



Connecticut Department of Energy and Environmental Protection



July 12, 2016 OTR Ozone Exceedances

By Michael Geigert



Connecticut Department of Energy and Environmental Protection

Summary

- Mostly GOOD to Moderate throughout the OTR, with USG at Mount Ninham NY and Danbury CT;
- FLOR PA had exceedance near Ohio border, which was part of a separate event.
- 3 sites in OTR reached USG:
 1. 3 sites above 70 ppb ozone NAAQS, 1 site in CT
 2. 1 site above (2008) 75 ppb ozone NAAQS, 0 sites in CT
 3. 0 sites above (1997) 84 ppb ozone NAAQS, 0 sites in CT



Regional AQI Maps

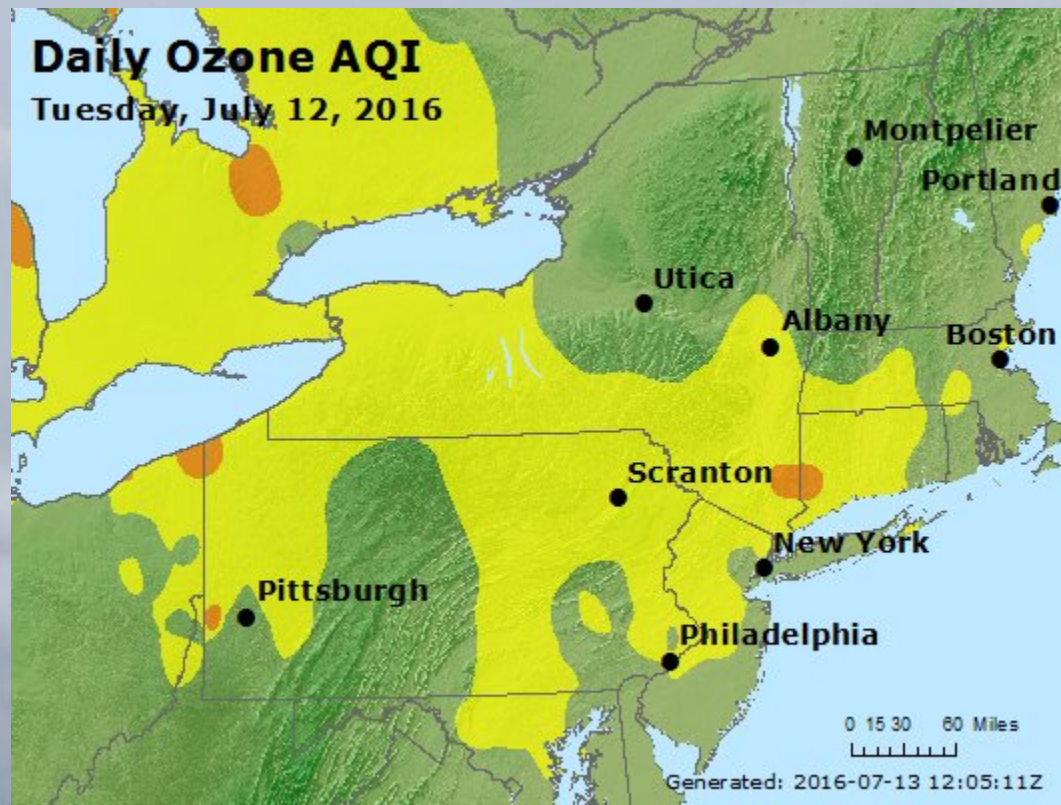


Table of OTR Monitoring Sites

- 3 USG exceedances across the OTR

| Date (LST) | Site | Site AQS | Max 8-hour Ozone |
|------------|-----------------|-----------|------------------|
| 7/12/2016 | FLOR | 421255001 | 79 |
| 7/12/2016 | Danbury | 090011123 | 72 |
| 7/12/2016 | Mt Ninham | 360790005 | 71 |
| 7/12/2016 | Farrell - PA | 420850100 | 70 |
| 7/12/2016 | Millbrook | 360270007 | 68 |
| 7/12/2016 | Harrison Townsh | 420031008 | 67 |
| 7/12/2016 | M.K. Goddard | 420859991 | 67 |
| 7/12/2016 | YORK | 421330008 | 67 |
| 7/12/2016 | ERIE | 420490003 | 66 |
| 7/12/2016 | KITT | 420050001 | 66 |
| 7/12/2016 | New Castle - PA | 420730015 | 66 |
| 7/12/2016 | Rockland Cty | 360870005 | 66 |
| 7/12/2016 | Amherst | 360290002 | 65 |
| 7/12/2016 | BEAV | 420070014 | 64 |
| 7/12/2016 | Padonia | 240051007 | 64 |
| 7/12/2016 | Middleport | 360631006 | 63 |
| 7/12/2016 | Dunkirk | 360130006 | 62 |
| 7/12/2016 | Madison-Beach R | 090099002 | 62 |
| 7/12/2016 | Middletown | 090070007 | 62 |
| 7/12/2016 | NEA | 421010024 | 62 |
| 7/12/2016 | New Haven - Cri | 090090027 | 62 |
| 7/12/2016 | AREN | 420010001 | 61 |
| 7/12/2016 | BRI1 | 420070005 | 61 |
| 7/12/2016 | Cornwall | 090050005 | 61 |
| 7/12/2016 | East Hartford | 090031003 | 61 |
| 7/12/2016 | Greenwich | 090010017 | 61 |
| 7/12/2016 | HERS | 420431100 | 61 |
| 7/12/2016 | HOOK | 420070002 | 61 |
| 7/12/2016 | South Carroll | 240130001 | 61 |
| 7/12/2016 | Westport | 090019003 | 61 |



