Connecticut Department of Energy and Environmental Protection

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

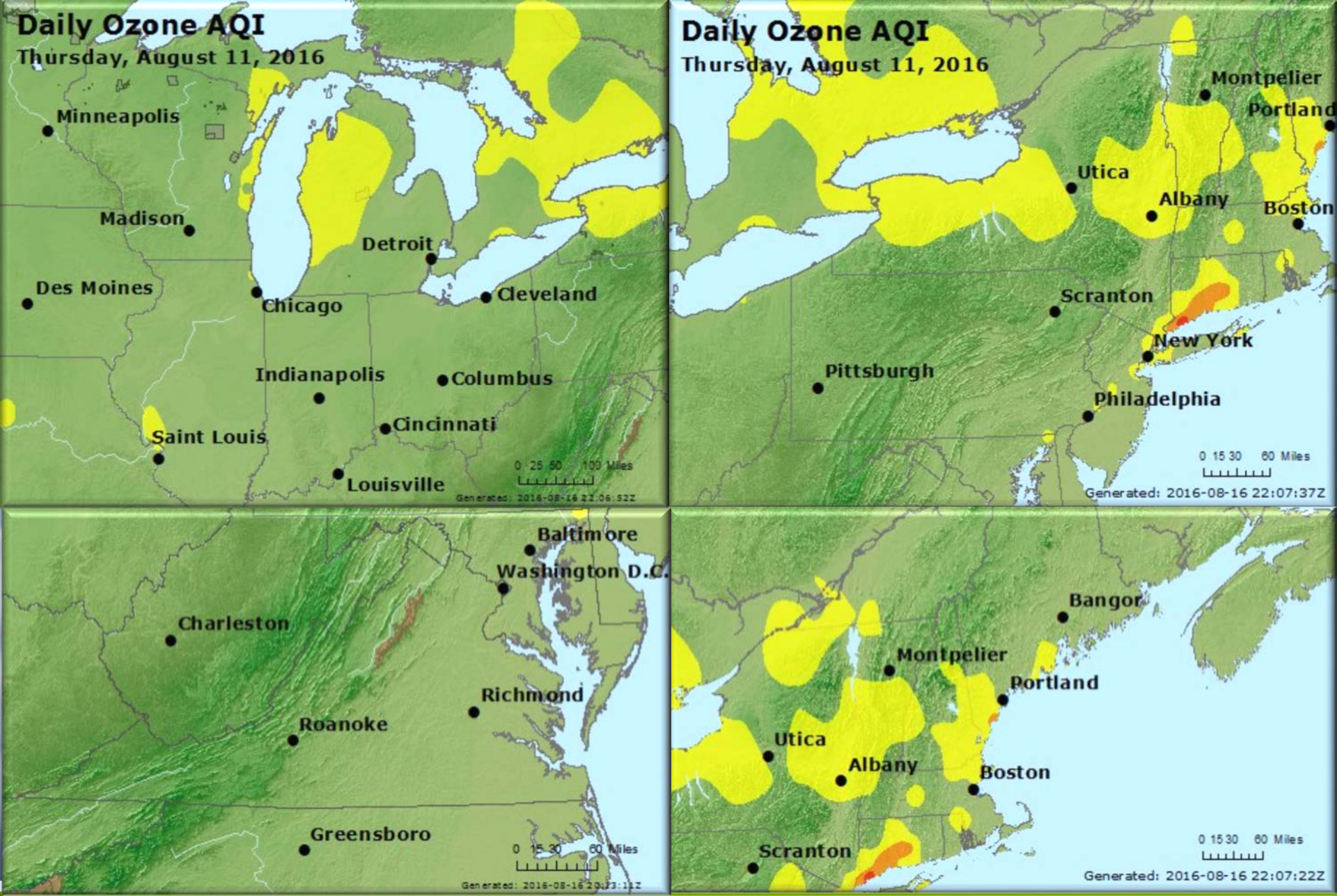
August 11, 2016 OTR and Connecticut Ozone Exceedances

By Michael Geigert

Connecticut Department of Energy and Environmental Protection

Summary

- 2 States had exceedances: Connecticut and Maine;
- Connecticut sites had the highest ozone concentrations.
  1. 6 sites above 70 ppb ozone NAAQS, 5 sites in CT
  2. 3 sites above (2008) 75 ppb ozone NAAQS, 3 sites in CT
  3. 1 site above (1997) 84 ppb ozone NAAQS, 1 site in CT



Regional AQI Maps

Table of OTR Monitoring Sites

- 5 sites in Connecticut exceeded the 70 ppb NAAQS. Bradley Airport had a high temperature of 92° F.

