



Connecticut Department of Energy and Environmental Protection



Air Quality Awareness Week

Communicating Air Quality Alerts to the Public

April 2016

Michael Geigert

Air Planning and Standards



Connecticut Department of Energy and Environmental Protection

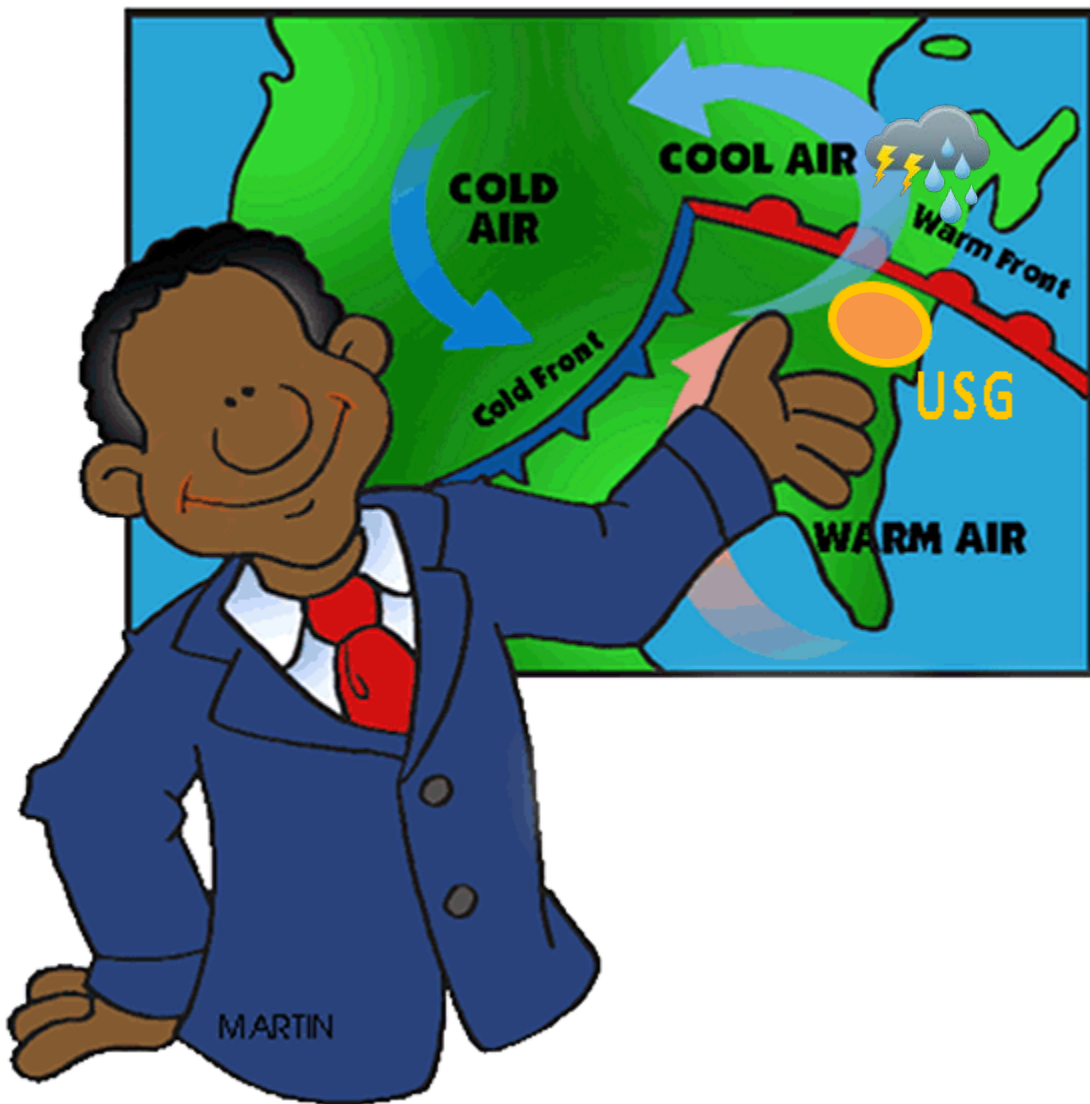
Air Quality and Meteorology

- Emissions and meteorology are the two most important factors determining the air quality




Why Include the Air Quality?

You are the messenger to the people!



8-hr Ozone AQI

GOOD	
MODERATE	
USG	
UNHEALTHY	

Ambient Air Monitoring in Connecticut

Town	O ₃	PM _{2.5}	PM ₁₀	Lead	BC	SO ₂	NO _x	CO	VOCs
Bridgeport		x	x			x		x	
Cornwall	x	x	x		x	x	x	x	
Danbury	x	x			x				
East Hartford	x	x	x		x	x	x	x	x
Greenwich	x								
Groton	x	x							
Hartford		x	x		x		x	x	
Madison	x								
Middletown	x								
New Haven	x	x	x	x	x	x	x	x	x
Stafford	x								
Stratford	x								
Waterbury		x							
Westport	x								

Lead Monitoring ceases on 6/30/2016

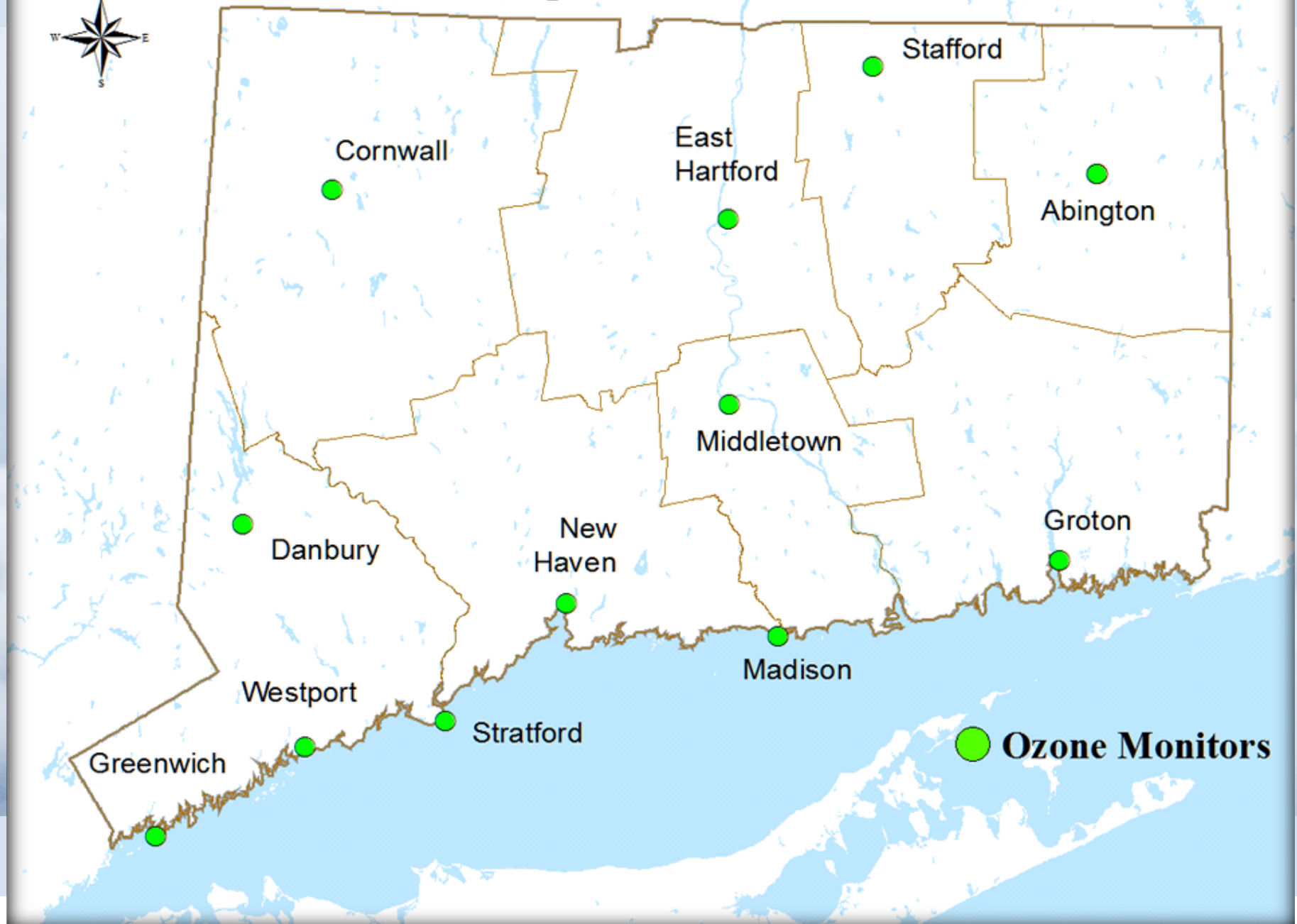
Criteria Pollutants

Forecast Pollutants

Connecticut Department of Energy and Environmental Protection



Air Monitoring Sites in Connecticut 2016



Ozone and Particulate Matter (PM2.5)

- With the new ozone 8-hr NAAQS of 70 ppb, expect more alerts this summer;
- Ozone monitoring season runs from March- September; daily forecasting usually begins in May;
- PM2.5 monitoring runs year-round;
- Expect only a few 24-hr PM2.5 exceedance days per year, generally in the winter.
- PM2.5 24-hr NAAQS = $35 \mu\text{g}/\text{m}^3$; Annual = $12 \mu\text{g}/\text{m}^3$
- **CTDEEP issues air quality forecasts everyday of the year.**




The CT DEEP AQI Web Page

Air Quality Index (AQI)

The U. S. Environmental Protection Agency (EPA) has provided a scale called the Air Quality Index (AQI) for rating air quality. This scale is based on the [National Ambient Air Quality Standards \(NAAQS\)](#). The AQI is not routinely updated on weekends and during holiday periods. On those days, please call the **Air Quality Index Hotline at (800) 249-1234 or (860) 424-4167** or link to [EPA AIRNow State of Connecticut](#) for the most current air quality information.

[EnviroFlash](#) - Subscribe to receive air quality information by e-mail

 - Follow the air quality forecasts



Air Quality Labels	
Forecasted Thursday, February 18, 2016	Good
Forecasted Friday, February 19, 2016	Good to Moderate



Ozone forecasting for the 2015 season has come to a close. Ozone concentrations from October through April are expected to remain in the **GOOD**, to occasionally **MODERATE** range.

[2015 Forecasted Unhealthy Ozone Days](#)

[Annual summary of 8-hour and 1-hour ozone daily maximums](#)

[Health Effects Statements](#) 

[Cautionary Statements](#) 

Connecticut Department of Energy and Environmental Protection



Sign up for AQI updates on Twitter



Air Quality Updates on Twitter

Follow us on Twitter for Connecticut air quality forecasts and alerts. Tweets are generated by EPA's EnviroFlash system and provide the date and air quality forecast for the selected area.

