



Connecticut Department of Energy and Environmental Protection



June 21, 2016 OTR Ozone Exceedances

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Connecticut Department of Energy and Environmental Protection

Summary

- Mostly Good to Moderate throughout the OTR, with USG around LIS ;
- 4 sites in OTR reached USG.
 1. 4 sites above 70 ppb ozone NAAQS, 1 sites in CT
 2. 0 sites above (2008) 75 ppb ozone NAAQS, 0 sites in CT
 3. 0 sites above (1997) 84 ppb ozone NAAQS, 0 sites in CT



Tables of OTR and CT Monitoring Sites

- Mostly Good to Moderate across the OTR with 4 USG exceedances

Date (LST)	Site	Site AQS	MAX 8-HR Ozone ppb
6/21/2016	Babylon	361030002	73
6/21/2016	Holtsville	361030009	73
6/21/2016	Madison-Beach R	090099002	71
6/21/2016	Riverhead	361030004	71
6/21/2016	Susan Wagner	360850067	67
6/21/2016	Colliers Mills	340290006	66
6/21/2016	Queens	360810124	66
6/21/2016	GREE	421290008	65
6/21/2016	BRIS	420170012	64
6/21/2016	HOOK	420070002	64
6/21/2016	NEA	421010024	64
6/21/2016	Groton Fort Gri	090110124	63
6/21/2016	HOLB	420590002	63
6/21/2016	TRURO	250010002	63
6/21/2016	BEAV	420070014	62
6/21/2016	Millington	240290002	62
6/21/2016	Monmouth Univer	340250005	62
6/21/2016	Rutgers Univers	340230011	62
6/21/2016	Stratford	090013007	62
6/21/2016	W Greenwich	440030002	62
6/21/2016	BAPC 301 39TH S	420030008	61
6/21/2016	CHAR	421250005	61
6/21/2016	Camden Spruce S	340070002	61
6/21/2016	FLOR	421255001	61
6/21/2016	Fairhaven2	250051006	61
6/21/2016	JOHN	420210011	61
6/21/2016	NORR	420910013	61
6/21/2016	Narragansett	440090007	61
6/21/2016	SOUTH FAYETTE	420030067	61
6/21/2016	Ancora State Ho	340071001	60
6/21/2016	BRI1	420070005	60
6/21/2016	Bar Harbor - Ca	230090102	60
6/21/2016	Clarksboro	340150002	60
6/21/2016	Flemington	340190001	60
6/21/2016	Greenwich	090010017	60
6/21/2016	KITT	420050001	60
6/21/2016	LANC	420710007	60
6/21/2016	Port Clyde	230130004	60

