

## Connecticut Department of Energy and Environmental Protection





# April 22, 2016 Ozone Event

Analyzed by Michael Geigert



**Connecticut Department of Energy and Environmental Protection** 

# **OTC Ozone Monitors**

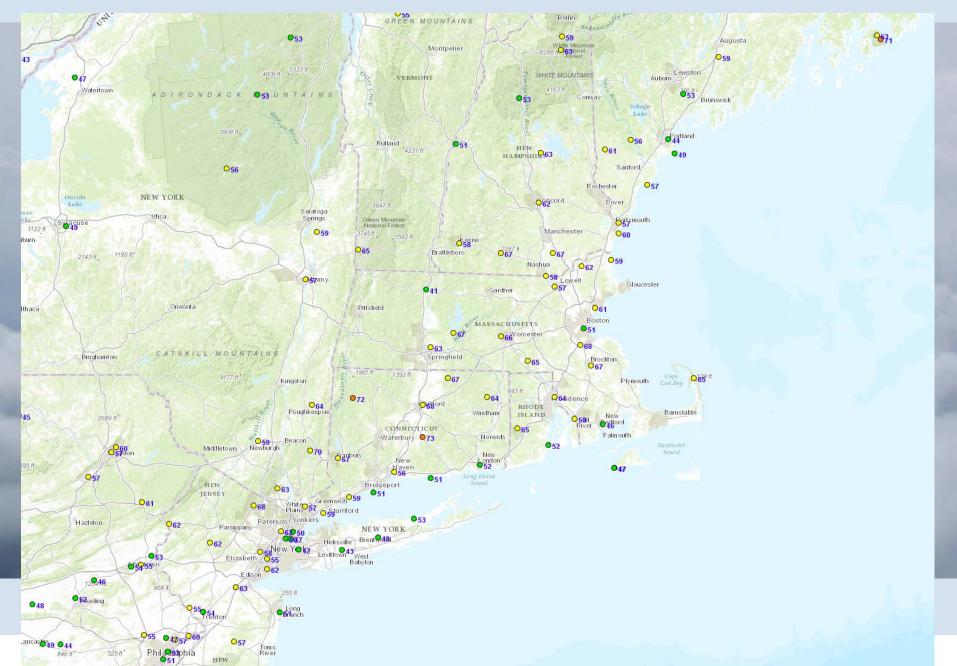
April 22, 2016

- 2 CT Exceedances
- 1 Maine Exceedance

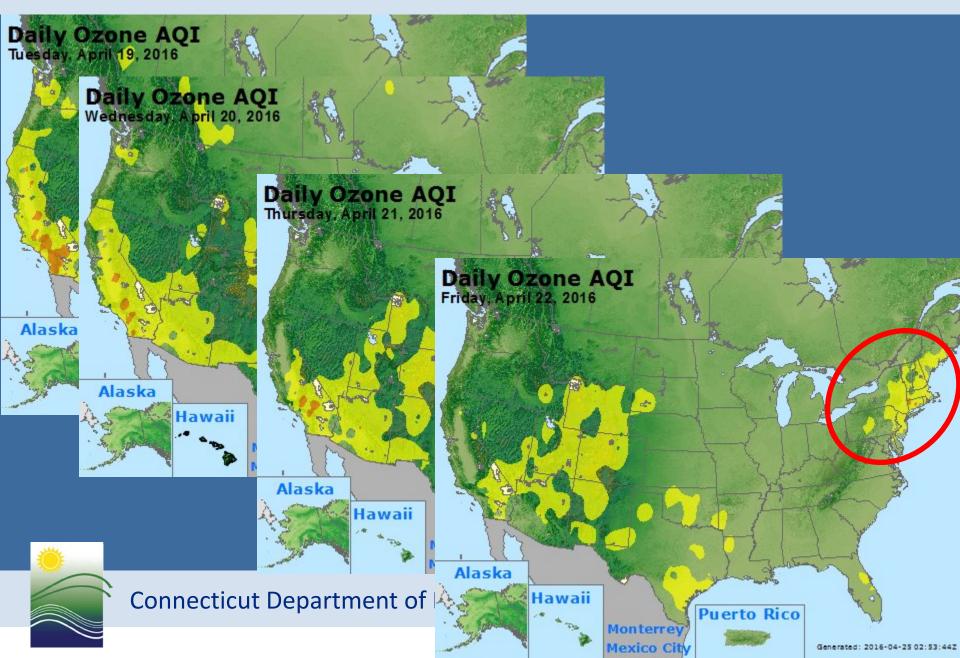
Site	Site AQS	Date (LST)	8-hr Ozone
Middletown	90070007	4/22/2016	73
Cornwall	90050005	4/22/2016	72
Bar Harbor - Ca	230090102	4/22/2016	71
Mt Ninham	360790005	4/22/2016	70
E. Milton - Blu	250213003	4/22/2016	68
East Hartford	90031003	4/22/2016	68
Ramapo	340315001	4/22/2016	68
Brockton	250230005	4/22/2016	67
Danbury	90011123	4/22/2016	67
Londonderry - M	330150018	4/22/2016	67
Miller State Pa	330115001	4/22/2016	67
Stafford	90131001	4/22/2016	67
WARE	250154002	4/22/2016	67
Worcester	250270015	4/22/2016	66
Bennington	500030004	4/22/2016	65
TRURO	250010002	4/22/2016	65
Uxbridge	250270024	4/22/2016	65
W Greenwich	440030002	4/22/2016	65
Abington	90159991	4/22/2016	64
E Providence	440071010	4/22/2016	64
Millbrook	360270007	4/22/2016	64
Acadia NP - McF	230090103	4/22/2016	63
CHICOPEE	250130008	4/22/2016	63
Laconia	330012004	4/22/2016	63
Rockland Cty	360870005	4/22/2016	63
Rutgers Univers	340230011	4/22/2016	63
SUMMIT	330074001	4/22/2016	63
Chester	340273001	4/22/2016	62
Columbia	340410007	4/22/2016	62
Concord	330131007	4/22/2016	62
Haverhill	250095005	4/22/2016	62
Leonia	340030006	4/22/2016	62
Susan Wagner	360850067	4/22/2016	62