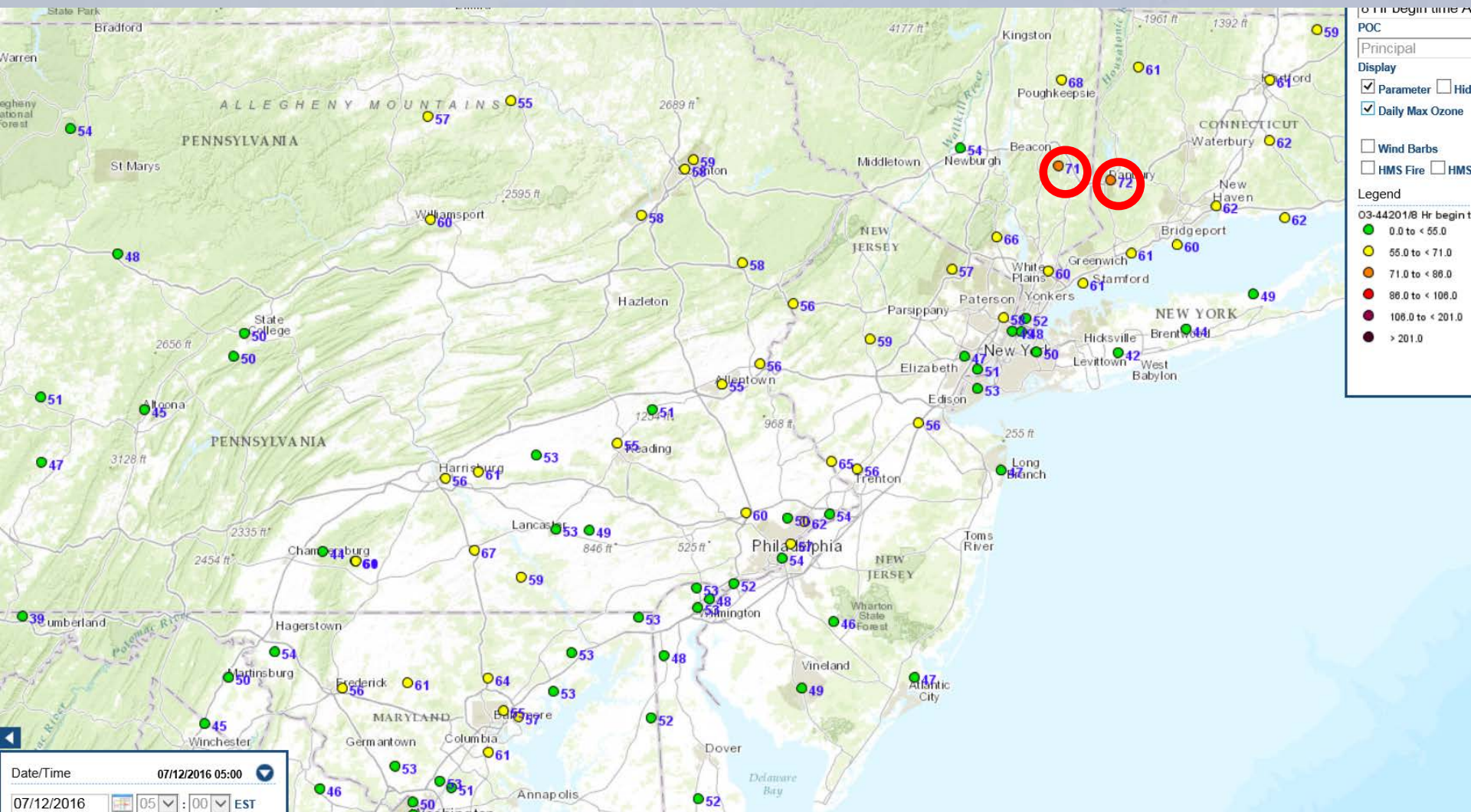
CT Monitoring Site Design Value Update

| | | | To Date 2016 Compliance Status x = Violating NAAQS | | | |
|-----------------------------|---------------------------|------------------------|--|---------------|---------------|--|
| | Site Name | To Date: 2016 DV | 2015 NAAQS | 2008 NAAQS | 1997 NAAQS | |
| SWCT Portion of NYC Area | Danbury | 78 | x | x | | Four more 102+ ppb days violates 1997 NAAQS |
| | Greenwich | 81 | x | x | | Four more 93+ ppb days violates 1997 NAAQS |
| | Madison | 73 | x | | | One more 78+ ppb day violates 2008 NAAQS |
| | Middletown | 79 | x | x | | Four more 97+ ppb days violates 1997 NAAQS |