Twitter updates are available for the following towns in Connecticut:

- [Bridgeport](#)
- [Danbury](#)
- [Greenwich](#)
- [Groton](#)
- [Hartford](#)
- [Madison](#)
- [Middletown](#)
- [New Haven](#)
- [Stafford](#)
- [Stratford](#)
- [Torrington](#)
- [Westport](#)





TWEETS
677

FOLLOWING
15

FOLLOWERS
50

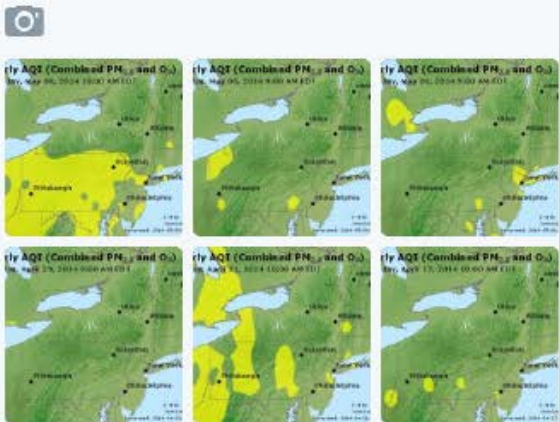


CT Air Quality

@CTAirQuality

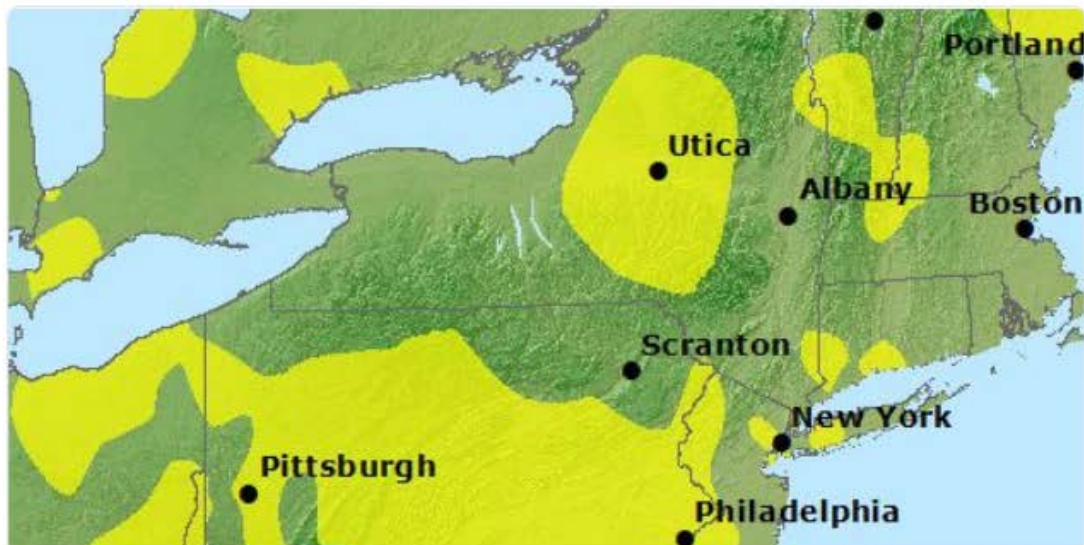
Air quality forecasts and information for the state of Connecticut.

1.usa.gov/1IA8Ukp



CT Air Quality @CTAirQuality · 2h

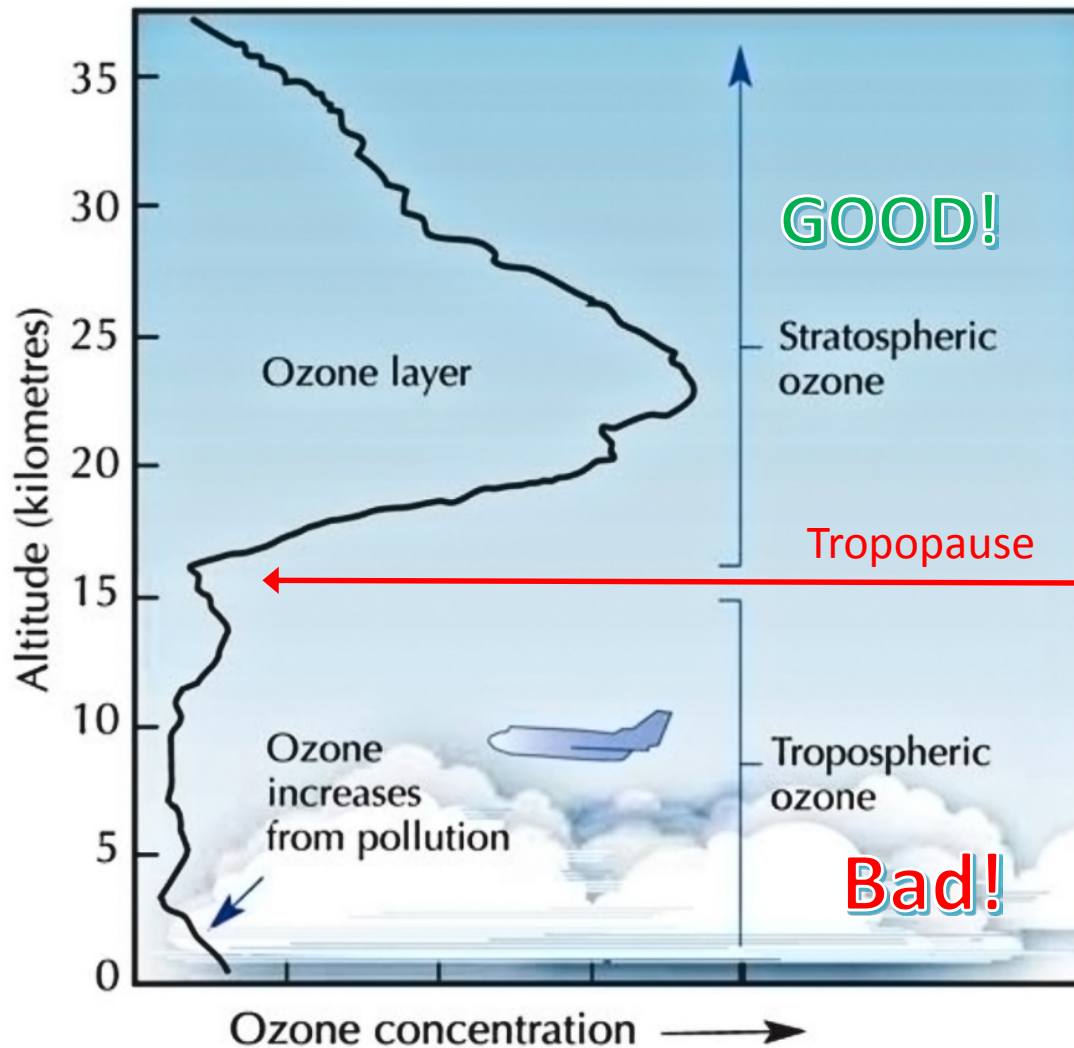
View CT's current air quality index for February 19: ow.ly/UcaSh



Today's Air Quality Index (AQI)

Connecticut DEEP provides a daily air quality forecast for the state. Ozone forecasts are also available from May 1 through September 30.

Where is the Ozone?



What is ground-level ozone?

- Ozone is a colorless gas formed when nitrogen oxides (NO_x) and volatile organic compounds (VOCs) chemically react in the sun.
- Ozone is a major component of smog — especially during the summer, when weather conditions are ripe for ground-level ozone to form.



VOC + NO_x + sunlight = OZONE



What do the AQI values mean?

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
<i>When the AQI is in this range:</i>	<i>...air quality conditions are:</i>	<i>...as symbolized by this color:</i>
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon



Ozone: USG Levels

Ozone Orange: The air quality forecast for tomorrow is unhealthy for sensitive groups (code orange).

Key On-Air Message

- Air quality is unhealthy for people in sensitive groups.

Supporting Message/ What Action Should People Take?

- Sensitive groups, including people with lung disease (such as asthma), active adults and children should take precautions, such as limiting prolonged outdoor exertion.



Ozone: Unhealthy Levels

Ozone Red: The air quality forecast for tomorrow is unhealthy for Everyone (code red).

Key On-Air Message:

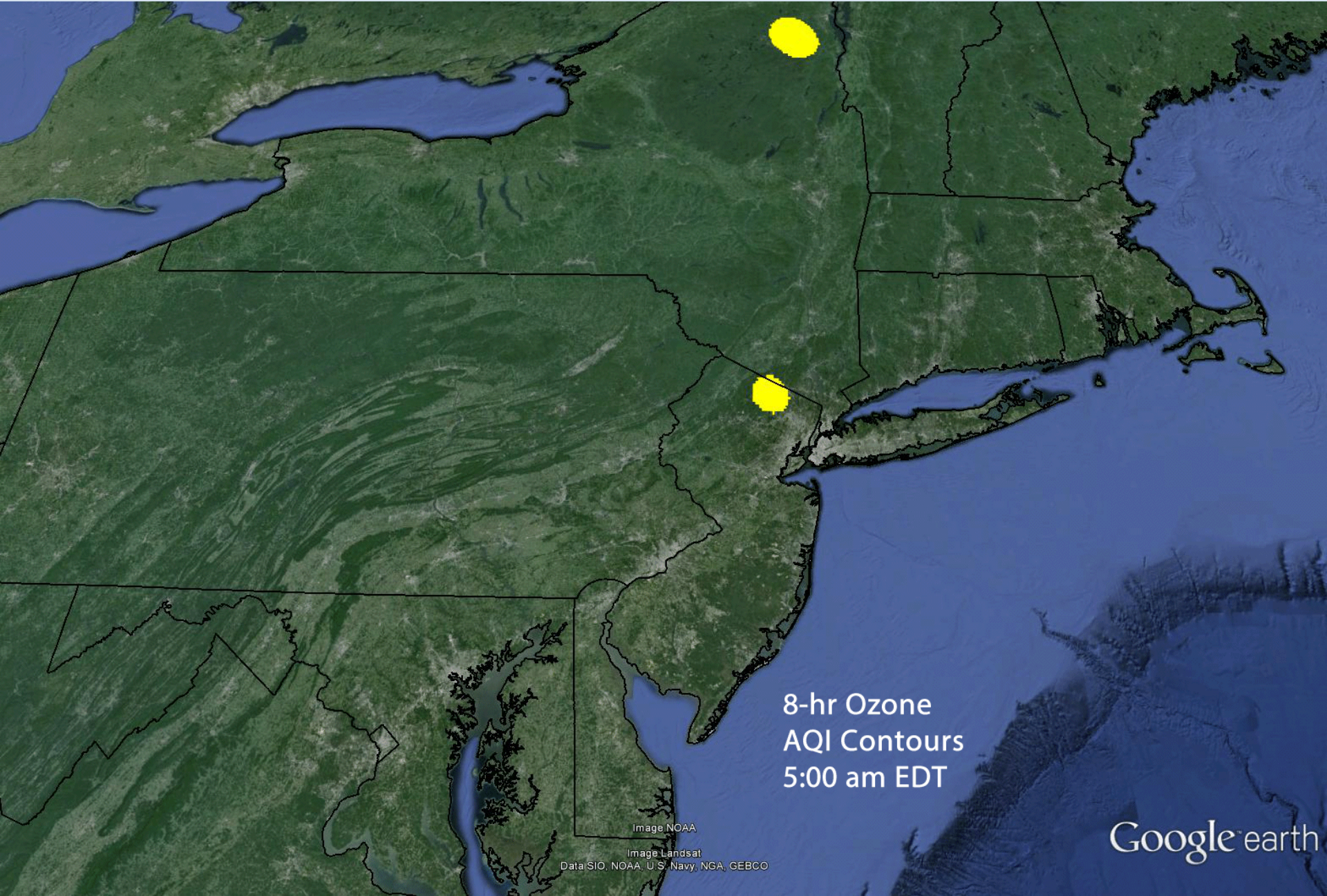
The air quality forecast for tomorrow is unhealthy for everyone.

