The Great Tropospheric Ozone "Cook-off"

A Preliminary Comparison of Tropospheric Ozone Column Measurements from Six Different Sources Gordon Labow, Diego Loyola

The Instruments & Chefs:

- 1) OMPS/Merra-2: Jerry Ziemke et al. (NASA GSFC)
- 2) OMI: Xiong Liu (Harvard-Smithsonian Center for Astrophysics)
- 3) TropOMI/BASCOE: Diego Loyola et al. (DLR)
- 4) GOME-2: Richard Siddans et al. (RAL)
- 5) IASI Metop-B : Anne Boynard et al. (LATMOS)
- 6) IASI Metop-A: Richard Siddans et al. (RAL)

The Data:

Tropospheric Column Maps for:

Monthly Means

April 2018, July 2018, October 2018, January 2019

Daily April 3, 2018 July 3, October 3, January 3, 2019

The Comparisons:

- -Limited to 60 South to 60 North
- -Tropopause defined differently by different groups
- -Qualitative in nature (pretty pictures)
- -There is no "truth"

-An attempt at quantitative analysis: Comparison to the average of 6 products





Dobson Units











<u>Summary</u>

The same features are seen in all products Tropical wave 1, pollution, biomass burning, etc.

Only compared 60 South to 60 North latitudes Many problems exist at higher latitudes Snow/Ice, clouds, isothermal atmosphere, etc.

Daily products need more work (next year's cook-off?)

We clearly need to do some/more validation of the various products which disagree over 20% in certain places in monthly means. How? Sondes? Models/Assimilations? Is 20% science acceptable?