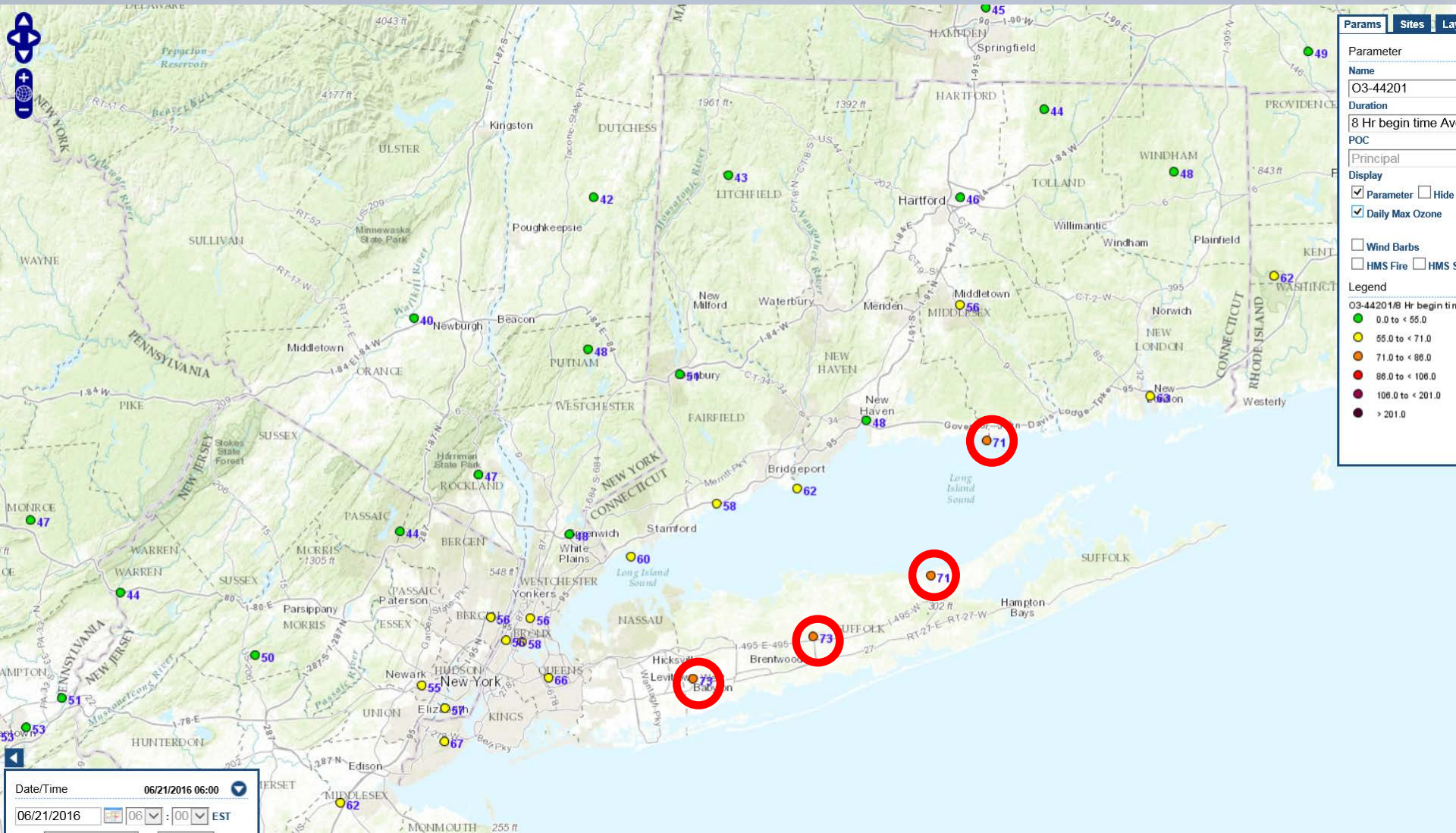


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