Ozone Season Summary 2021

SIPRAC

October 14, 2021

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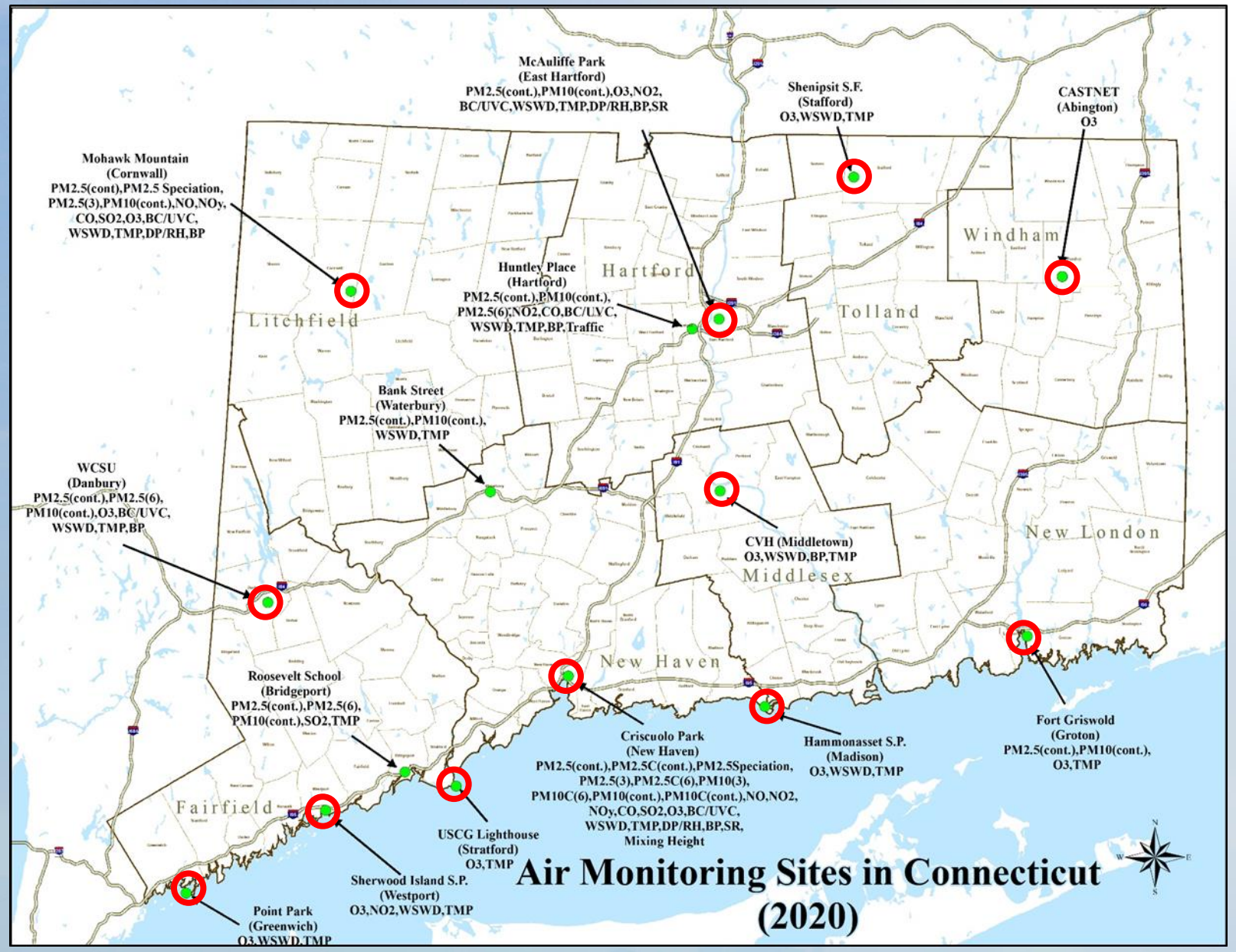
Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

CT Ozone Monitoring Sites



Ozone Exceedance Days

Month	May		June								July				August							
Site	21	26	5	6	7	18	19	28	29	30	6	7	16	27	6	7	11	12	13	26	27	Exceedances
Abington	48	58	82	68	62	70	55	59	67	68	62	49	56	57	54	56	48	57	53	55	47	1
Cornwall	76	70	61	63	57	65	50	46	49	48	54	49	45	53	67	57	51	48	51	69	45	1
Danbury	64	75	63	64	71	67	54	56	66	54	54	60	55	70	72	65	69	52	59	74	45	4
East Hartford	58	66	62	61	74	65	51	56	56	57	55	50	52	59	63	60	69	57	55	68	55	1
Greenwich	49	59	71	82	72	64	64	55	77	78	70	77	76	72	78	63	63	62	76	94	53	11
Groton	38	40	79	74	43	67	72	41	69	68	54	68	57	58	66	75	44	68	76	76	64	6
Madison	43	47	83	77	51	69	81	52	69	79	69	89	70	60	77	83	59	78	73	85	84	11
Middletown	58	60	86	71	68	76	61	72	74	78	77	69	76	65	71	70	66	79	66	79	63	11
New Haven	44	40	76	47	49	50	61	56	62	71	66	81	61	57	67	78	57	60	63	67	52	4
Stafford	67	71	62	31	66	65	55	57	47	54	55	47	54	56	62	58	69	56	59	68	43	1
Stratford	47	50	86	78	57	66	73	57	72	80	71	91	87	58	80	74	64	73	80	87	65	13
Westport	49	56	80	86	66	67	66	62	80	85	78	89	87	64	80	68	71	73	82	99	63	12
Site Exceedances	1	2	8	6	3	1	3	1	4	6	3	5	4	1	6	4	1	4	5	7	1	76
# days > Federal Standard	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

Good (0-54 ppb)
Moderate (55-70 ppb)
Unhealthy for Sensitive Groups (71-85 ppb)
Unhealthy (86-105 ppb)
Very Unhealthy (>106 ppb)

There were five ozone exceedance days reaching ‘code red’ spread throughout June, July, and August

Forecasted Exceedance Days

Actual Exceedance Days = 21 Forecast Exceedance Days = 18		
Month	**Actual Dates**	**Forecast Dates**
May	**21 & 26**	**26**
June	**5, 6, 7, 18, 19, 28, 29, & 30**	**5, 6, 7*, 20, 29, & 30**
July	**6, 7, 16, & 27**	**6, 7, 15, 16,& 20***
August	**6, 7, 11, 12, 13, 26, & 27**	**6, 7, 11, 12, 13, & 26**
September	**None**	**None**
Total	**21**	**18**

Of the 21 exceedance days,

1. Forecasted USG for 15 days that exceeded the standard (71% compared to 53% last year)
2. Did not forecast USG for 6 days that exceeded the standard (29% compared to 47% last year)
3. Forecasted USG for 3 days that did not exceed the standard

All of the over-predicted days had at least one site that was very close to exceeding the standard, but only reached high moderates

