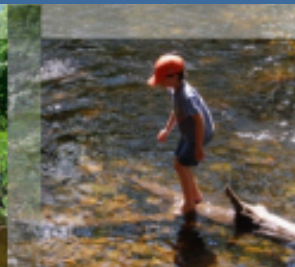
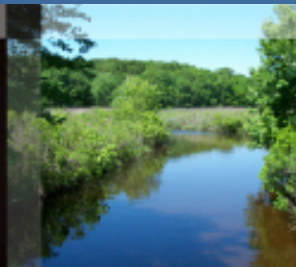




# Connecticut Department of Energy and Environmental Protection



Connecticut Department of  
**ENERGY &  
ENVIRONMENTAL  
PROTECTION**

# June 26, 2016 OTR Ozone Exceedances

By Michael Geigert



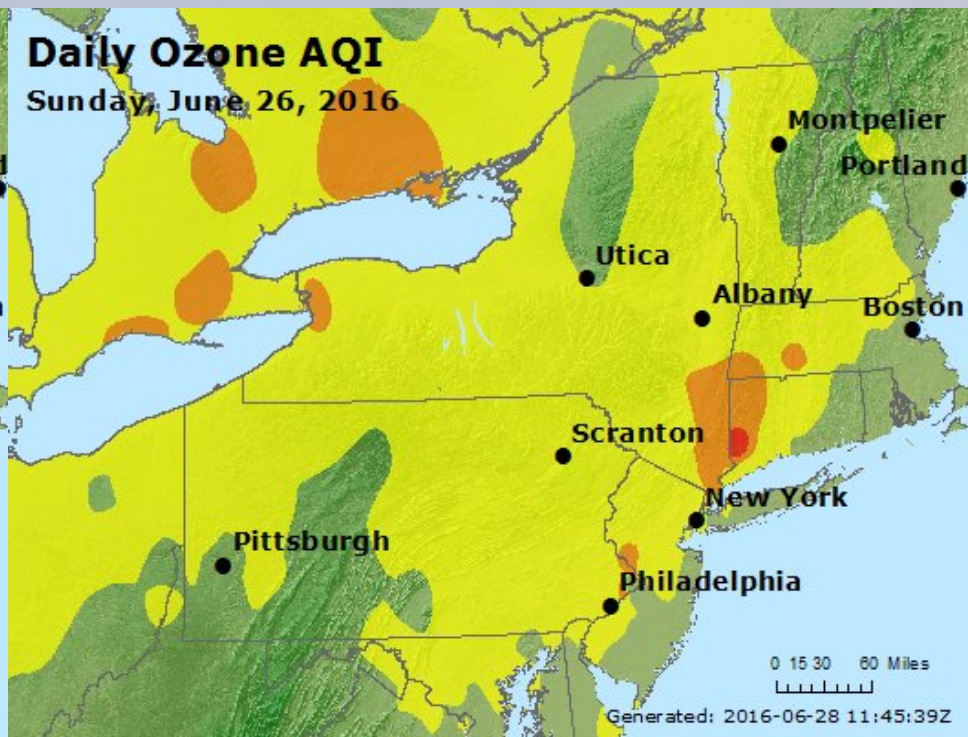
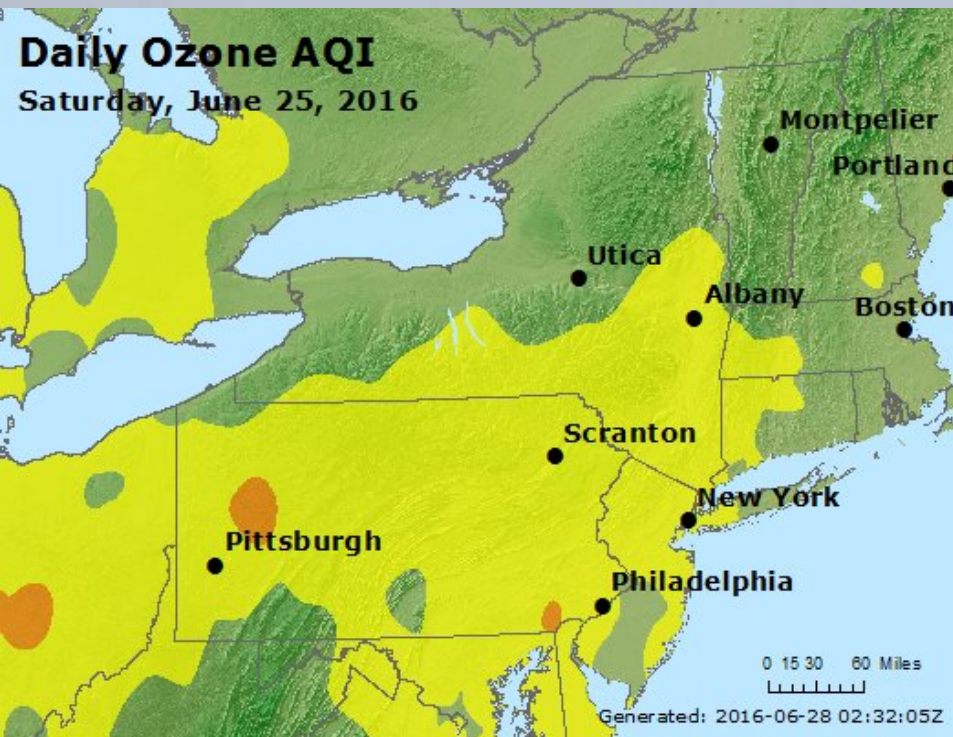
Connecticut Department of Energy and Environmental Protection