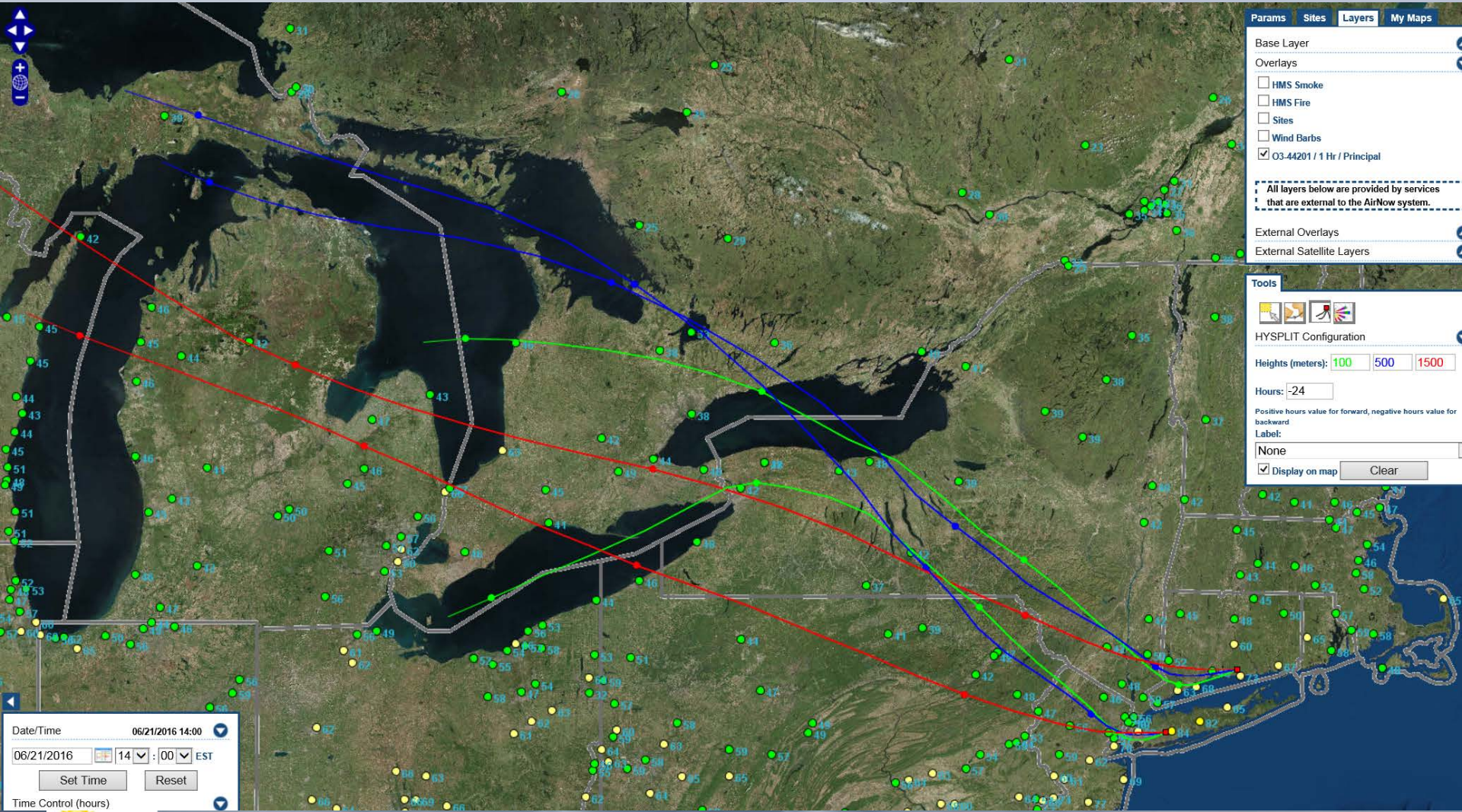
Department of Environmental Protection

