

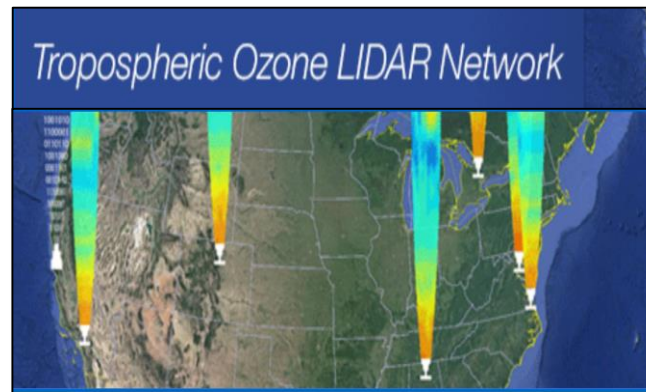
Langley Mobile Ozone Lidar (LMOL) Data Collection During LISTOS

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Bill Carrion, Co-PI, Technology lead

Joey Sparrow, Field support

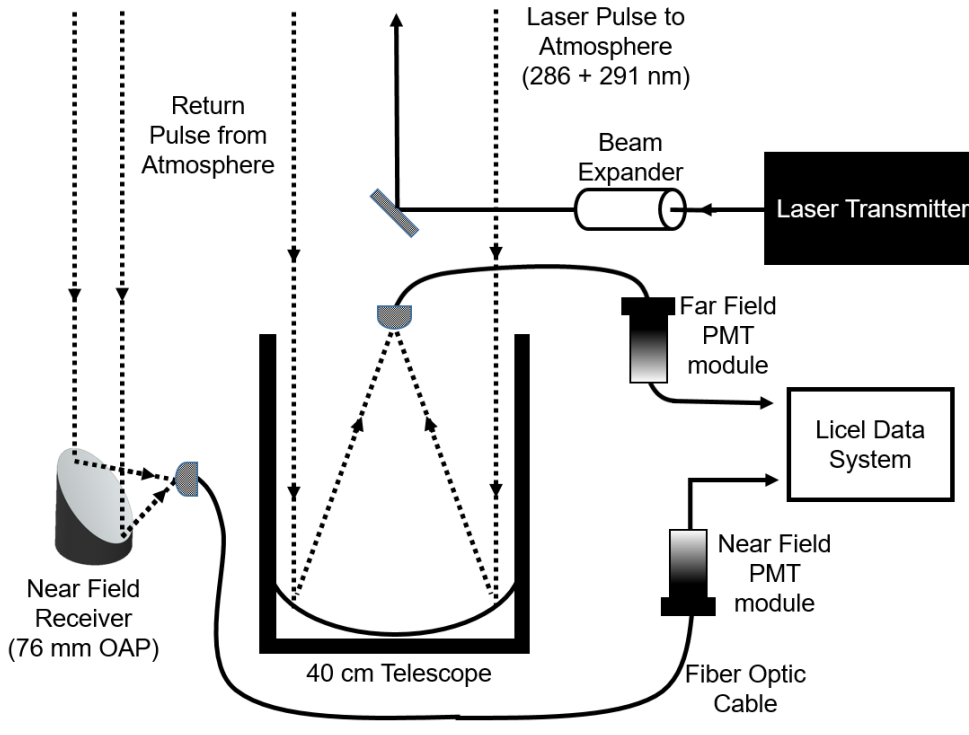


Support provided by NASA HQ Tropospheric Composition Program

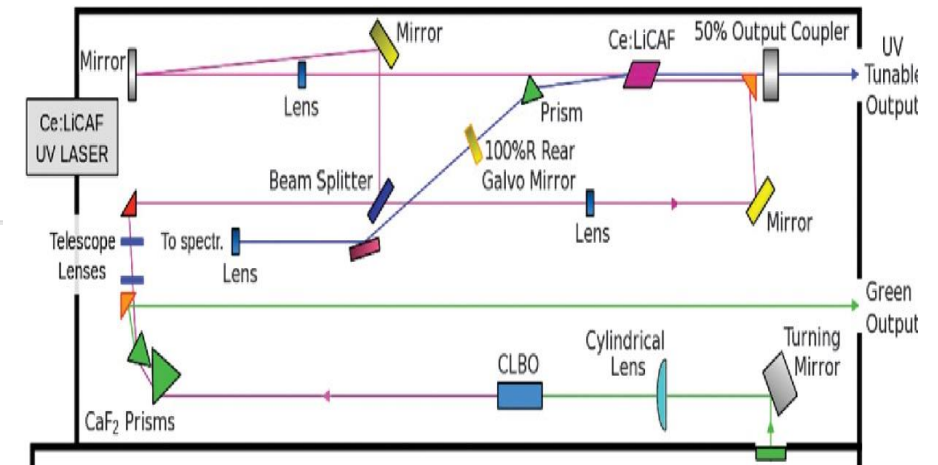
Langley Mobile Ozone Lidar (LMOL)

- 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

Instrument description: De Young et al., *Appl. Opt.* **56**, 721-730 (2017)



Tunable UV Ce:LiCAF laser transmitter



V. A. Fromzel et al., SESI Inc. (Intech, 2010).

