



Connecticut Department of Energy and Environmental Protection



July 22 , 2016 OTR and Connecticut Ozone Exceedances

By Michael Geigert



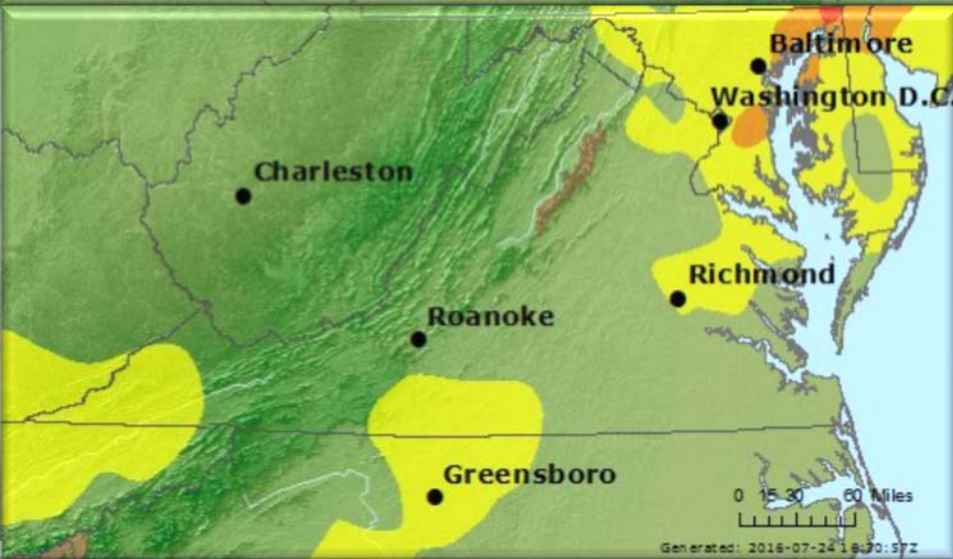
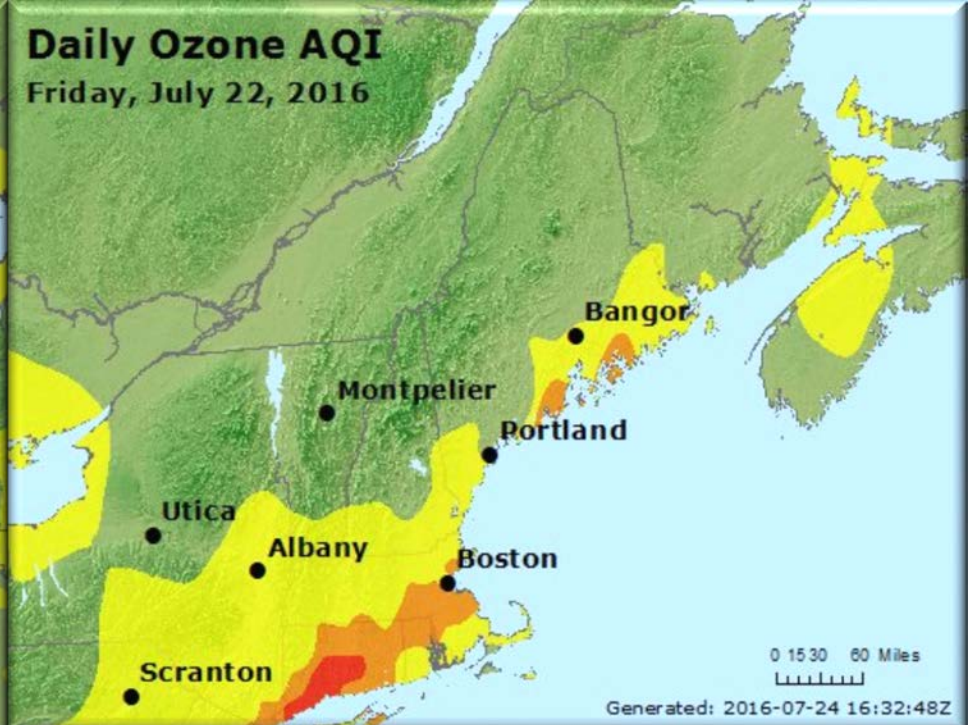
Connecticut Department of Energy and Environmental Protection

Summary

- 9 States had exceedances along the I-95 corridor to Maine;
- Connecticut sites had the highest ozone concentrations with a 1-hour peak of 123 ppb in Stratford.
 1. 46 sites above 70 ppb ozone NAAQS, 9 sites in CT
 2. 31 sites above (2008) 75 ppb ozone NAAQS, 8 sites in CT
 3. 6 sites above (1997) 84 ppb ozone NAAQS, 5 sites in CT*

* Airnow has flagged Abington and Greenwich as possibly being invalid.





Regional AQI Maps

Table of OTR Monitoring Sites

- 9 sites in Connecticut exceeded the 70 ppb NAAQS. Bradley Airport had high temperature of 99° F.

* Airnow has flagged Greenwich and Abington CT as possibly invalid.