Supporting Message/ What Action Should People Take?

Everyone needs to limit prolonged outdoor exertion!



September 17, 2015- 8-hour Ozone AQI



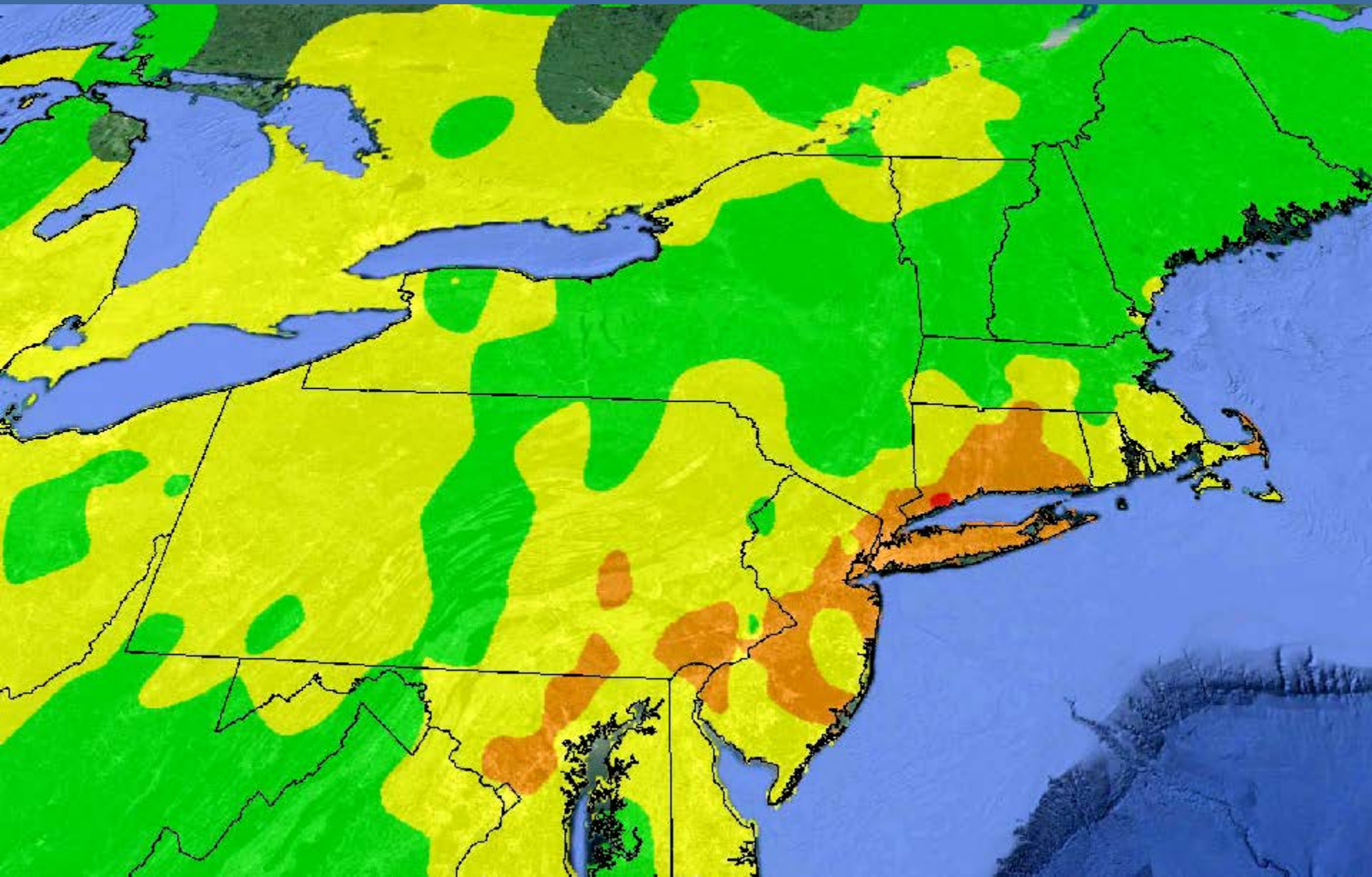
8-hr Ozone
AQI Contours
5:00 am EDT

Image NOAA

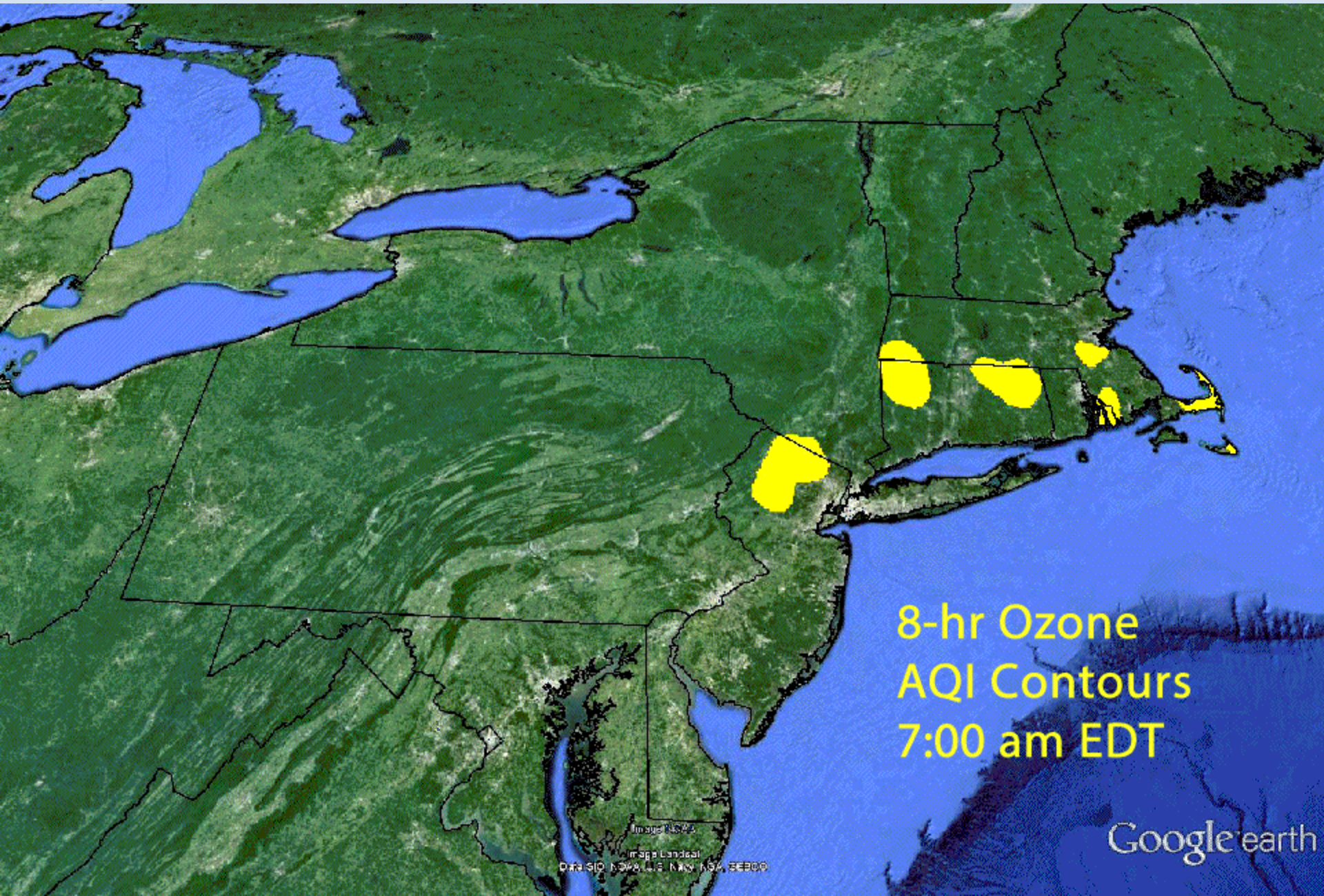
Image Landsat
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google earth