# Summary

- Widespread Moderate throughout the OTR, with scattered USG from Philadelphia PA to CT;
- 8 sites in OTR reached USG:
  1. 8 sites above 70 ppb ozone NAAQS, 2 sites in CT
  2. 3 sites above (2008) 75 ppb ozone NAAQS, 1 site in CT
  3. 1 sites above (1997) 84 ppb ozone NAAQS, 1 site in CT



# Summary



# Tables of OTR and CT Monitoring Sites

- Widespread Moderate across the OTR with 8 USG exceedances

Site	Site AQS	Param	8-hr Ozone Max ppb
Danbury	90011123	O3	87
Mt Ninham	360790005	O3	78
NEA	421010024	O3	76
White Plains	361192004	O3	75
Cornwall	90050005	O3	74
Amherst	360290002	O3	71
CHICOPEE	250130008	O3	71
Millbrook	360270007	O3	71
Flemington	340190001	O3	70
Leonia	340030006	O3	70
Rockland Cty	360870005	O3	70
Camden Spruce S	340070002	O3	68
Middleport	360631006	O3	68
NEW	421010048	O3	68
PECK	420690101	O3	68
NORR	420910013	O3	67
Pocono	420890002	O3	67
Rider Universit	340210005	O3	67
KITT	420050001	O3	66
SCRA	420692006	O3	66
WILK	420791101	O3	66
Columbia	340410007	O3	65
Dunkirk	360130006	O3	65
EAS2	420958000	O3	65
FREE	420950025	O3	65
GREE	421290008	O3	65
M.K. Goddard	420859991	O3	65
Rutgers Univers	340230011	O3	65
Stillwater	360910004	O3	65
Westport	90019003	O3	65
ALLE	420770004	O3	64
East Hartford	90031003	O3	64
Greenfield	250112005	O3	64
Greenwich	90010017	O3	64



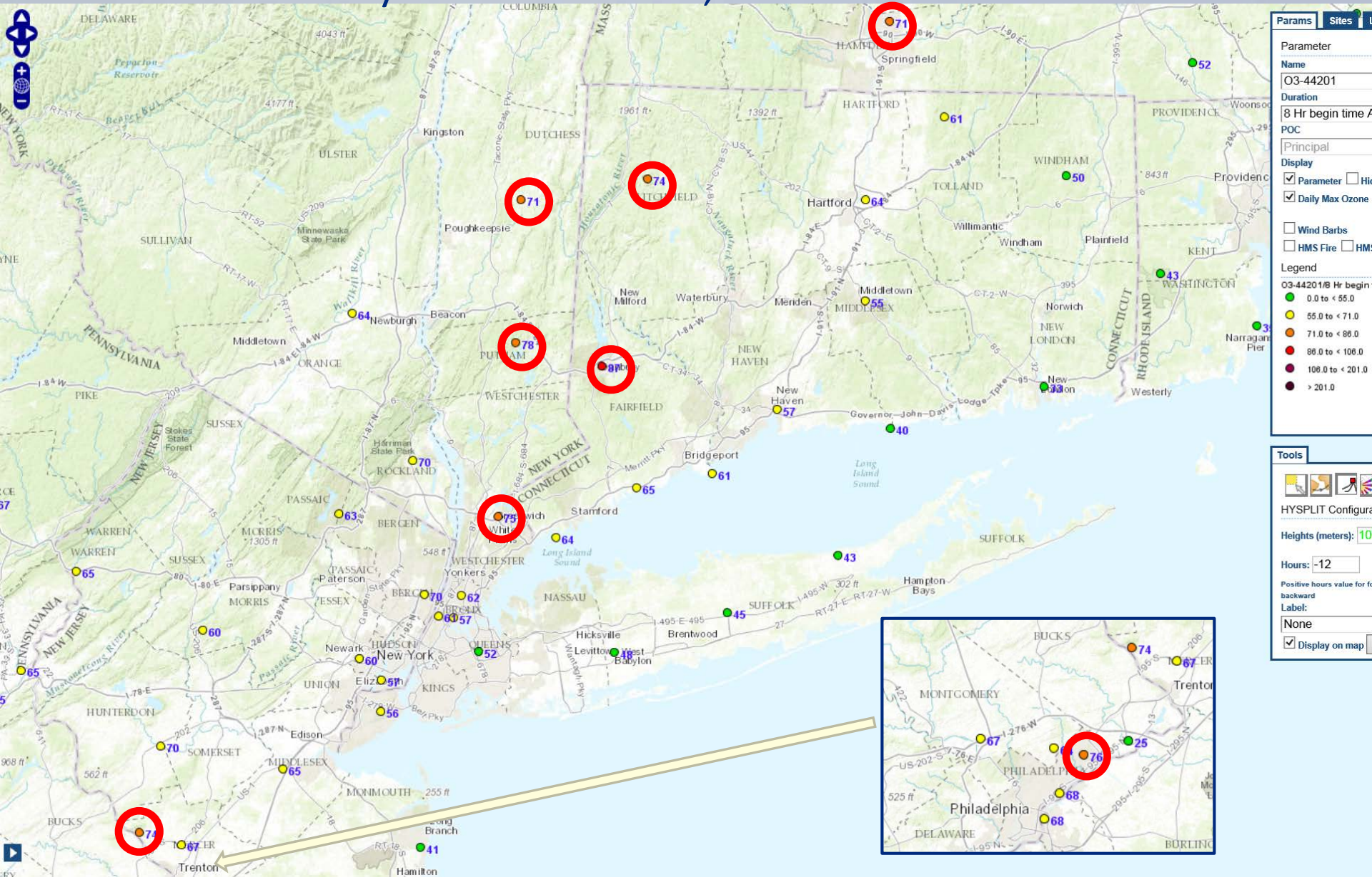
# CT Monitoring Site Design Value Update