June 21, 2016 Peak East Coast Ozone

- USG for Madison CT and three Long Island Monitors

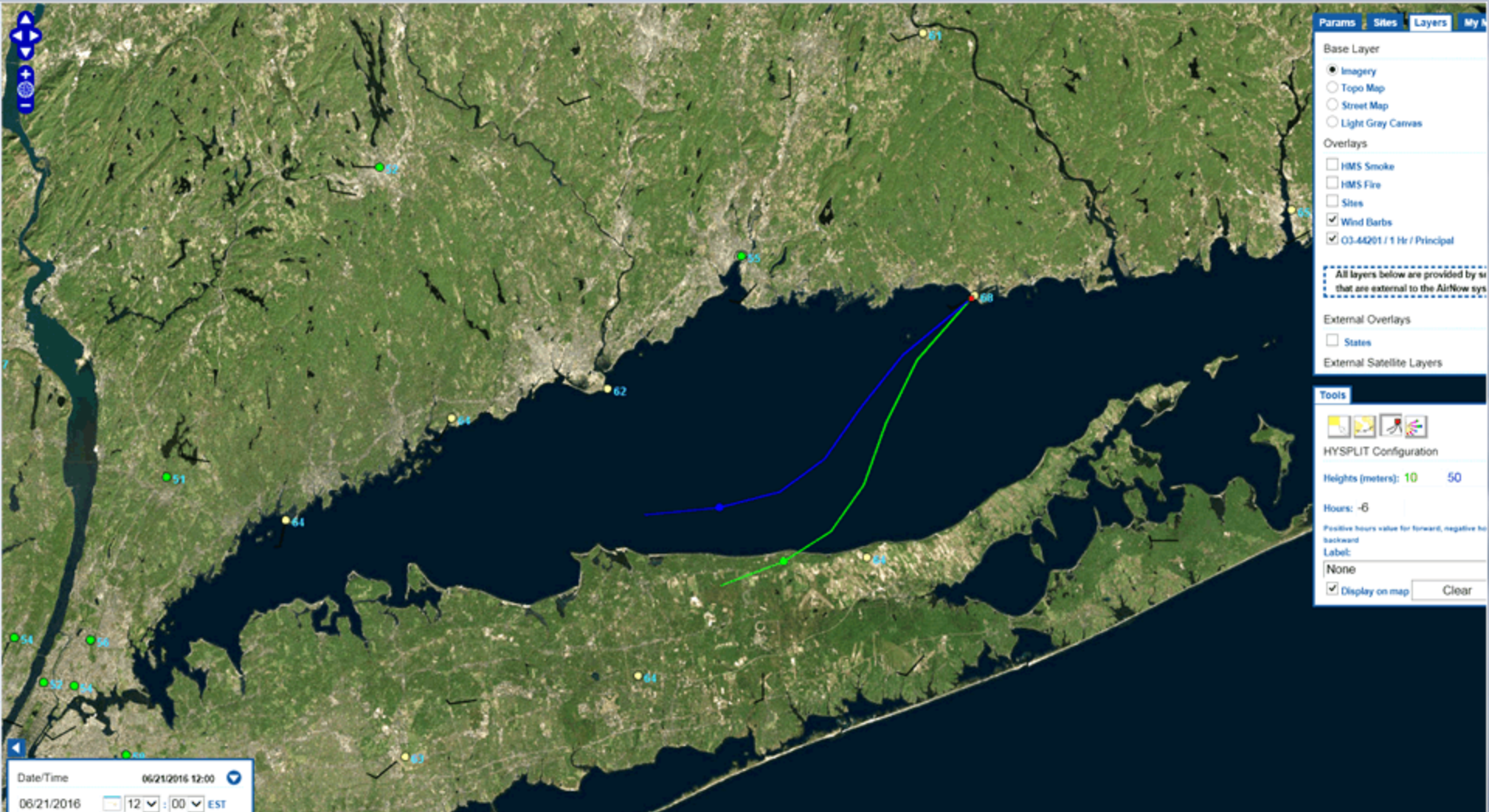


24-hr Back Trajectories 2:00 pm EST



The 100/500/1500 meters trajectories to Madison CT and Babylon NY originated