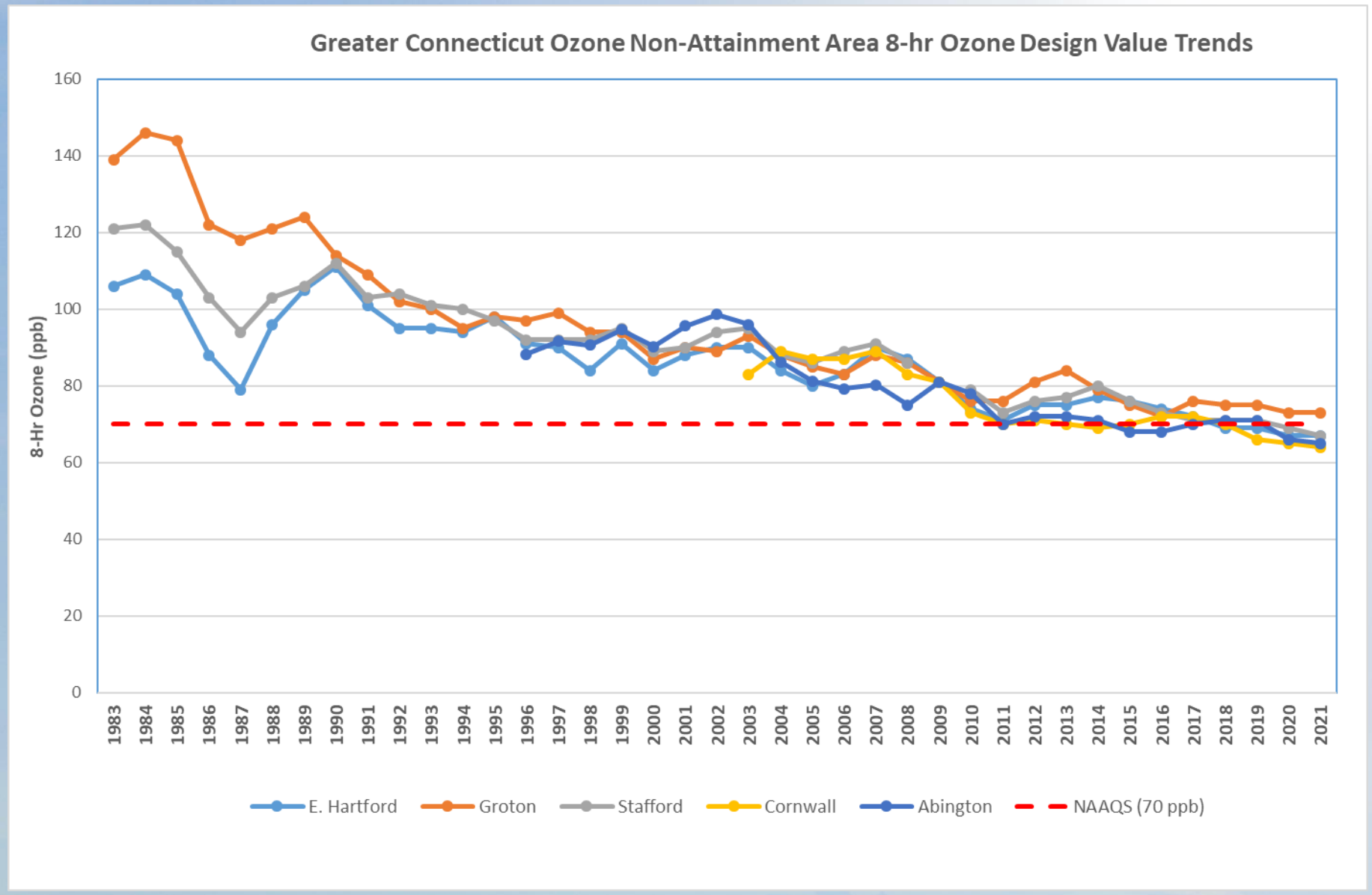
* Means we originally did not forecast a USG event, but we did upgrade the forecast to USG on those morning

Design Value Update

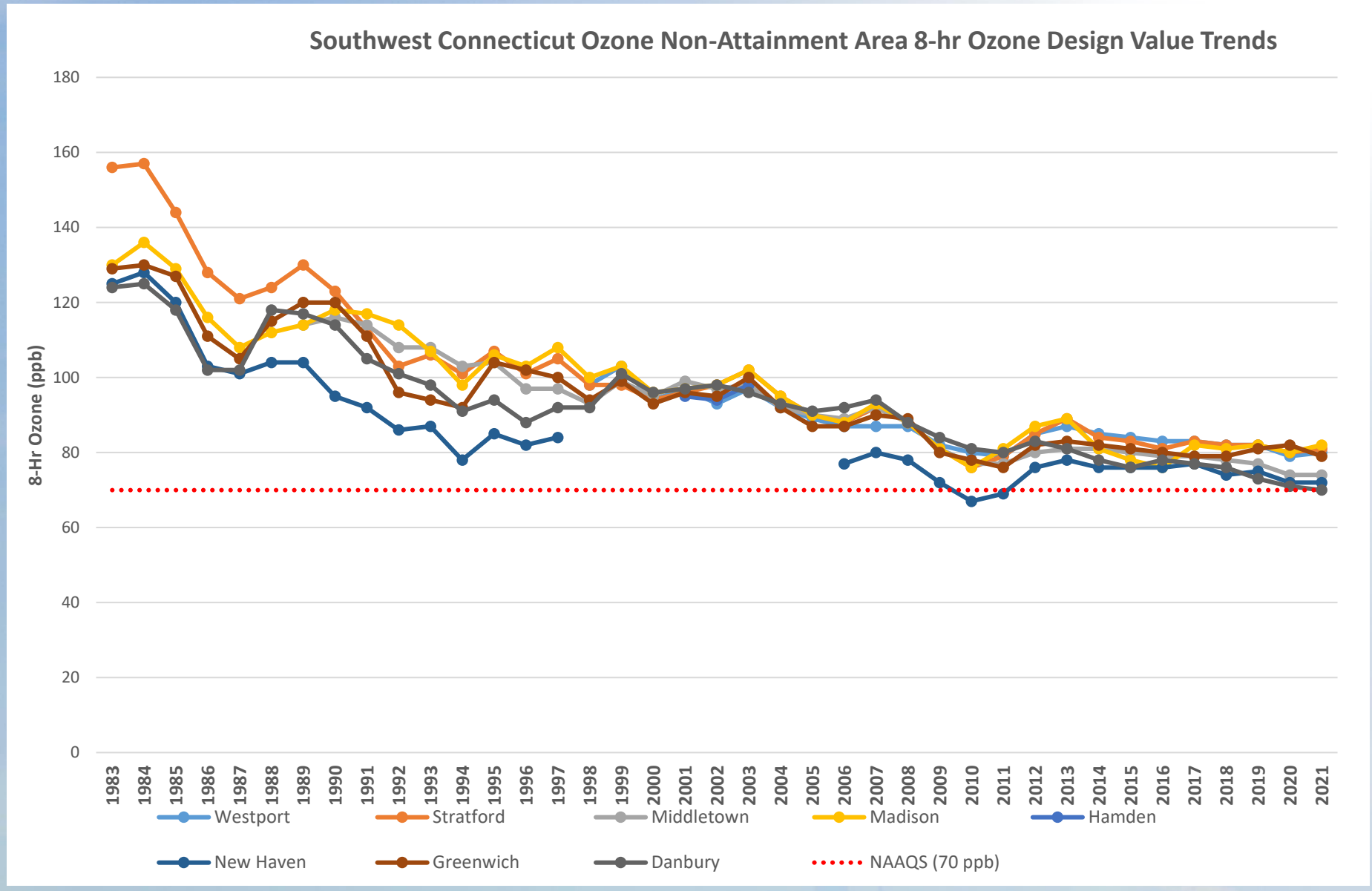
- For Southwest Connecticut, Danbury is the only site that is not violating the 2015 NAAQS
- For Greater Connecticut, Groton is the only site that is violating the 2015 NAAQS

	Site Name	To Date: Prelim 2021 DV	2021 Compliance Status x = Violating NAAQS: 2015 NAAQS	2008 NAAQS	1997 NAAQS	# Needed to Next NAAQS in Violation (key monitors in each NA are highlighted in RED)
SWCT Portion of NYC Area	Danbury	70				2 more days > 73 ppb day(s) violate the 2015 NAAQS
	Greenwich	79	X	X		3 more days > 93 ppb day(s) violate the 1997 NAAQS
	Madison	82	X	X		4 more days > 90 ppb day(s) violate the 1997 NAAQS
	Middletown	74	X			3 more days > 82 ppb day(s) violate the 2008 NAAQS
	New Haven	72	X			4 more days > 81 ppb day(s) violate the 2008 NAAQS
	Stratford	81	X	X		4 more days > 96 ppb day(s) violate the 1997 NAAQS
	Westport	80	X	X		4 more days > 100 ppb day(s) violate the 1997 NAAQS
Greater CT	Cornwall	64				4 more days > 87 ppb day(s) violate the 2015 NAAQS
	East Hartford	67				4 more days > 76 ppb day(s) violate the 2015 NAAQS
	Groton	73	X			4 more days > 81 ppb day(s) violate the 2008 NAAQS
	Stafford	67				4 more days > 76 ppb day(s) violate the 2015 NAAQS
	Abington	65				4 more days > 84 ppb day(s) violate the 2015 NAAQS
Number of Exceedance Days to Date			21			The 1997 standard was repealed with the 2008 implementation rule. Effective April 6, 2015

