR) degradation has been an issue after VIIRS launch, but after the new scan-by-scan RSB calibration algorithm /F-LUT was implemented in operations on August 10, 2012; it has no negative impact on ocean color EDR.
- The significant NIR/SWIR degradation may still be an important issue, although currently no negative impact on OC EDR has been found.



Read-me for Data Users

- OC EDR anomaly occurred for some scenes due to VIIRS onboard calibration dual gain switch issue. This issue was resolved in Mx6.3 which was implemented in operations on Oct. 15, 2012.
- Before Mx6.3, there are no Chl-a retrievals in case of negative remote-sensing reflectance in M1–M5. Since Mx6.3, Chl-a data have been retrieved in case of negative remote-sensing reflectance at the band M5. There are still no Chl-a retrievals in case of negative remote-sensing reflectance at any bands M1–M4. Has been applied in the operational IDPS OCC EDR processing since Mx6.5 (DRs4869, 4877, 4898 – CCR 12-0685). However, this issue was fixed in MSL12.
- No retrievals in coastal and inland waters. Has been applied in the operational IDPS OCC EDR processing since Mx6.5 (DRs4869, 4877, 4898 – CCR 12-0685). This issue has been fixed in MSL12.
- Vicarious calibration has been applied in the operational IDPS OCC EDR processing since Mx8.0 (DR7157-CCR1006). Vicarious calibration has also been applied in MSL12.
- Sun glint masking/correction algorithm has been modified/improved in the operational IDPS OC EDR processing since MX8.5. (DR7384 – CCR14-1582). This has been implemented in MSL12.
- Inherent Optical Properties (IOPs) for absorption (IOP-a) and backscattering (IOP-s) products have not been evaluated yet, and these products are considered experimental products. It may require a different IOP algorithm for improved products.
- There are atmospheric correction problems in coastal turbid and inland waters due to the algorithm issue. The required algorithm for correction of the NIR water-leaving radiance contributions has not been implemented in the IDPS OC EDR data processing. However, a new NIR water reflectance correction algorithm has been implemented in MSL12 with much improved results.
- Some $nL_w(\lambda)$ biases in the blue bands since mid-May 2012 are due to VIIRS SDR issue. We expect that this SDR-related issue will be addressed/resolved soon. See the VIIRS SDR readme for more detail.

Additional/more updated information in detail is available in the VIIRS ocean color algorithm theoretical basis document (ATBD) (will be published soon) and validation maturity review briefing, which can be accessed at: <http://www.star.nesdis.noaa.gov/jpss/Docs.php>

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