	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	78	x	x		Four more 93+ ppb days violates 1997 NAAQS
	Madison	73	x			One more 78+ ppb day violates 2008 NAAQS
	Middletown	77	x	x		Four more 97+ ppb days violates 1997 NAAQS
	New Haven - Criscuolo Park	74	x			Two more 75+ ppb days violates 2008 NAAQS
	Stratford	76	x	x		Four more 95+ ppb days violates 1997 NAAQS
	Westport	80	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	71	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



# June 26, 2016 Peak East Coast Ozone

- USG for Danbury and Cornwall CT, and 6 other OTR sites



Params Sites

Parameter Name: O3-44201

Duration: 8 Hr begin time A

POC

Principal Display

Parameter  Hic

Daily Max Ozone

Wind Barbs

HMS Fire  HMS

Legend

- 0.0 to < 55.0
- 55.0 to < 71.0
- 71.0 to < 86.0
- 86.0 to < 106.0
- 106.0 to < 201.0
- > 201.0

Tools

HYSPLIT Configur

Heights (meters): 10

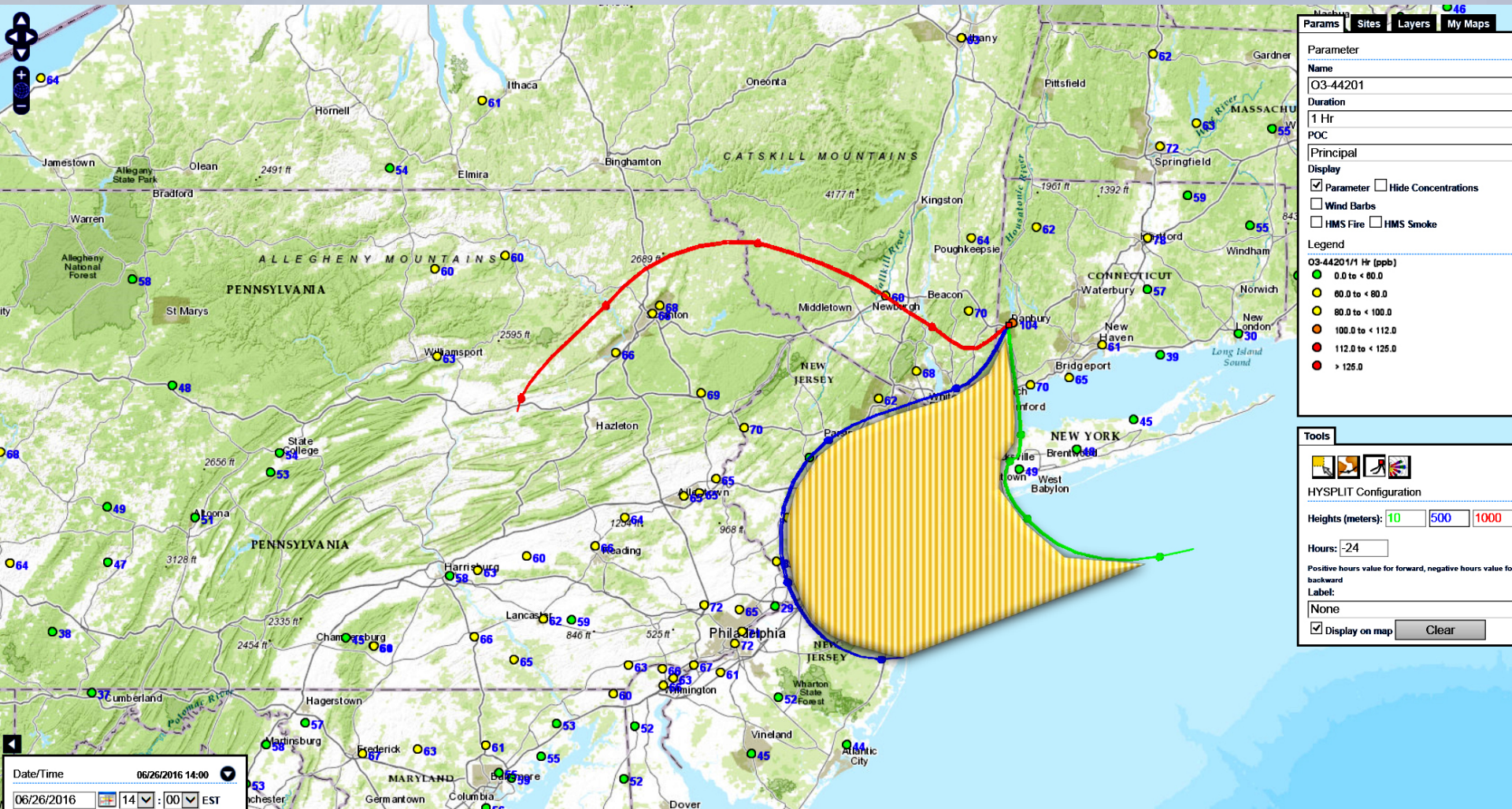
Hours: -12

Positive hours value for forward

Label: None

Display on map

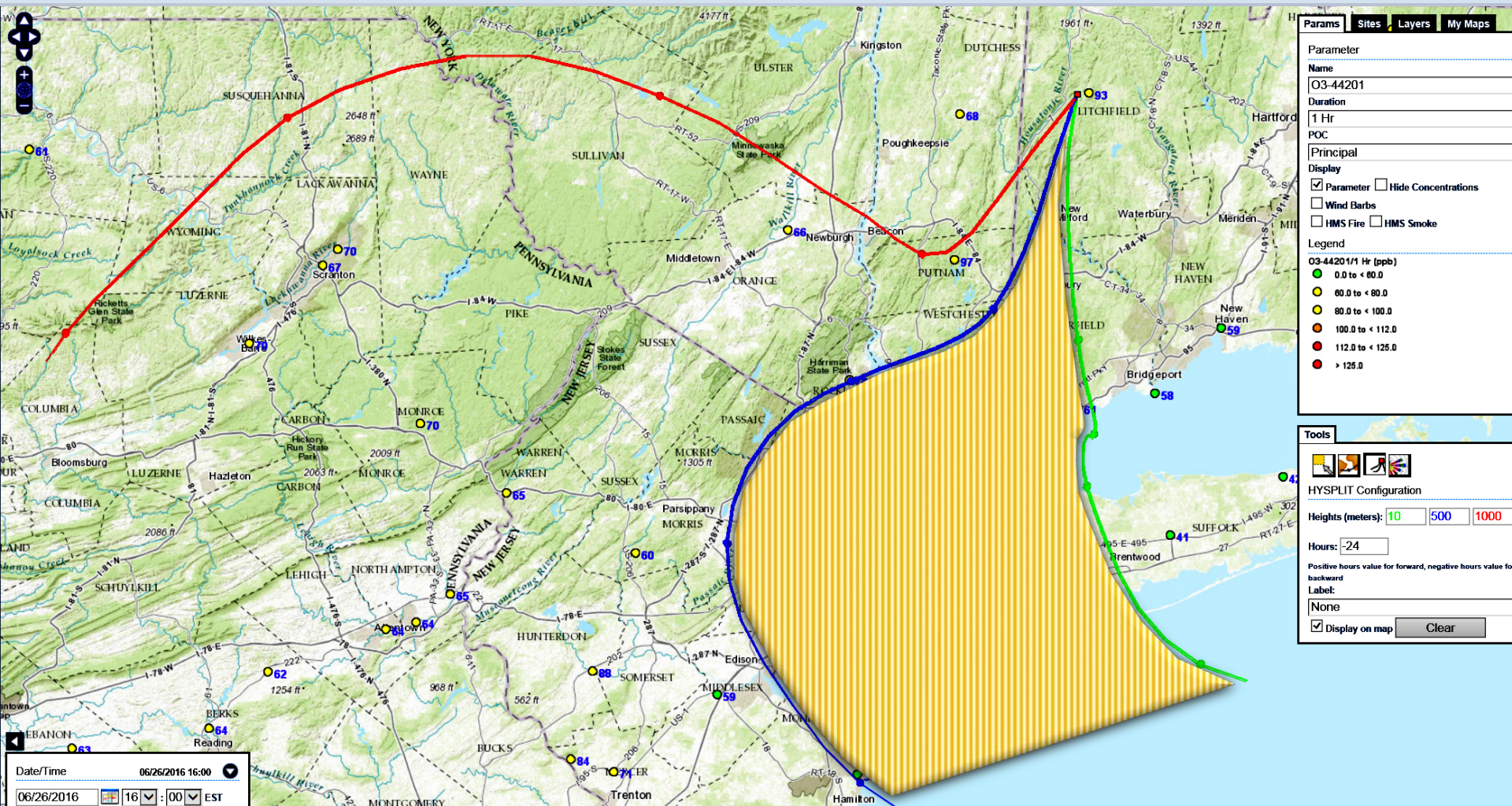
# 24-hr Back Trajectories 2:00 pm EST



The 10/500 meters trajectories around CT showed light east winds becoming southwest during the afternoon. Low level flow from the NYC metro area impacted Danbury at the hour of peak ozone. Higher level flow at 1000 meters from the west, originated in eastern PA, from an area with elevated ozone.