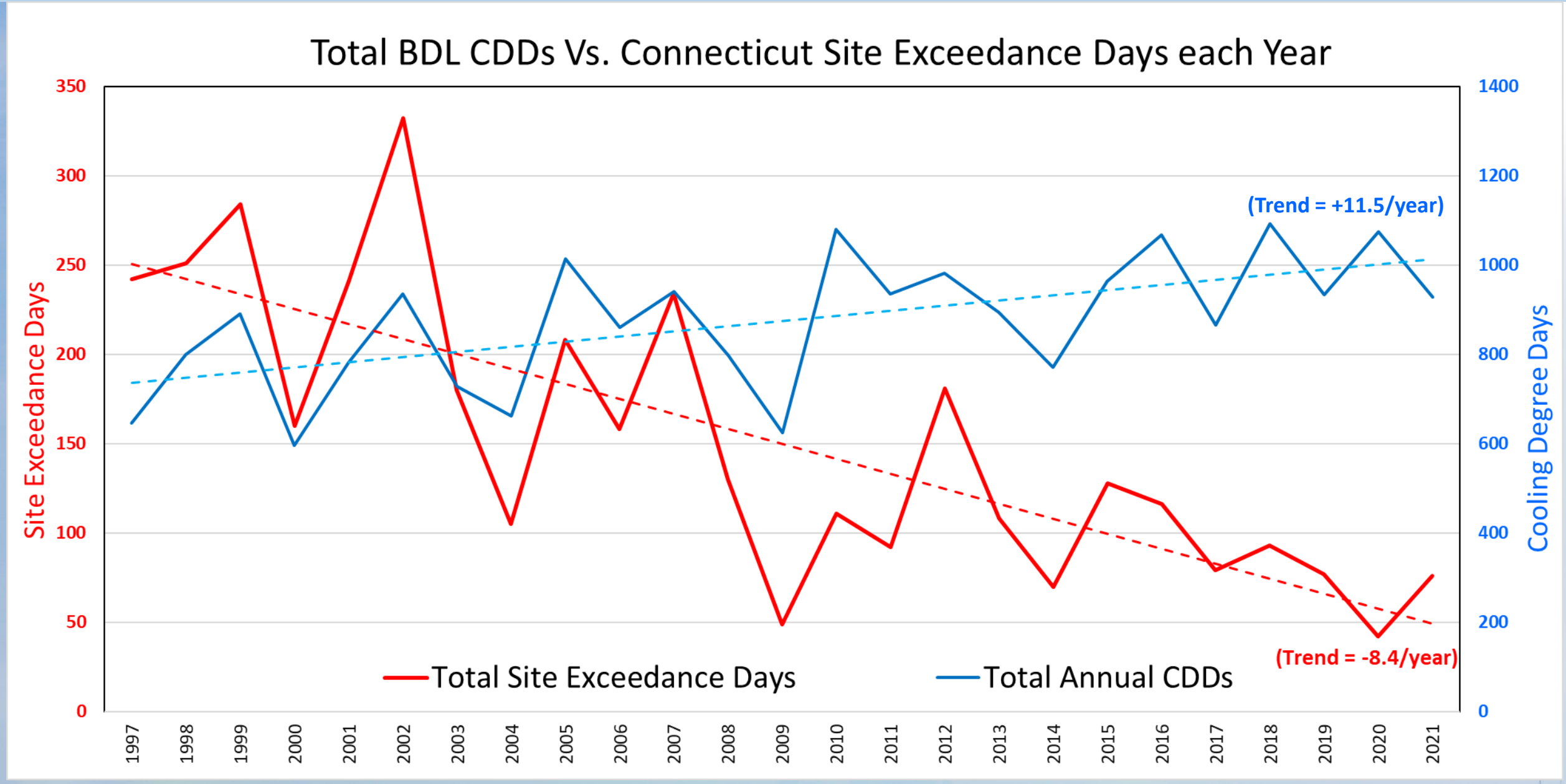
Greater Connecticut Ozone Trends



Southwest Connecticut Ozone Trends



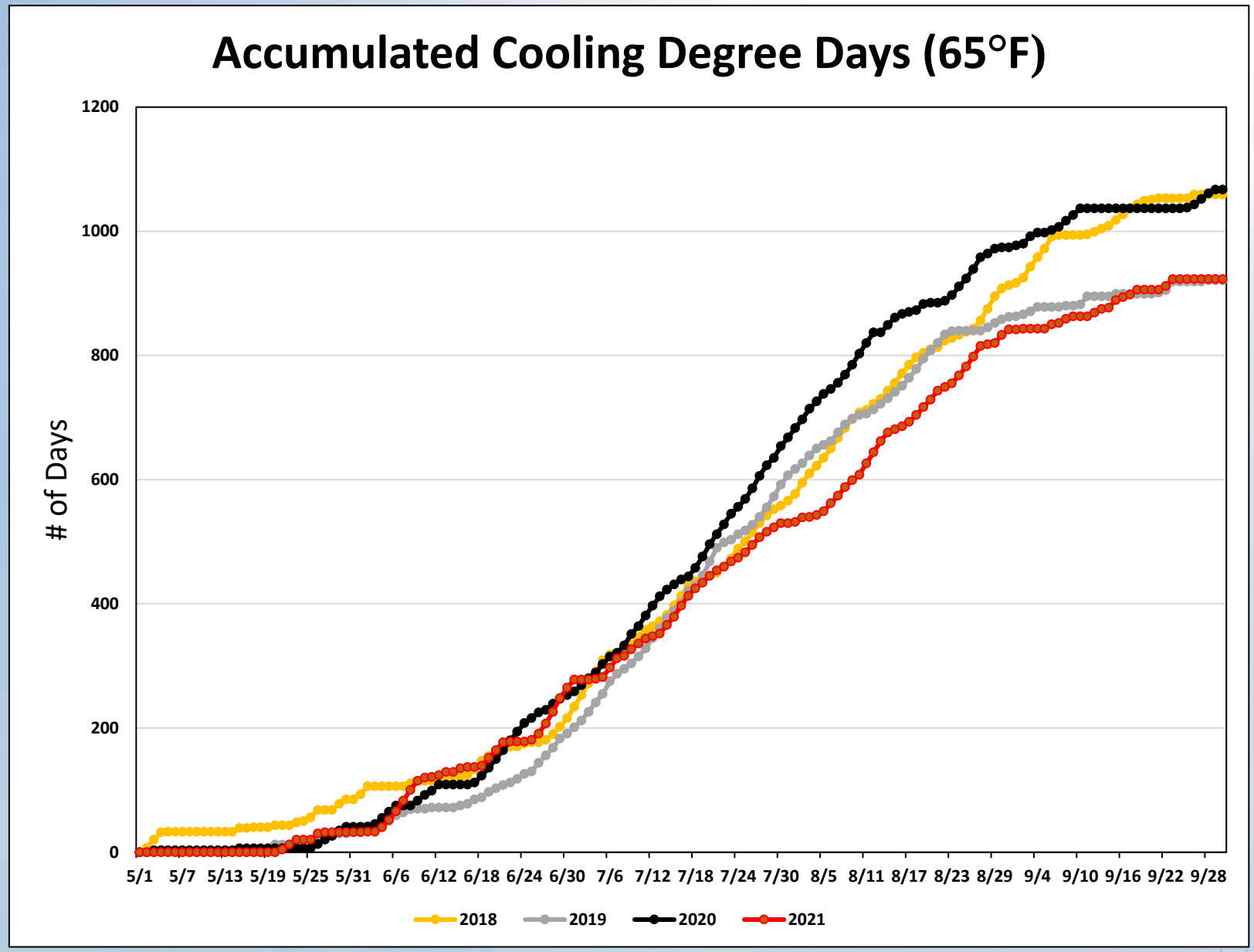
Connecticut Ozone Trends



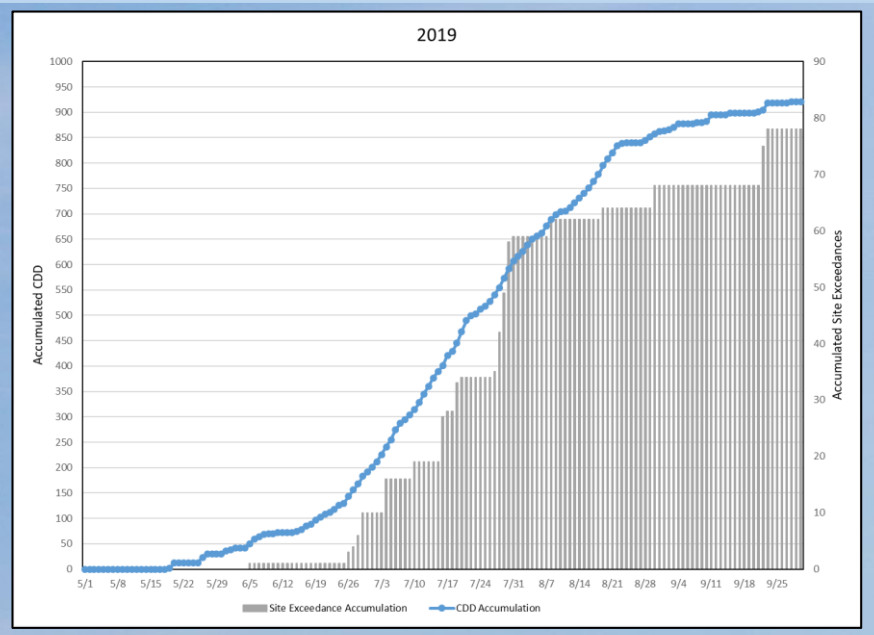
Cooling Degree Days

- A cooling degree day (CDD) is the number of degrees a day's average temperature is above 65° F.