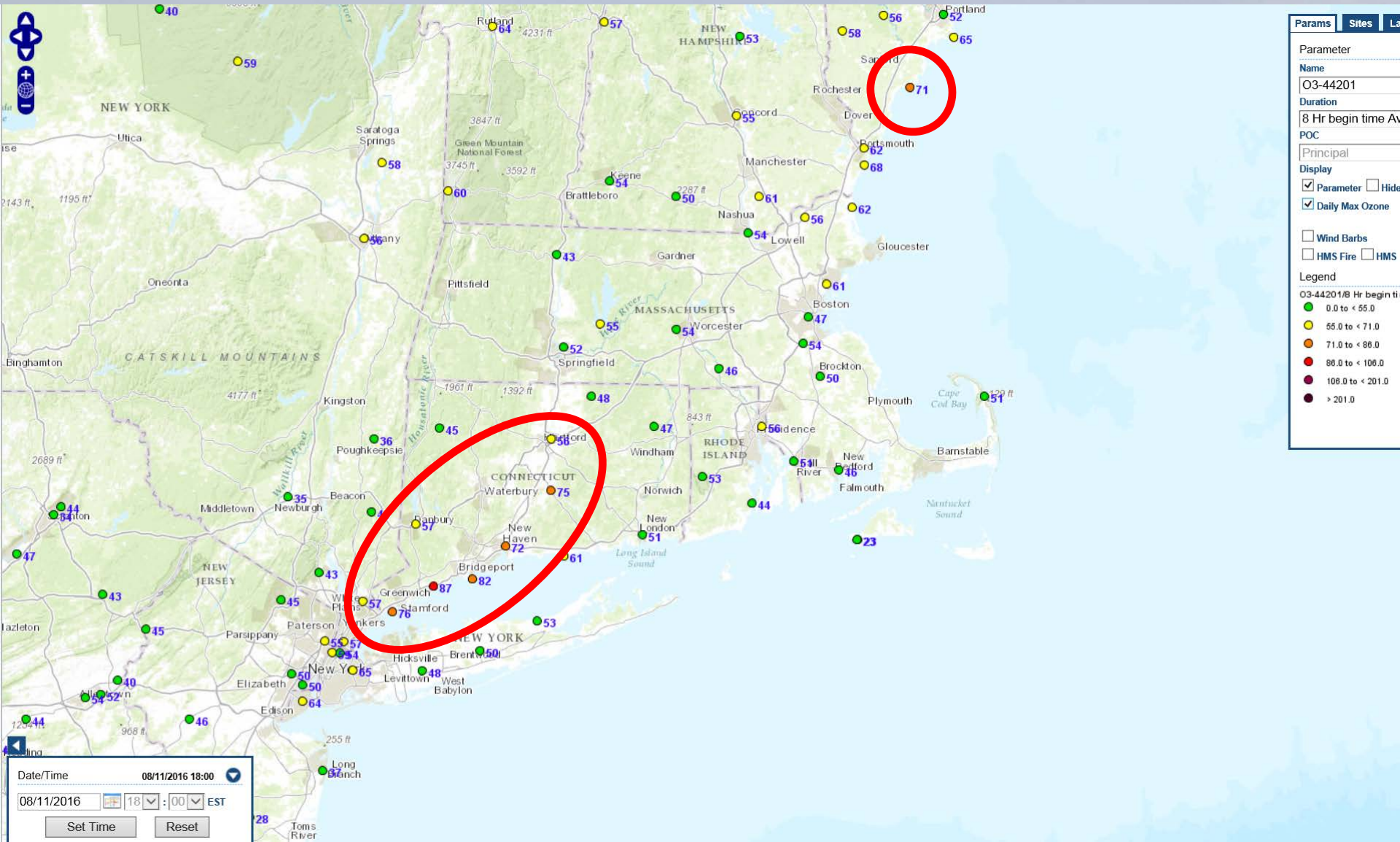
Site	Site AQS	Date (LST)	Max 8-hour Ozone ppb
Westport	090019003	8/11/2016	87
Stratford	090013007	8/11/2016	82
Greenwich	090010017	8/11/2016	76
Middletown	090070007	8/11/2016	75
New Haven - Cri	090090027	8/11/2016	72
Kennebunkport	230312002	8/11/2016	71
Odiorne State P	330150016	8/11/2016	68
E Syracuse	360671015	8/11/2016	67
Rochester	360551007	8/11/2016	66
Cape Elizabeth	230052003	8/11/2016	65
Port Clyde	230130004	8/11/2016	65
Queens	360810124	8/11/2016	65
Susan Wagner	360850067	8/11/2016	64
Williamson	361173001	8/11/2016	64
Middleport	360631006	8/11/2016	62
Newburyport	250094005	8/11/2016	62
Portsmouth	330150014	8/11/2016	62
LYNN	250092006	8/11/2016	61
Londonderry - M	330150018	8/11/2016	61
Madison-Beach R	090099002	8/11/2016	61
Bennington	500030004	8/11/2016	60
Fulton	360750003	8/11/2016	60
Amherst	360290002	8/11/2016	59
CCNY	360610135	8/11/2016	59
NEA	421010024	8/11/2016	59
Piseco Lake	360410005	8/11/2016	59
Rutgers Univers	340230011	8/11/2016	59
Shapleigh Ball	230310040	8/11/2016	58
Stillwater	360910004	8/11/2016	58
Danbury	090011123	8/11/2016	57
Lebanon	330090010	8/11/2016	57
Pfizer Lab	360050133	8/11/2016	57
SUMMIT	330074001	8/11/2016	57
White Plains	361192004	8/11/2016	57
E Providence	440071010	8/11/2016	56
East Hartford	090031003	8/11/2016	56

CT Monitoring Site Design Value Update

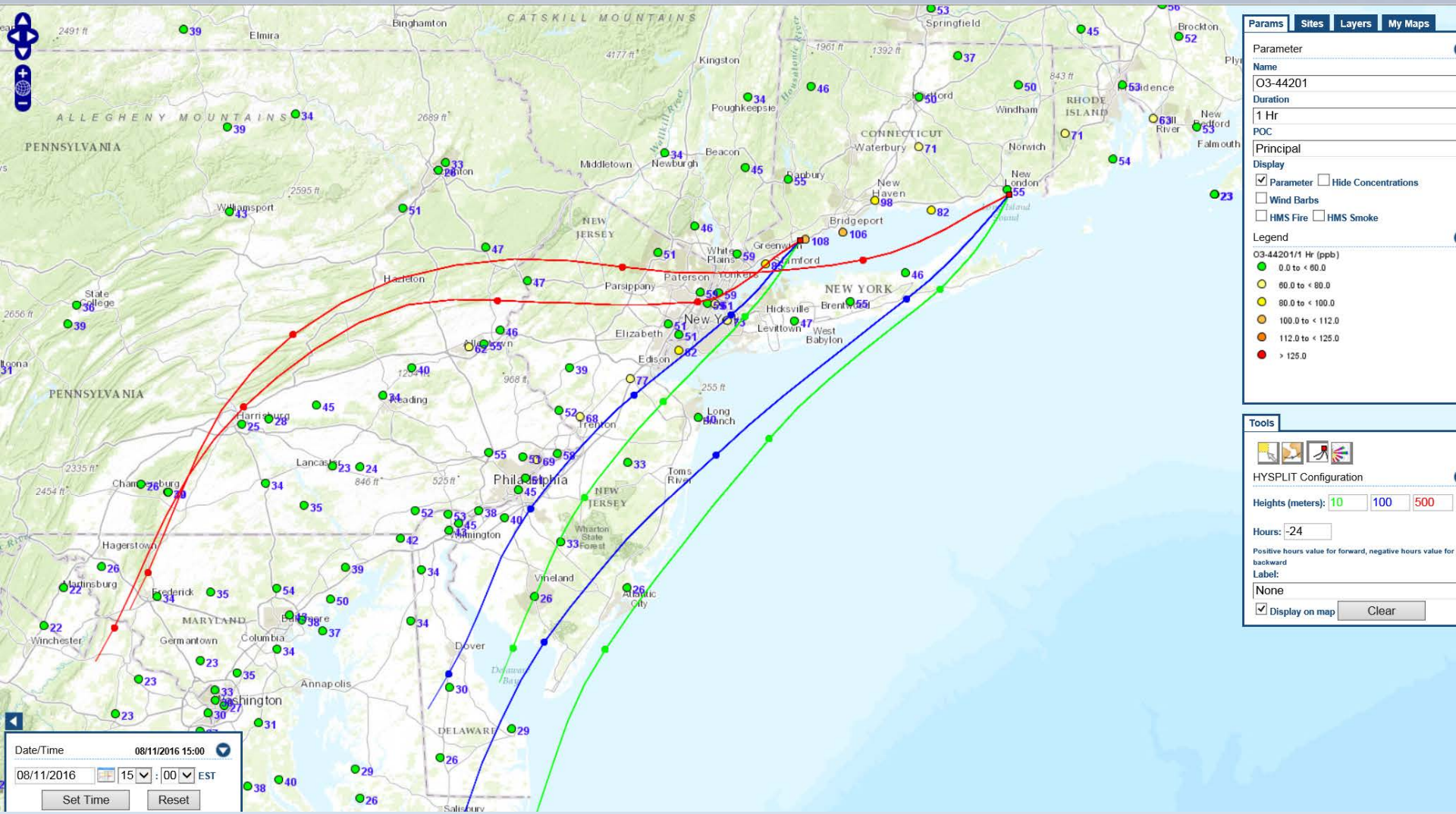
- Connecticut has 24 exceedance days to date
- No change to table with this episode