Smallest TOLNet lidar system, mobile trailer can be moved with a pick-up truck

Long Island Sound Tropospheric Ozone Study (LISTOS)

LMOL
location ●



Connecticut 2017 Annual Air Monitoring Network Plan

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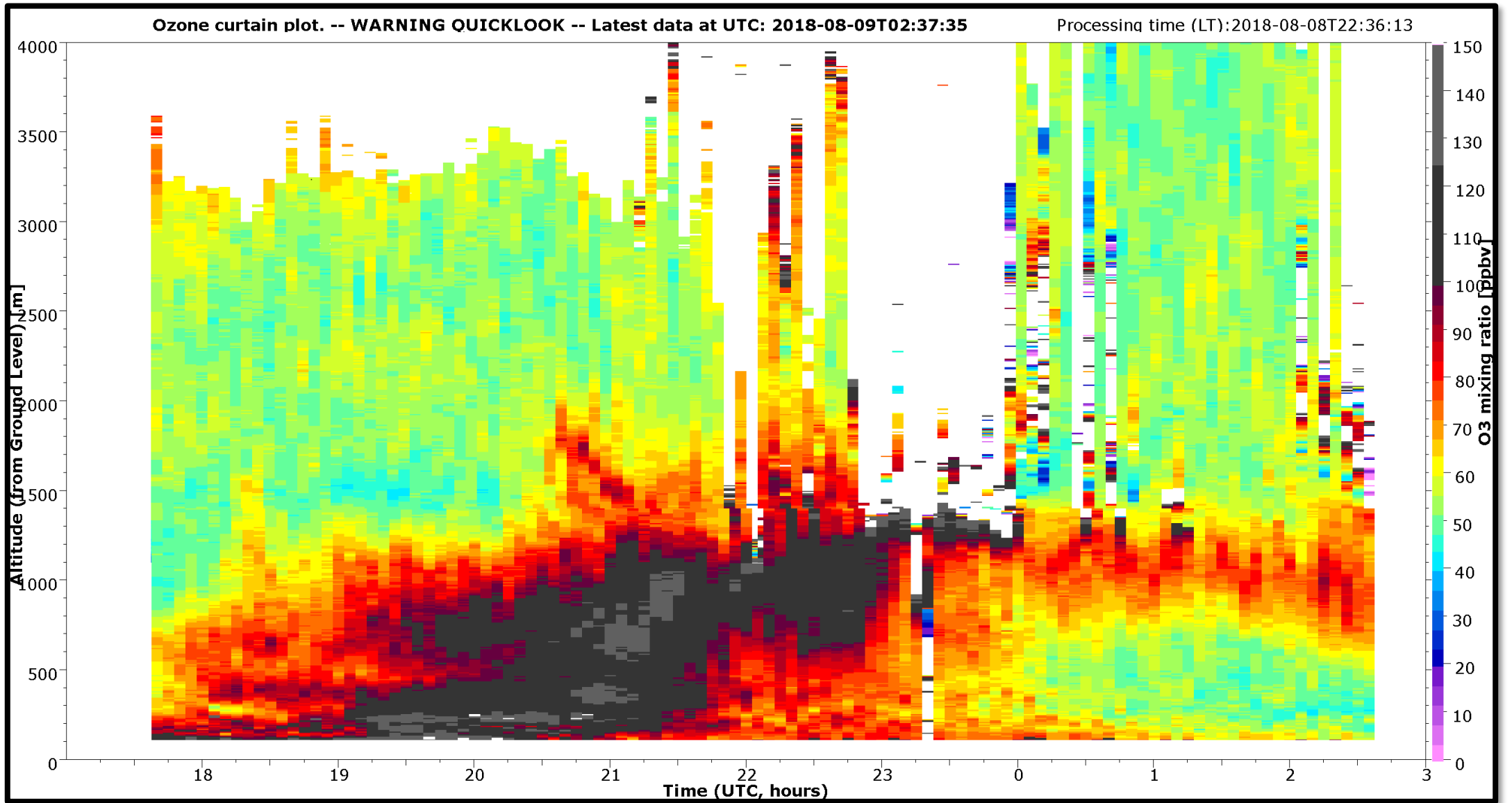
Town – Site:	Westport – Sherwood Island State Park	Latitude:	41.11822°
County:	Fairfield	Longitude:	-73.33681°
Address:	Sherwood Island SP	Elevation:	4 m (13 ft)
AQS Site ID:	09-001-9003	Year Established:	1996
Spatial Scale:	Regional		
Statistical Area:	CSA (New York-Newark-Bridgeport)		