Site	Site AQS	Date (LST)	Max 8-hour Ozone	Site	Site AQS	Date (LST)	Max 8-hour Ozone
Middletown	090070007	7/22/2016	100	Madison-Beach R	090099002	7/22/2016	78
Westport	090019003	7/22/2016	97	Rutgers Univers	340230011	7/22/2016	78
Stratford	090013007	7/22/2016	96	Port Clyde	230130004	7/22/2016	77
New Haven - Cri	090090027	7/22/2016	91	Acadia NP - McF	230090103	7/22/2016	76
Abington*	090159991	7/22/2016	90	East Hartford	090031003	7/22/2016	76
Fair Hill	240150003	7/22/2016	87	LUMS 2	100031007	7/22/2016	76
BCSP	100031010	7/22/2016	84	PG Equestrian C	240338003	7/22/2016	76
NEA	421010024	7/22/2016	84	White Plains	361192004	7/22/2016	76
BELLFNT2	100031013	7/22/2016	83	Leonia	340030006	7/22/2016	75
E. Milton - Blu	250213003	7/22/2016	83	Clarksboro	340150002	7/22/2016	74
Uxbridge	250270024	7/22/2016	83	LAB	421010004	7/22/2016	74
BRIS	420170012	7/22/2016	82	Flemington	340190001	7/22/2016	73
E Providence	440071010	7/22/2016	82	IS52	360050110	7/22/2016	73
Edgewood	240251001	7/22/2016	82	Aldino	240259001	7/22/2016	72
NEW	421010048	7/22/2016	82	Brockton	250230005	7/22/2016	72
Queens	360810124	7/22/2016	82	CCNY	360610135	7/22/2016	72
Camden Spruce S	340070002	7/22/2016	81	Essex	240053001	7/22/2016	72
NEWG	420290100	7/22/2016	81	FREE	420950025	7/22/2016	72
Susan Wagner	360850067	7/22/2016	81	Pfizer Lab	360050133	7/22/2016	72
W Greenwich	440030002	7/22/2016	80	Rider Universit	340210005	7/22/2016	72
Bar Harbor - Ca	230090102	7/22/2016	79	Stafford	090131001	7/22/2016	72
Greenwich*	090010017	7/22/2016	79	LYNN	250092006	7/22/2016	71
CHES	420450002	7/22/2016	78	NORR	420910013	7/22/2016	71