| | New Haven - Crisculo Park | 74 | x | | | Two more 75+ ppb days violates 2008 NAAQS |
| | Stratford | 77 | x | x | | Four more 95+ ppb days violates 1997 NAAQS |
| | Westport | 82 | x | x | | Two more 87+ ppb days violates 1997 NAAQS |
| Greater CT | Cornwall | 72 | x | | | Three more 86+ ppb days violates 2008 NAAQS |
| | East Hartford | 74 | x | | | Two 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 | | | | Two more 76+ ppb days violates 2015 NAAQS |



July 12, 2016 Peak Northeast Ozone

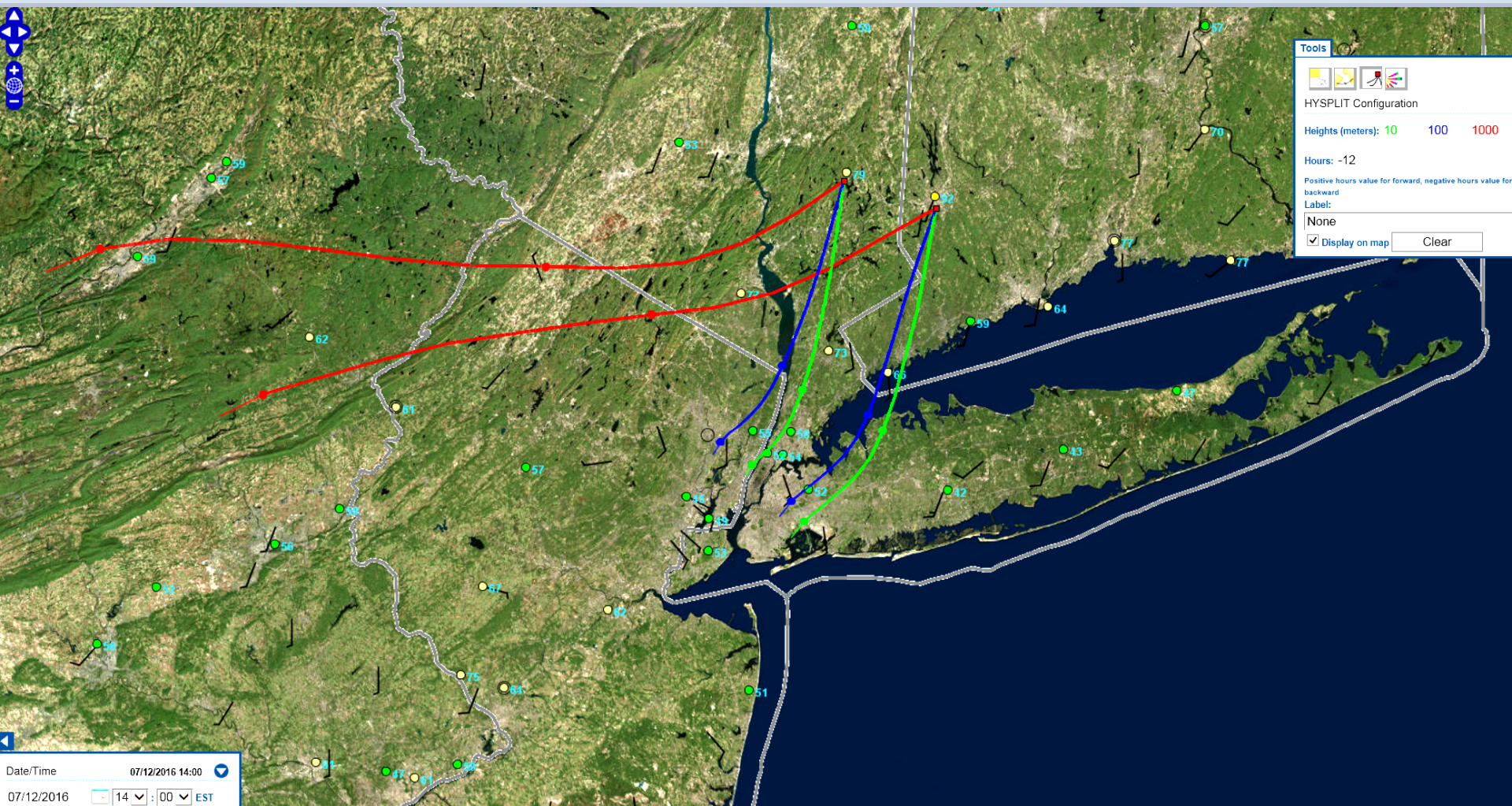
- Exceedances for 1 Connecticut and 1 New York Site