LMOL at Westport site

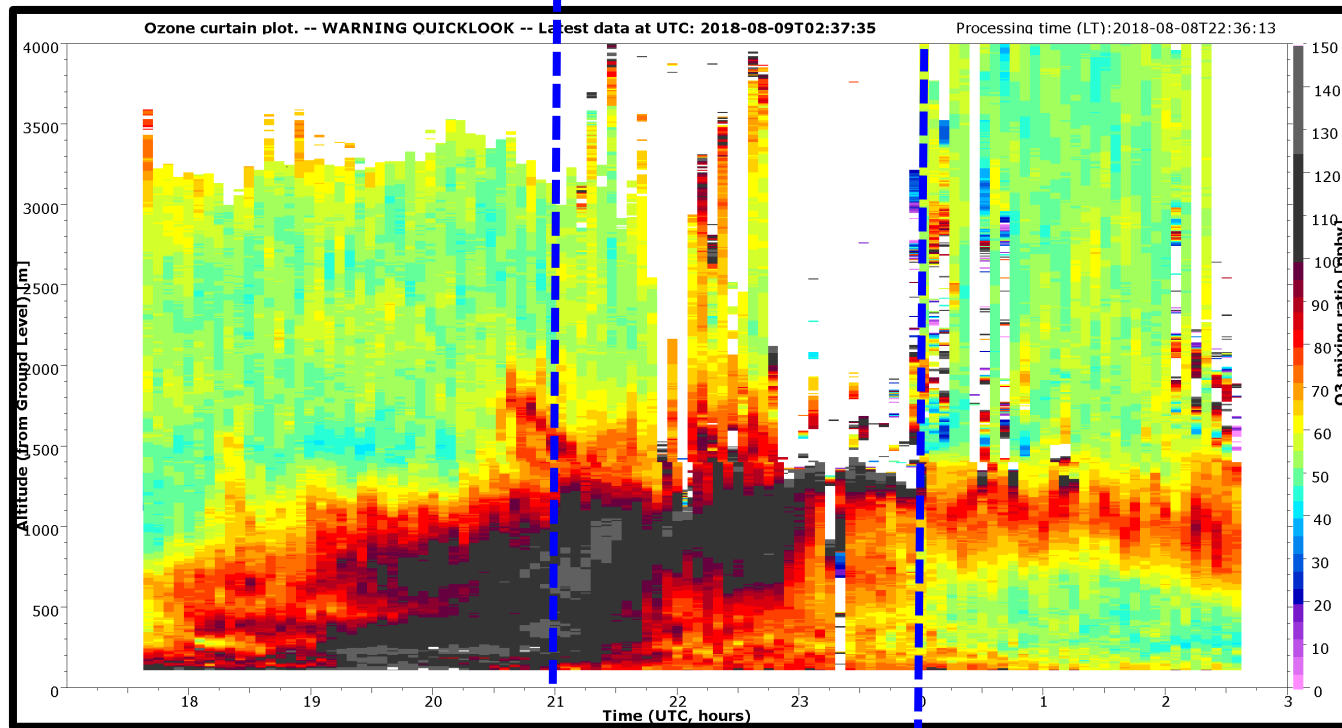
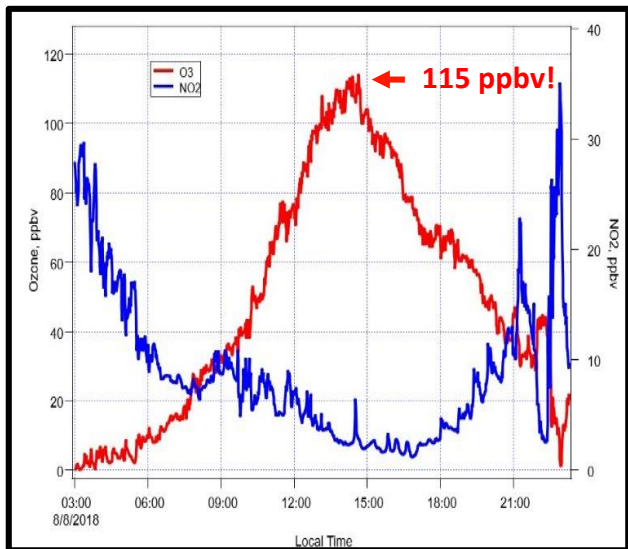