	Site Name	To Date: 2016 DV	To Date 2016 Compliance Status x = Violating NAAQS: 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 days 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)	68				One more 76+ ppb days violates 2015 NAAQS

August 11 , 2016 Peak Northeast Ozone

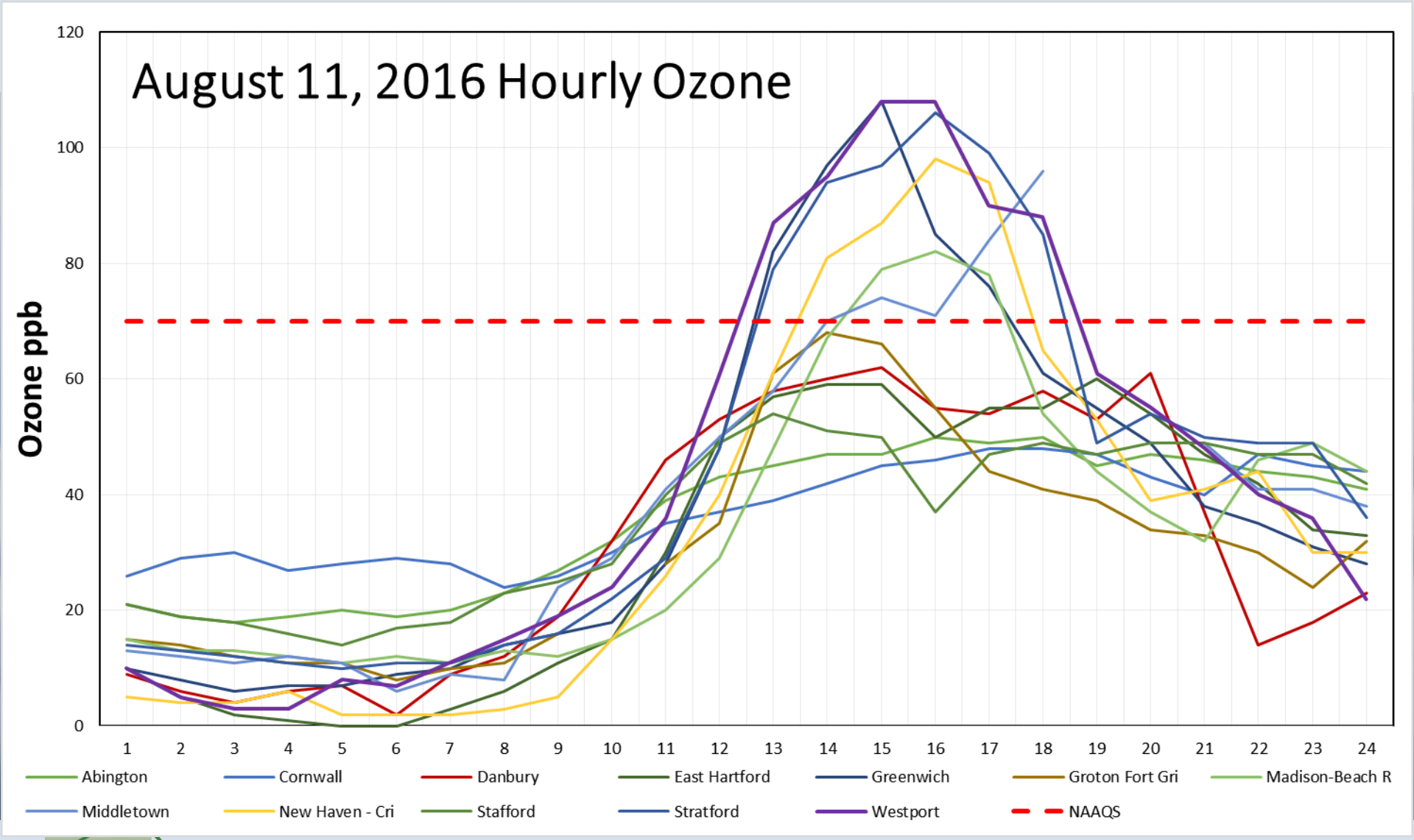


August 11 , 2016 Back Trajectories 3:00 pm EST