over the Great Lakes. By early afternoon, the low level flow had shifted to the southwest, transporting ozone precursors from the NYC metro area into LIS.

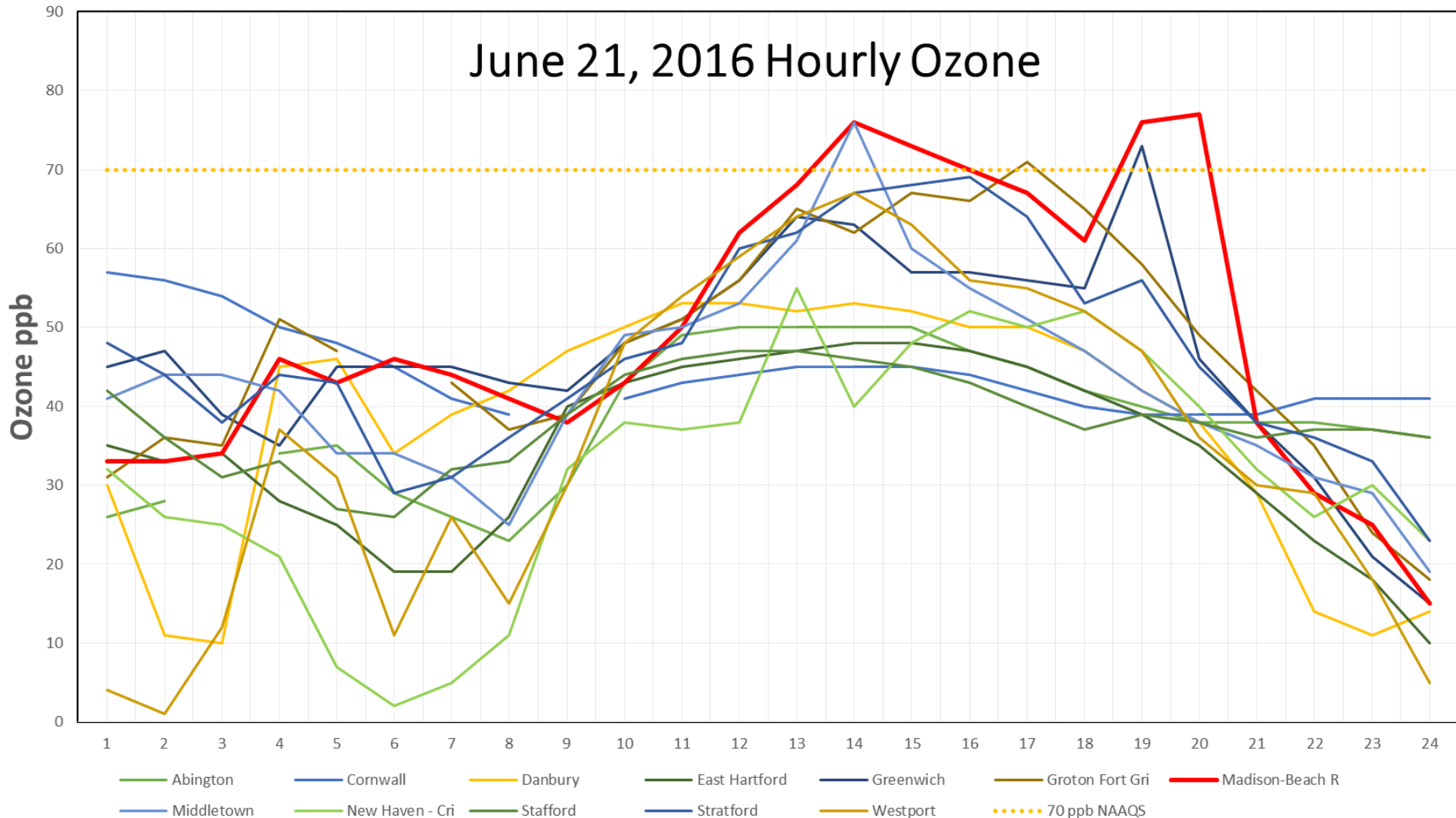
6-hr Back Trajectory Animation: 12:00-8:00 pm EST



