Development and Testing of the new Surface LER Climatology for OMI UV Aerosol Retrievals

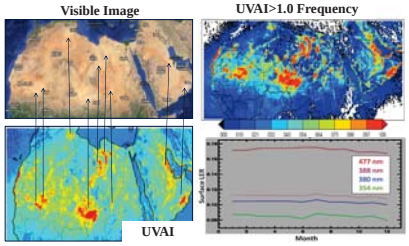
Pawan Gupta[1, 2], Omar Torres[2], Hiren Jethva[1, 2], Changwoo Ahn[1, 3]

[1]GESTAR-Universities Space Research Associations, [2]NASA Goddard Space Flight Center, [3]Science Systems and Applications, Inc.

Objective:

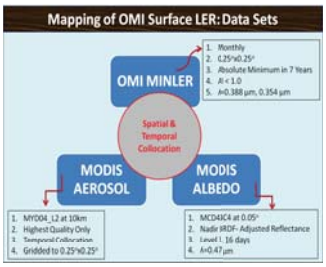
To derive monthly global climatology of surface LER at 388 and 354 nm using 7 years (2005-2011) of OMI observations. This will replace TOMS LER (380 and 354 nm) climatology in OMI near UV Aerosol Retrieval Algorithm.

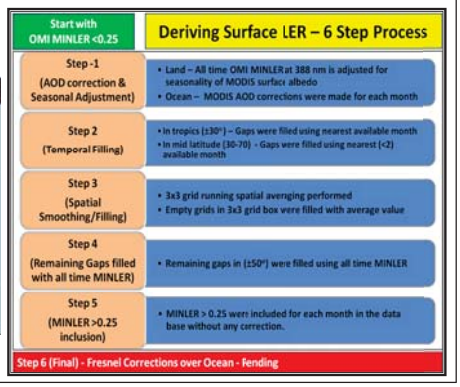
- To produce high resolution (0.25x0.25) surface LER data sets for aerosol retrieval.
- To produce self (OMI) consistent surface data.
- To produce wavelength consistent LER climatology (OMI: 388, 354 vs TOMS: 380, 354*)



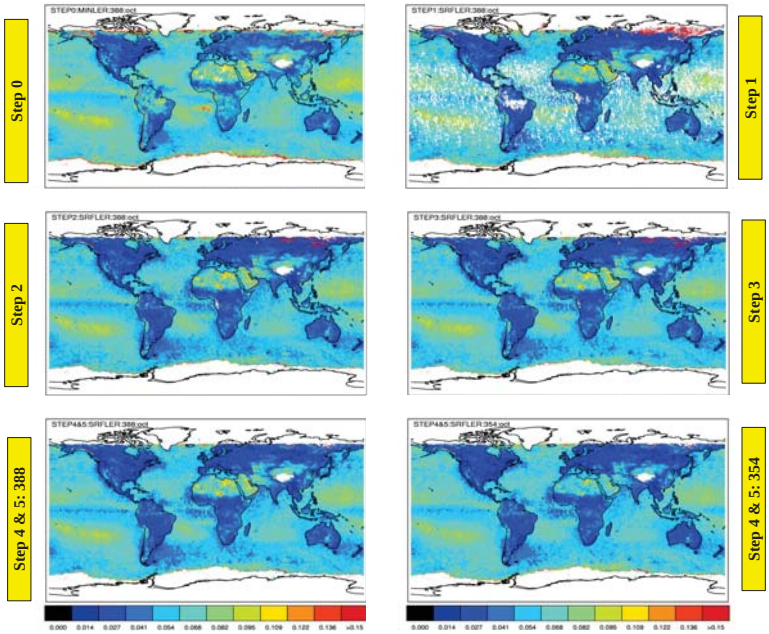
Existing OMI data (TOMS surface) shows consistent high UVAI values, which appeared as (visible) surface feature over Sahara and Arabian Peninsula.

Approach & Data

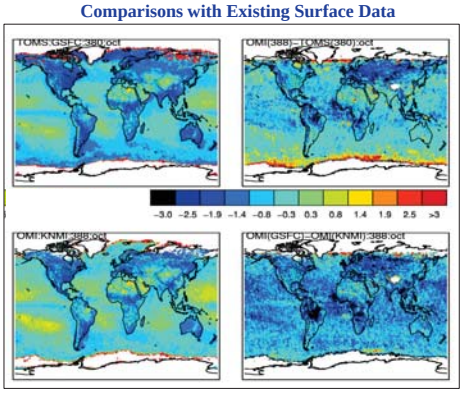




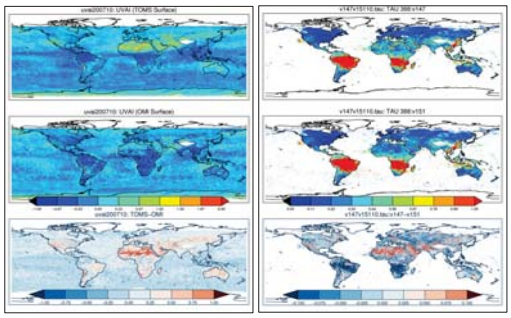
Method: step by step result for October: 388 nm



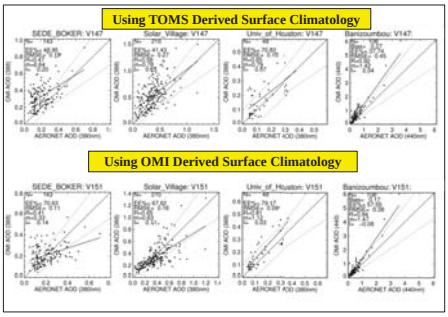
Comparisons with Existing Surface Data



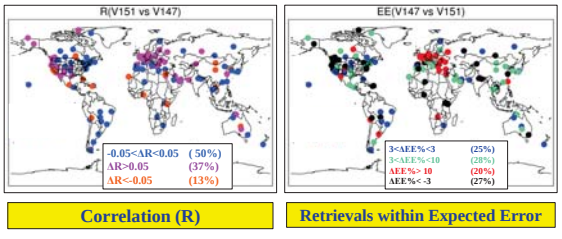
Implementation in Aerosol Retrieval Algorithm



AOD Comparisons with AERONET



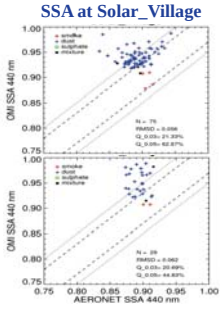
Global Statistics of AERONET Comparisons



Correlation (R)

Retrievals within Expected Error

SSA at Solar_Village



Summary/Ongoing Work

- New surface LER monthly climatology for OMI's near UV aerosol retrieval is developed at 354 nm and 388 nm.
- The new data sets will provide high resolution, instrument and wavelength consistent surface LERs.
- Inter-comparisons with existing TOMS based climatology and OMLER product show regional differences and similarities.
- Initial testing of AOD and SSA retrieval show improvement over dust areas and consistent with existing retrieval everywhere else.
- More testing and refinement in the LERs climatology and retrieval algorithm is in progress.

pawan.gupta@nasa.gov