



Developing an Ozone Climate Data Record from High Resolution Satellite Observations



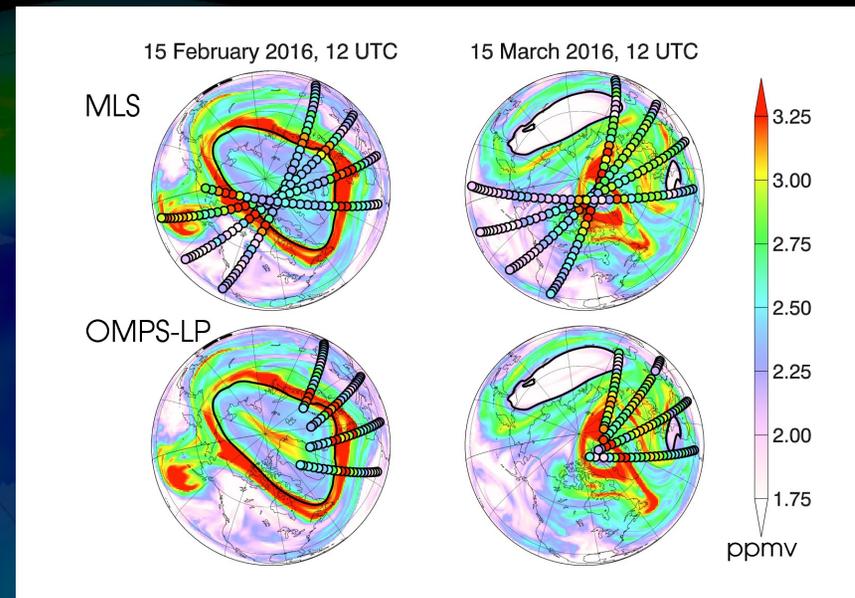
Kris Wargan

Many different satellites make observations of ozone in the earth's atmosphere. Can we create a better record of the ozone layer by combining (assimilating) observations from different satellites in way that makes the data consistent between the missions?

Assimilation of ozone data from NASA's Microwave Limb Sounder (MLS, 2004–present) and from the Ozone Mapping and Profiler Suite Limb Profiler (OMPS-LP, 2012–present with missions projected into the 2030s) into the GEOS data assimilation system are in excellent agreement with independent observations. A simple adjustment of OMPS-LP data is sufficient to eliminate a relative difference between the two data sources.

Using the combined MLS and OMPS-LP data, we can now create a multidecadal ozone record in future reanalysis.

An accurate ozone climate data record on time scales ranging from hours to decades is critical for the monitoring of the 21st century stratospheric ozone recovery and for furthering of our understanding of ozone-climate interactions and how the difference layers of our atmosphere interact with each other.



Ozone mixing ratio at ~19 km above the sea level from assimilation of MLS and OMPS-LP data during the 2016 winter and spring. These plots illustrate a good agreement between the data sets and the ability of data assimilation to produce highly resolved representations of stratospheric ozone.