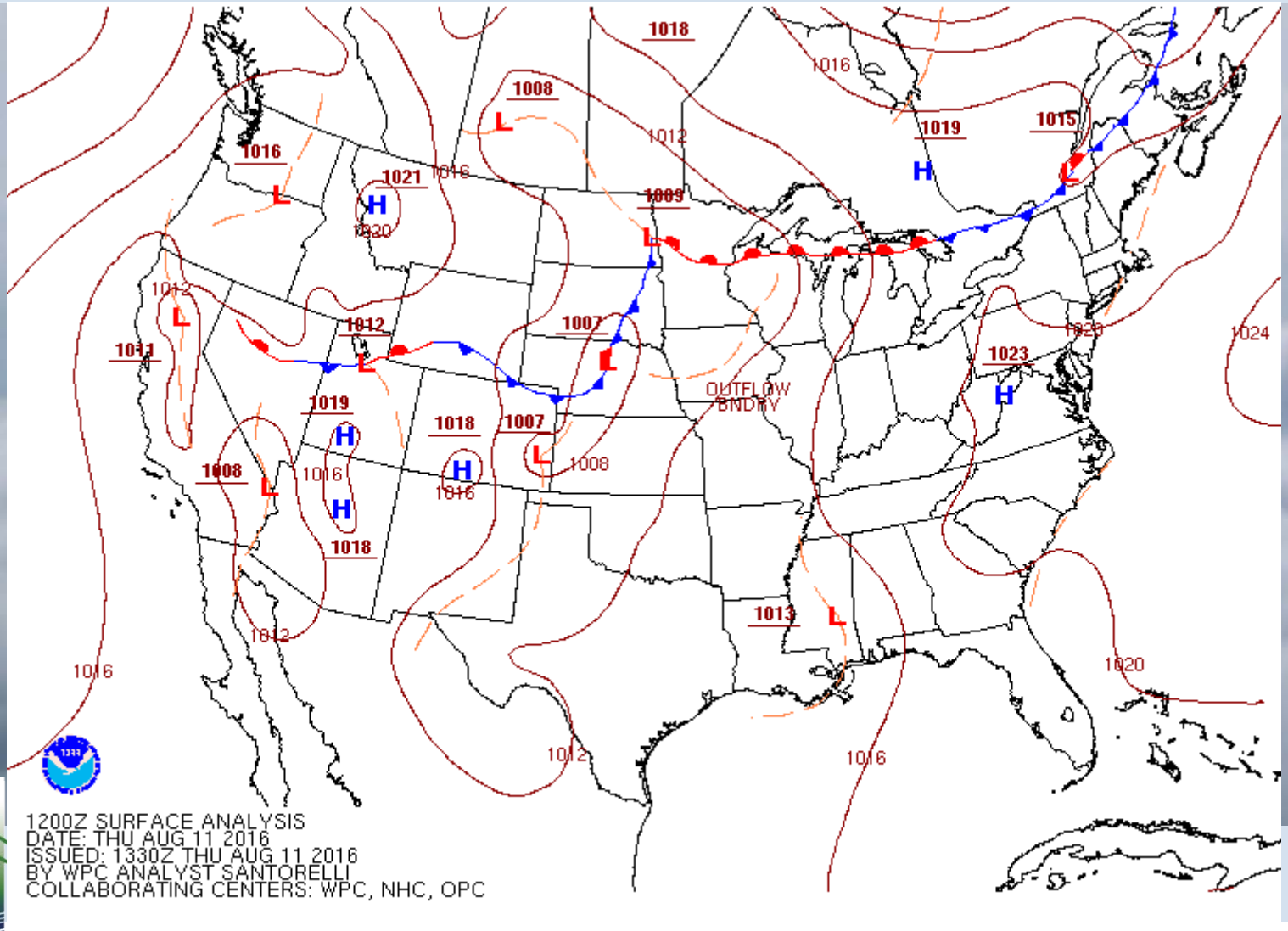
Low level winds (10-500 meters) were southwest and transported pollutant northeast from the I-95 corridor. Further east, the clean maritime air from 10-100 meters, prevented ozone buildup.

CT Ozone Monitors August 11 , 2016



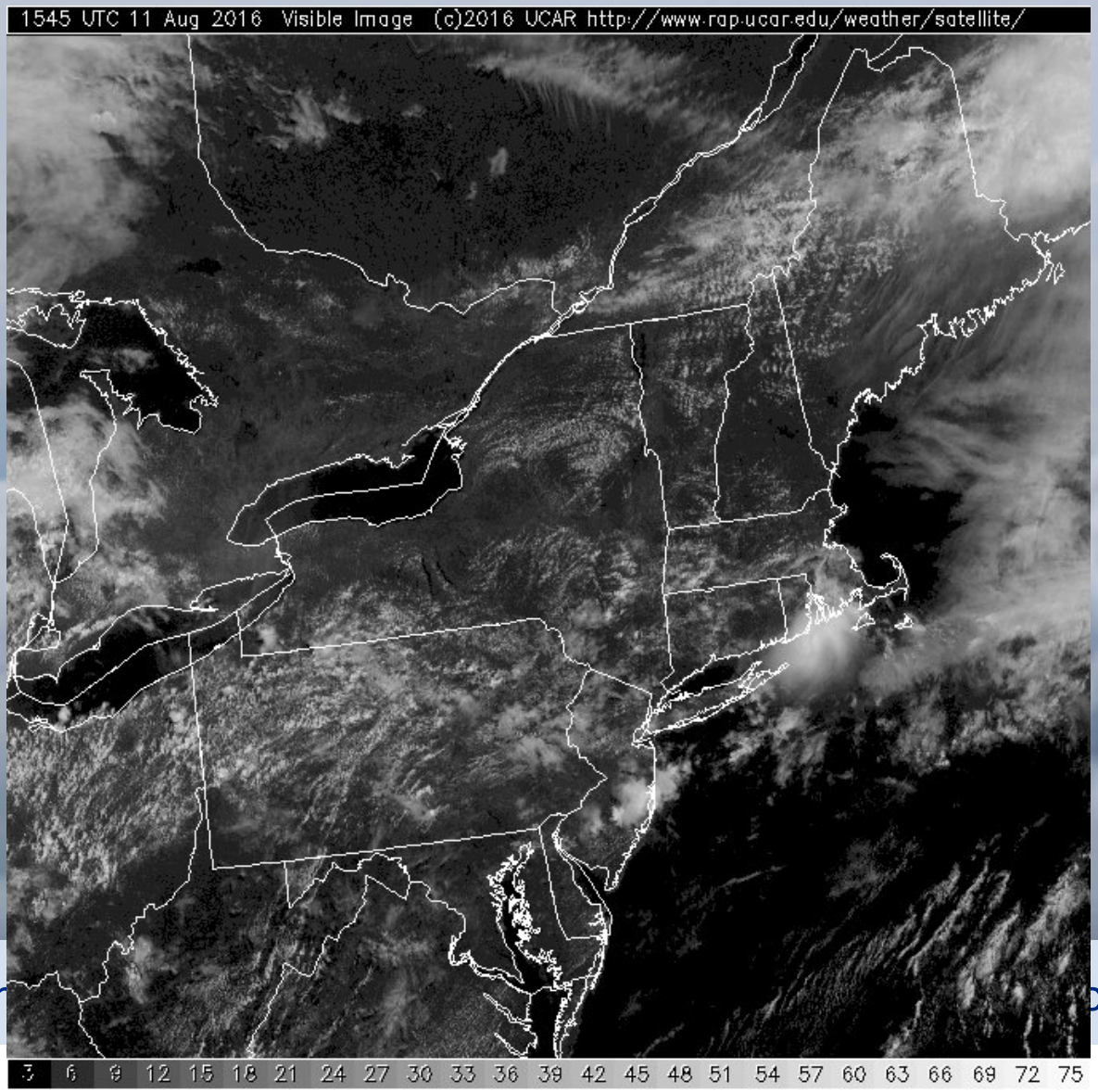
August 11 , 2016 Surface Analysis Animation

