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OMPS calibration improvements

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The Ozone Mapping and Profiler Suite (OMPS) flying on the Suomi National Polar-orbiting Partnership (SNPP) spacecraft has been collecting data for nearly 5 years during which time there have been two Level 1 product releases for the Nadir sensors and 3 for Limb. Improvements to data product quality include radiometric calibration adjustments, accounting for wavelength registration changes, stray light correction improvements, and adjustments to Limb tangent height registration.

Of particular note is the tangent height adjustments to the OMPS Limb product, where we used separate scene-based techniques to develop an adjustment and to verify the long-term sensor pointing performance. The drift in tangent height over the SNPP mission is within 100m, which can result in as much as 2% layer ozone error. The stray light corrections for Limb in the visible wavelengths have also been improved, which we demonstrate through comparisons with radiative transfer models. Such improvements are important for accurate measurements of stratospheric aerosols. Stray light also limits the performance of the Nadir Mapper instrument at the short end of its range, near 300nm. We present evidence that improved corrections bring Mapper radiometric errors to less than 3% for wavelengths longer than 302nm. Similarly, the Nadir Profiler radiometric errors are within 3% over its entire wavelength range (250-310 nm).

Finally, we will present a short summary of the performance improvements of the JPSS-1 OMPS (launching early 2017) contrasted with its predecessor on SNPP.