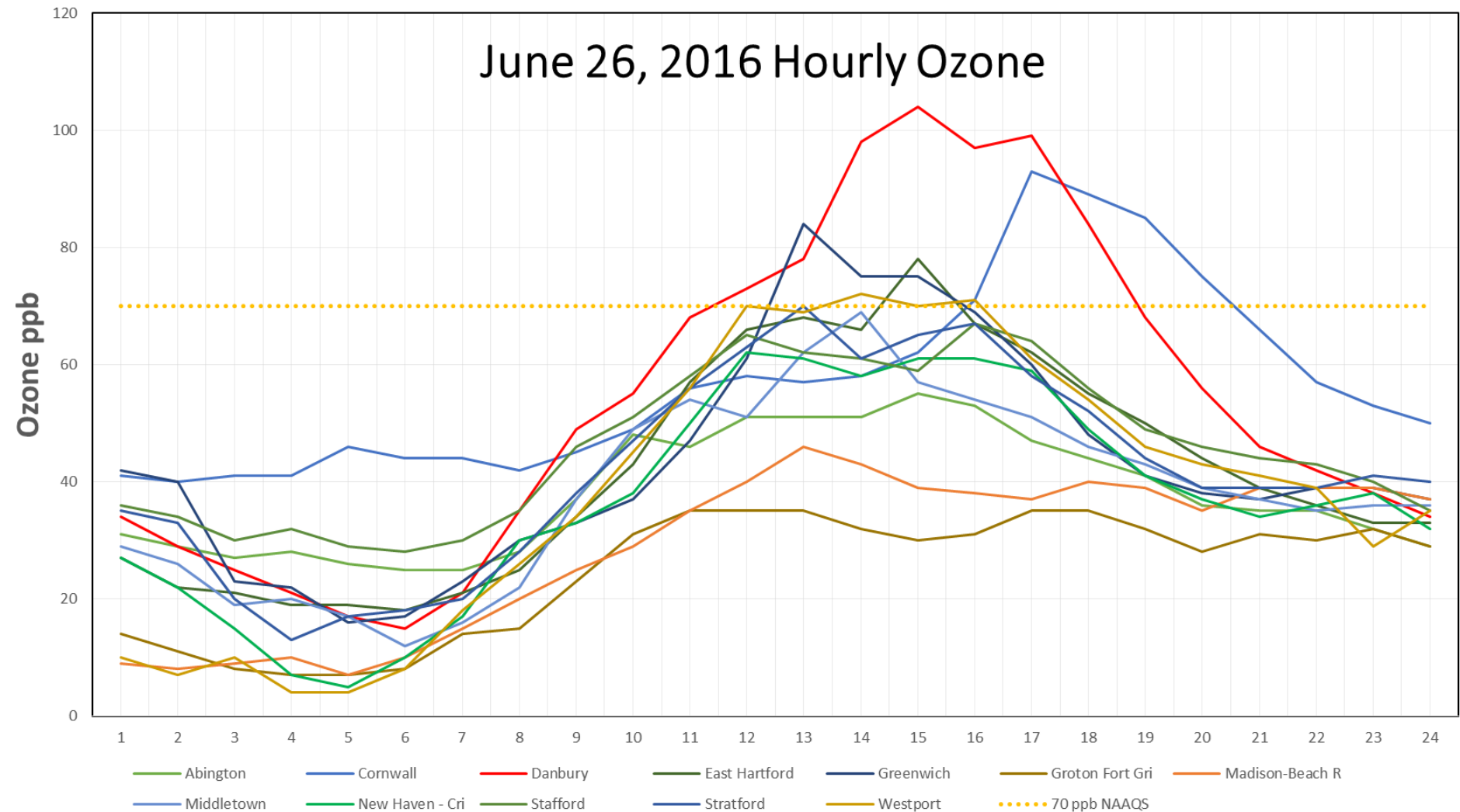
# 24-hr Back Trajectories 4:00 pm EST



At the Cornwall monitor, 2 hours later, the 10/500 meters trajectories showed contribution from NYC metro. Monitors to the east had more maritime air.

