13th International Atmospheric Limb Workshop



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## Validation of OMPS Limb Profiler Ozone Retrievals

The Ozone Profiler and Mapping Suite (OMPS) Limb Profiler (LP) satellite instruments perform limb measurements of scattered solar radiation in the ultraviolet and visible wavelengths, which allow for the retrieval of high vertical resolution ozone profiles from the 12.5km to 57.5km with full global coverage. The first LP was launched on board the Suomi-NPP satellite in 2011 and started operational observations in April 2012. The second LP was launched on board the NOAA-21 satellite in 2022 and started operational observations in February 2023.

In this study we utilized ozone profile retrievals from three correlative satellite instruments, (SAGE III/ISS, ACE-FTS and Aura MLS) together with ozonesonde data, to validate SNPP OMPS LP profile measurements processed with the new NASA GSFC version 2.6 retrieval algorithm. We found that SNPP OMPS LP agrees to within 10% between 15 and 55km at all locations (except for the tropical upper troposphere/lower stratosphere) when compared to all correlative sources, and to within 5% in most cases. SNPP OMPS LP started operational observations in April 2012, and so we now have more than 12 years of data overlap with MLS, ACE-FTS and sondes, SAGE III/ISS observations started in June 2017, which provides 7 years of data overlap with OMPS LP. These overlaps provide a large source of data with which to validate OMPS LP ozone profile retrievals and allow us to determine if there are any long-term drifts between OMPS LP and correlative observations. We found that drifts relative to correlative observations are within -0.6 and +0.4 %/yr with the largest drifts (also larger uncertainties) seen relative to SAGE III/ISS which has the shortest overlap period. We also present initial comparisons of NOAA-21 OMPS LP version 1 ozone profile retrievals with the same correlative data. We found that NOAA-21 OMPS LP generally has smaller biases compared to correlative observations, in particular, the large positive bias seen in SNPP OMPS LP at around 18km in the tropics and mid latitudes is not present in NOAA-21 comparisons.

## Topic

Current and past limb and occultation instruments: algorithms, products, validation

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