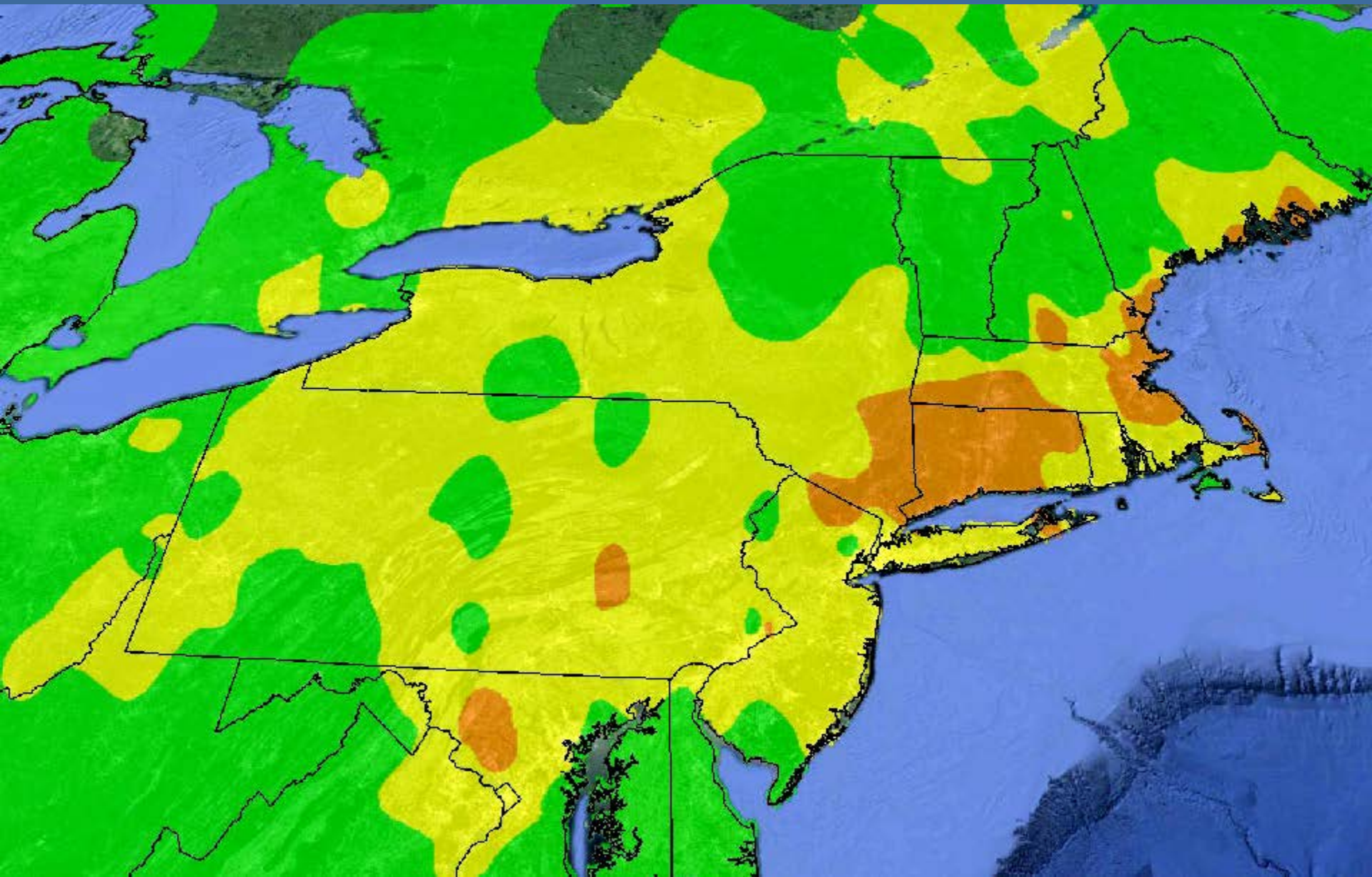
Peak Ozone AQI- September 17, 2015



September 18, 2015- 8-hour Ozone AQI

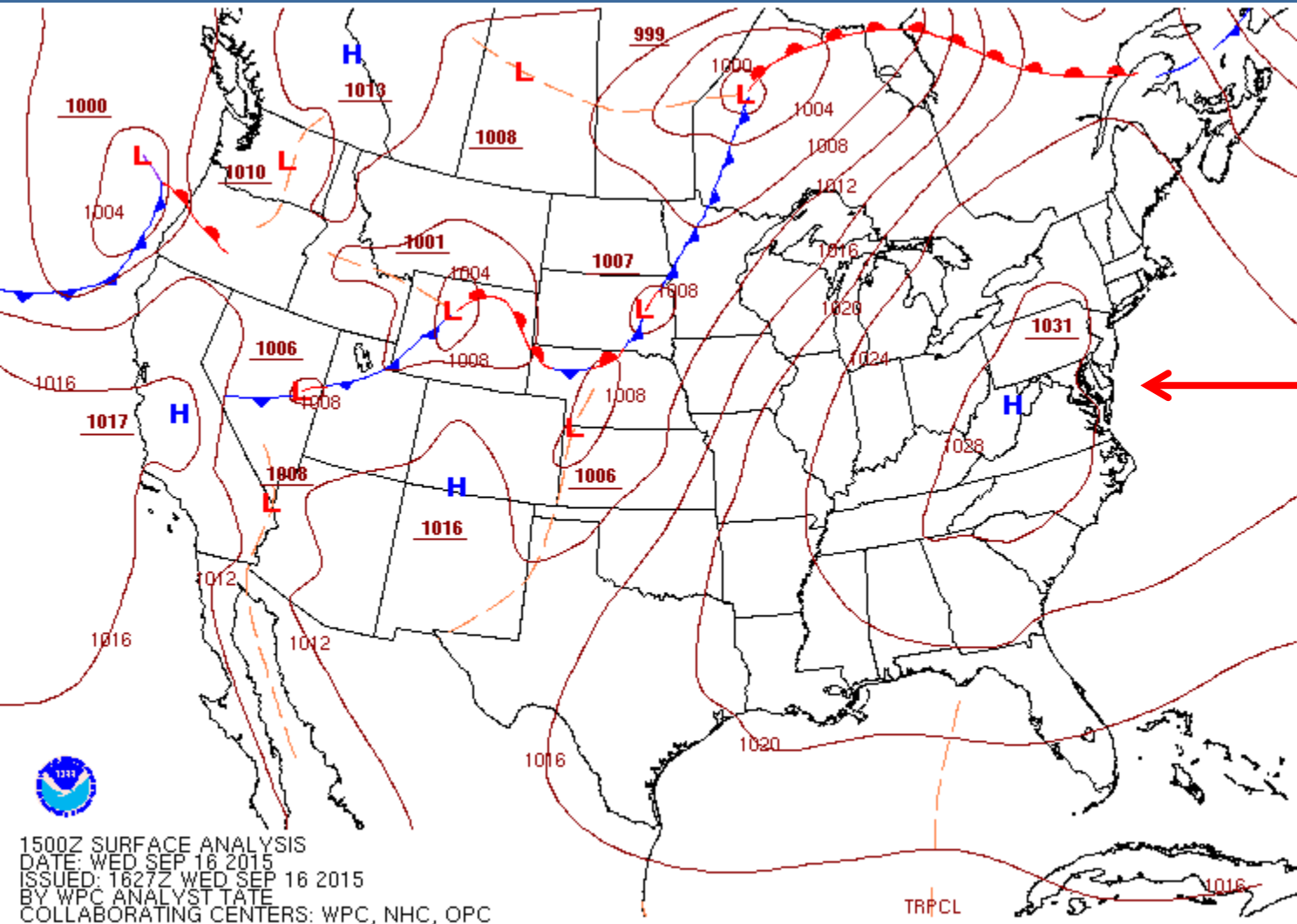


Peak Ozone AQI- September 18, 2015



Surface Analysis Animation

September 16, 11:00 am- September 19, 2:00 am

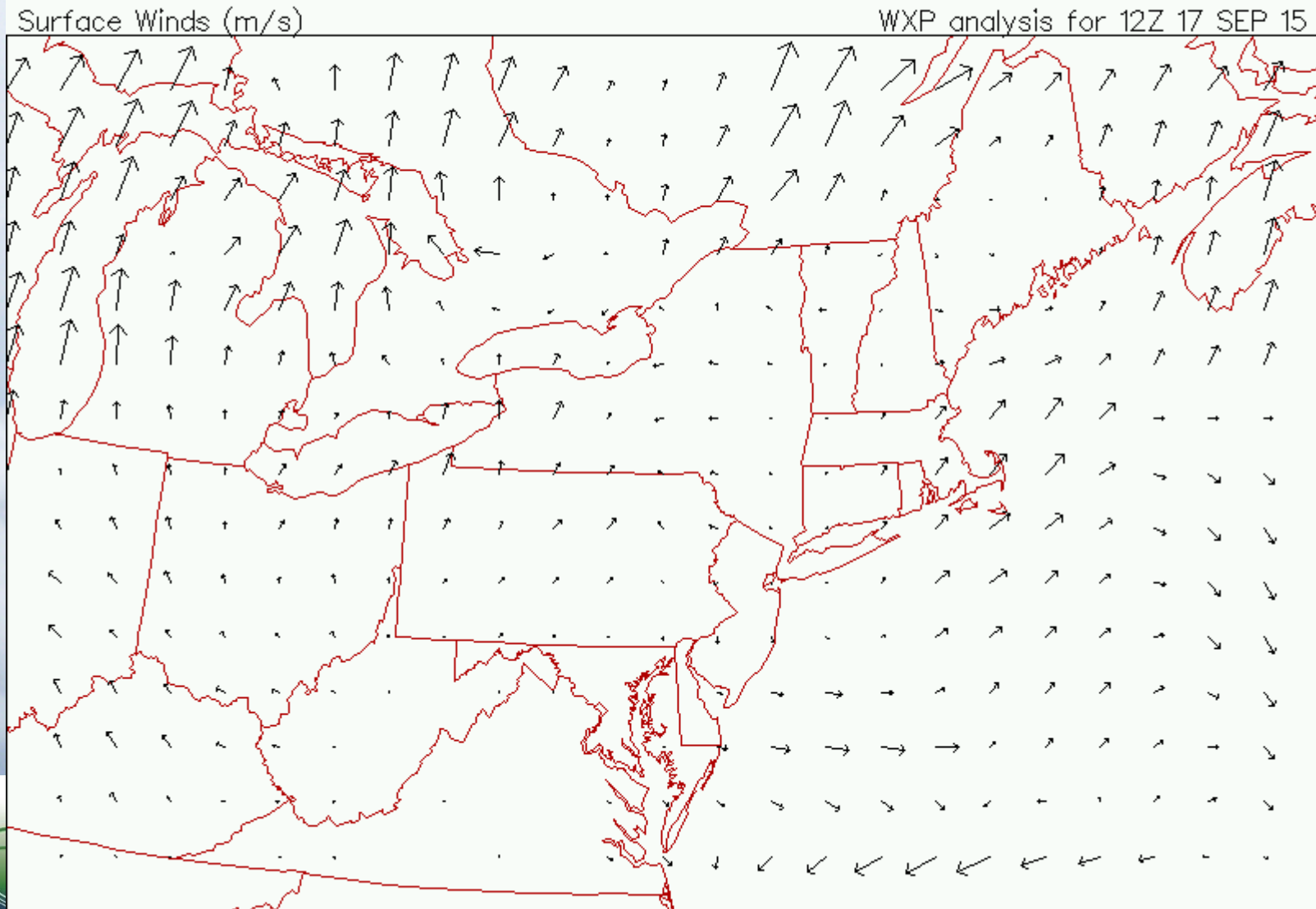


Note the nearly stationary high pressure center over the mid-Atlantic region.

This resulted in light winds and stagnant conditions that tended to trap pollutants in the boundary layer.