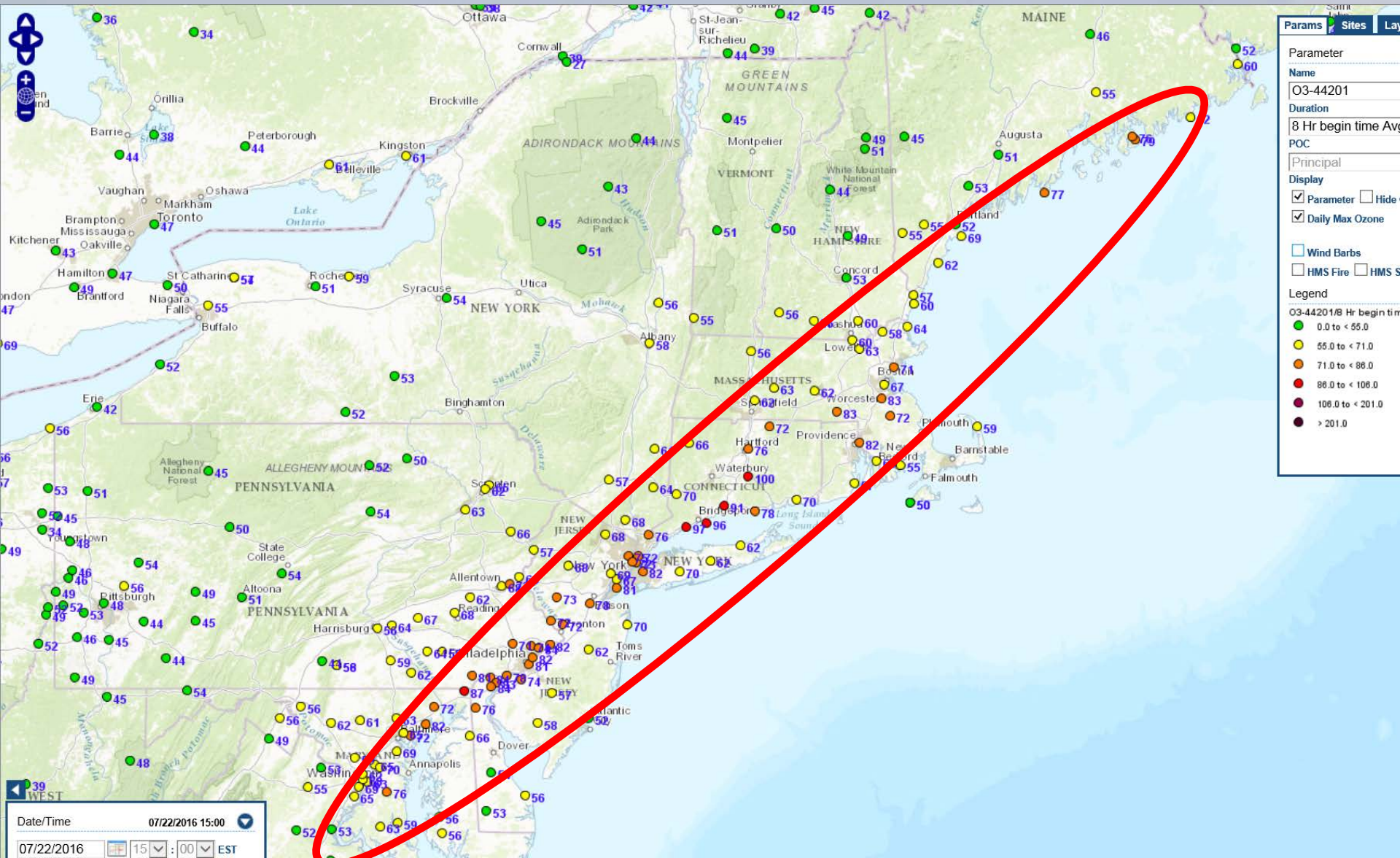
CT Monitoring Site Design Value Update

- Connecticut has 20 exceedance days to date

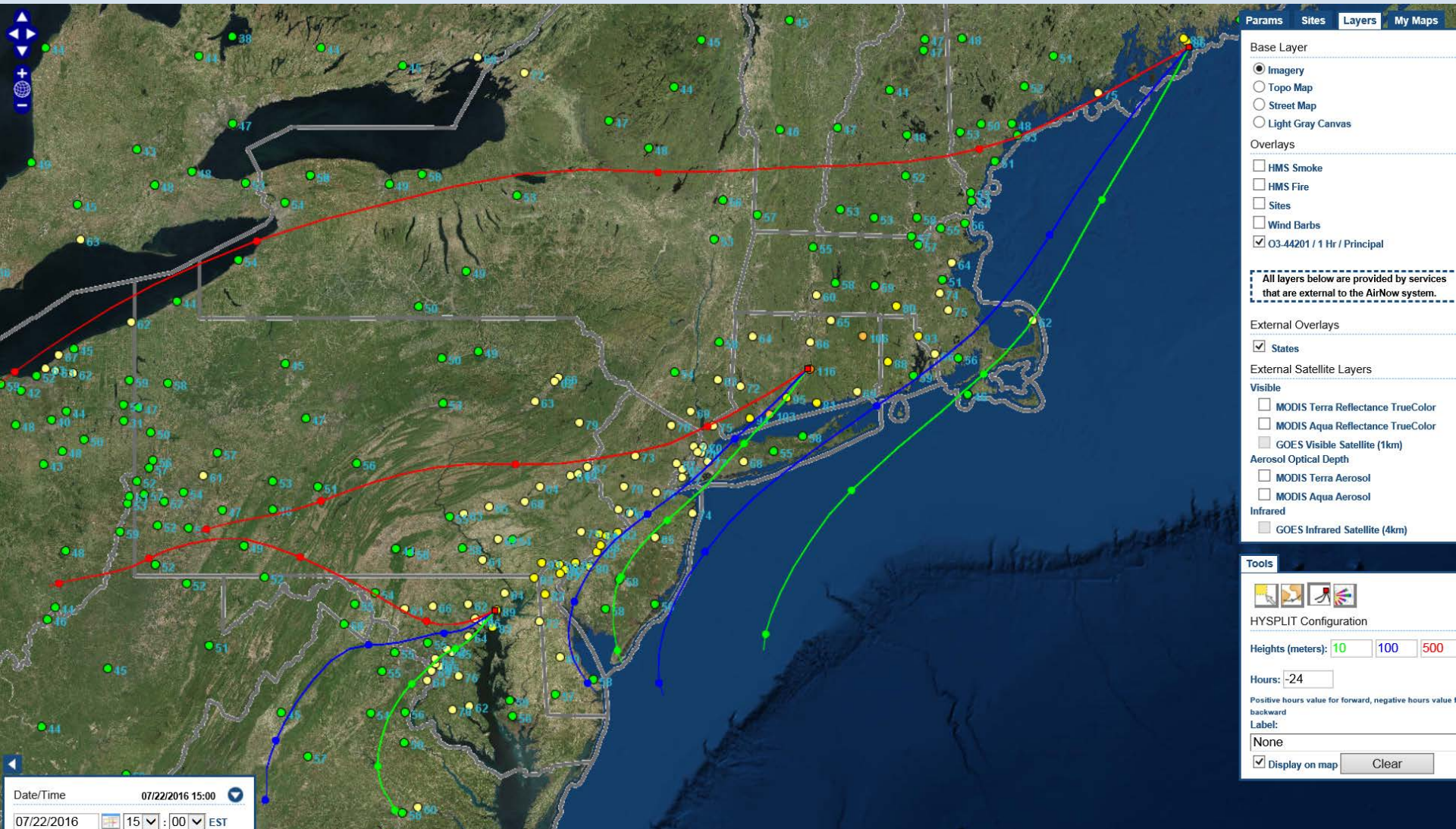
			To Date 2016 Compliance Status x = Violating NAAQS			
	Site Name	To Date: 2016 DV	2015 NAAQS	2008 NAAQS	1997 NAAQS	Next Possible NAAQS in Violation (key monitor in each NA is highlighted in RED)
SWCT Portion of NYC Area	Danbury	78	X	X		Four more 102+ ppb days violates 1997 NAAQS
	Greenwich	82	X	X		Four more 93+ ppb days violates 1997 NAAQS
	Madison	76	X	X		Four more 105+ ppb days violates 1997 NAAQS
	Middletown	79	X	X		Three more 97+ ppb days violates 1997 NAAQS
	New Haven - Criscuolo Park	76	X	X		Four more 101+ ppb days violates 2008 NAAQS
	Stratford	81	X	X		Three more 95+ ppb days violates 1997 NAAQS
	Westport	85	X	X	X	Violates all NAAQS
Greater CT	Cornwall	72	X			Three more 86+ ppb days violates 2008 NAAQS
	East Hartford	75	X			One more 76+ ppb day violates 2008 NAAQS
	Groton Fort Griswold	72	X			Three more 86+ ppb days violates 2008 NAAQS
	Stafford	73	X			Three more 79+ ppb days violates 2008 NAAQS
	Abington (CASTNET)	70				One more 76+ ppb day violates 2015 NAAQS

July 22, 2016 Peak Northeast Ozone

- Exceedances along I-95 corridor from Maryland through Maine.



