

OMPS NP and TC SDR Readme file

OMPS SDR Release, Validated Data Quality

Recommended Cautions for Data Users

Final Release September 9, 2015

The JPSS Algorithm Engineering Review Board has reviewed the OMPS Earth Viewing Sensor Data Record products and set the Data Quality attribute to Validated, effective September 09, 2015 at UTC 16:48.53Z - CSN associated with validated products are:

OMPS-NP-SDR (SOMPS – OMPS Nadir Profiler Science SDR) – Associated GEO file is **OMPS-NP-GEO** (OMPS NP ellipsoid, geolocation data)

OMPS-TC-SDR (SOMTC – OMPS Total Column Science SDR) – Associated GEO file is **OMPS-TC- GEO** (OMPS TC ellipsoid geolocation data)

Validated quality is defined as:

- On-orbit sensor performance characterized and calibration parameters adjusted accordingly
- There may be later improved version
- There will be strong versioning with documentation
- Ready for use in applications and scientific publication

The OMPS C/V team recommends that users be aware of certain specific data product characteristics. The product caveats for OMPS at this time are:

- 1) The Day One solar flux look up tables (LUTs) for the OMPS TC and NP has been updated with on-orbit measurements for both TC and NP. The LUTs are provided in the current SDR products. Additional updates of Day One solar LUT are planned to occur after validated maturity as part of routine calibration update.
- 2) The radiance calibration coefficients for the OMPS TC and NP have been updated with on-orbit measurements. The adjustments significantly improved radiance products consistency between OMPS TC and NP in the overlap region (300-310nm) by 2-10%.
- 3) The wavelengths for the OMPS TC and NP for both Earth and solar spectra have been updated with on-orbit measurements. The adjustments reduced TC cross-track wavelength variation and captured the changes in the measured solar flux. The wavelength scale will be monitored and re-evaluated periodically.
- 4) While the OMPS NP South Atlantic Anomaly (SAA) flag is working well in identifying regions with higher frequency of charged particles, the OMPS SDR performance over SAA is to be improved. The same darks LUT updates are currently used for in/out SAA region.

- 5) The stray light calibration table was updated for TC to account for out-of-band stray light effect that was found significant (up to 5%) for wavelengths less than 310 nm in the provisional products. These updates reduced the stray light impact to ~2%, for wavelength less than 310 nm. While expected even before launch, this is not a major concern because these radiances are not used in total ozone retrievals.
- 6) Stray light correction for the NP is re-evaluated via orbital Earth view image data and then validated via NP SDR products. Results from the analyses have demonstrated that the current stray light correction is adequately applied. While the sensor performance has been stable, there is no plan for further correction.
- 7) OMPS TC SDR product dimensions allow for a future change in the horizontal resolution to smaller FOVs. Currently only the first 35 cross-track by 5 along-track cells are used to store actual measurements. The OMPS NP SDR products allow for a future change in the horizontal resolution as well. The NP SDR has been modified to include a smaller FOV (5x5 instead of 1x1) for J1 OMPS. Currently only the first cross-track by first along-track cell contains actual measurement. Thus, users should continue to find that, most of time, only a small portion (less than 5% in some case) of the data in the HDF files are valid (not zero or other fill values), as explained in Beta readme file [7].
- 8) In several documents the name Nadir Mapper (NM) is used instead of Total Column (TC). They are used interchangeably and both correspond to the same algorithm.
- 9) For OMPS RDR users: the OMPS RDR hdf5 products contain both measurement data and the spacecraft ephemeris data that should be synchronized with the measurement data. The ephemeris data is collected in 20 seconds time intervals, while the measurement data is collected typically every 37.4 seconds. Other OMPS RDR datasets may have different time intervals that will not overlap with the 20 second ephemeris time interval. A mismatch between the OMPS measurement time interval and the time interval covered by the ephemeris data occurs in some RDR granules. In these cases, the IDPS algorithm uses spacecraft diary information from an adjacent granule to obtain the ephemeris data needed to process one RDR granule. Outside users of the OMPS RDR datasets should be aware that in some cases they will need to use spacecraft diary information from adjacent granules to get complete spacecraft ephemeris and attitude information.

For additional information contact OMPS SDR C/V lead

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