Surface Wind Vector Animation

September 17-18, 2015



Sept 17 8:00 am

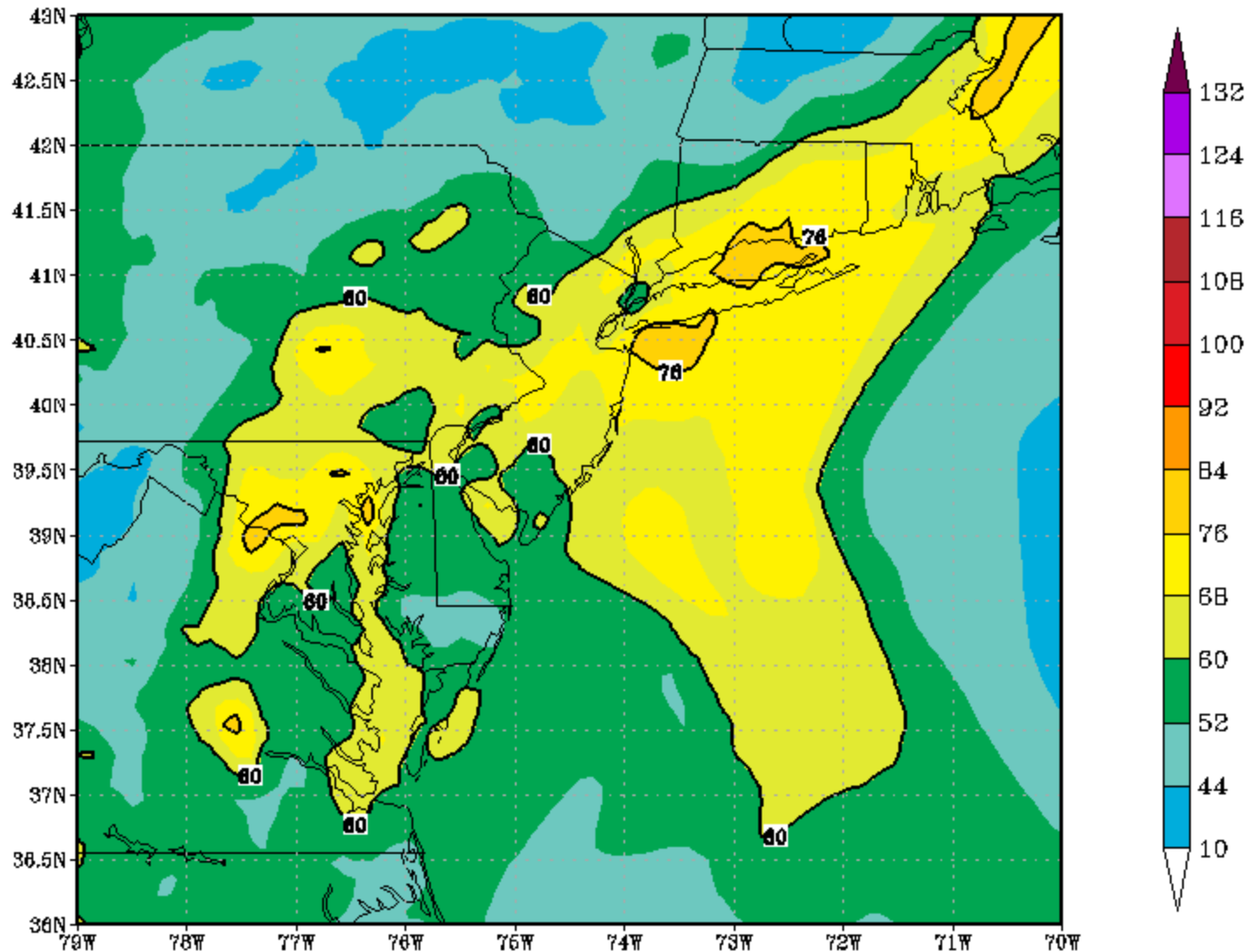
MAX: 5.91



September 17th NOAA Model

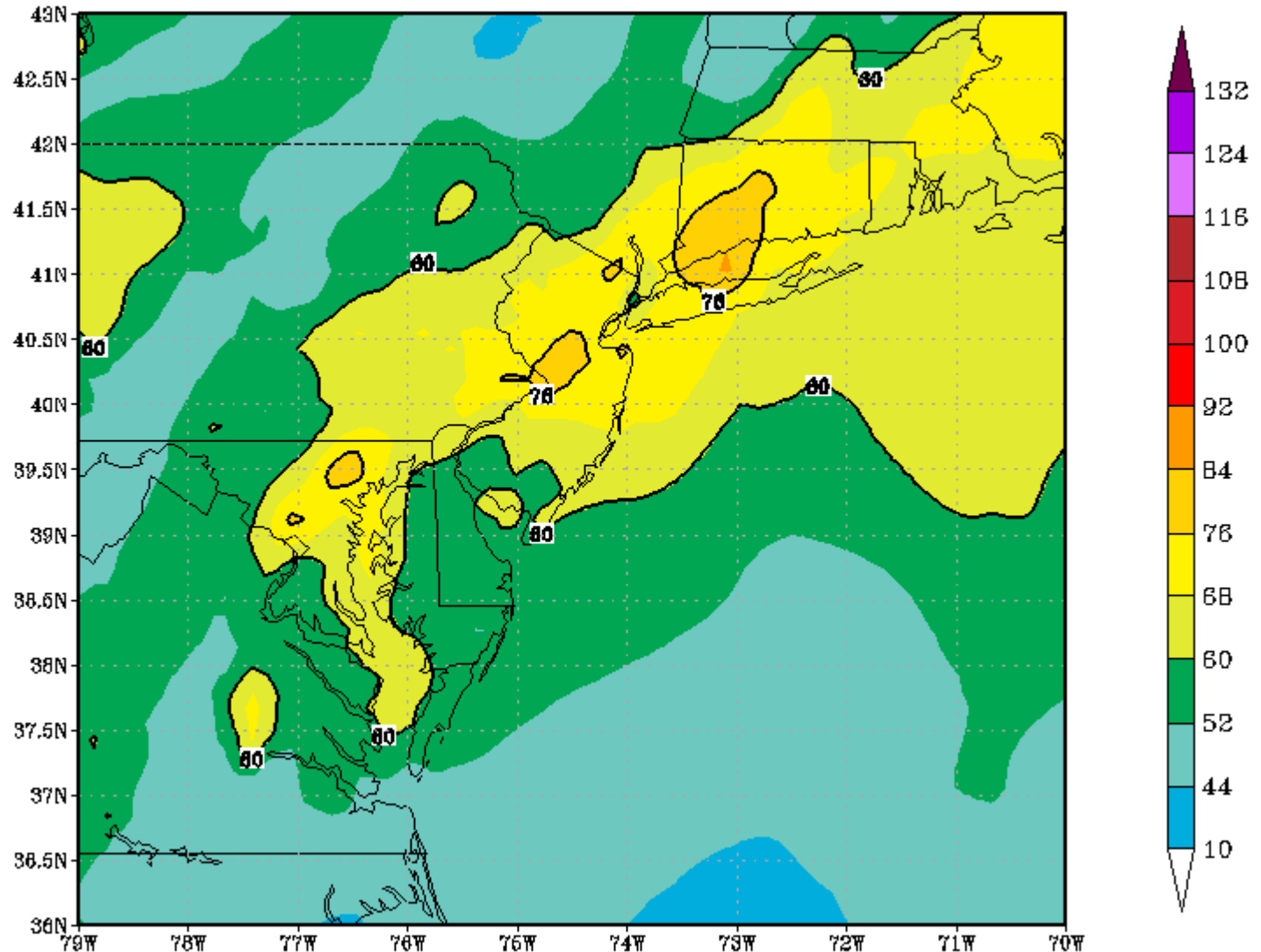
The publicly available NOAA ozone forecast model is of great value to our forecasters!

(prd) 06Z 31H-48H 2 day 8h max sf O₃ (ppbv) Valid 17 SEP 2015



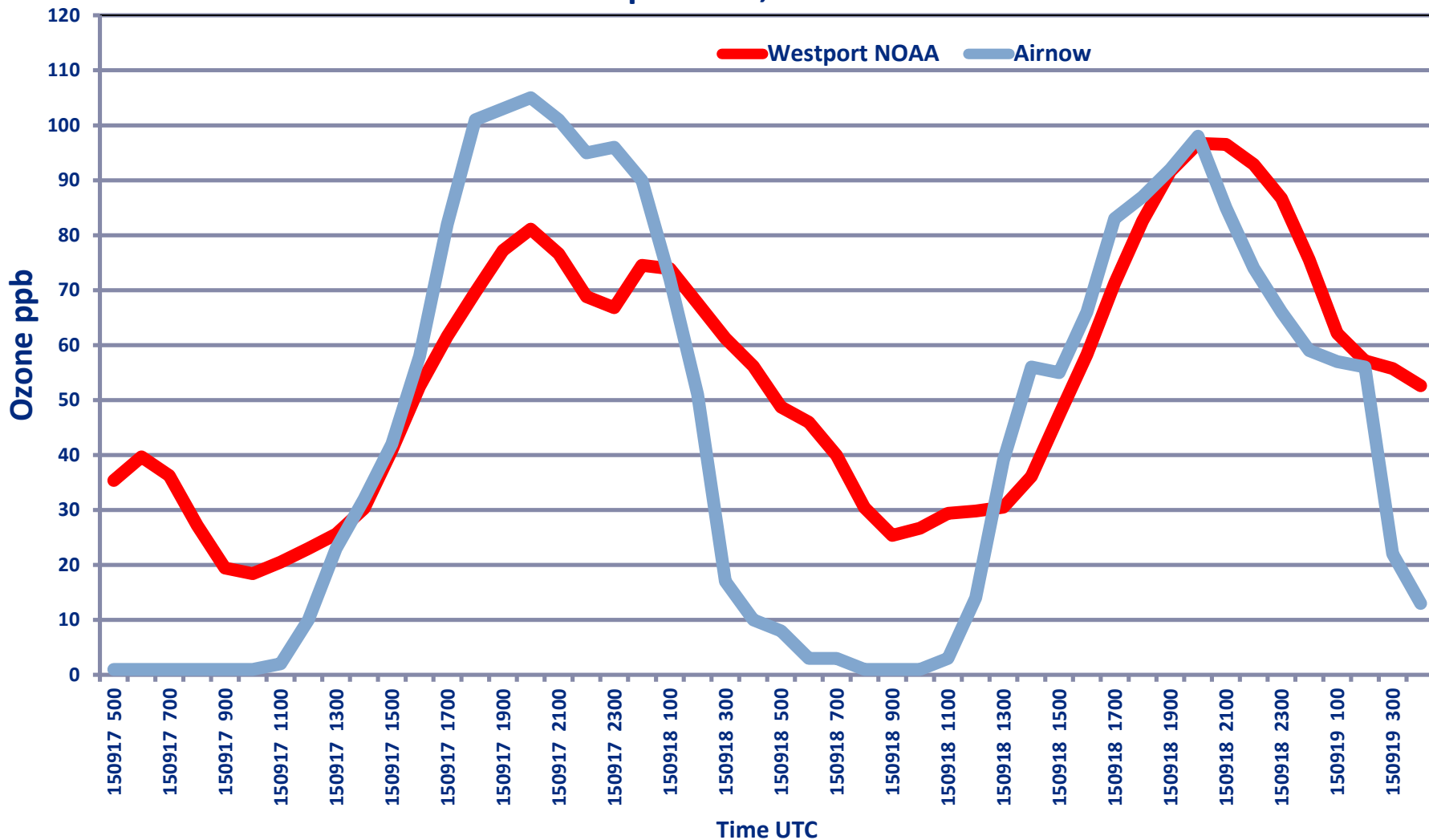
September 18th NOAA Model

(prd) 06Z 31H-48H 2 day 8h max sf O₃ (ppbv) Valid 18 SEP 2015



Westport CT Modeled Ozone

NOAA Model 12z Day Before vs. Airnow Observations
Sept 17-18, 2015



Particle Pollution: **USG**

Key On-Air Message

- The air quality forecast for tomorrow is unhealthy for sensitive groups (**code orange**) for fine particles.

Supporting Message/ What Action Should People Take?