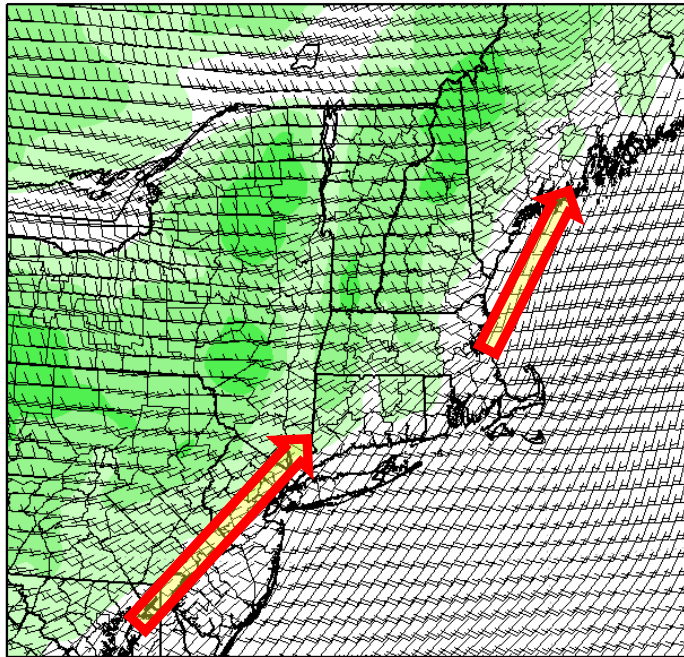
July 22, 2016 Back Trajectories 3:00 pm EST



Low level winds were southwest and transported pollutant northeast from the I-95 corridor. Southwest winds passing over NYC augmented ozone levels over central CT. This ozone plume between 100-500 meters was transported to Bar Harbor Maine.