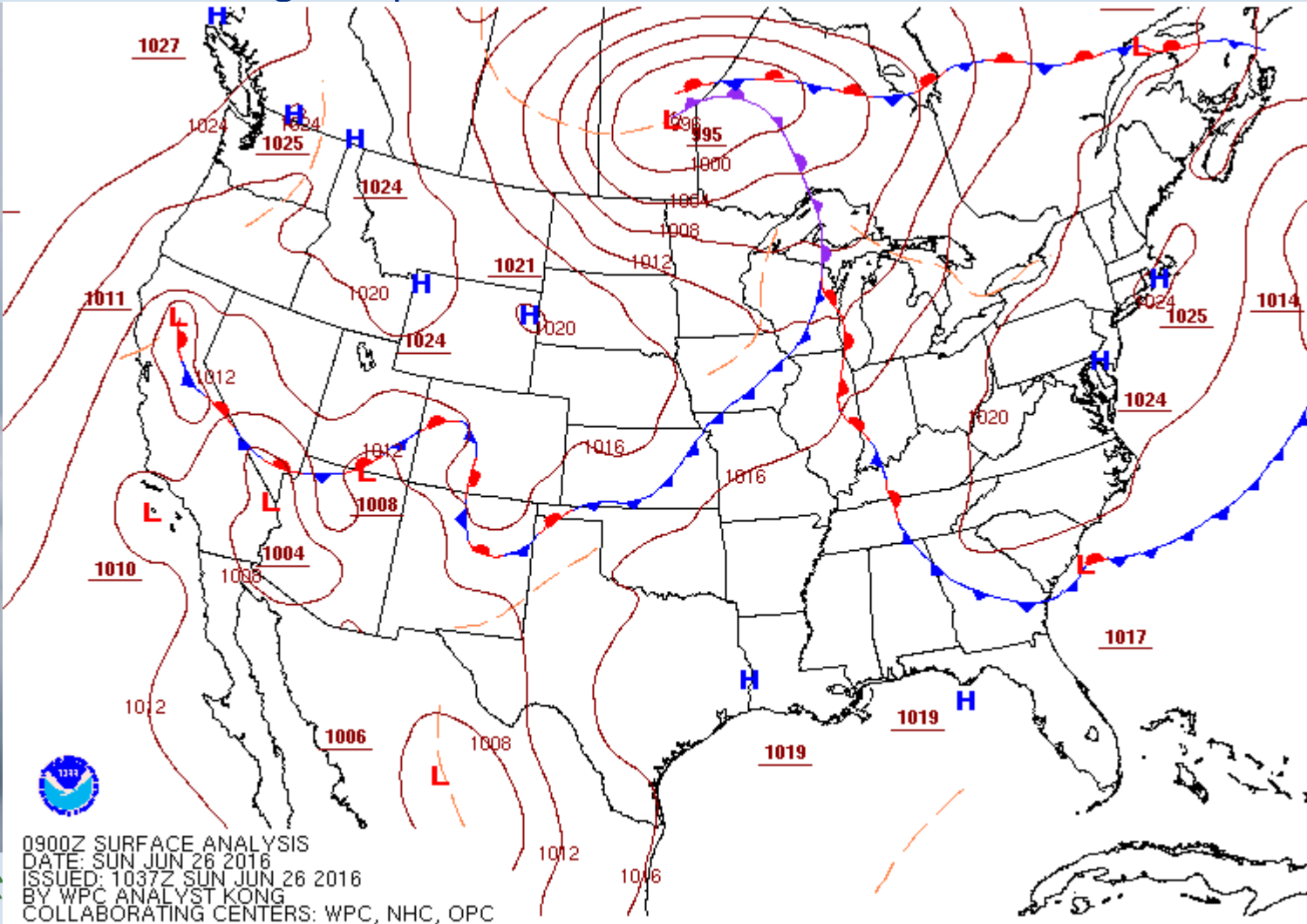
# June 26, 2016 CT Ozone Monitors

Four CT sites had USG ozone levels for several hours, however, Danbury and Cornwall had hourly spikes over 90 ppb that caused the exceedances.



# June 26, 2016 Surface Analysis (5:00am -11:00pm) Animation

- Weak high pressure moves off the coast, allowing some southwest wrap around surface winds to bring NYC pollutants over western Connecticut.

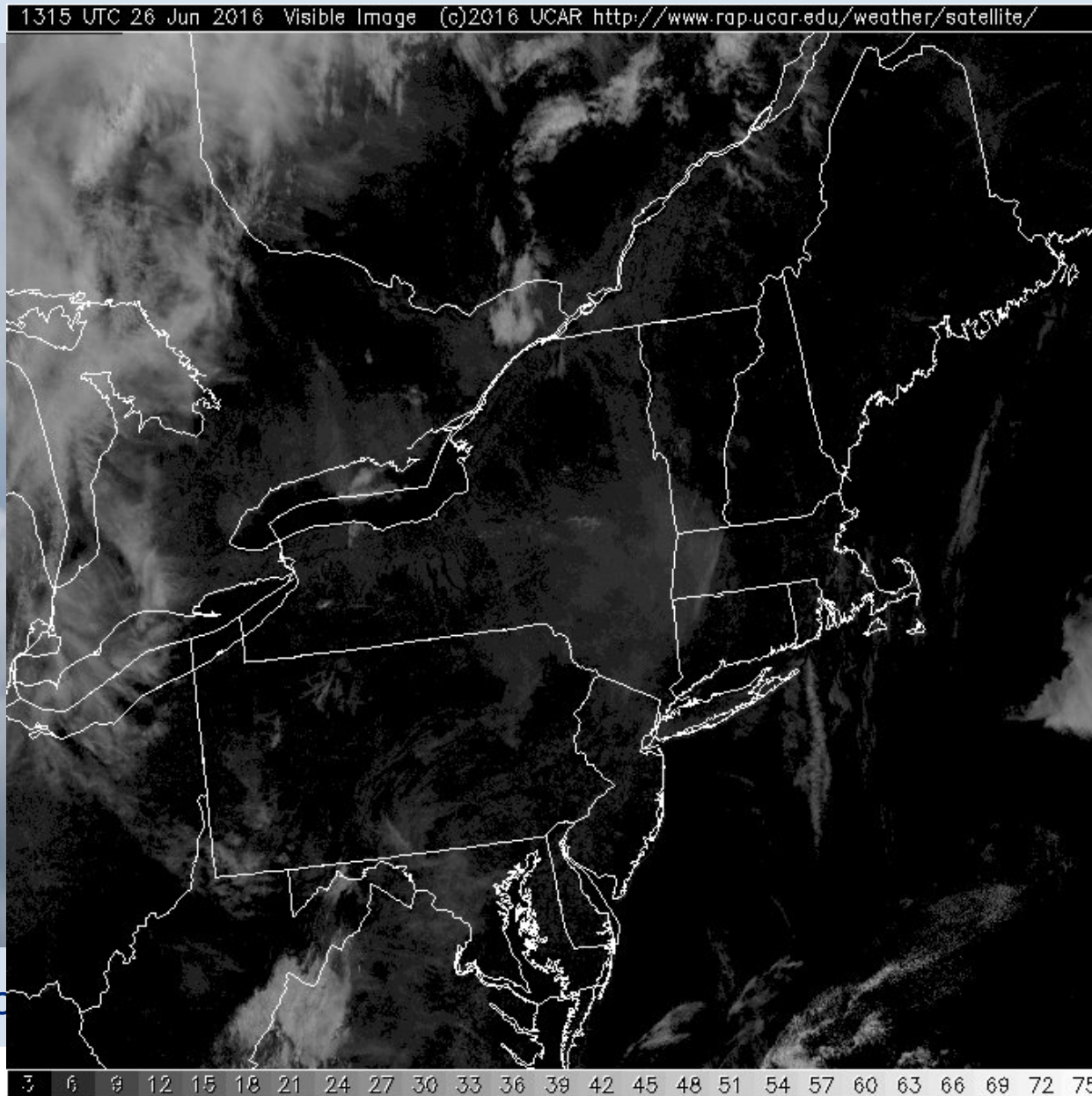


0900Z SURFACE ANALYSIS  
DATE: SUN JUN 26 2016  
ISSUED: 1037Z SUN JUN 26 2016  
BY WPC ANALYST KONG  
COLLABORATING CENTERS: WPC, NHC, OPC



# June 26, 2016 Satellite Animation

- Sunny skies, with only scattered clouds late in the day, aided the ozone production.