If you are in a sensitive group, including people with heart or lung disease (such as asthma), older adults and children:

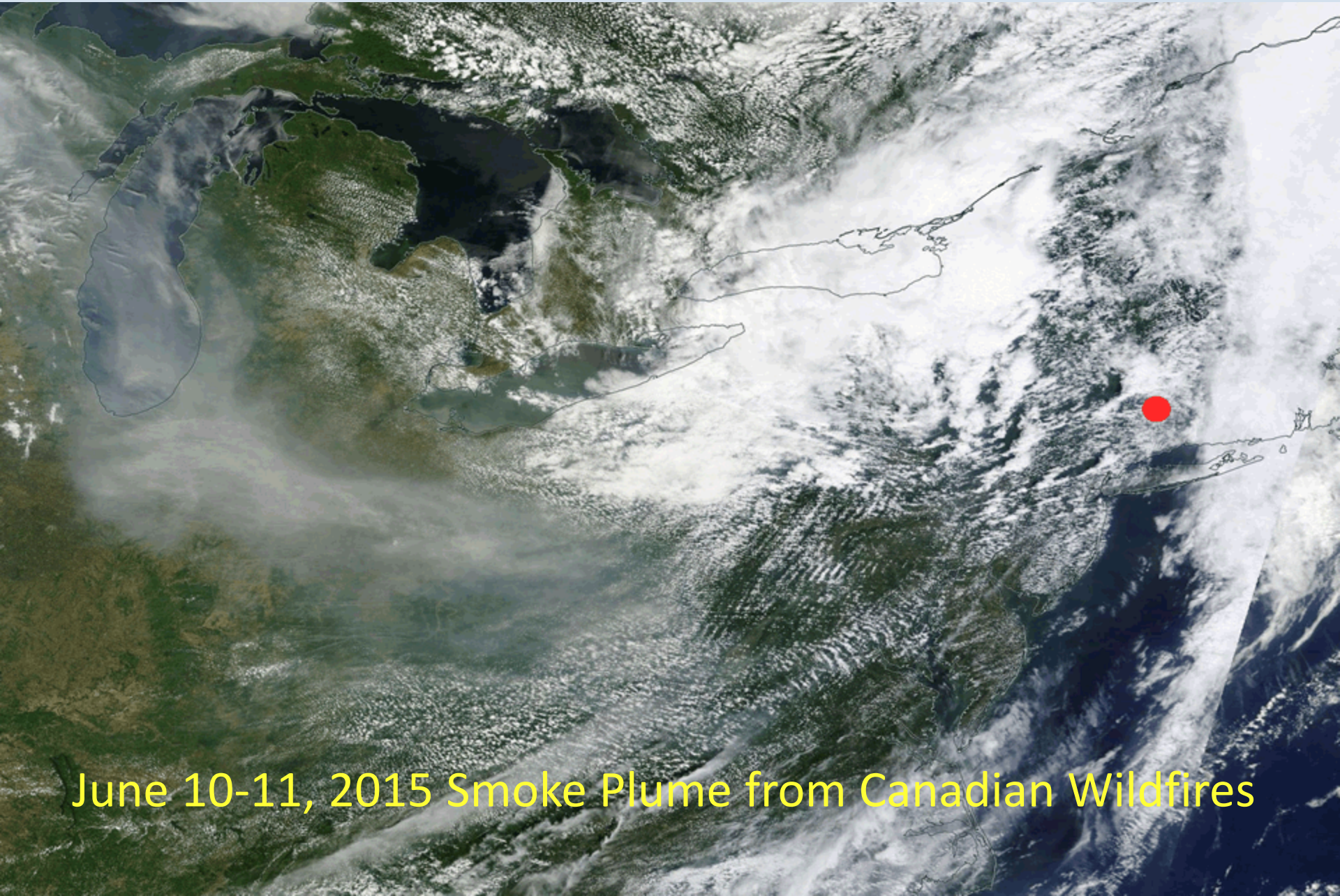
- You might want to go for a walk instead of a jog.
- Try to cut back your strenuous activities or reschedule them when air quality is better.
- Take precautions if you experience any unusual coughing or chest discomfort.





PM2.5 decreases as the atmosphere becomes well-mixed
Talcott Mountain CT Haze Cam with PM2.5 Concentrations

PM2.5 Generally Higher in the Winter, unless...



June 10-11, 2015 Smoke Plume from Canadian Wildfires

Myths and Facts

MYTH	FACT
Asthma is only a concern during the summer and/or when playing sports.	Asthma is a lung disease, and <u>people with asthma are susceptible to air pollution year-round.</u>
Air quality only affects us when we are outside.	That's right for ozone. But <u>when particle levels are high outdoors, they can also be high indoors.</u>
Air pollution is only a concern in the summer.	<u>Particle pollution, unlike ozone, occurs year-round.</u>
There is nothing I can do about air pollution, so I should just ignore it.	<u>People can reduce their exposure to air pollution by simply checking their daily air quality forecast and using it to adjust their strenuous outdoor activities.</u>
Ozone and particle pollution affect the same groups of people.	<u>People with heart or lung disease, older adults, and children are particularly sensitive to the harmful effects of particle pollution.</u> The sensitive groups for ozone include people with lung disease (but not heart disease), and children and adults who are active outdoors.
The health effects of ozone and particle pollution are the same.	While both ozone and particles have been associated with effects on the lungs, <u>particles have also been associated with effects on the heart and cardiovascular system.</u>
Air pollution is a health concern only for people with lung disease (including asthma) and older adults.	<u>Others can be affected by air pollution, including people with heart disease, active adults and children.</u> And when the air quality forecast is code red - everyone can be affected.





Local Air Quality Conditions

Zip Code:

State:



[National Summary](#)

[Forecast](#)

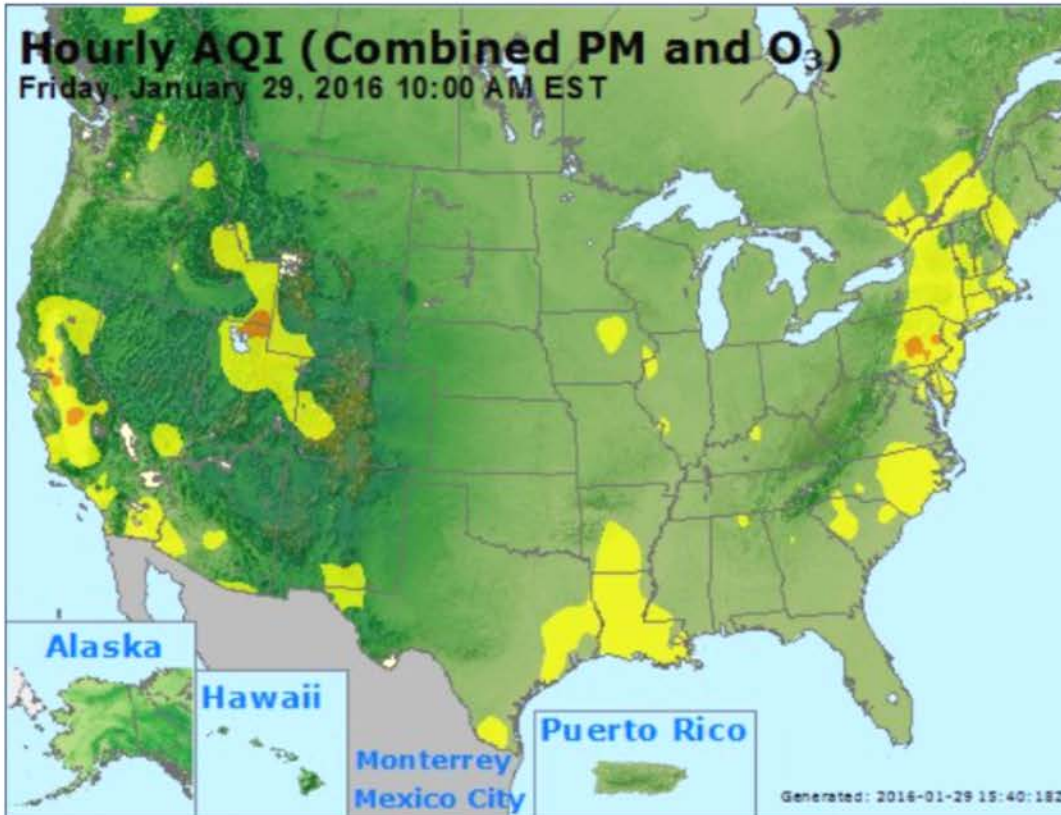
[Current AQI](#)

[AQI Loop](#)

[More Maps](#)

Hourly AQI (Combined PM and O₃)

Friday, January 29, 2016 10:00 AM EST



Fires: Current Conditions

[Click to see map](#)



[U.S. Embassies and Consulates](#)

Data from air quality monitors at select U.S. embassies and consulates around the world

Announcements

1/28/16: Updated Fact Sheet - [Heart Disease, Stroke, and Outdoor Air Pollution](#)

10/15/15: [Department of State provides air quality monitoring data from U.S. embassies and consulates overseas](#)

[more announcements](#)

Air Quality Basics

[Air Quality Index](#) | [Ozone](#) | [Particle Pollution](#) | [UV](#) | [Smoke from fires](#) | [What You Can Do](#)

[Health](#)

[Learning Center](#)

Good

Moderate

USG

Unhealthy

Very Unhealthy

Hazardous

Action Day

EnviroFlash Email

Subscribe to EnviroFlash

Manage Your Account

Welcome to EnviroFlash! Air quality affects how you live and breathe. Like the weather, it can change from day to day, or even hour to hour. Up-to-date information allows you to make decisions based on air quality forecasts. EnviroFlash comes to you through a partnership between the US EPA and your state or local air quality agency - notifying you about air quality so you don't have to go searching for it!



An [on-line subscription page](#) allows you to sign up, edit your profile, or cancel the service. After you choose the type and frequency of service you want, EnviroFlash will be sent to your email or cell phone as specified.



Typical EnviroFlash Message



Air Quality Notifications

Current Air Quality for New Haven, CT

Tuesday, January 26 - 9 AM

The most recent hourly estimate of Particle Pollution (2.5 microns) reached 106 AQI (Unhealthy for Sensitive Groups).

Orange

We are sending you this alert because your local air quality may be changing. Take action appropriate for your health conditions -- and please monitor the latest conditions at www.airnow.gov.

Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion during elevated ozone events. In addition, when particulate levels are elevated, people with respiratory or heart disease, the elderly and children should limit prolonged exertion.