The low level 10-50 meter 6-hour back trajectories to Madison CT show origins over Long Island and Long Island Sound. Frontal passage at 8:00 pm EST turns wind to northwest as ozone levels drop.

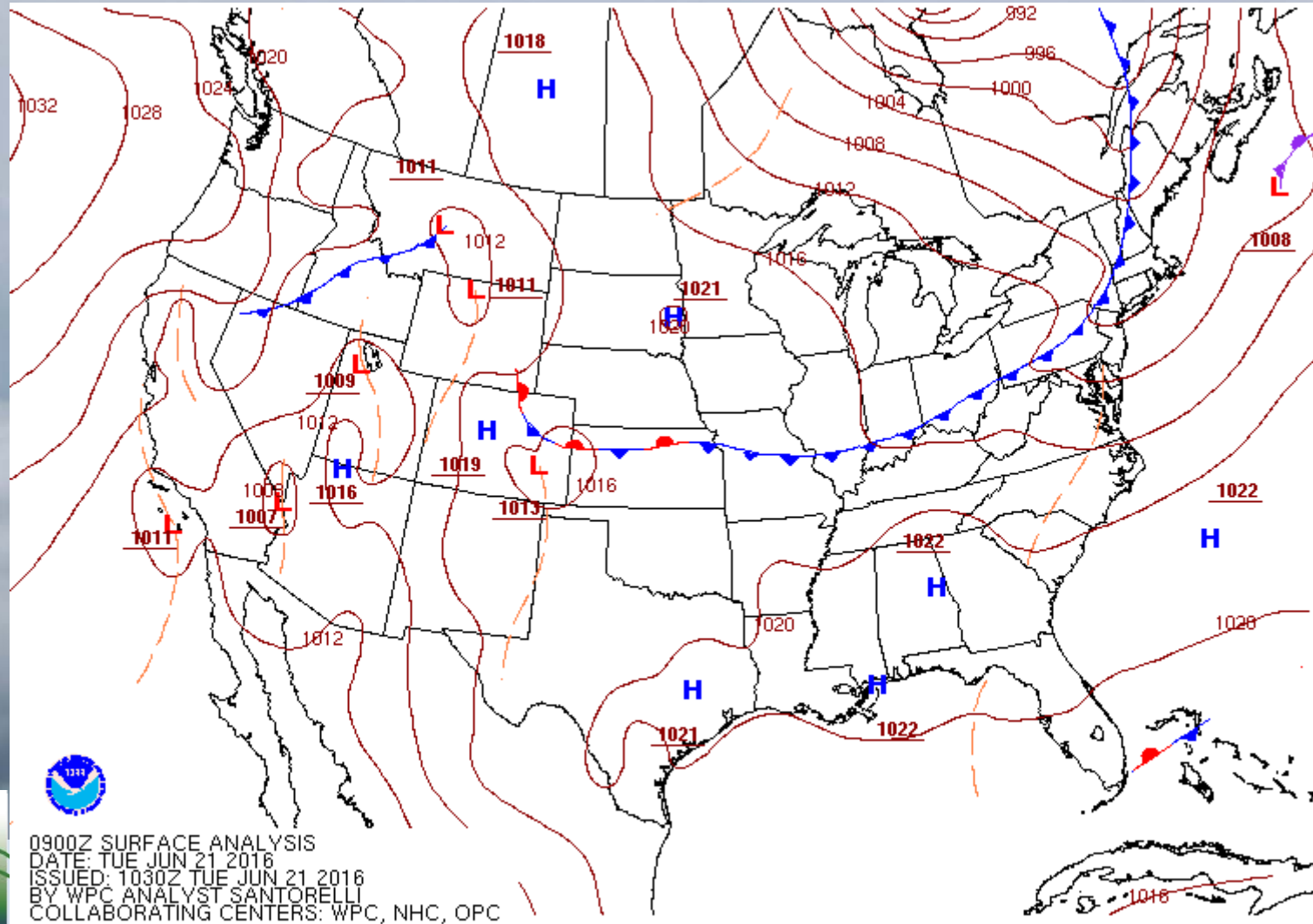
June 21, 2016 CT Ozone Monitors

Most CT sites had moderate ozone levels for several hours, however, Madison had a second ozone plume originating from Long Island Sound that caused it to exceed the NAAQS.



June 21, 2016 Surface Analysis (5:00am -11:00pm)

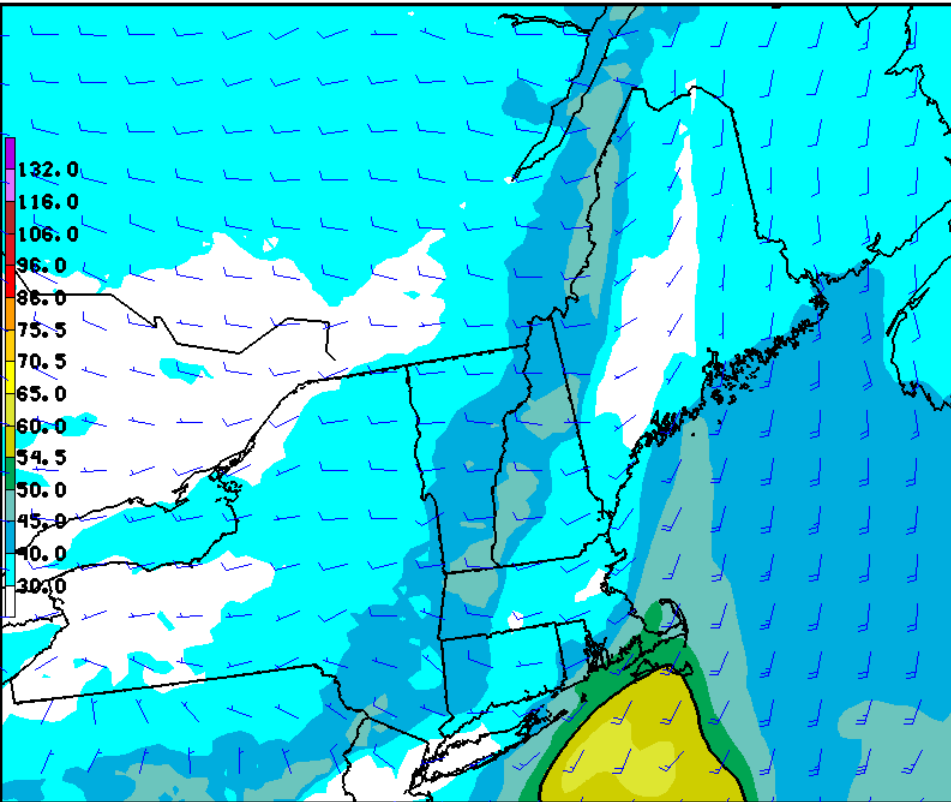
- Cold front stalled along the coast, allowing ozone to build up over Long Island Sound