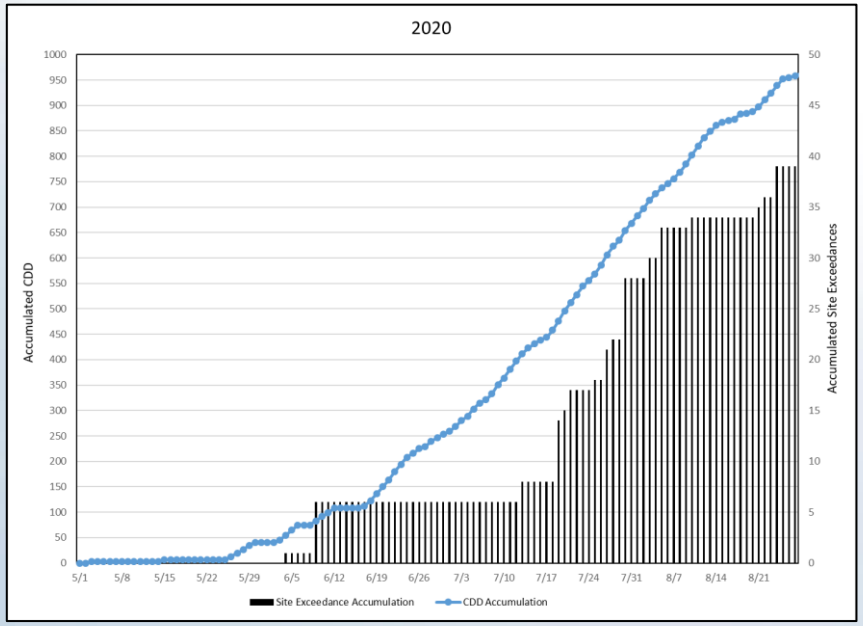
- The first CDD for 2021 occurred on May 21st.



CDD Update

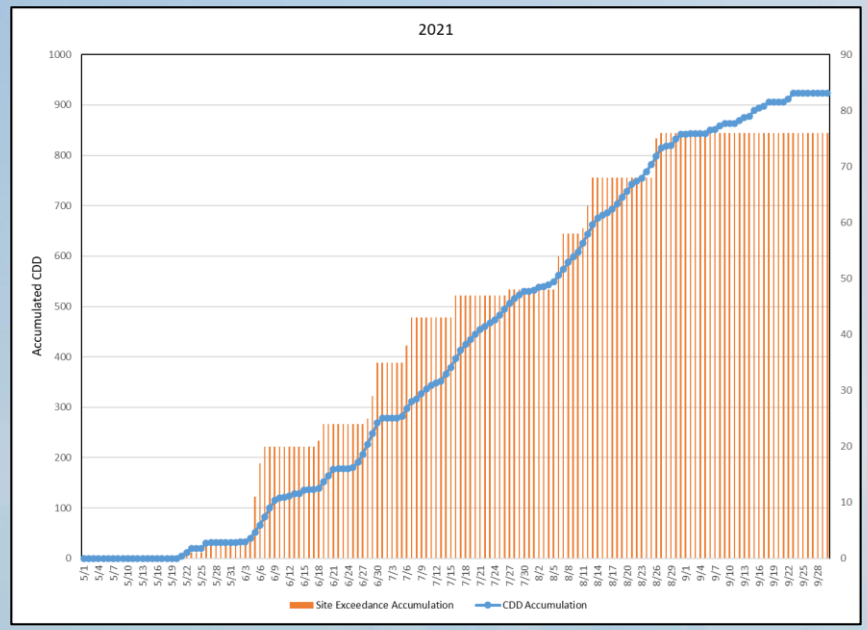


- The first exceedance in 2019 (left) was on June 5th.
- The first exceedance in 2020 (right) was also on June 5th.
- The first exceedance in 2021 (bottom) was on May 21st.



As of the end of ozone season:

- 2019 had 921 CDD and 78 site exceedances
- 2020 had 1067 CDD and 39 site exceedances
- 2021 had 923 CDD and 76 site exceedances