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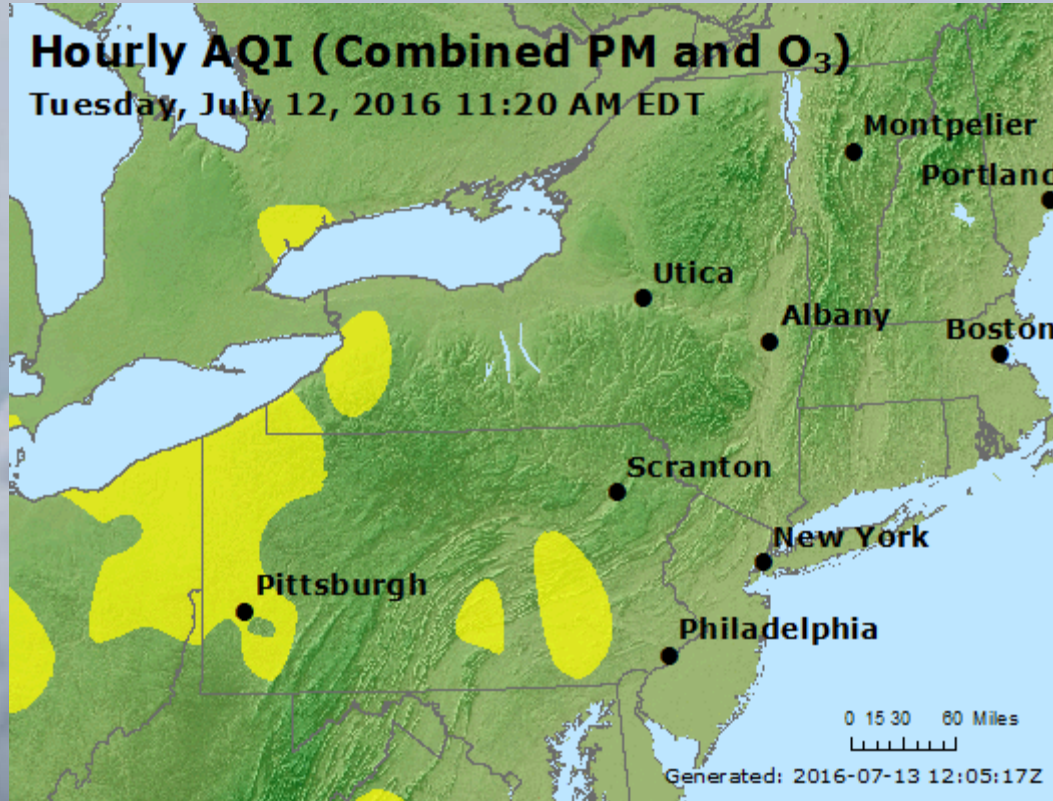


12-hr Back Trajectories 2:00 pm EST



Low level trajectories originated from metro NYC. This plume was responsible for 2 exceedances near the CT/NY border.