NOAA Ozone Model Animation

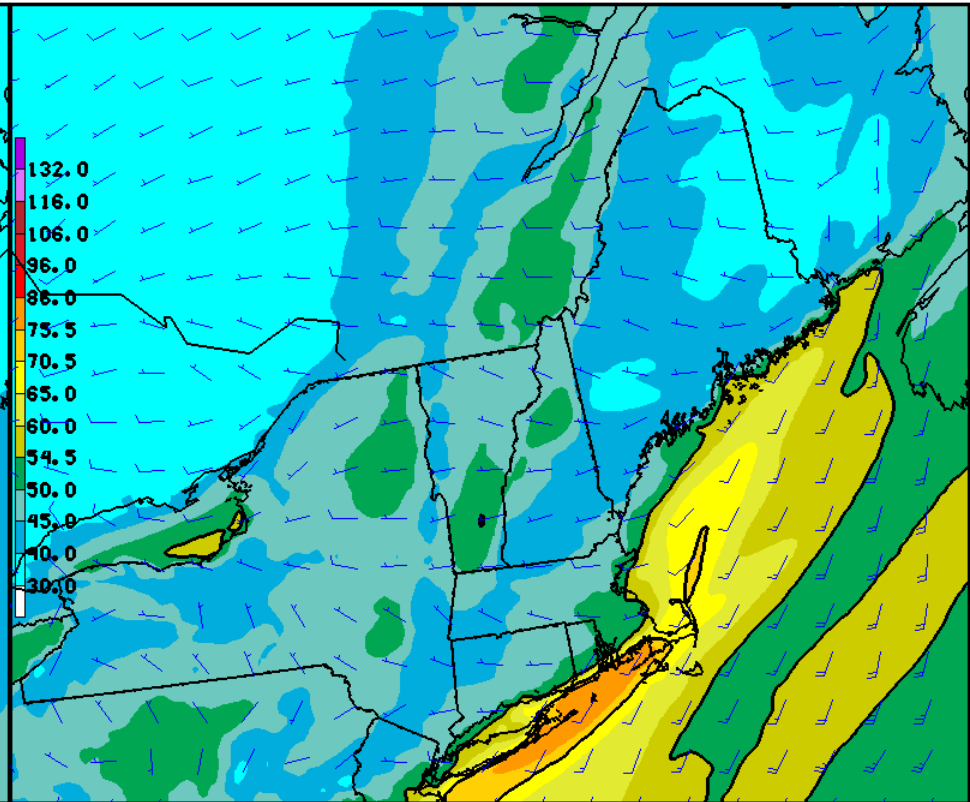
Model showed the ozone plume moving along the CT coast, but the 8-hour maximum predicted for Madison (2:00am update) was 61 ppb (moderate). The 8:00 am model update on June 21st predicted the Madison monitor to reach 70 ppb. This shows that the models have difficulty with this fast moving weather pattern.

06z NOAA Model Animation



PROD OZCN01 TUB 160621/1200Y006 -

06z NOAA Model 8-HR Ozone Maximum



PROD DAY1 OZMX08 0 20160621 06Z CYC-



Barons MAQSIP Ozone Model

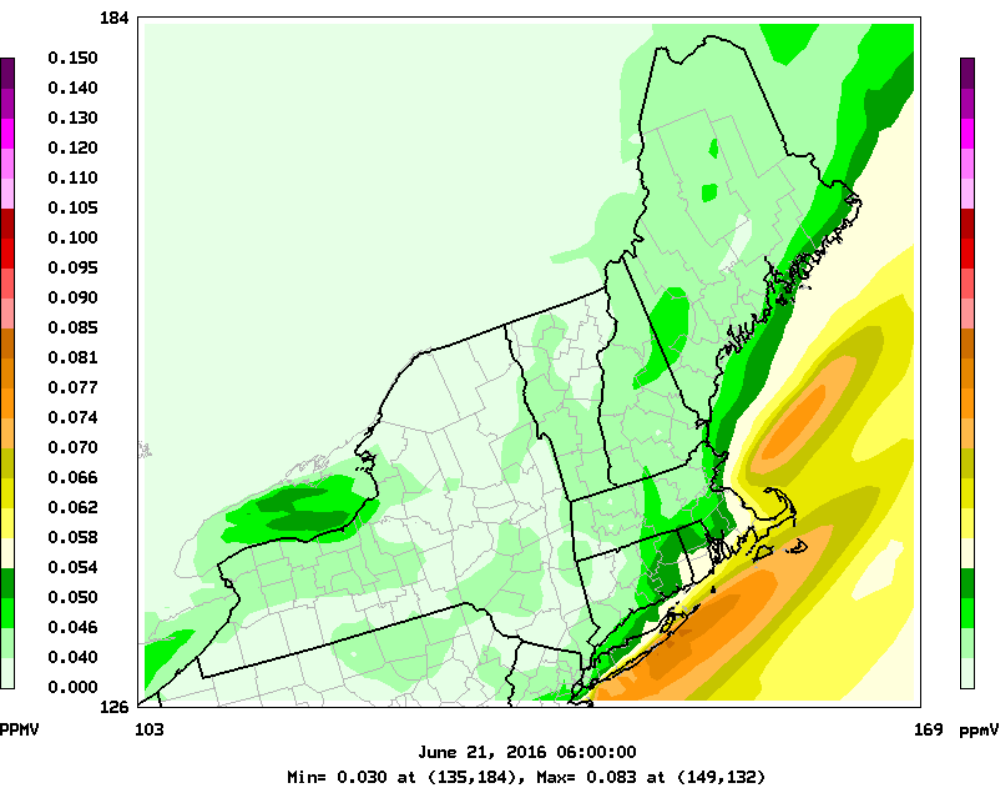
The Barons models even showed more of an under prediction, making this a difficult exceedance to predict.