LMOL Example Ozone Curtain from LISTOS (Aug 8)



LMOL Example Ozone Curtain from LISTOS (Aug 8)

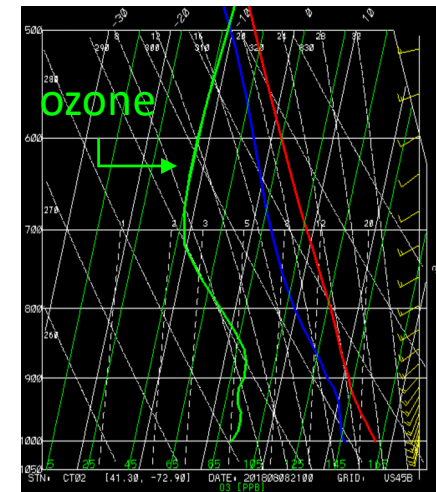
Westport surface data
courtesy of CT Dept. of Env.



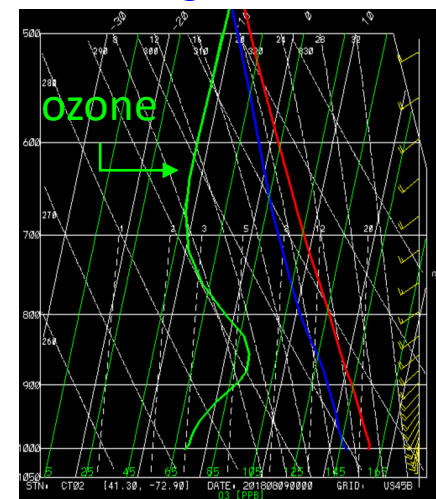
21:00 UT forecast