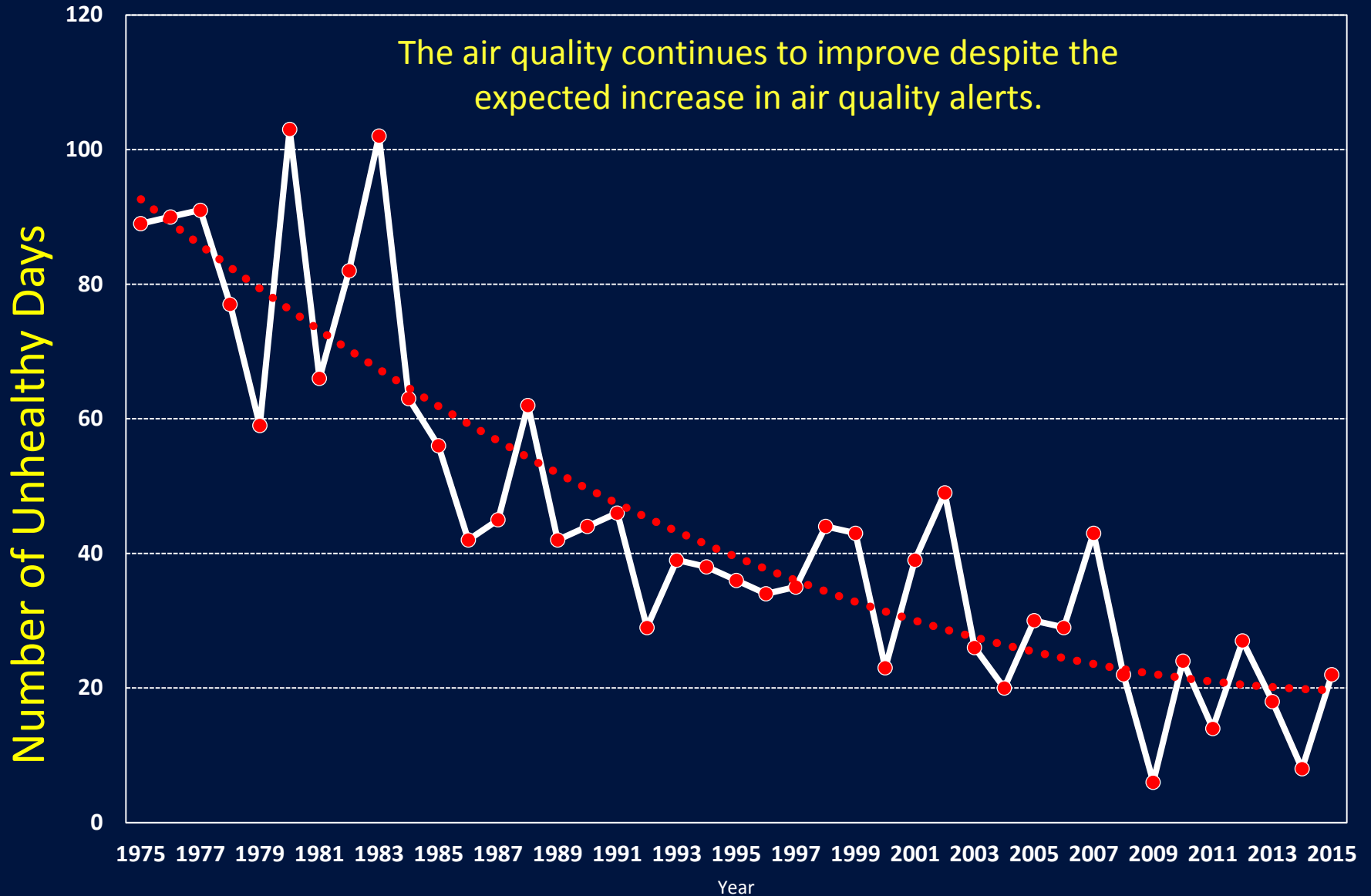
Do not reply directly to this email. If you want more information on the air quality forecast, or other aspects of the local air quality program, please contact your local air quality agency using the information above. For more information on the U.S. EPA's AIRNow Program, visit <http://www.airnow.gov>.

[To unsubscribe or edit your EnviroFlash account](#)

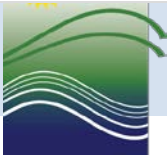
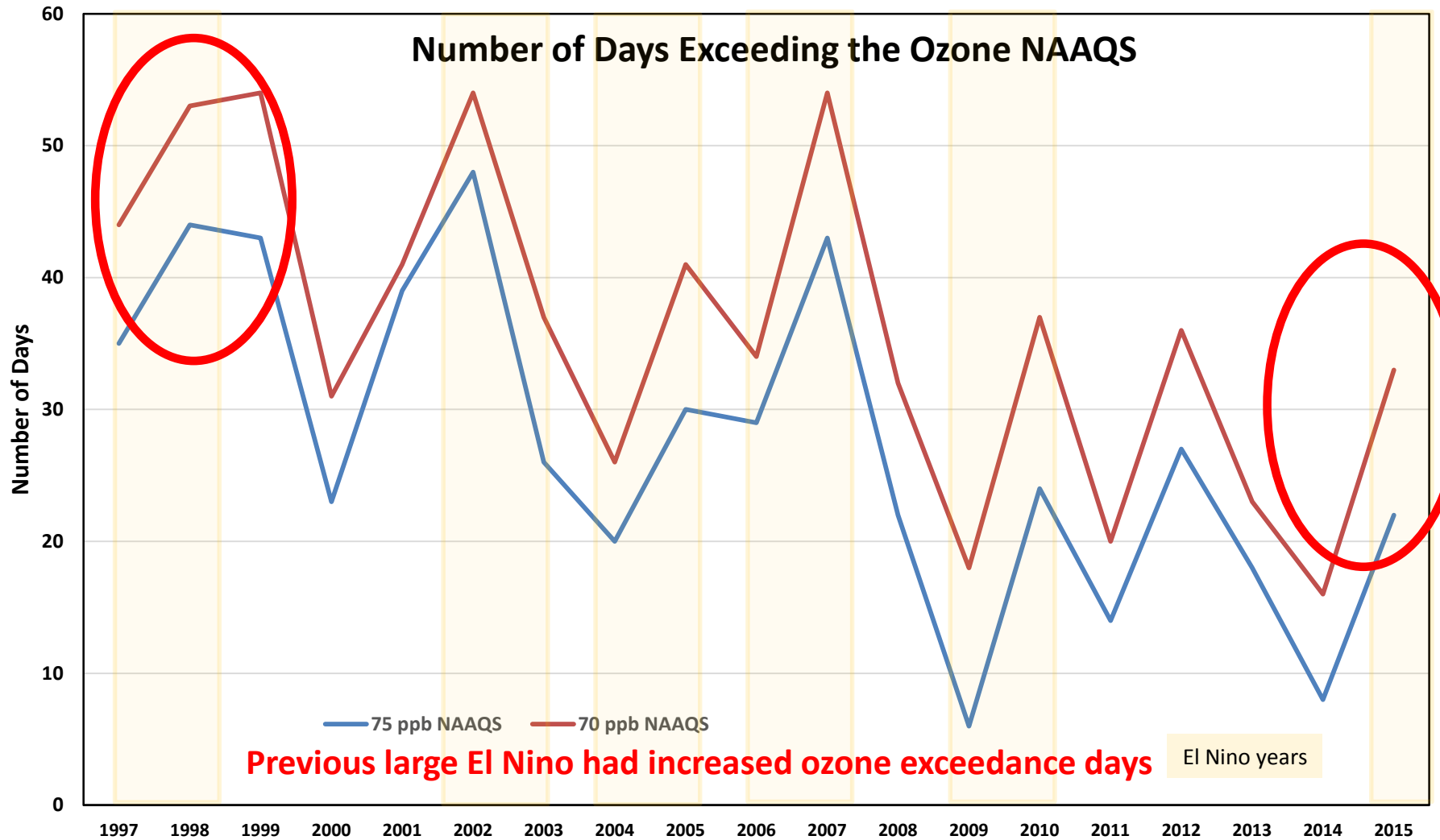


2015 had 22 Ozone Exceedance Days in CT

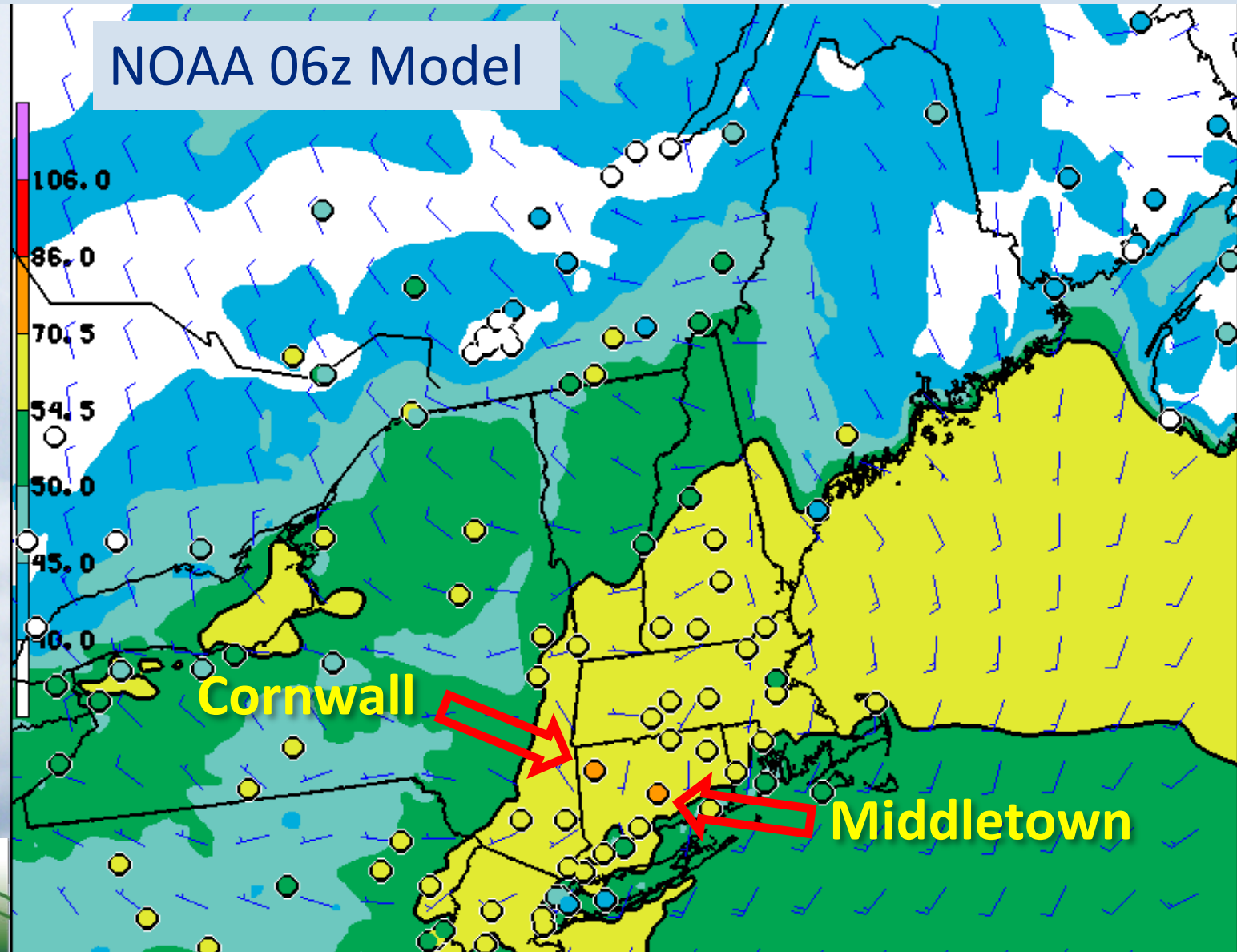
Days > 8-Hr NAAQS (75 ppb) with Polynomial Trend