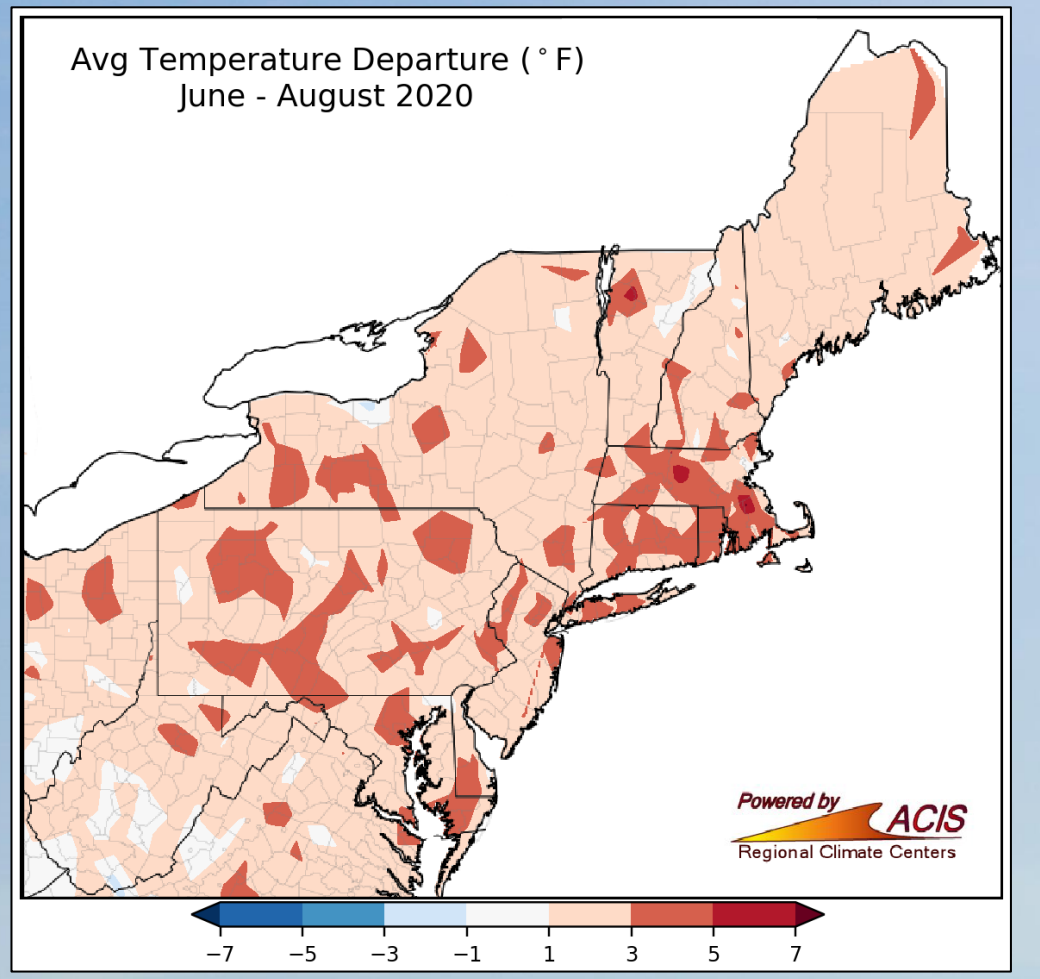


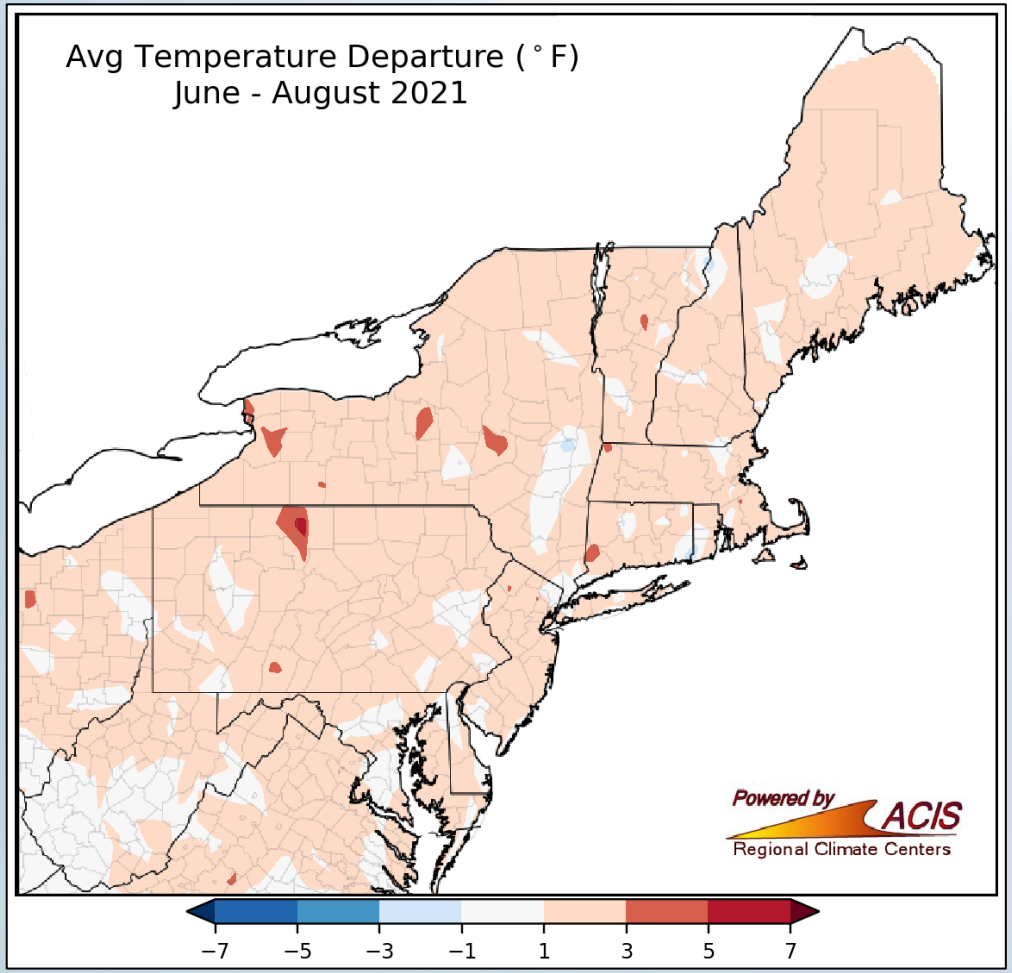
As of the end of ozone season:

- 2021 was very similar to 2019 with two more CDD and 2 less site exceedances

2020 vs 2021 Temperature

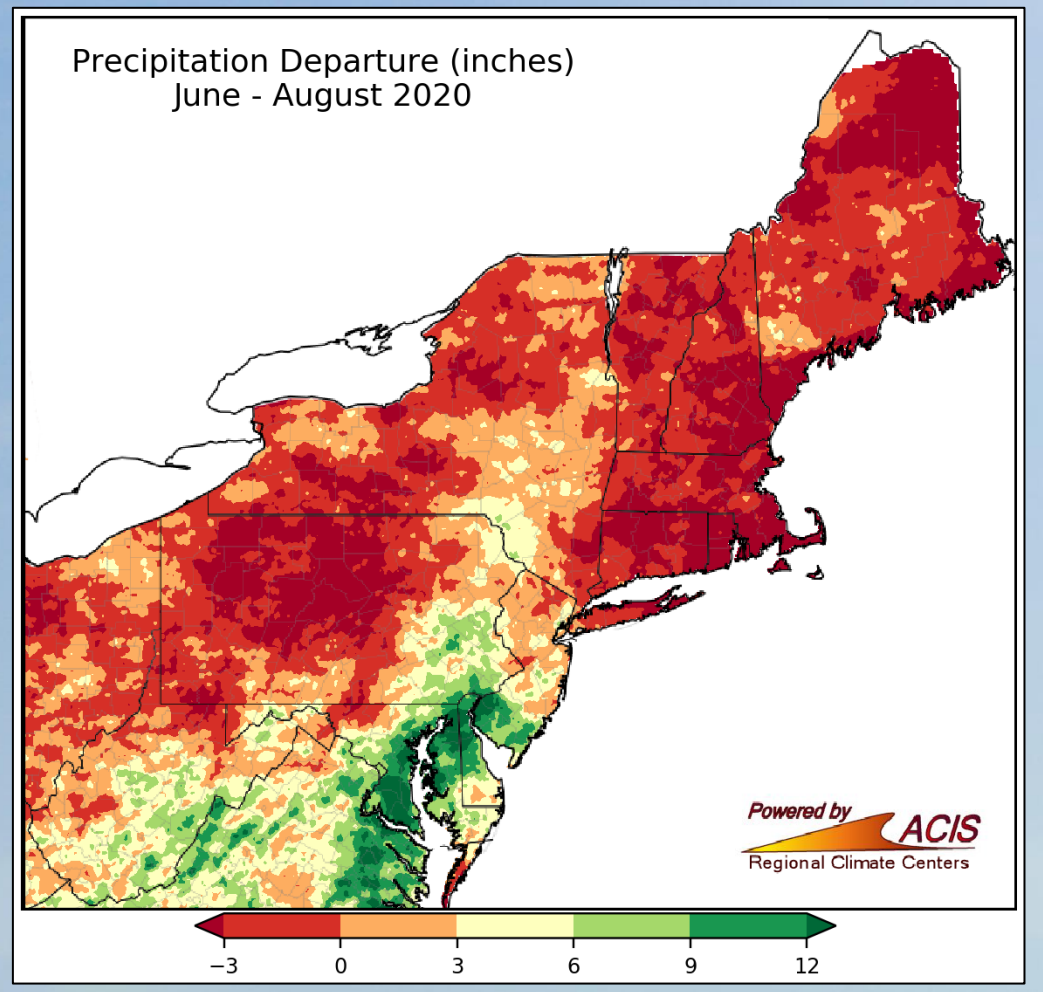
2021 had lower temperature departures for June through August signaling slightly warmer temperatures on average that were not as high as 2020