Barons MAQSIP O3/SkewT
24-hour forecast

Aug 8 21:00 UT



Aug 9 0:00 UT

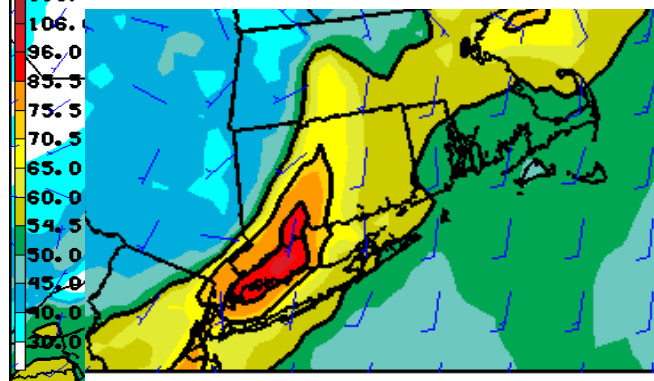


00:00 UT
(Aug 9) forecast

MODIS- Aqua image

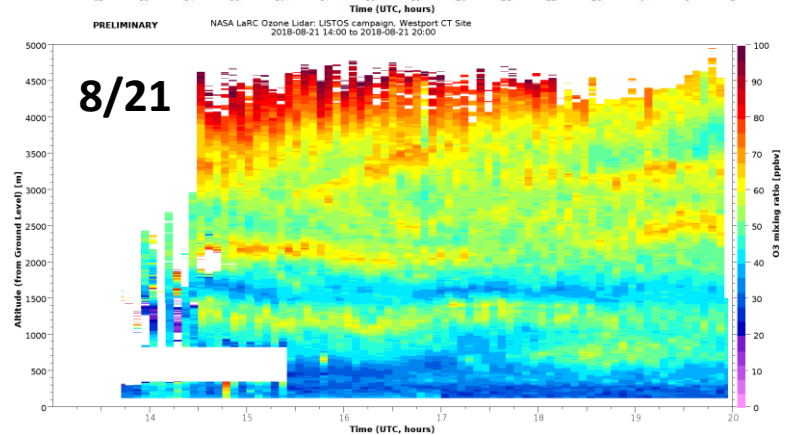
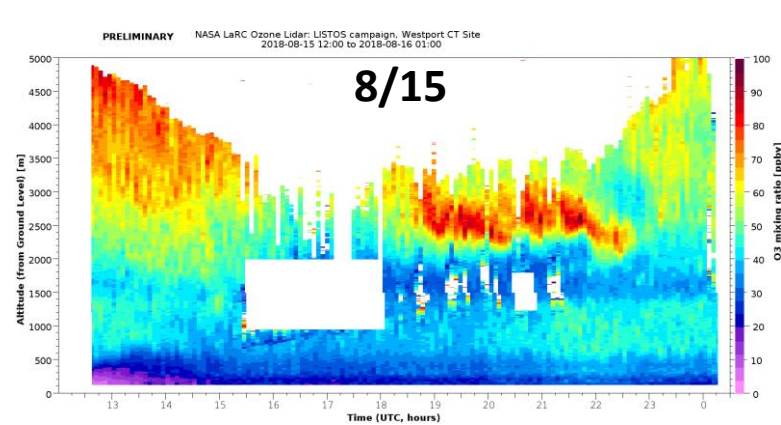
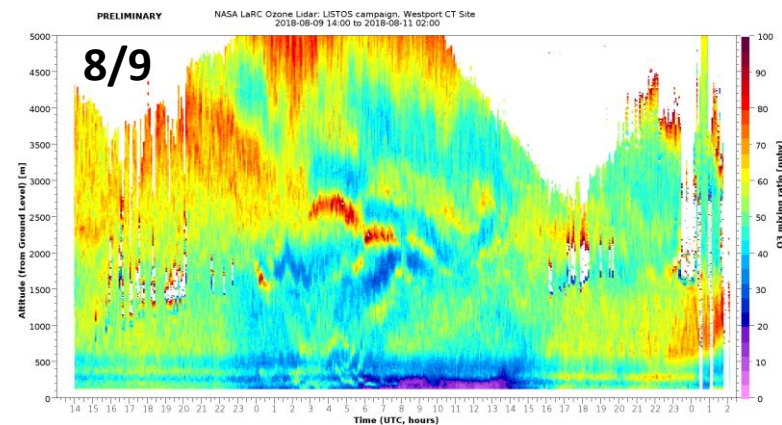
