Langley Mobile Ozone Lidar (LMOL) Data Collection During LISTOS

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Support provided by NASA HQ Tropospheric Composition Program
Langley Mobile Ozone Lidar (LMOL)

- DIAL UV lidar using Ce:LiCAF laser oscillator time multiplexed at two wavelengths
- Licel analog and photon counting data system
- Ozone profiles from 0.12 km up to 8+ km
- Quasi-unattended/automated, can be left running overnight
- Real-time quick-look display
- TOLNet—standardized algorithms, and error propagation

Smallest TOLNet lidar system, mobile trailer can be moved with a pick-up truck
Long Island Sound Tropospheric Ozone Study (LISTOS)

LMOL location

LMOL at Westport site

Connecticut 2017 Annual Air Monitoring Network Plan

<table>
<thead>
<tr>
<th>Town – Site:</th>
<th>Westport – Sherwood Island State Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>County:</td>
<td>Fairfield</td>
</tr>
<tr>
<td>Address:</td>
<td>Sherwood Island SP</td>
</tr>
<tr>
<td>AQS Site ID:</td>
<td>09-001-9003</td>
</tr>
<tr>
<td>Spatial Scale:</td>
<td>Regional</td>
</tr>
<tr>
<td>Year Established:</td>
<td>1996</td>
</tr>
<tr>
<td>Elevation:</td>
<td>4 m (13 ft)</td>
</tr>
<tr>
<td>Latitude:</td>
<td>41.11822°</td>
</tr>
<tr>
<td>Longitude:</td>
<td>-73.33681°</td>
</tr>
<tr>
<td>Statistical Area:</td>
<td>CSA (New York-Newark Bridgeport)</td>
</tr>
</tbody>
</table>
LMOL Example Ozone Curtain from LISTOS (Aug 8)

Westport surface data courtesy of CT Dept. of Env.

115 ppbv!

21:00 UT forecast

Barons MAQSIP O3/SkewT 24-hour forecast

Aug 8 21:00 UT

Aug 9 0:00 UT

00:00 UT (Aug 9) forecast

NOAA NAM-CMAQ forecast

MODIS- Aqua image
Randomly selected LISTOS O3 curtain collage....
• Data collection on 29 different days over a 7 week period of time (July 12 to Aug 29)
• > 300 hours of measurements
• Quicklooks are available on the LISTOS page (Caution: this rapid version of display will have errors!)
• Provisional data should be ready in ~ 1 month or so and will be uploaded to the archive
• QA/QC data expected in ~ 2 months
• Data includes rigorous propagation of uncertainties, following standardized TOLNet procedures
• H5 format files, but we can convert to other file formats on a case-by-case basis
• Can provide sample python code for reading and displaying files
Future plans & thoughts.....

• Finalize quicklooks, upload provisional and then QA/QC data files
• Aug 8 example, other cases based on interest
• Surface, sonde, wind lidar data and GSFC O3 lidar measurement inter-comparisons
• Ozone vertical distribution forecast inter-comparisons
• AMS abstract submitted for overview of LISTOS O3 lidar data
• Westport was a great measurement location for us, would be happy to go back again in the future if resources allow