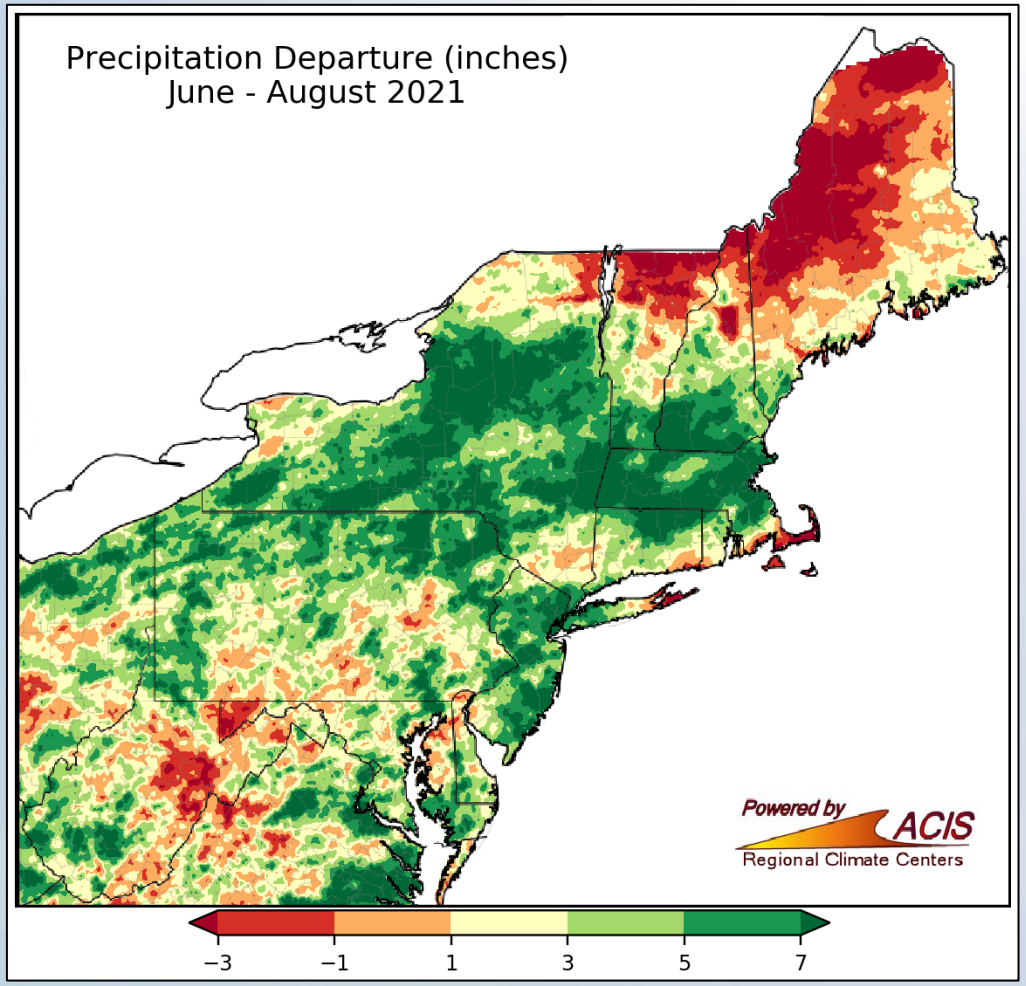




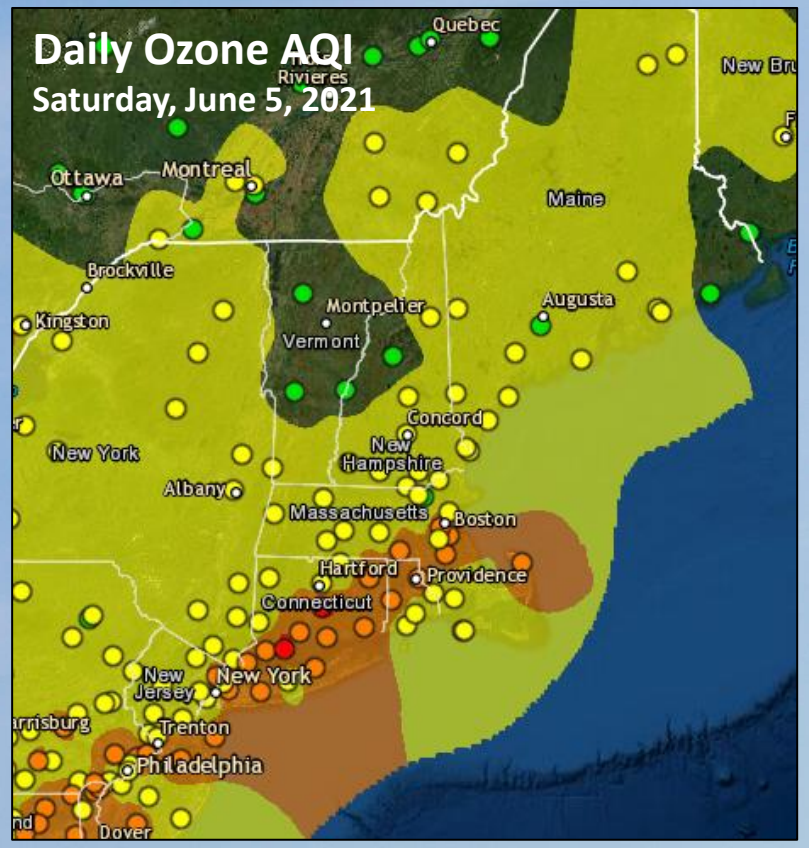
2020 vs 2021 Precipitation

2021 had more positive precipitation departures for June through August, while 2020 had more negative precipitation departures. This signals 2021 being a wetter summer and 2020 being a drier summer