#### Map of April 22, 2016 Maximum 8-hr Ozone (ppb)



## Persistent Elevated Ozone over the Southeast



#### Cornwall 48-hr Back Trajectories 20z April 22, 2016

Longest range 1200 meter transport taps the elevated ozone over the southern States.

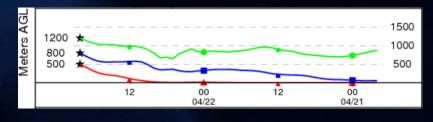
04/20/2016 2200 UTC

1200 Meters
800 Meters
500 Meters

04/20/2016 2200 UTC

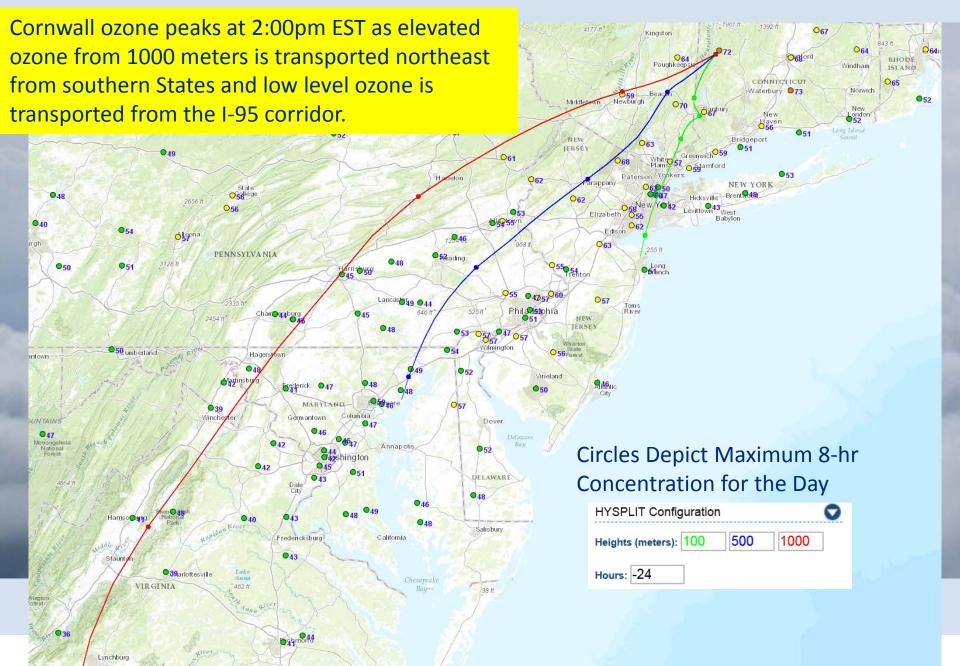
04/20/2016 2200 UTC

HYSPL



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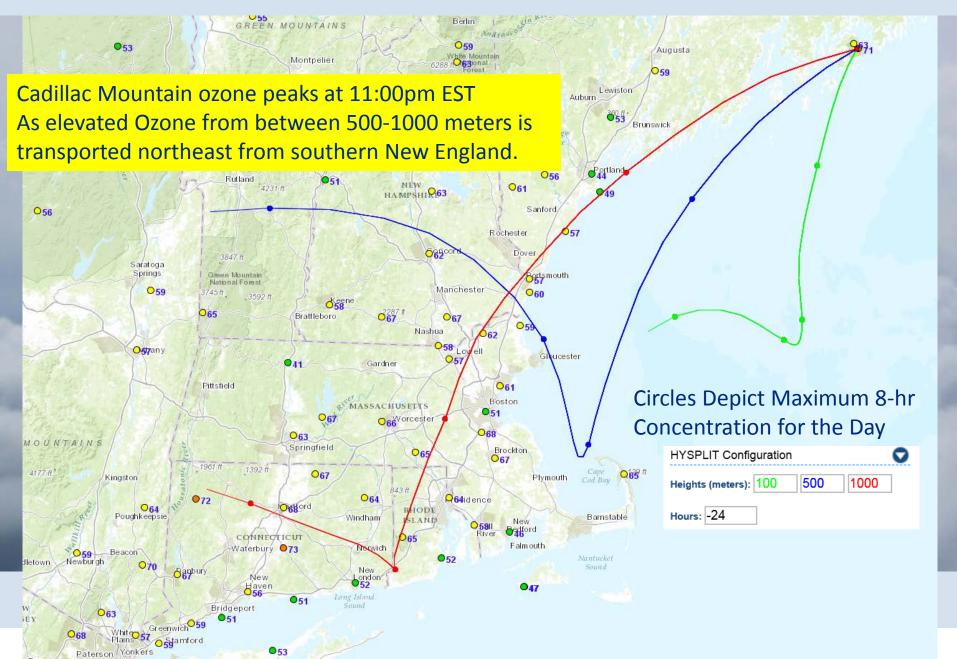
#### Cornwall 24-hr back Trajectory (2:00pm)



#### Middletown 24-hr back Trajectory (5:00pm)

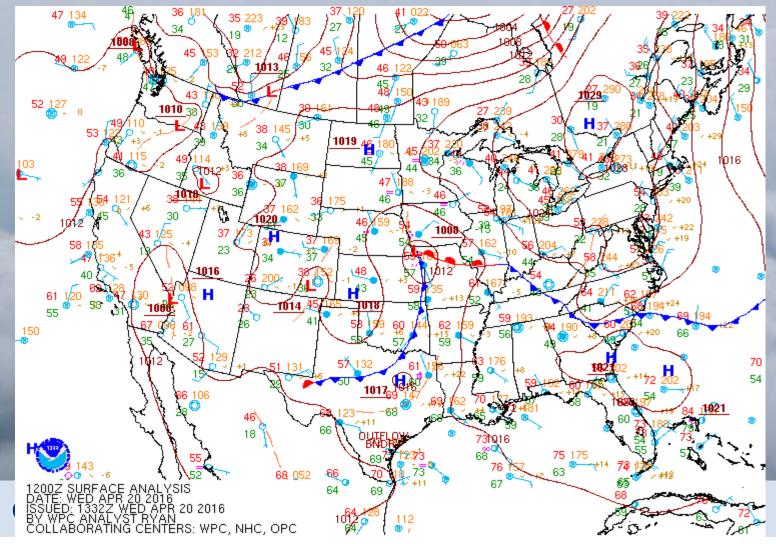
Middletown ozone peaks at 5:00pm EST as Kingston 064 072 Ownord elevated ozone from 1000 meters is transported 064 RHC Poughkeepsie Windham ISL/ CONNECTICUT northeast from southern States and 500 meter 065 Waterbur Norwich Newburgh Beacon Middletown 070 ozone is transported from the I-95 corridor. New London" Lowest level transport takes place over the ocean. 051 NEW Greenwich 059 White 57 068 O Stamfo **5**3 Yonkers Hazleton Paterson 062 Parsippany NEW YORK State Brent O Sellege 062 icksville 2656 ft Levittown43 056 053 Elizabeth Babylon Olgotssv n 054 Otoona 12946 968 f 255 ft PENNSYLVANIA 52 ading 3128 ft 051 O Long irri sourg **955** 04057 Lancasta 49 044 057 2335 ft\* Toms Chanogaburg Phila 525 ft River 846 1 045 2454 ft NEW TERSEY 048 •53 057 •47 57 Wharton ●50 umberland 054 O 56 Forest Hagestown 06 049 052 Vineland Martinsburg Saderick 047 AttAntic 048 050 048 Bangre MARYLAND 057 Circles Depict Maximum 8-hr Columbia Winonester Germantown Dover 047 046 04547 Concentration for the Day 042 Annap olis 052 844shington 042 DELAWARE 043 Dale City Q48 046 HYSPLIT Configuration 049 048 Harriso 040 043 048 River Salisbury Heights (meters): 100 500 1000 Fredericksburg California 043 staunton Hours: -24 Lake O39arlottesville VIRGINIA 462 ft 38 ft