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



August 11 , 2016 Satellite Animation

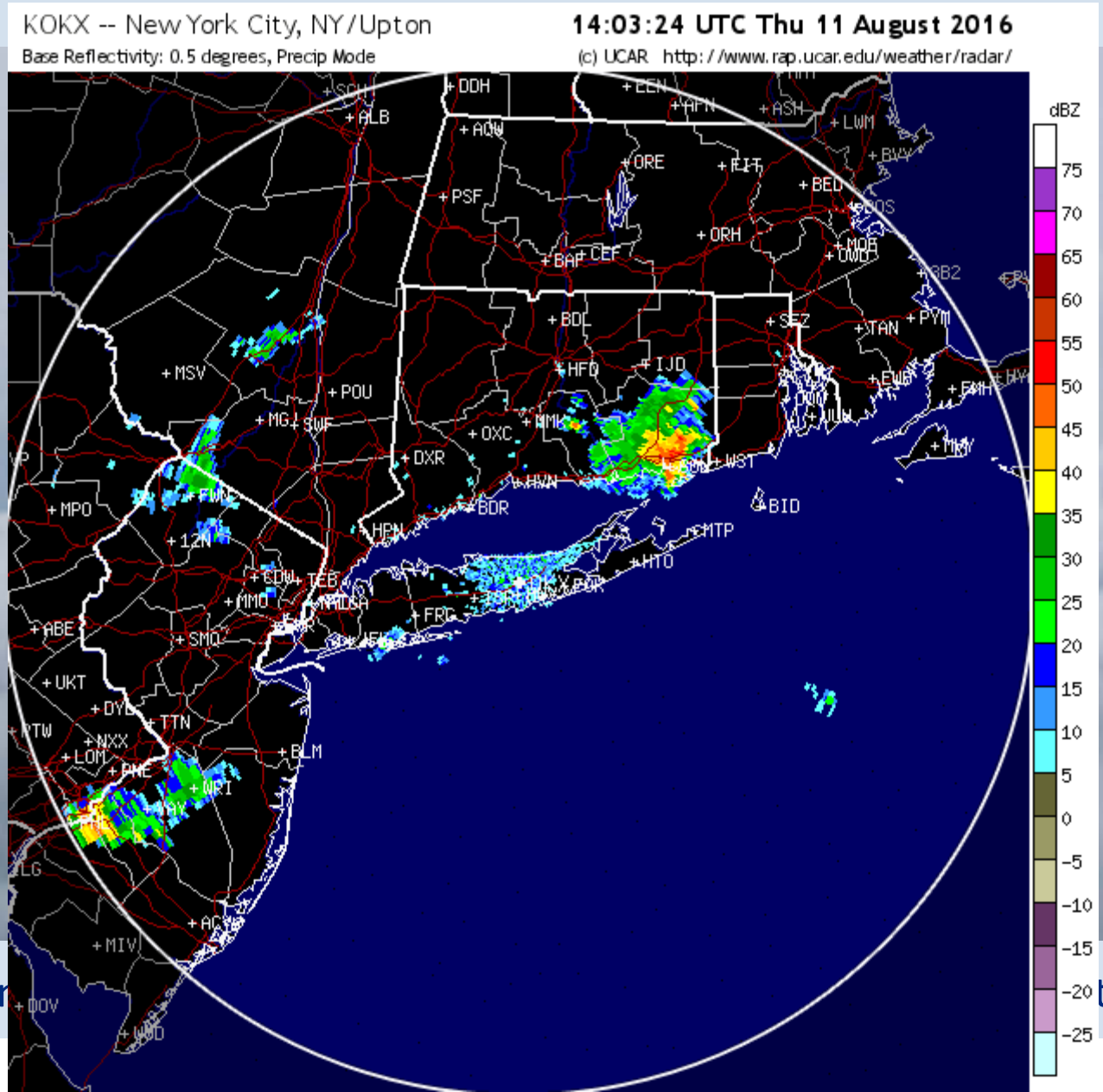
- Thunderstorms developed over northern Connecticut during the afternoon, sparing southwest Connecticut, which allowed the ozone to increase in Fairfield/Middlesex Counties.