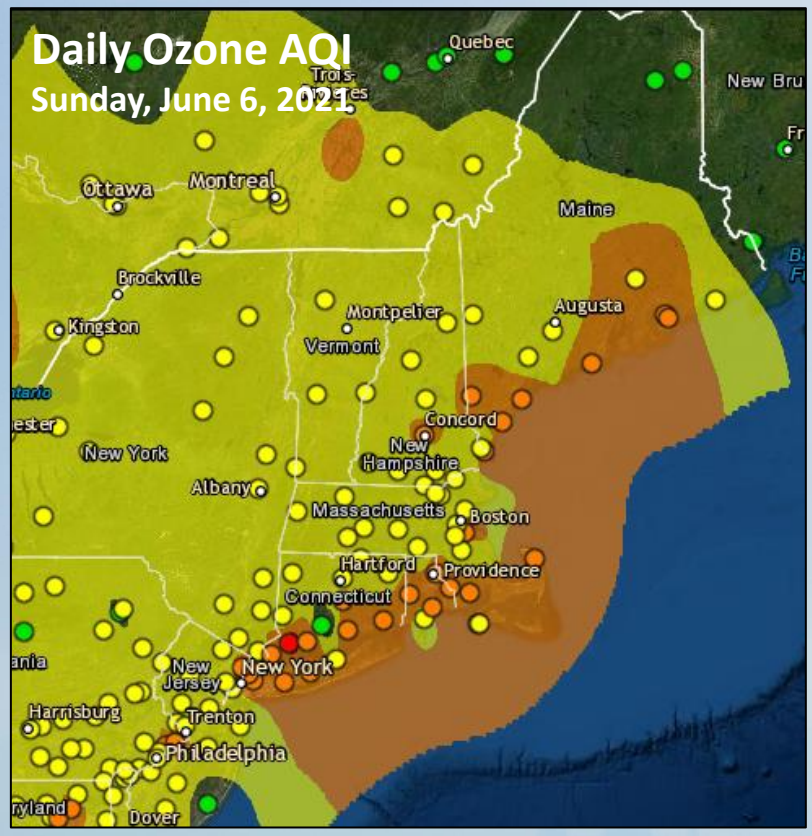


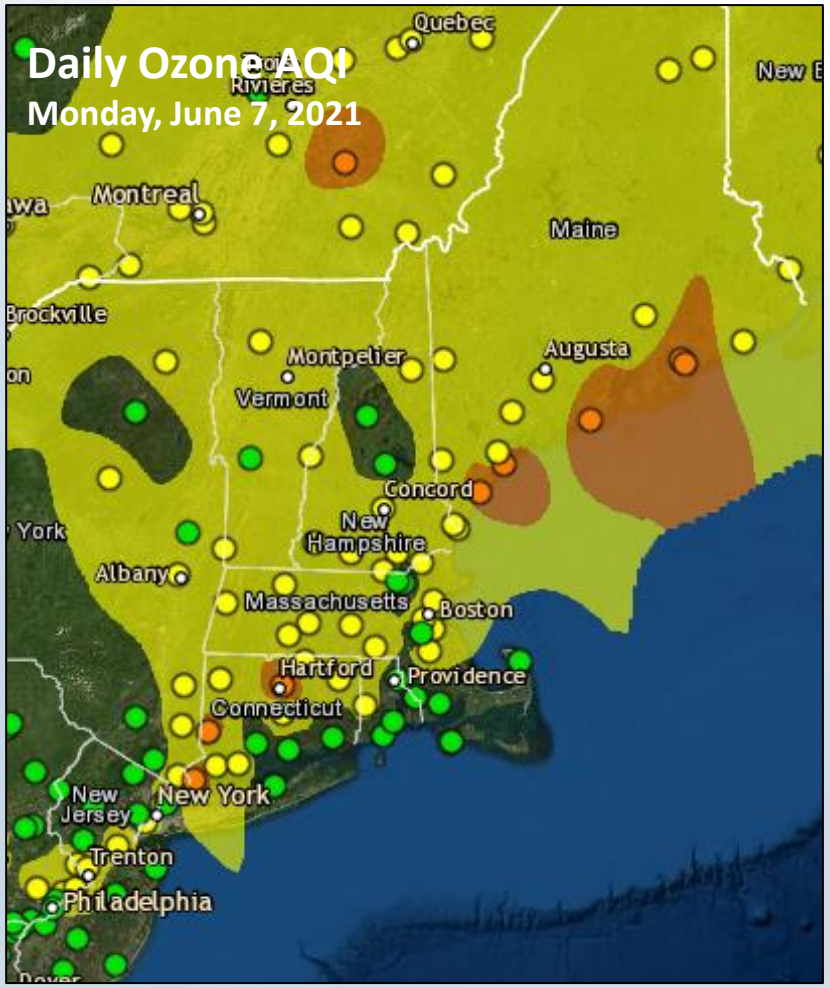


June 5th – 7th Ozone Event: AirNow Map

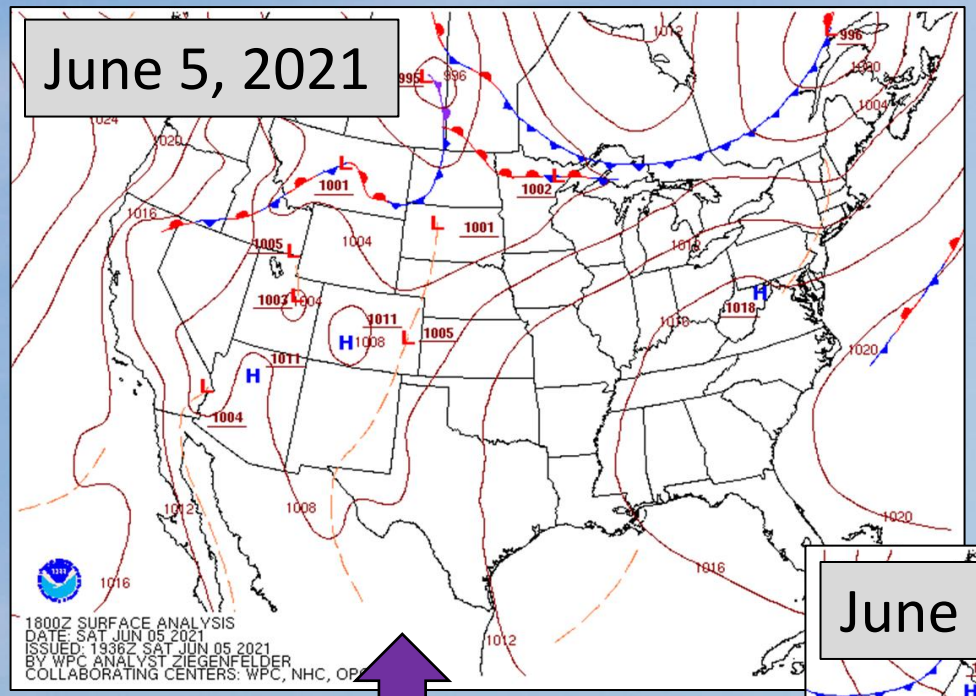


Most of the exceedances occurred along the I-95 corridor moving more northward each day



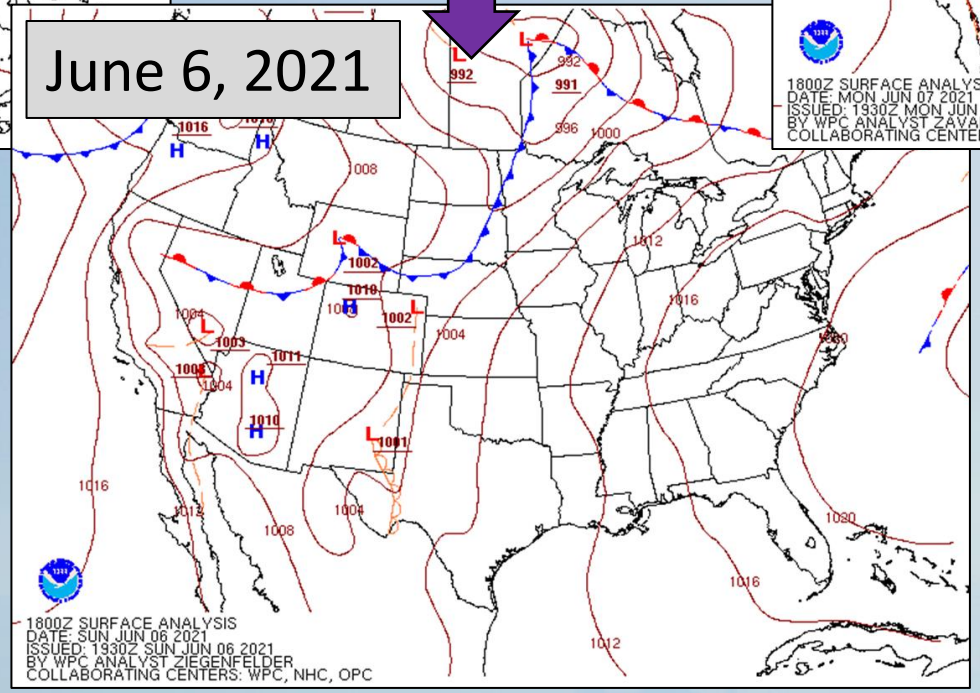


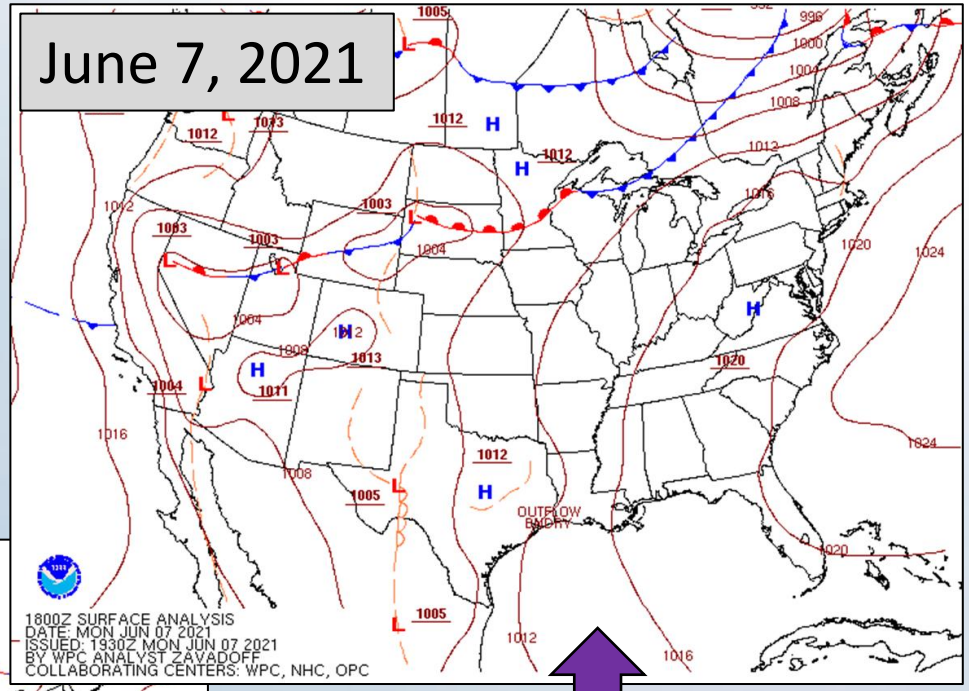
June 5th – 7th Ozone Event: Surface Analysis



On June 5th, high pressure remains in control for most of the eastern US

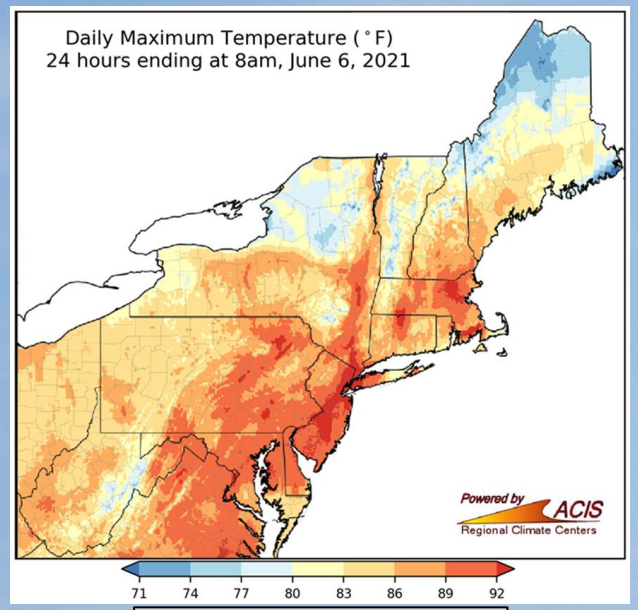
On June 6th, high pressure is sliding further offshore, allowing for southwest winds



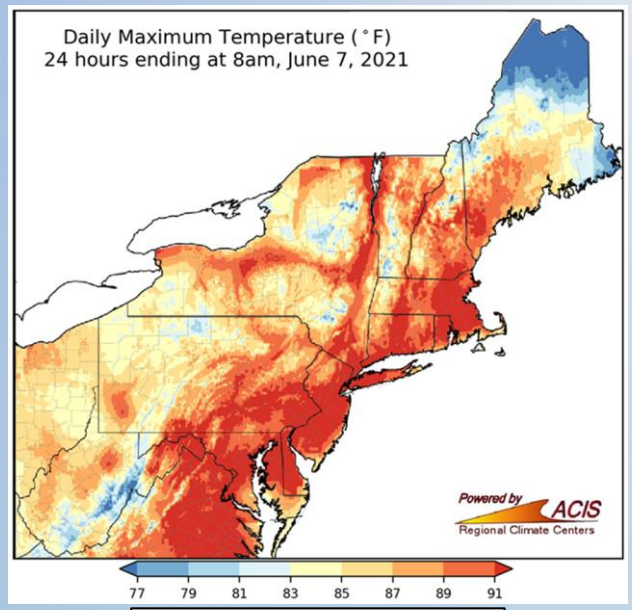


On June 7th, high pressure continues moving offshore with continued southwest winds