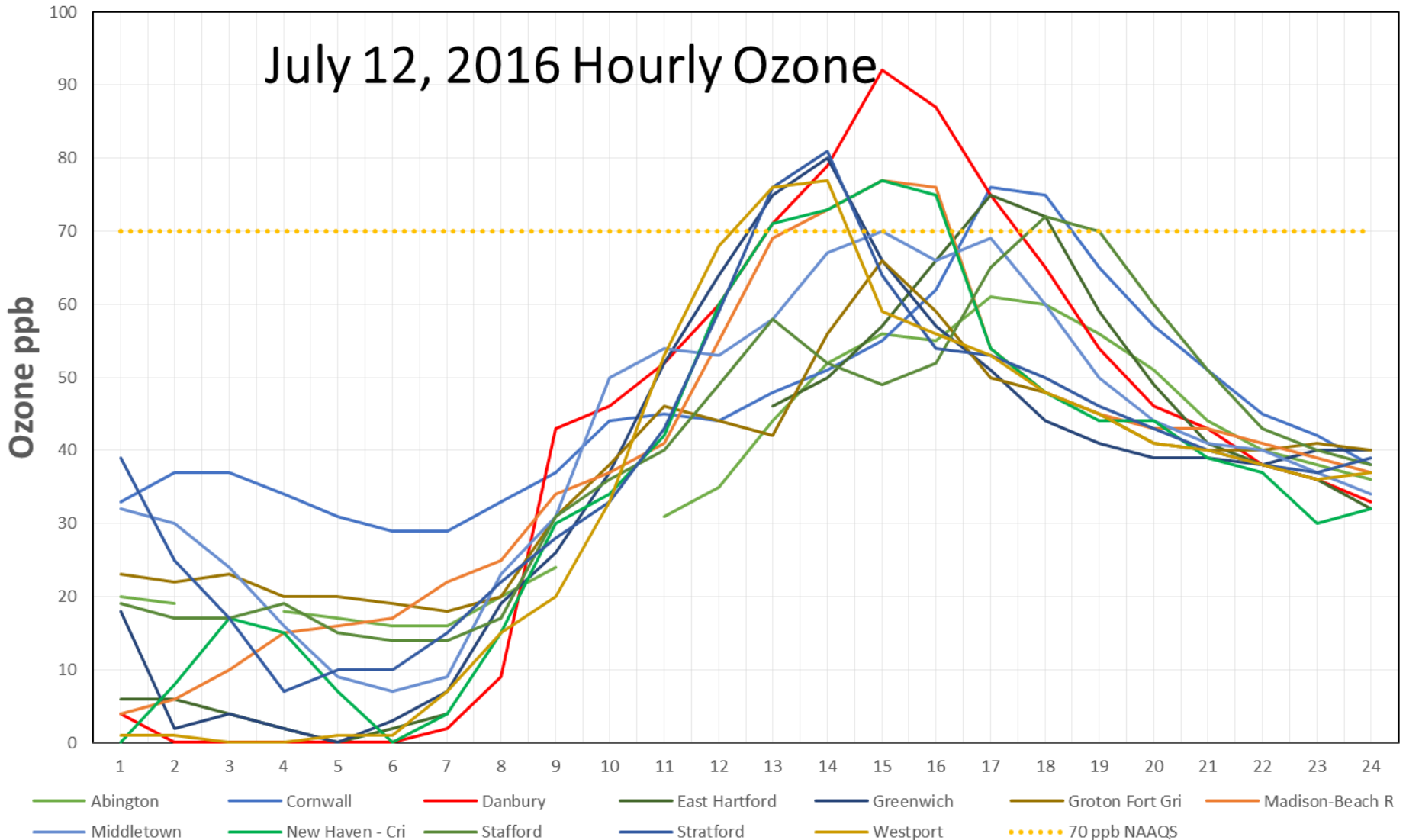
AQI Animation July 12, 2016



Elevated ozone develops north of I-95 corridor and southerly winds push the plume northward before it dissipates later in the evening.