Cor otection

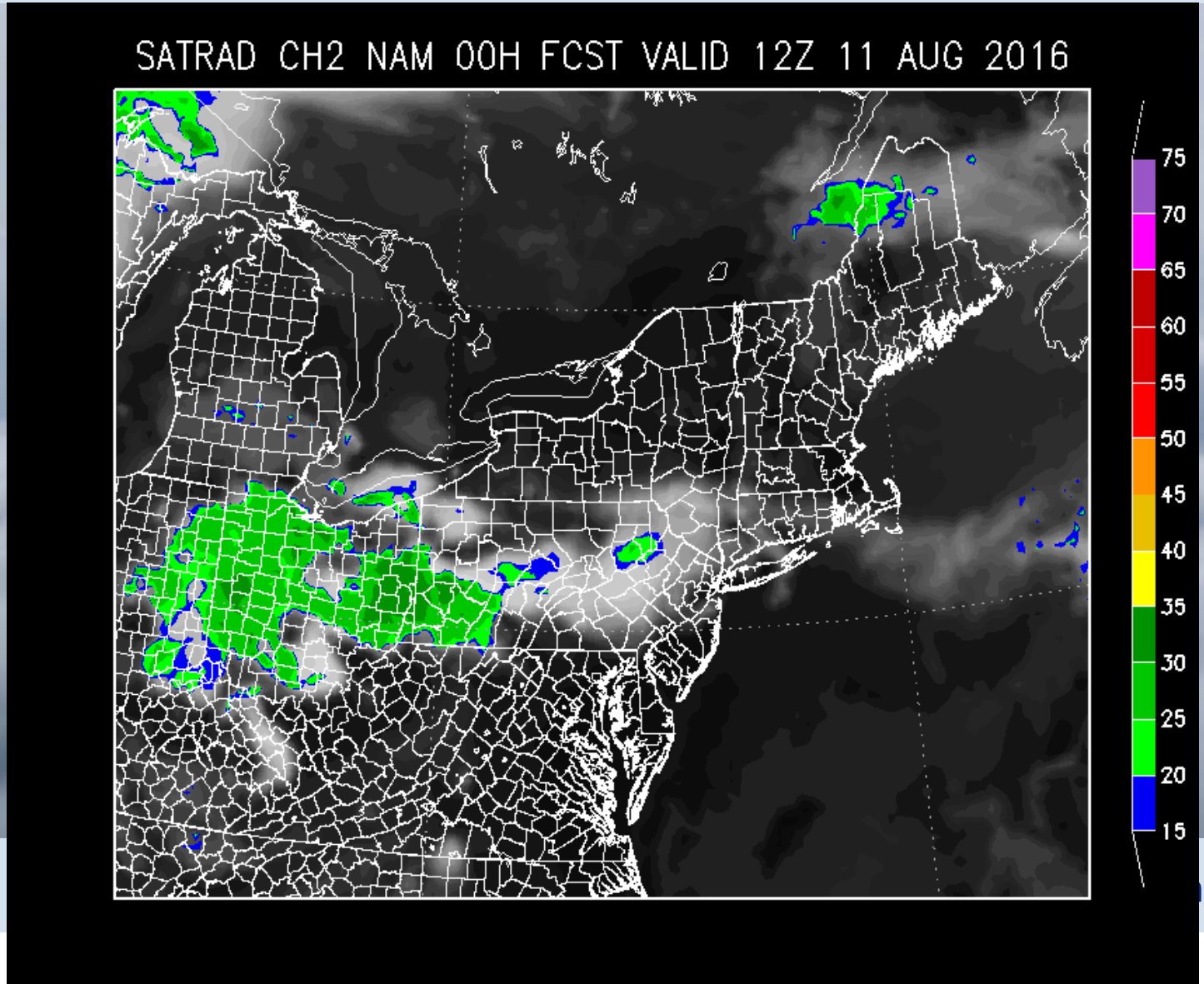
August 11 , 2016 Radar Animation

- Thunderstorms developed over northern Connecticut during the afternoon.



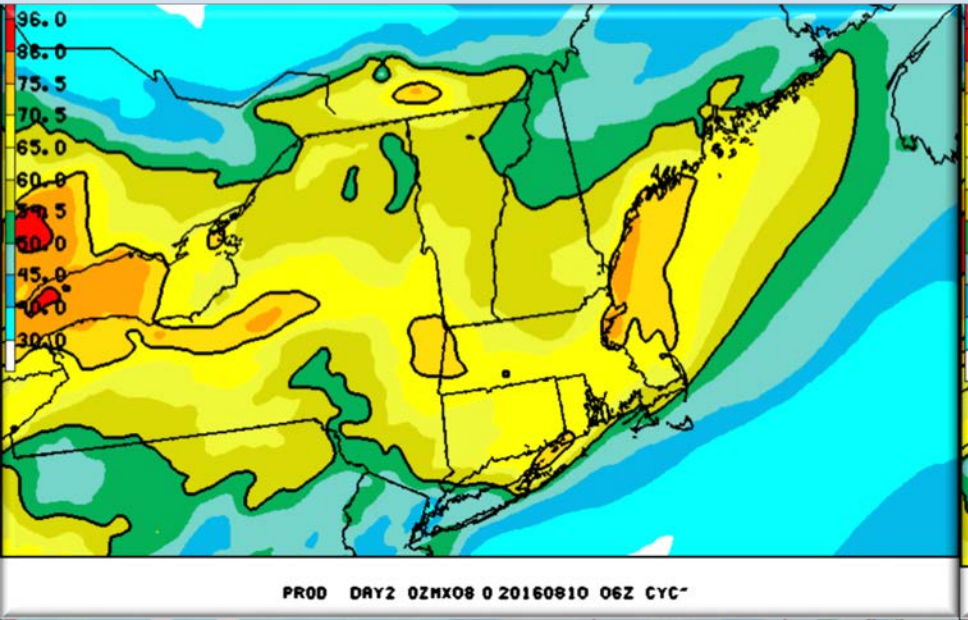
August 11 , NAM Model Radar Animation

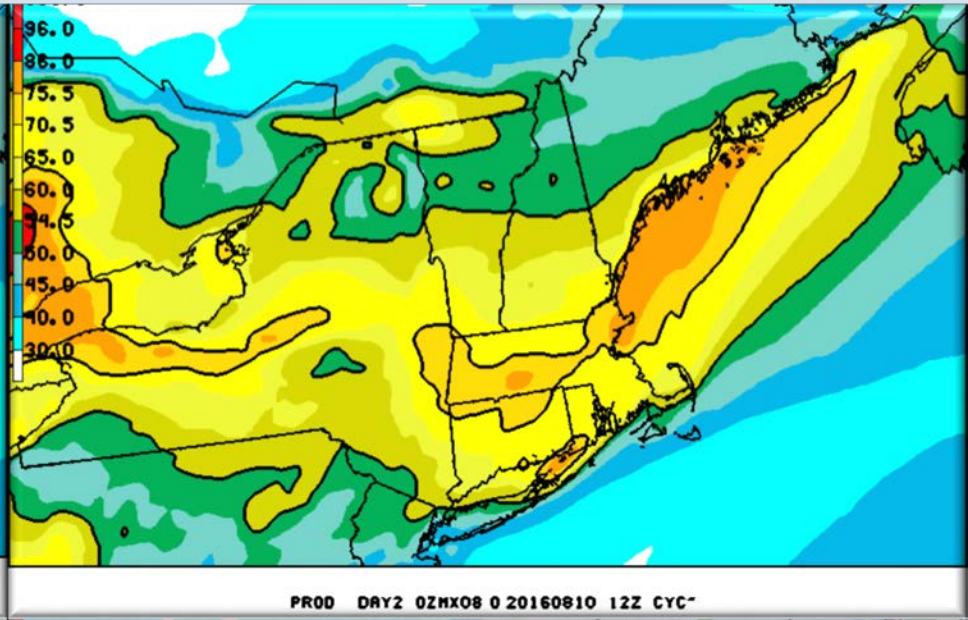
- Weather model forecasted showers over the entire State during the morning, explaining the lack of forecasted ozone over Connecticut.

