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

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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: 388, 354)

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.

Method: step by step result for October: 388 nm

Step 0
Step 2
Step 1
Step 3
Step 4 & 5: 388
Step 4 & 5: 354

Comparisons with Existing Surface Data
AOD Comparisons with AERONET

Global Statistics of AERONET Comparisons
Correlation (R)
Retrievals within Expected Error

Implementation in Aerosol Retrieval Algorithm

AOD

Using TOMS Derived Surface Climatology
Using OMI Derived Surface Climatology

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.
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