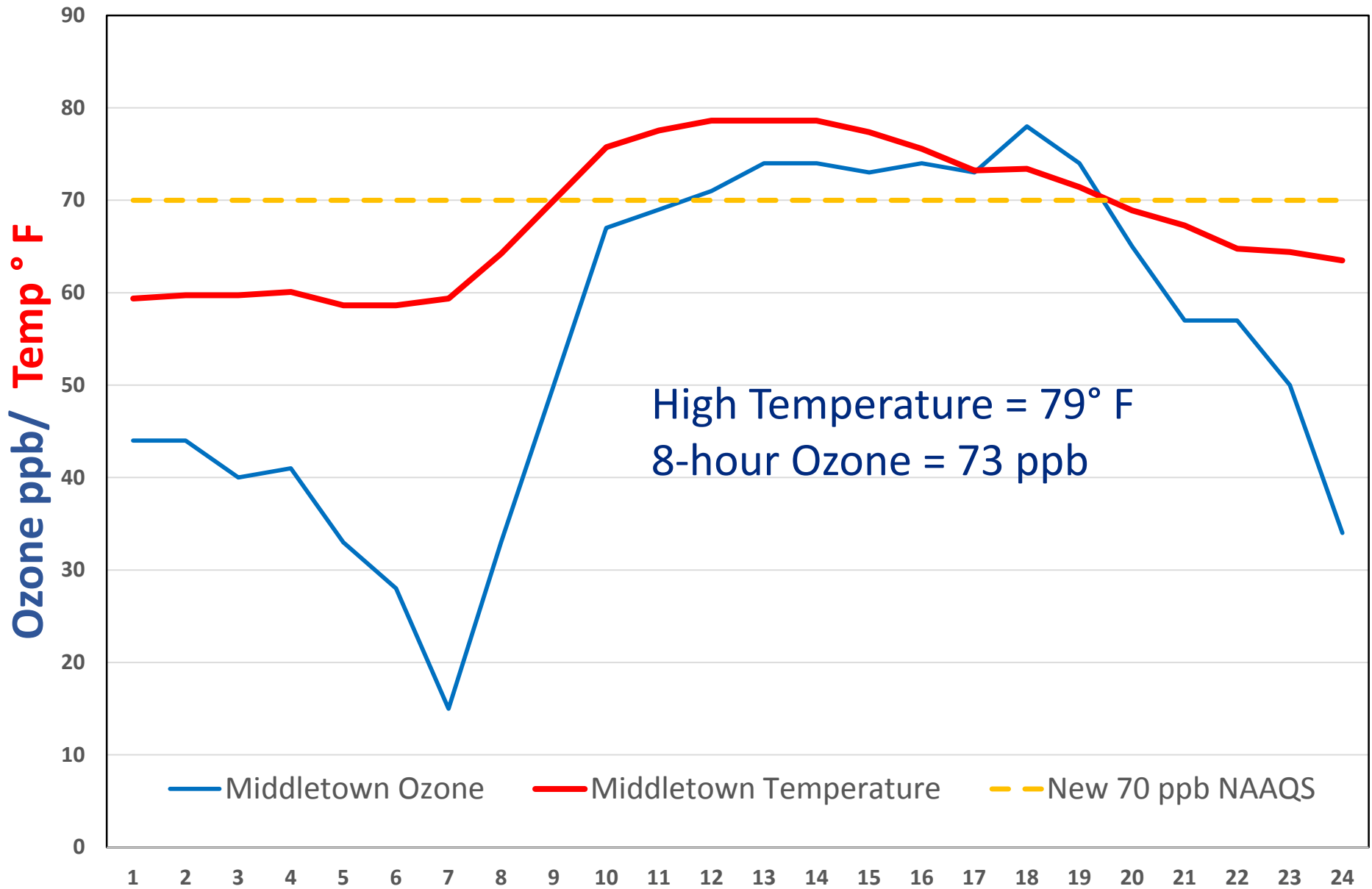
What to Expect for 2016



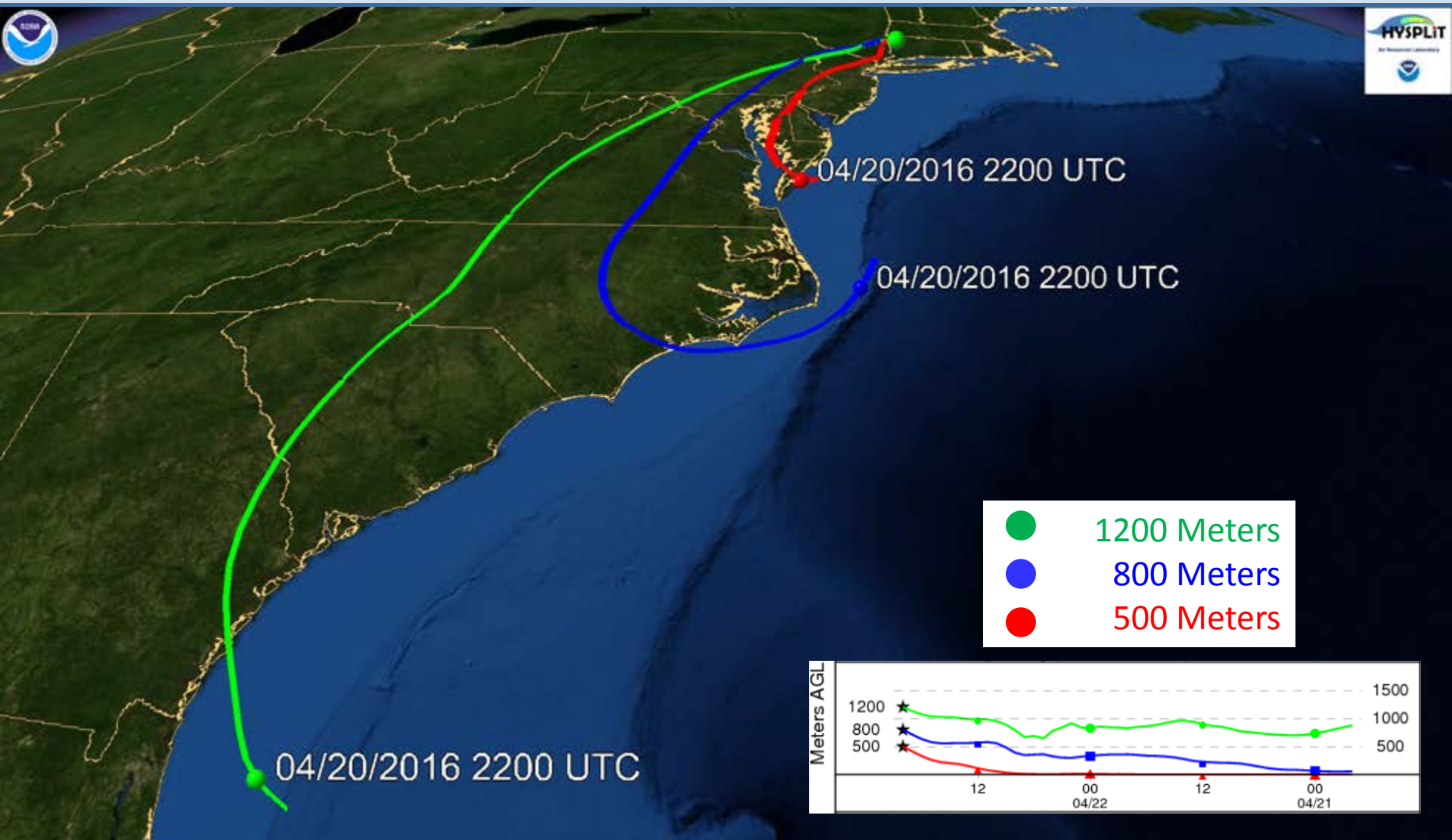
April 22nd: First Ozone Exceedance!



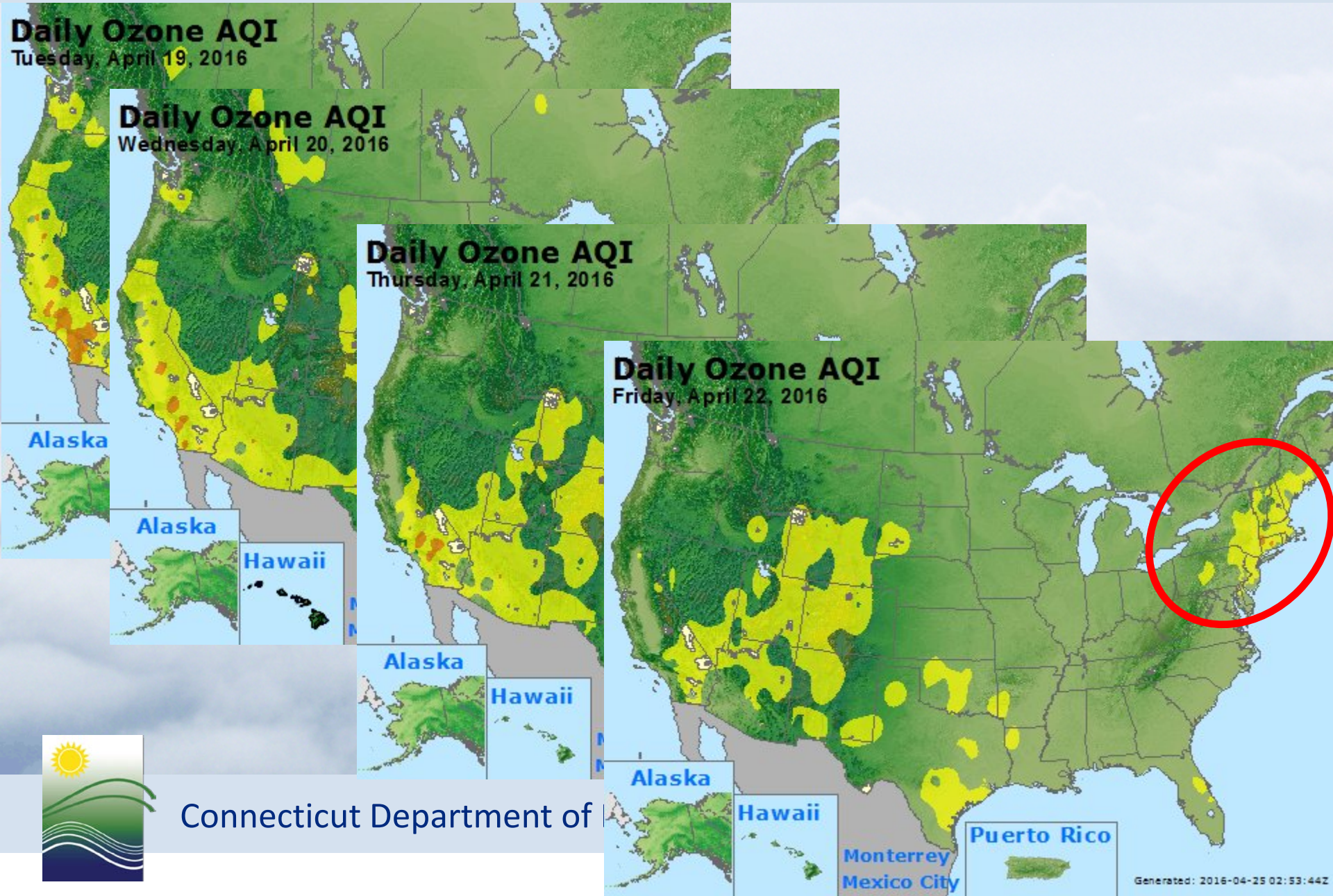
Temperature vs. Ozone



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



Persistent Elevated Ozone over the Southeast



Connecticut Department of



Questions?



Connecticut Department of Energy and Environmental Protection