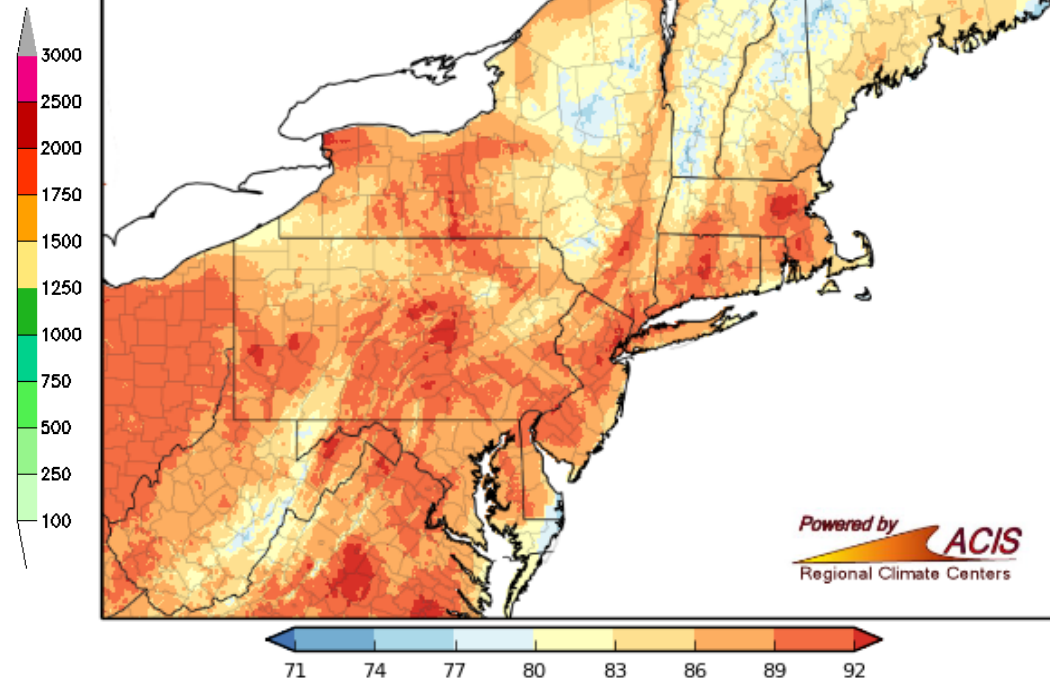
Model Winds for Northeast, 1:00 pm EST

10-M WND, SFC HGT NAM 00H FCST VALID 18Z 22 JUL 2016



Wind barbs displayed at every other grid point

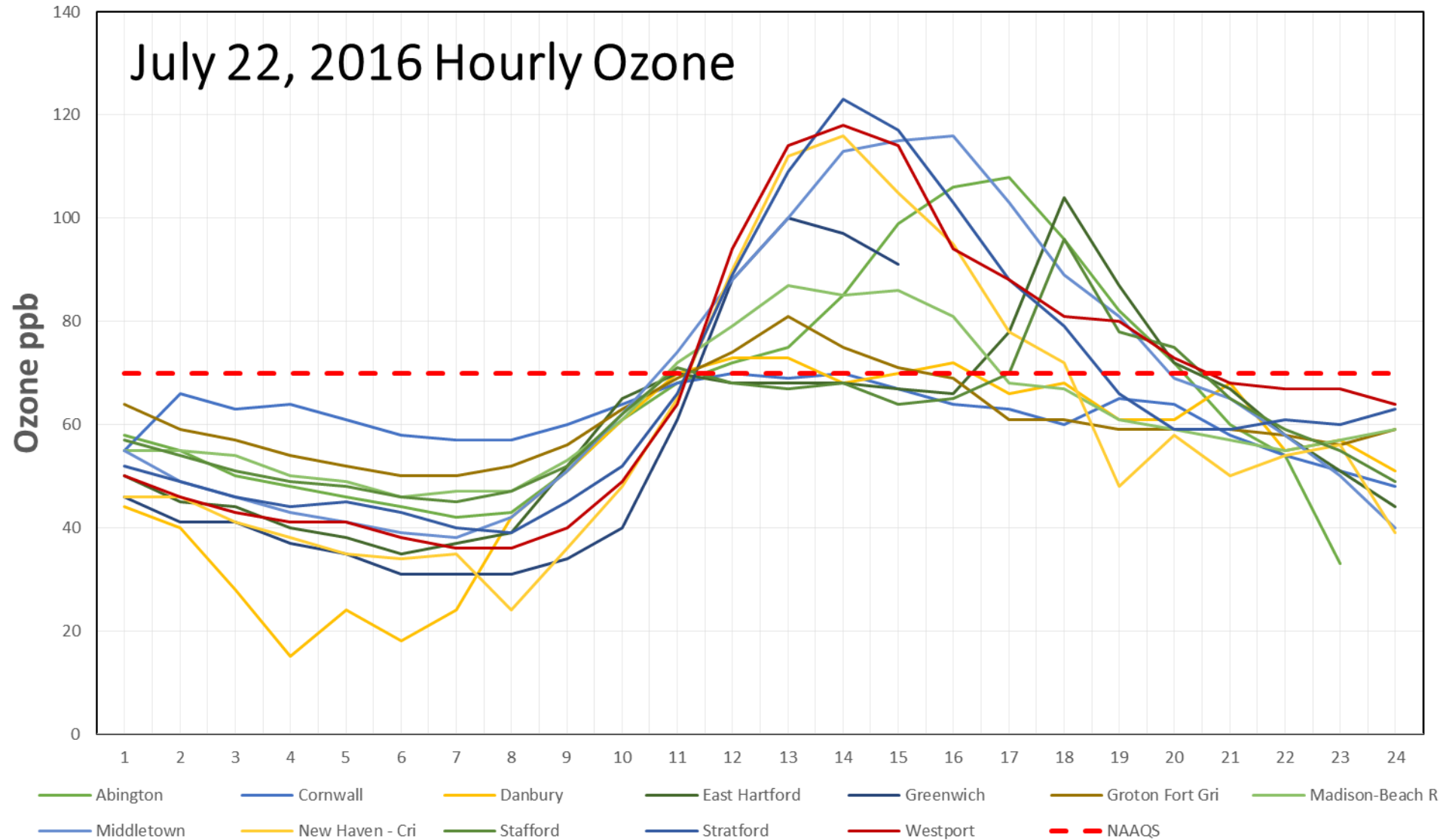
Daily Maximum Temperature (° F)
24 hours ending at 8am, July 22, 2016



Ozone levels were rising by 1:00 EST in the Mid-Atlantic States and Connecticut due to the southwest wind flow that developed on back side of the high pressure center. Most States recorded maximum temperatures into the 90's.