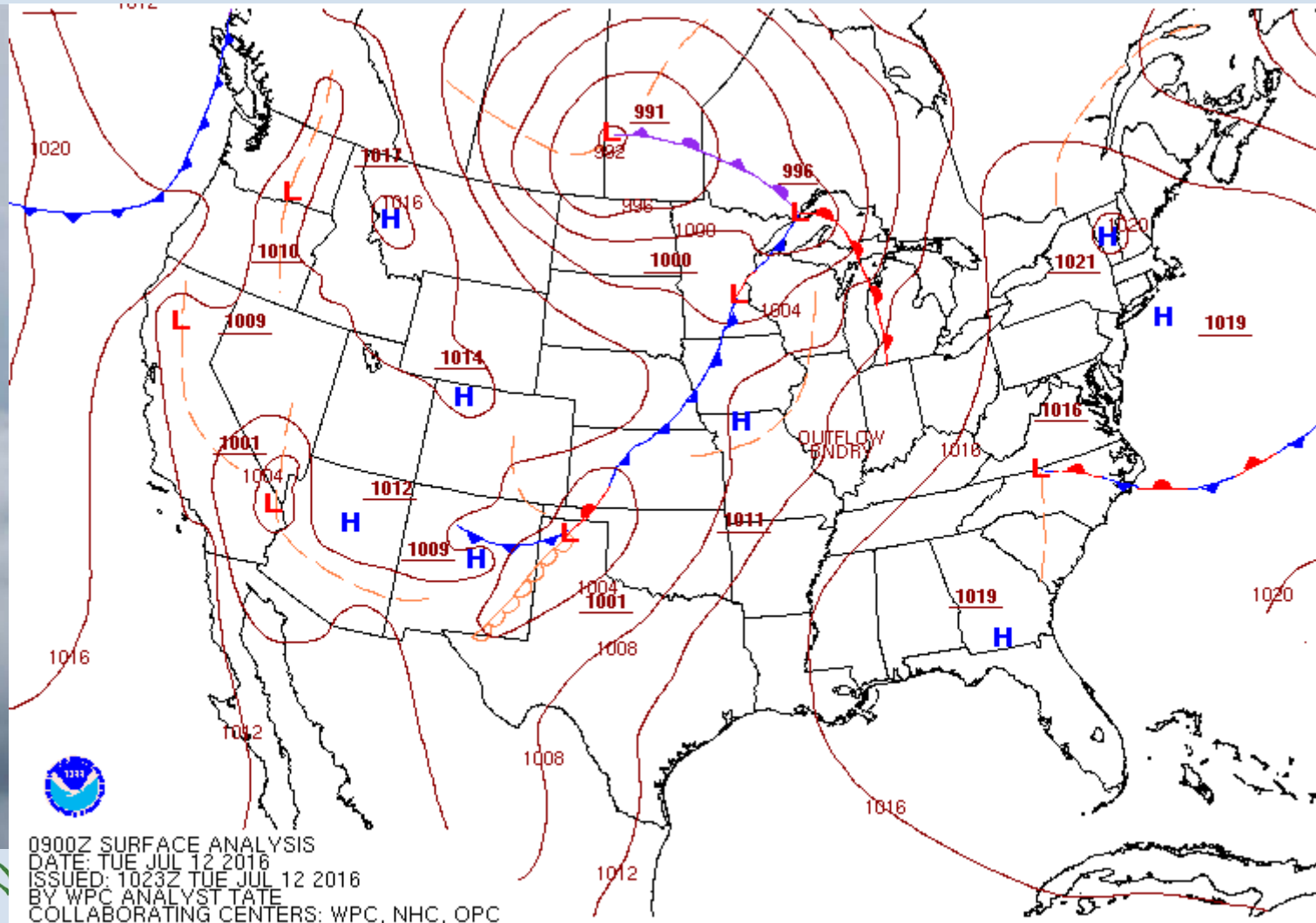
CT Ozone Monitors July 12, 2016

Most CT sites had USG ozone levels from 12:00 pm to 7:00 pm with Danbury peaking at 92 ppb. Cornwall and Stafford peaked later as ozone plume moved northward and dissipated.