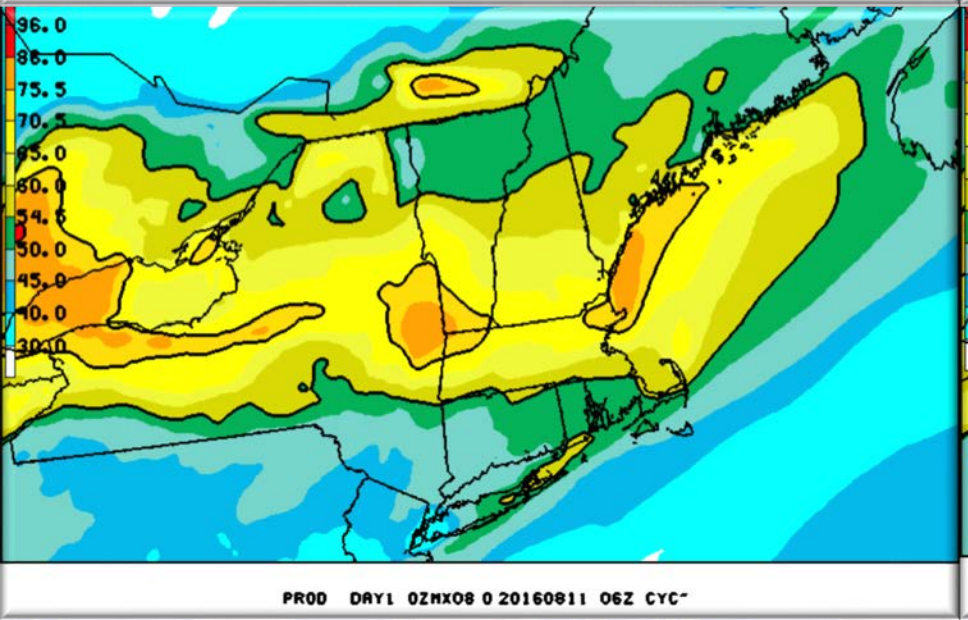


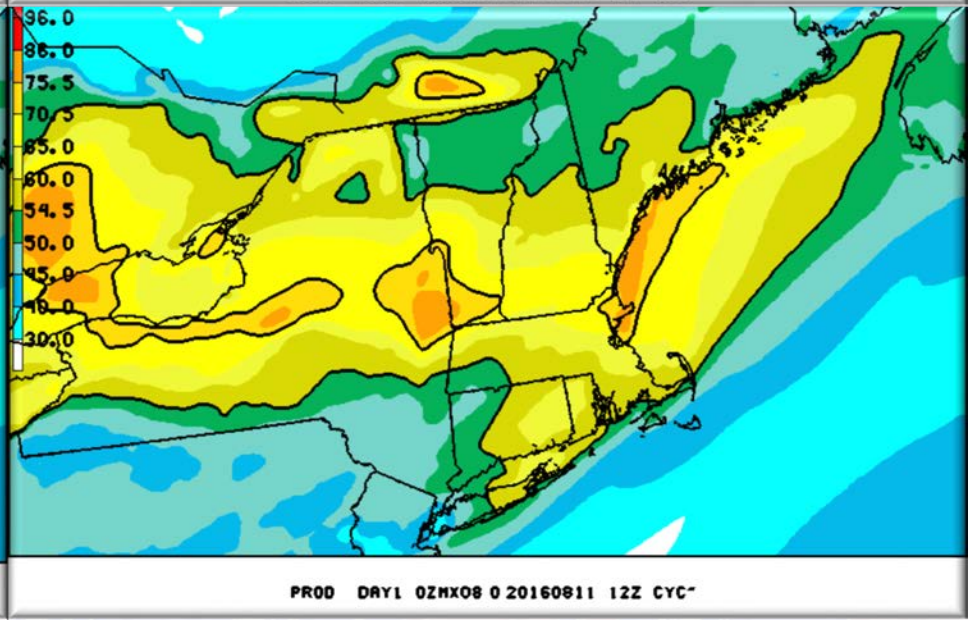
August 11 , 2016 NOAA Model Performance

- Model runs trended towards GOOD to MODERATE ozone levels due to modeled precipitation over-spreading the State during the morning.