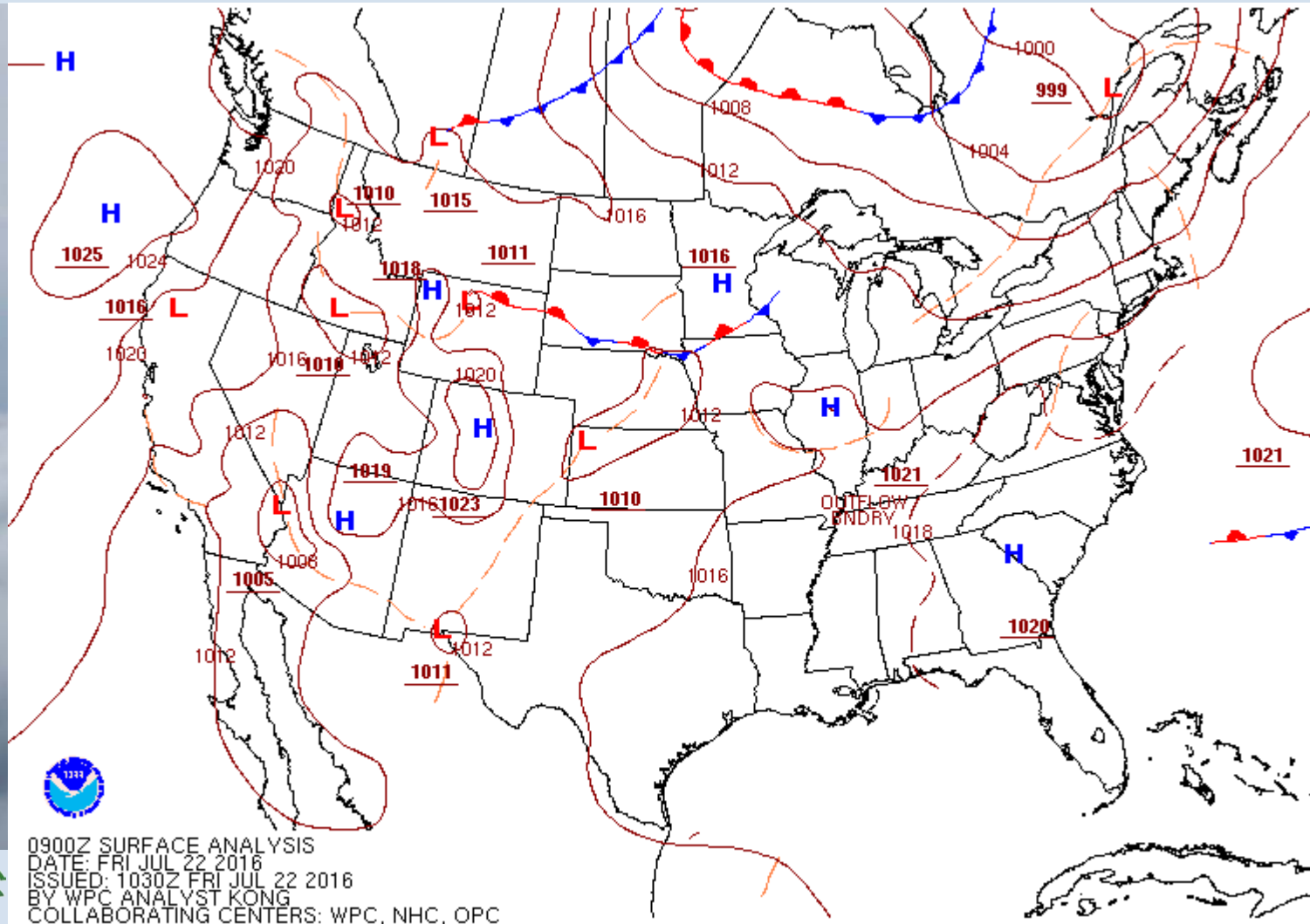
CT Ozone Monitors July 22, 2016

Many CT sites had USG ozone levels from 11:00am to 8:00 pm with Stratford peaking at 123 ppb. Middletown reach a maximum 8-hour average of 100 ppb for the day.



July 22, 2016 Surface Analysis Animation

- Pre-frontal trough developed near I-95 corridor, allowing southwest winds to funnel pollutants up the I-95 corridor.