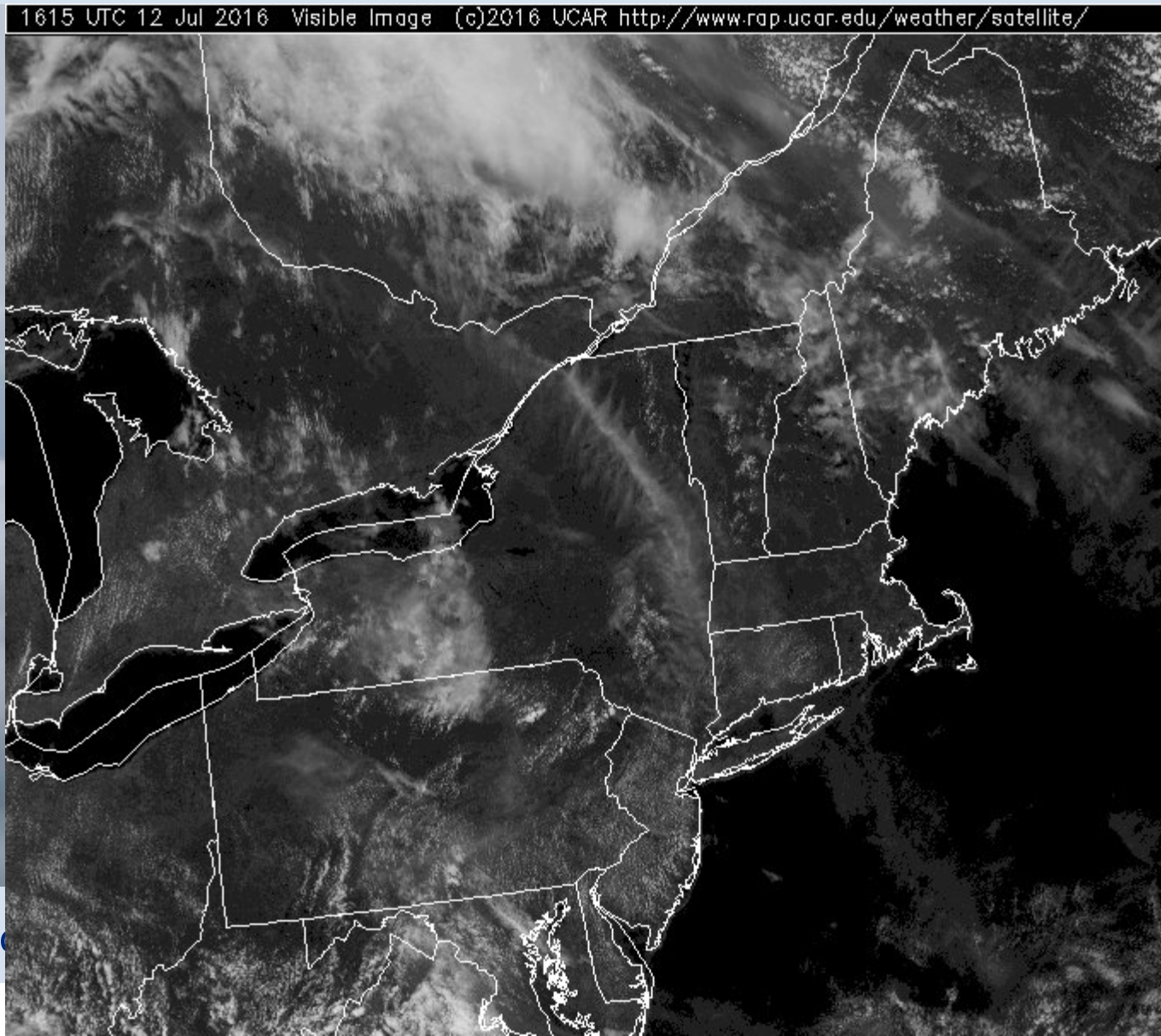
July 12, 2016 Surface Analysis (5:00am -11:00pm) Animation

- Weak high pressure moves off the coast, allowing southerly winds to develop, along with a warming trend.



July 12, 2016 Satellite Animation

- Sunny skies, with only scattered clouds. Note the sea-breeze front that transported ozone inland from I-95 corridor.



