

## 22 November 2017:

The Ocean Biology Processing Group is preparing for a reprocessing of the ocean color products from VIIRS on SNPP, to incorporate advancements in instrument and vicarious calibration. This reprocessing will begin as early as next week, and it should be completed within a week.

There will be no changes to product formats or product algorithms relative to the current R2014.0.2 product distribution. The purpose of this R2018.0 reprocessing for VIIRS is two-fold:

1) to incorporate significant advancements in instrument calibration

- Advancements in the on-board (solar/lunar) calibration analysis of VIIRS have resolved some spectral inconsistency in trends between the blue bands, and incorporated absolute calibration to the solar diffuser which is needed for accurate calibration of the SWIR channels.

2) to update the vicarious calibration to incorporate recent developments in the MOBY instrument calibration.

- in 2017, the MOBY time-series was reprocessed to include a number of refinements in MOBY instrument calibration and post processing with impacts of order 1-5% (largest in red), as documented here:

[https://www.star.nesdis.noaa.gov/sod/moby/oct\\_2016\\_reprocessing.html](https://www.star.nesdis.noaa.gov/sod/moby/oct_2016_reprocessing.html)

(note: only the arm depth and binning impacts the NASA vicarious calibration)

- in addition, the MOBY Team updated the MOBY instrument straylight correction (SLC) for the VIIRS era (documentation pending), which has an impact to the water-leaving radiances of VIIRS on the order of up to 6% (largest in the blue, varying with time).

The combined impact of the MOBY update and the instrument calibration update is 3%-5% changes in the global mean deep-water Rrs retrievals from VIIRS, largest in the blue, with an associated reduction in chlorophyll of order 10%. A detailed analysis of the expected changes to the time-series is available here, where VT66 is a test processing that contains all changes proposed for R2018.0 and VT59 is a test processing with the current operational R2014.0 calibration:

[https://oceancolor.gsfc.nasa.gov/analysis/global/vt66\\_vt59/](https://oceancolor.gsfc.nasa.gov/analysis/global/vt66_vt59/)

A web page detailing the calibration changes and the impacts to the time-series and validation results should be available next week, prior to the initiation of reprocessing.

It should be noted that the changes we are seeing on the global average ocean color products are large, but indications are that vicarious calibration with this updated MOBY time-series does improve the validation of the satellite retrievals against in situ measurements. To maintain consistency in the global multi-mission time-series, it will thus be necessary to reprocess MODIS and

SeaWiFS missions that are also tied to MOBY. With thanks to the MOBY Team for making this a priority, we have just received the full MOBY time-series spanning the MODIS-SeaWiFS era, consistently processed with the new SLC. We will now begin evaluation on the impact of the MOBY changes to MODIS and SeaWiFS products, in preparation for likely reprocessing of those missions in the coming month(s). More details on the MODIS/Aqua results coming soon.

Best Regards,  
Bryan Franz and the NASA Ocean Biology Processing Group

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