

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

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Objective:



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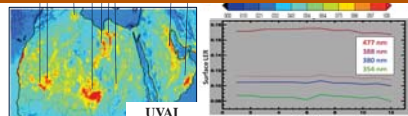
Method: step by step result for October: 388 nm

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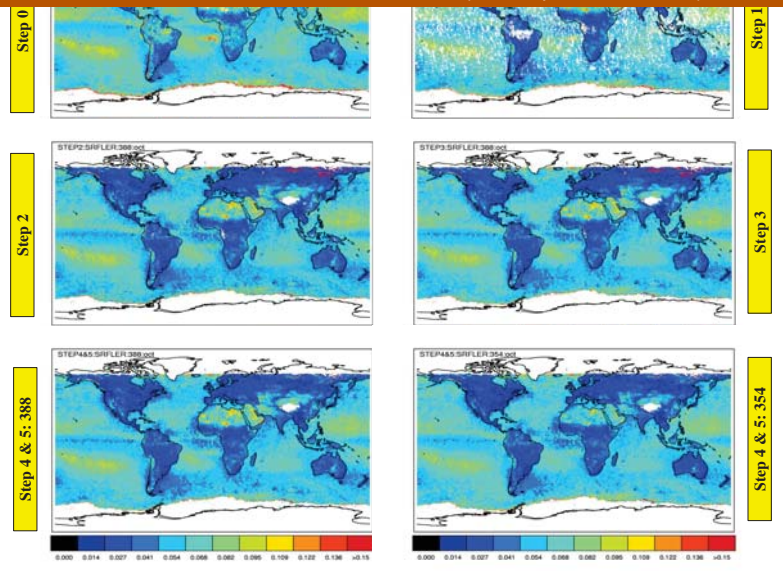
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UV Aerosol Retrieval Algorithm.

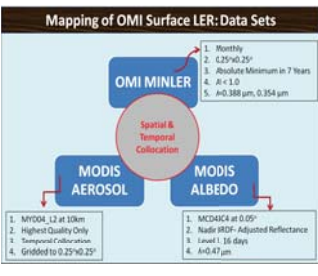
- To produce high resolution (0.25x0.25) surface LER data sets for aerosol retrieval.
- To produce self (OMI) consistent surface data.
- To produce wavelength consistent LER climatology (OMI: 388, 354 vs TOMS: 380, 354\*)



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

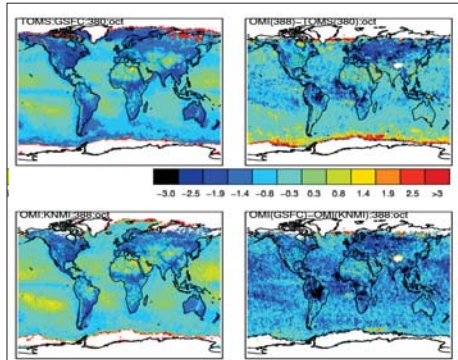


## Approach & Data

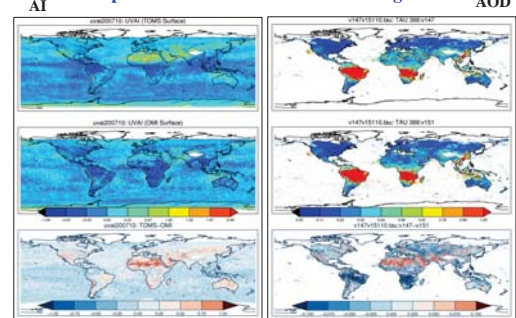


Start with OMI MINLER <0.25	Deriving Surface LER – 6 Step Process
<b>Step-1 (AOD correction &amp; Seasonal Adjustment)</b>	<ul style="list-style-type: none"> <li>Land – All time OMI MINLER at 388 nm is adjusted for seasonality of MODIS surface albedo</li> <li>Ocean – MODIS AOD corrections were made for each month</li> </ul>
<b>Step 2 (Temporal Filling)</b>	<ul style="list-style-type: none"> <li>In tropics (130°) – Gaps were filled using nearest available month</li> <li>In mid latitude (30-70) – Gaps were filled using nearest (&lt;2&gt; available month</li> </ul>
<b>Step 3 (Spatial Smoothing/Filling)</b>	<ul style="list-style-type: none"> <li>3x3 grid running spatial averaging performed</li> <li>Empty grids in 3x3 grid box were filled with average value</li> </ul>
<b>Step 4 (Remaining Gaps filled with all time MINLER)</b>	<ul style="list-style-type: none"> <li>Remaining gaps in (150°) were filled using all time MINLER</li> </ul>
<b>Step 5 (MINLER &gt;0.25 inclusion)</b>	<ul style="list-style-type: none"> <li>MINLER &gt; 0.25 were included for each month in the data base without any correction.</li> </ul>
<b>Step 6 (Final) - Fresnel Corrections over Ocean - Fending</b>	

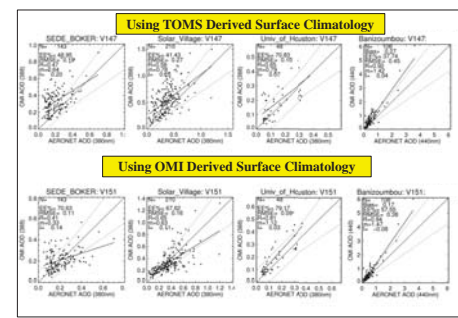
## Comparisons with Existing Surface Data



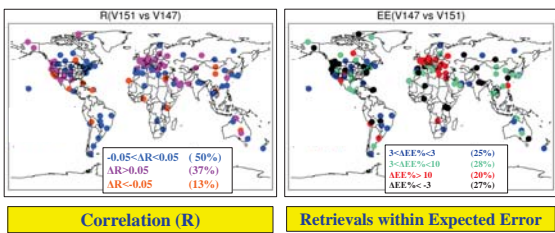
## Implementation in Aerosol Retrieval Algorithm



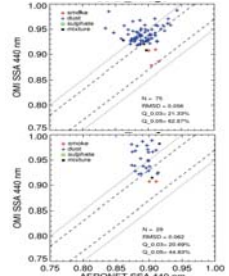
## AOD Comparisons with AERONET



## Global Statistics of AERONET Comparisons



## 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.