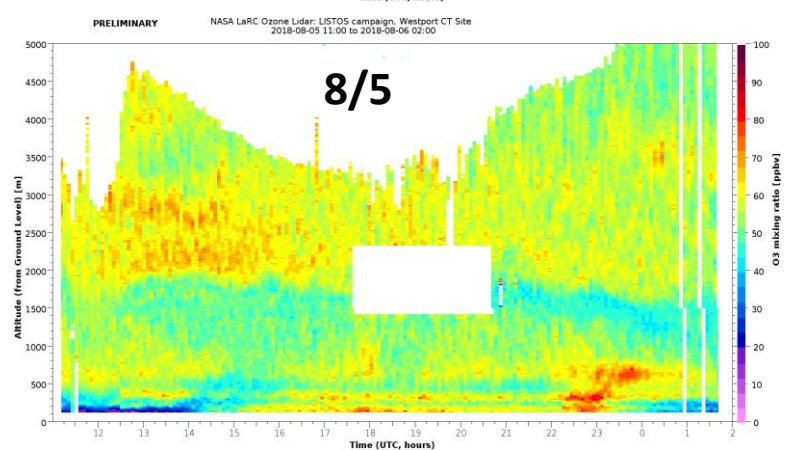
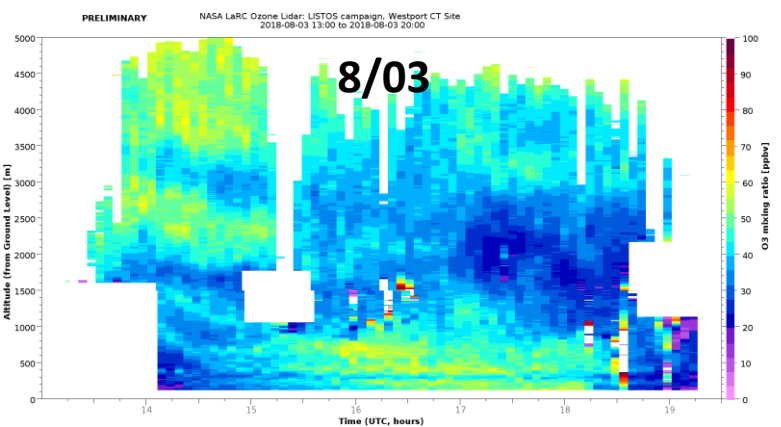
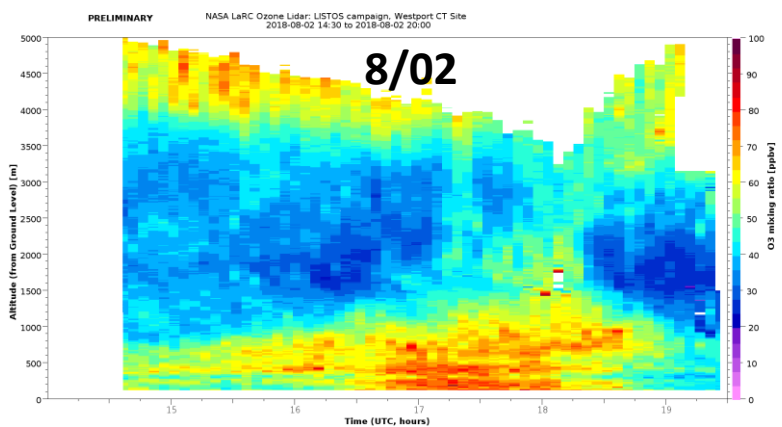
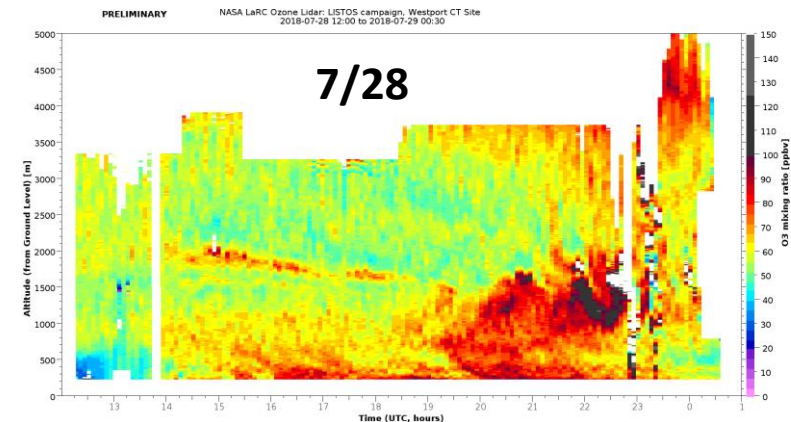
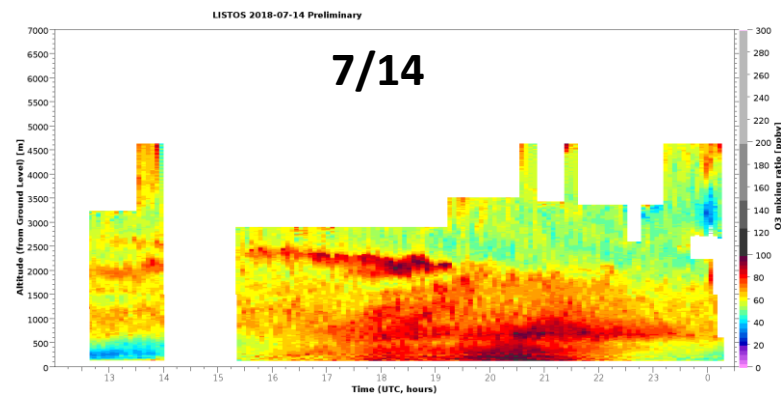
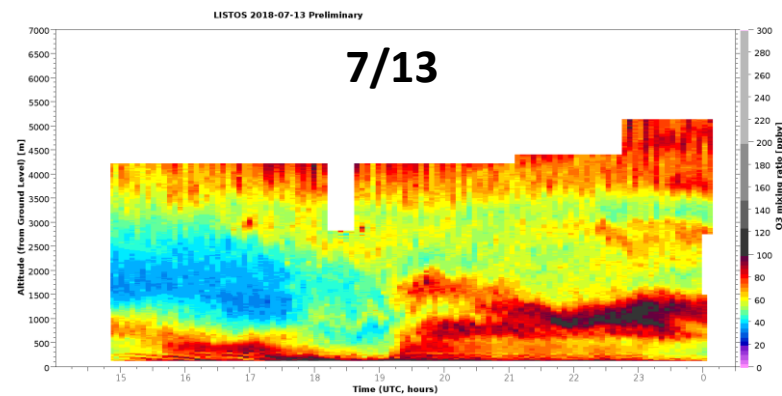