Barons MAQSIP

24HR Peak 8HR-AVG Ozone -- 15km NES wndw

(c) 2013 BAMS Environmental Modeling Center

15km MAQSIP Domain Initialized 20160621 at 06Z

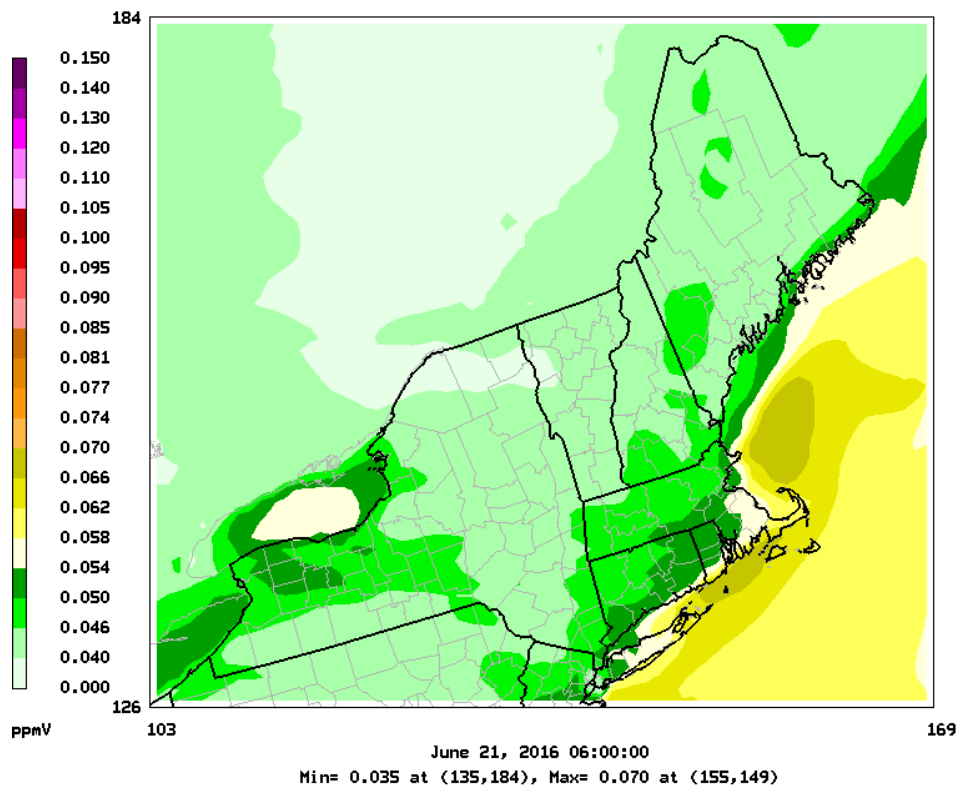


Barons CMAQ

24HR Peak 8HR-AVG Ozone -- 15km NES wndw

(c) 2013 BAMS Environmental Modeling Center

15km CMAQ Domain Initialized 20160621 at 06Z



Conclusion

- Although models showed moderate levels along the CT coast, the stalled cold front allowed ozone to reach low USG at several sites along the Sound in NY and CT;
- The 8:00am NOAA run (available at 1:00pm), showed a near exceedance at Madison, but it was too late to forecast.
- This June weather pattern, which is more indicative of May, has featured an east coast trough with a fast moving jet stream in the vicinity. This makes exact forecasting for fronts a challenge.