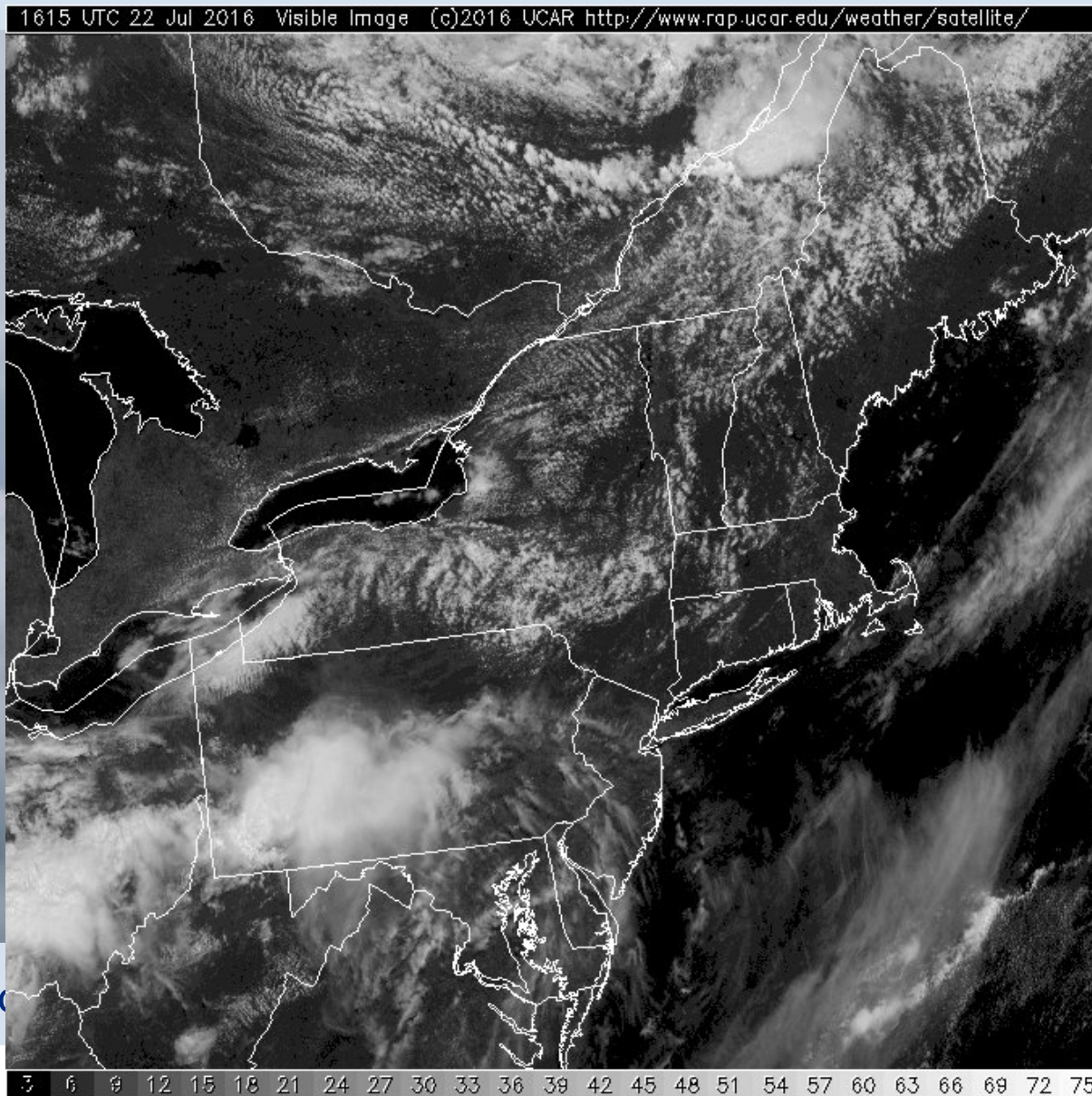


0900Z SURFACE ANALYSIS
DATE: FRI JUL 22 2016
ISSUED: 1030Z FRI JUL 22 2016
BY WPC ANALYST KONG
COLLABORATING CENTERS: WPC, NHC, OPC



July 22, 2016 Satellite Animation

- Mostly sunny skies persisted through the entire day.

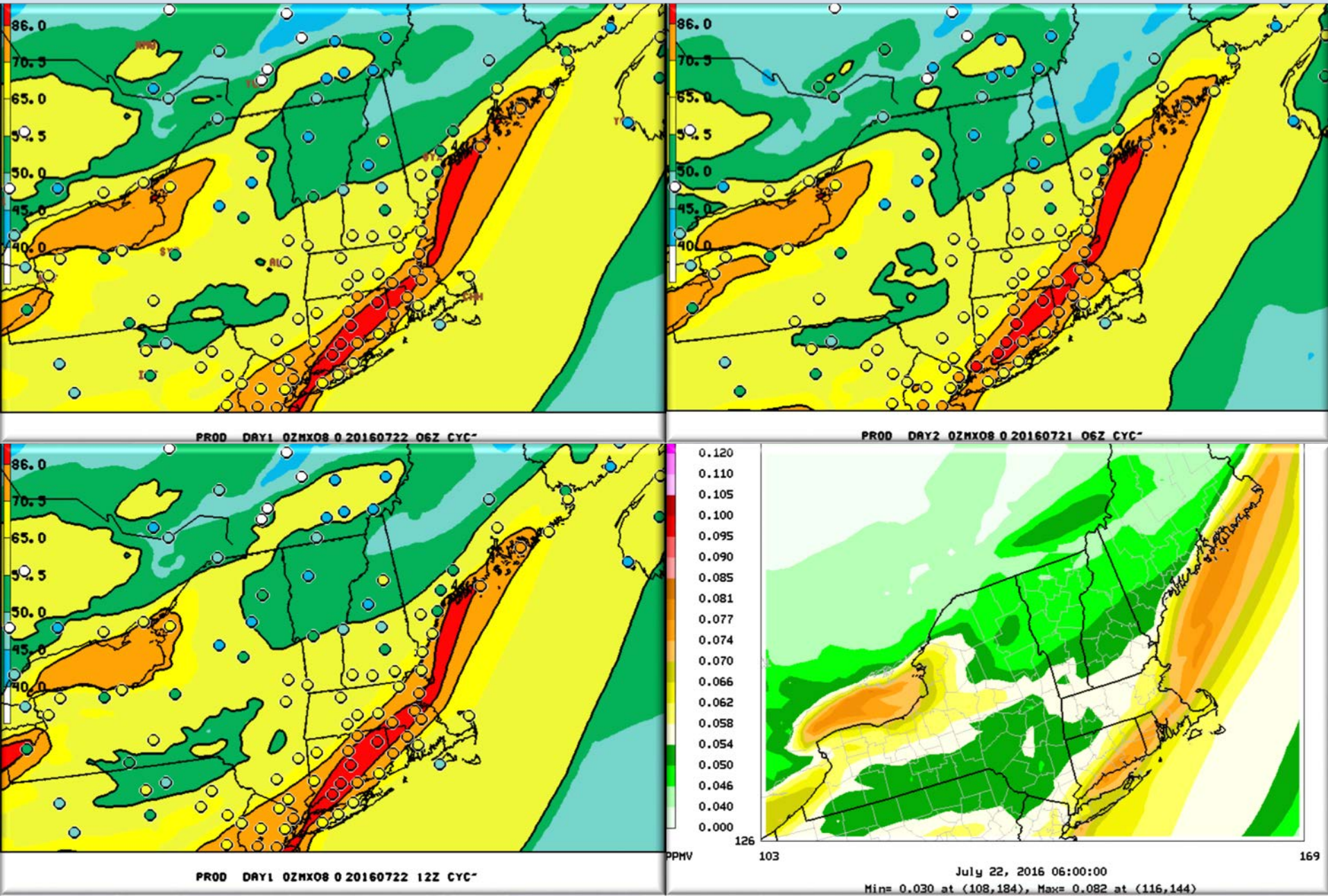


Co

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July 22, 2016 NOAA Model Performance