### Cadillac MT 24-hr back Trajectory (11:00pm)

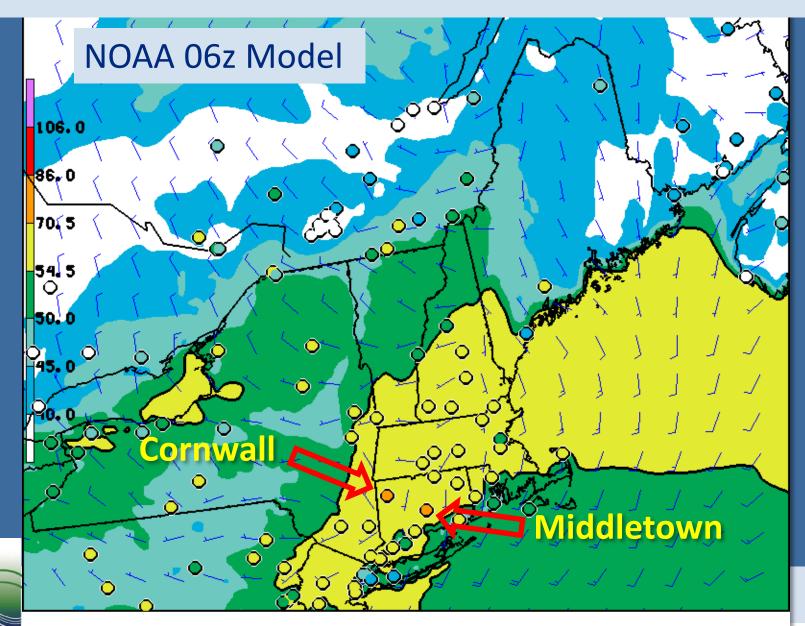


## Surface Front Animation: April 20-22, 2016

Note the 'High Pressure Center' moving off the coast, setting up Connecticut for a southwest surface wind on Wednesday.

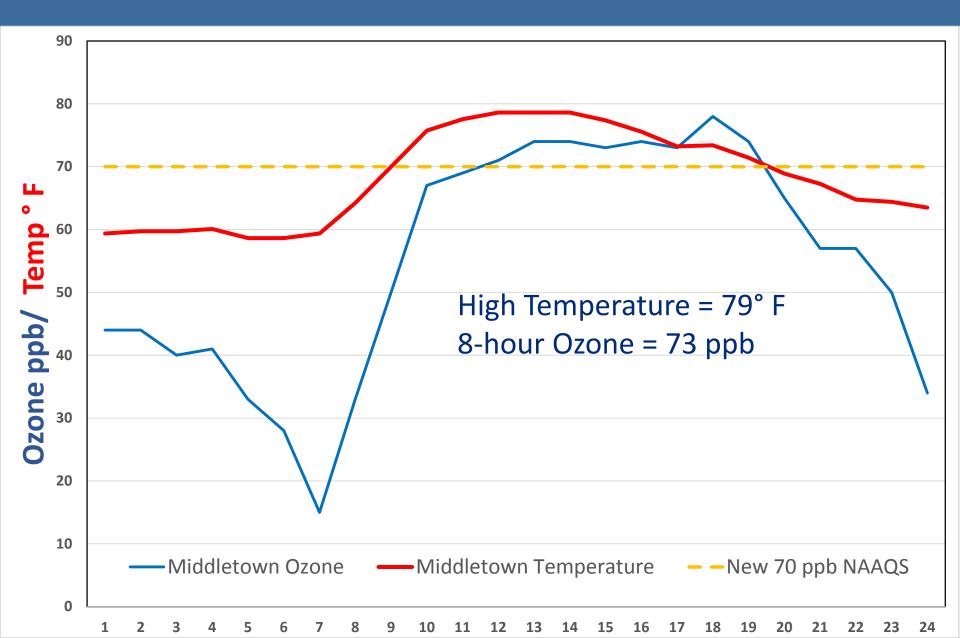


## April 22<sup>nd</sup>: NOAA Model Nearly Correct!



PROD DAY1 02MX08 0 20160422 062 CYC\*

## Temperature vs. Ozone



# Conclusions

- Weather setup was conducive for elevated ozone;
- Ozone reservoir was building up over the Southeast States, combining with low level transport from the I-95 corridor, which contributed to the exceedances;
- High temperatures barely reached 80 °F, which normally would not alert forecasters to a possible exceedance;
- NOAA model performed well, but slightly underpredicted, so forecasters had no firm basis to expect exceedance.



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