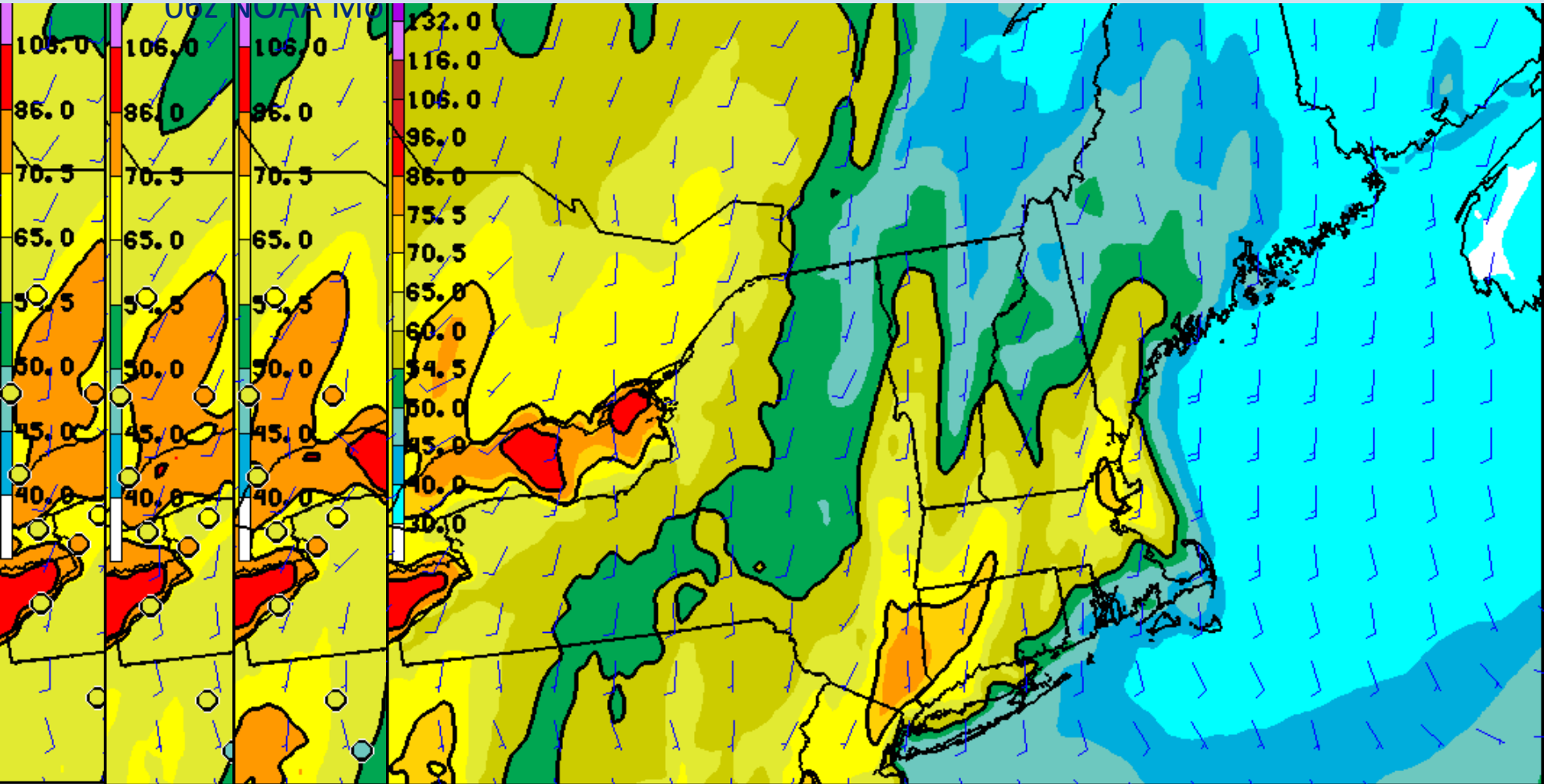


Co

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# NOAA Ozone Model Animation (Slide show)

Model showed the ozone plume emanating from the NYC metro area and was fairly consistent in positioning the plume over western CT and eastern NY. This animation shows the 4 NOAA model runs from 06z, 12z day before and 06z, 12z the same day. However, these model runs were not available on Friday, when the forecast was made.



# Barons MAQSIP Ozone Model

Only the Barons models could forecast for Sunday, June 26<sup>th</sup> and they showed USG plume further west over New York. Because of this, CT forecasters did not forecast USG for Sunday!