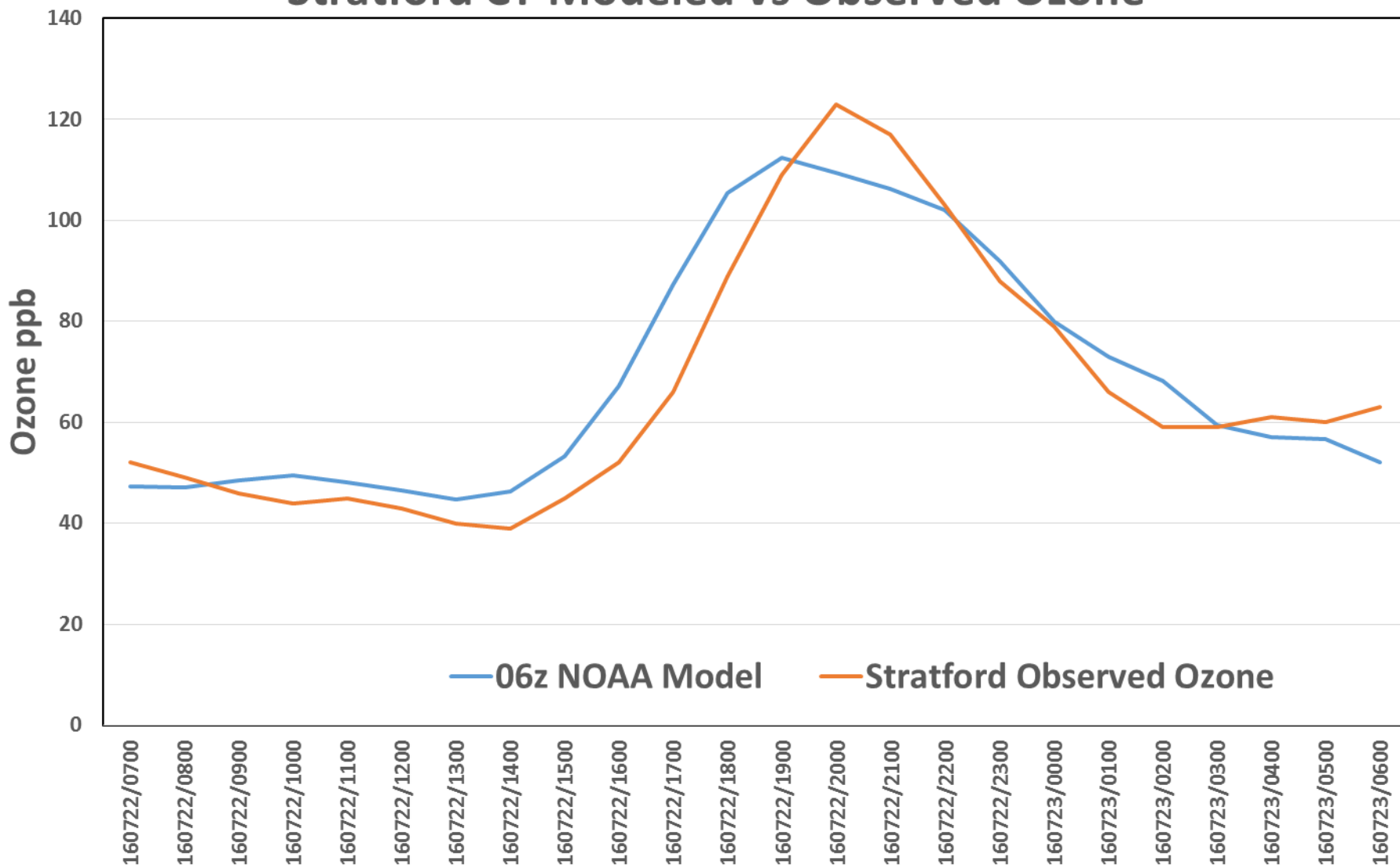
- NOAA model was consistent through 3 cycles and had better position than Barons MAQSIP



July 22, 2016 NOAA Model Performance

- NOAA model was fairly accurate for the Stratford Monitor. It appears that the general model over-prediction in July may pertain to episodes where the ozone plume has significant residence time over LIS before advecting inland with the sea-breeze. This was an episode of I-95 corridor transport.

Stratford CT Modeled vs Observed Ozone



Conclusion

- Widespread USG event for the I-95 corridor into Maine;
- Southwest winds developed as pre-frontal trough developed, which caused ozone to be funneled along I-95 corridor;
- Highest ozone was monitored at sites in Connecticut, aided by the NYC plume into central CT and transport up the I-95 corridor;
- NOAA model performed well in situating the USG over central Connecticut.
- CT Forecasters predicted USG for the same modeled area, but under predicted peaks by 20 ppb at the highest monitors because of the model tendency to over-predict in July-August. In this case, the modeled ozone verified well.