C

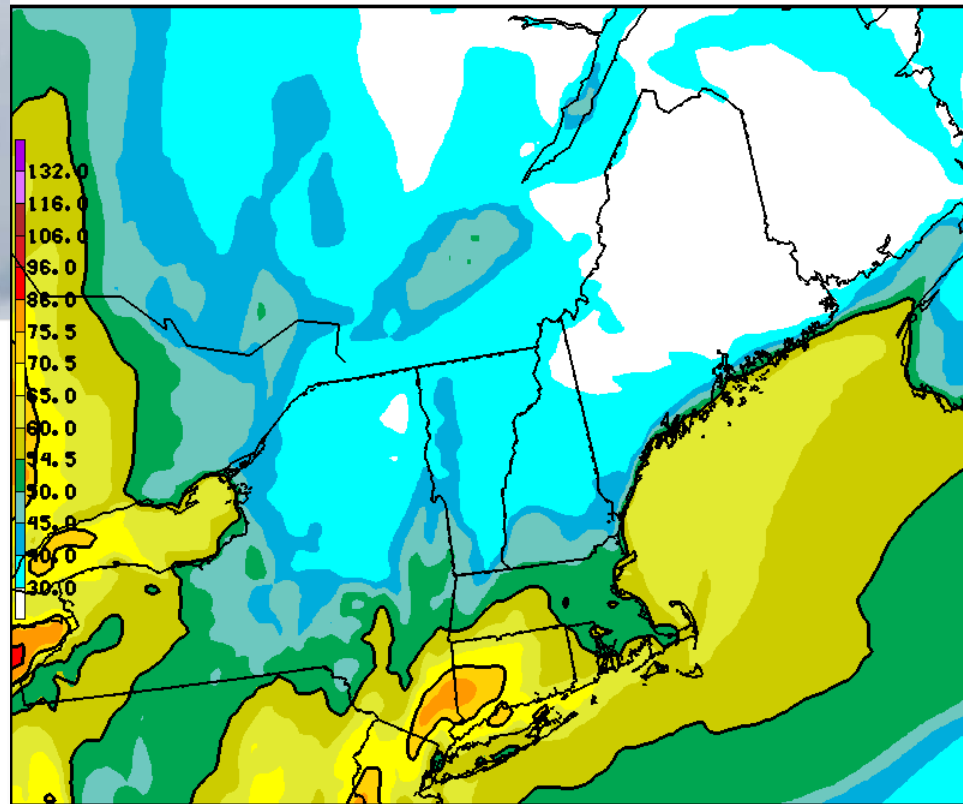
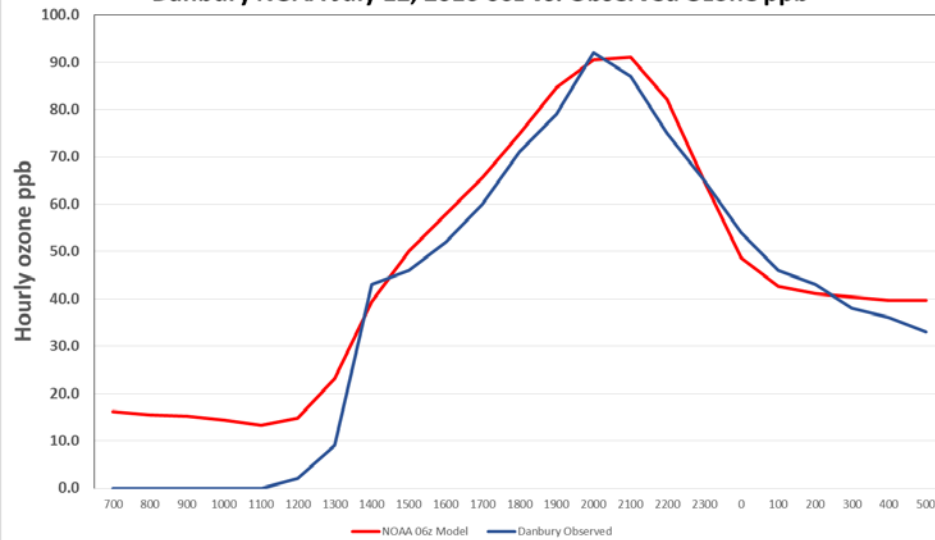
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NOAA Ozone Model Over-Prediction

The NOAA model is over predicting the extent of USG but had the correct general area. The NOAA 06z model run did a great job forecasting the Danbury hourly observations.



Danbury NOAA July 12, 2016 06z vs. Observed Ozone ppb



PROD DAY1 OZHX08 0 20160712 06Z CYC-



Conclusion

- The NOAA 06z model run did a good job pinpointing the area for USG;
- High pressure moved off the coast and ozone developed along the I-95 corridor. Southerly winds pushed the plume inland while NYC emissions increased ozone levels around Danbury.
- The CT forecaster upgraded the forecast that day to USG at Danbury and NY forecasters did the same for monitors near the CT border.
- From this event, it is probable that NYC emissions increased ozone 10 ppb in its plume, compared to other sites in the I-95 corridor.