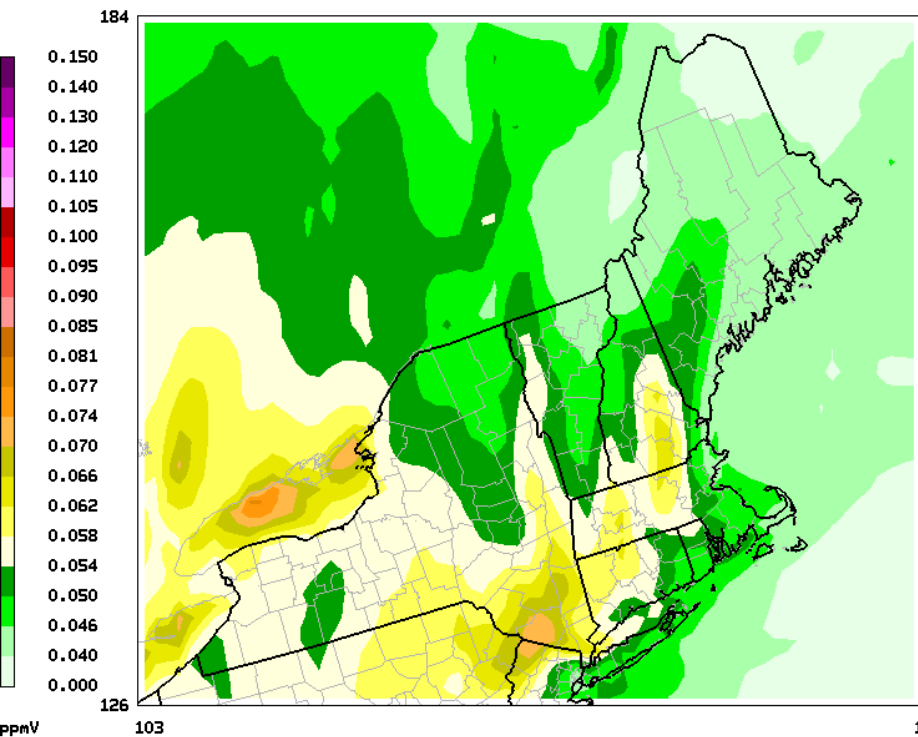
Barons CMAQ June 24th, 12z run

Barons MAQSIP June 24th 12z run

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

(c) 2013 BAMS Environmental Modeling Center

15km CMAQ Domain Initialized 20160624 at 12Z



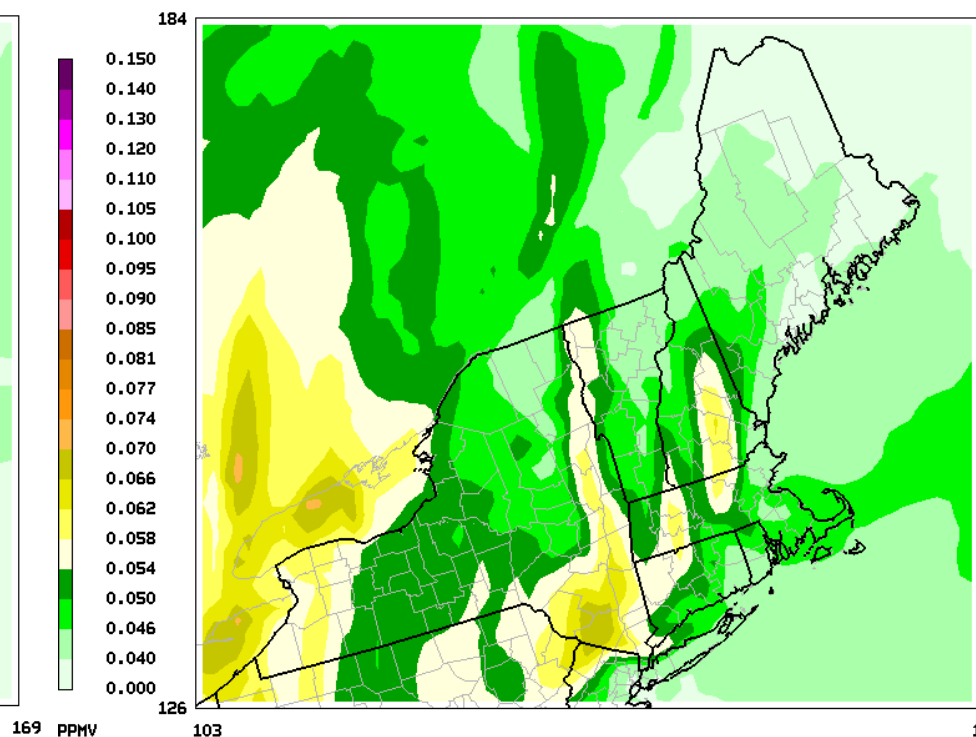
June 26, 2016 06:00:00

Min= 0.036 at (169,141), Max= 0.077 at (113,143)

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

(c) 2013 BAMS Environmental Modeling Center

15km MAQSIP Domain Initialized 20160624 at 12Z



June 26, 2016 06:00:00

Min= 0.036 at (144,170), Max= 0.072 at (106,146)

# Conclusion

- Although the NOAA showed USG for Sunday, June 26<sup>th</sup>, These model runs were not available to forecasters on Friday.;
- On Friday, the Barons model and NAM forecast trajectories showed NYC surface plume staying west of CT.
- USG levels were realized over western CT and eastern NY due to low level boundary layer winds advecting the NYC metro plume northward.
- 2-3 day ozone forecasting is difficult, unless it is a widespread event, because meteorological models tend to change with every model run.