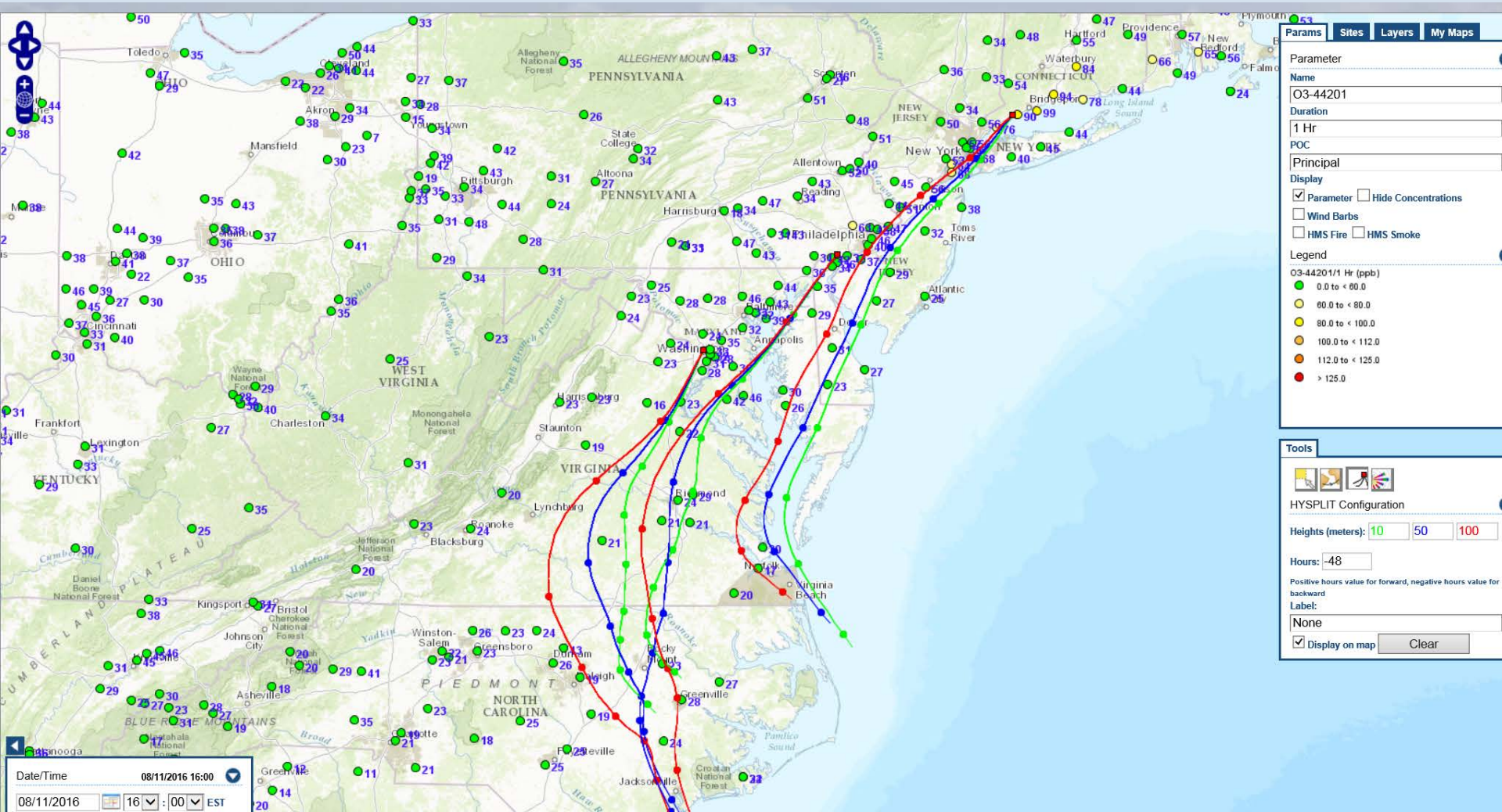






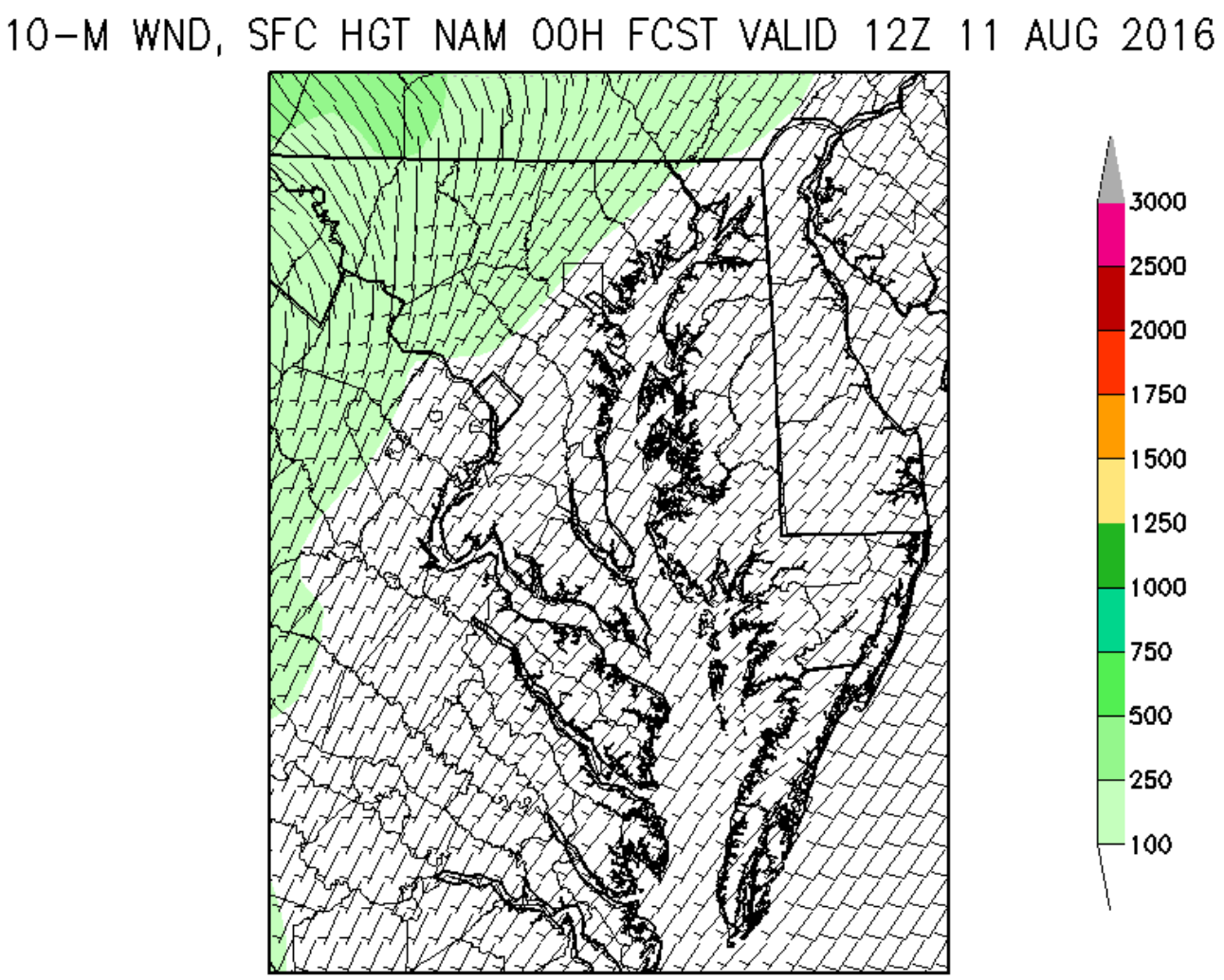
Low Level 48-hour Back Trajectories

- 48-hour low level (10, 50 100 meter) back trajectories originated from the Atlantic Ocean, however they passed over the NYC area before arriving in Connecticut.
- This clean maritime air kept the remainder of I-95 corridor ozone free.



August 11 , 2016 Radar Animation

- Modeled surface winds shift to the south at 18z, at the time when the ozone decreases at Maryland monitors.



Conclusion

- Mainly USG event for southwest Connecticut;
- Southwest winds increased as pre-frontal trough developed, which caused ozone from NYC area to be transported into Connecticut;
- Thunderstorms developed by early afternoon and lowered ozone levels in northern and eastern Connecticut;
- NOAA NAM model predicted early convection for the entire State, so it subsequently under-predicted the ozone levels.
- Areas south of Connecticut had clean maritime air move in during the morning, providing mainly good air quality.