NOAA NAM-CMAQ forecast



OZCN01 (PPB) 0 HED 180808/2100Y009

Randomly selected LISTOS O3 curtain collage



Langley Mobile Ozone Lidar Data Collection During LISTOS

Date	12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	19-Jul	20-Jul	27-Jul	28-Jul	29-Jul	30-Jul	2-Aug	3-Aug	5-Aug	
Start (UTC)	14:30	15:00	13:30	16:00	0:00	12:00	12:00	19:50	12:30	12:15	0:00	14:45	13:30	11:15	
Stop (UTC)	21:00	14-Jul 0:00	15-Jul 0:00	next day	23:00	19:45	21-Jul 1:00	21:10	29-Jul 0:00	next day	21:00	20:00	19:30	6-Aug 1:30	
Date	6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	15-Aug	16-Aug	20-Aug	21-Aug	23-Aug	24-Aug	26-Aug	27-Aug	28-Aug	29-Aug
Start (UTC)	10:45	0:00	17:40	14:00	0:00	12:45	11:00	18:30	14:00	13:30	12:00	17:00	17:00	8:00	8:00
Stop (UTC)	next day	8-Aug 1:00	9-Aug 2:30	next day	11-Aug 2:00	16-Aug 0:00	17-Aug 0:00	20:45	20:00	20:00	25-Aug 13:00	19:00	28-Aug 1:00	29-Aug 0:00	30-Aug 1:00

- 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