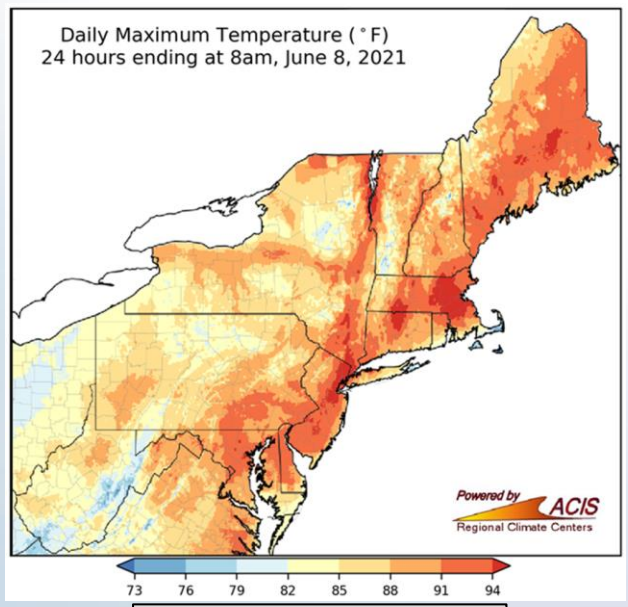
June 5th – 7th Ozone Event: Temperature & Cloud Cover



June 5, 2021

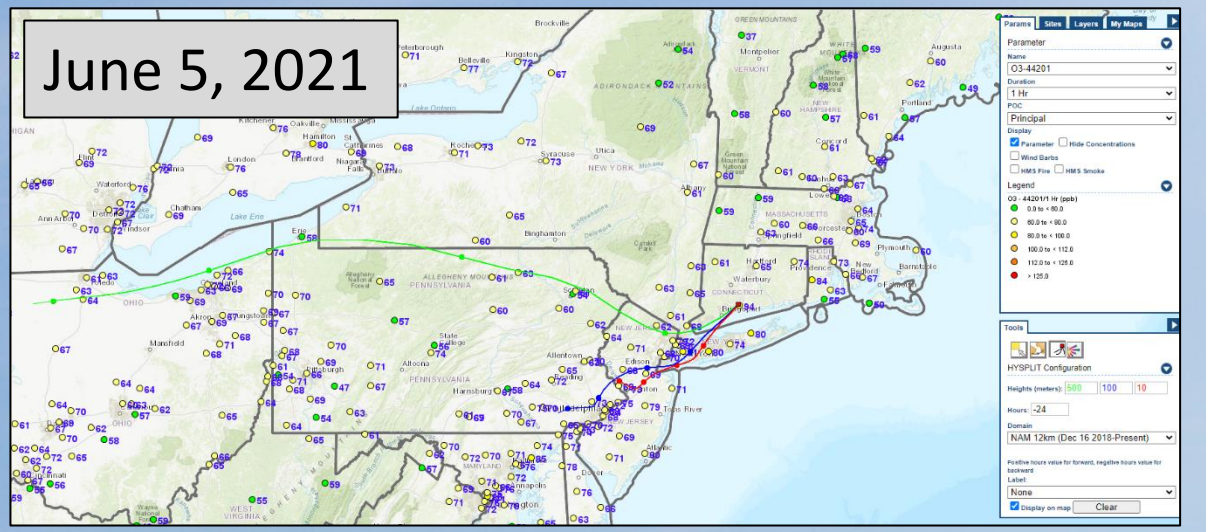


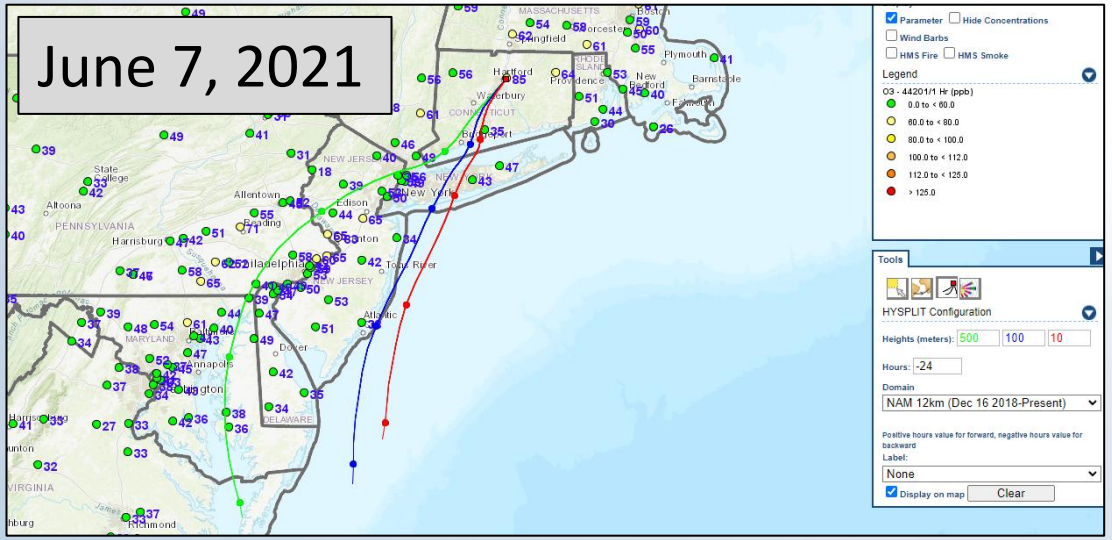
June 6, 2021

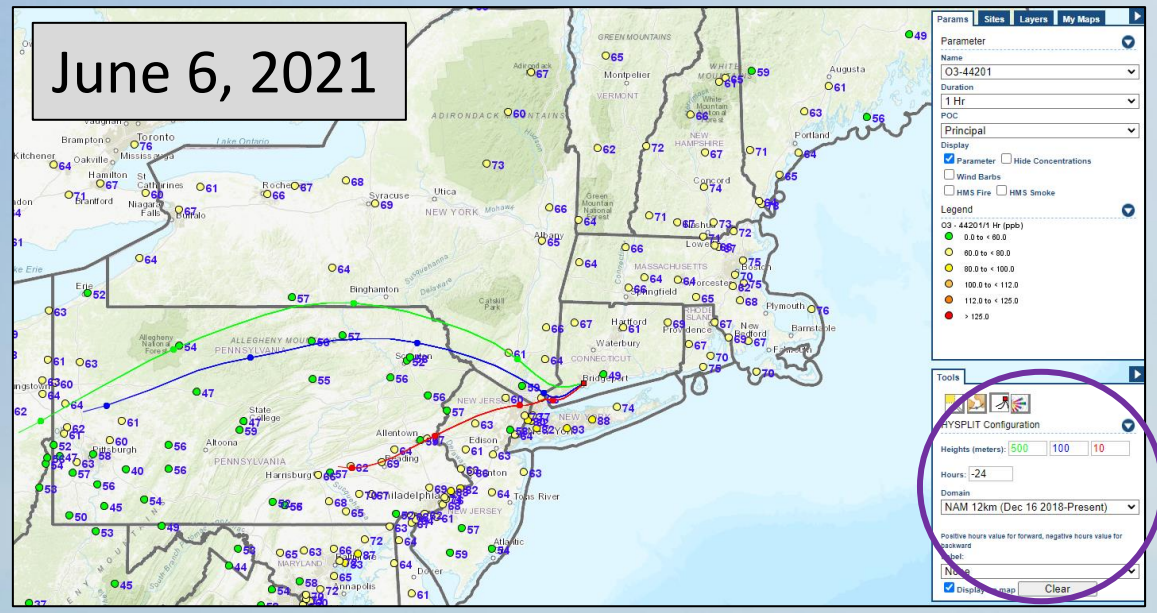


June 7, 2021

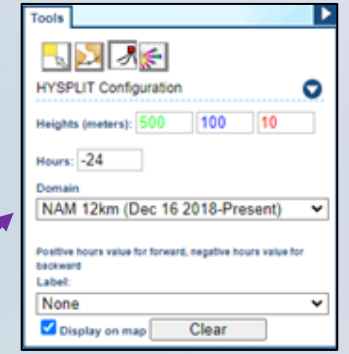
June 5th – 7th Ozone Event: Back Trajectories





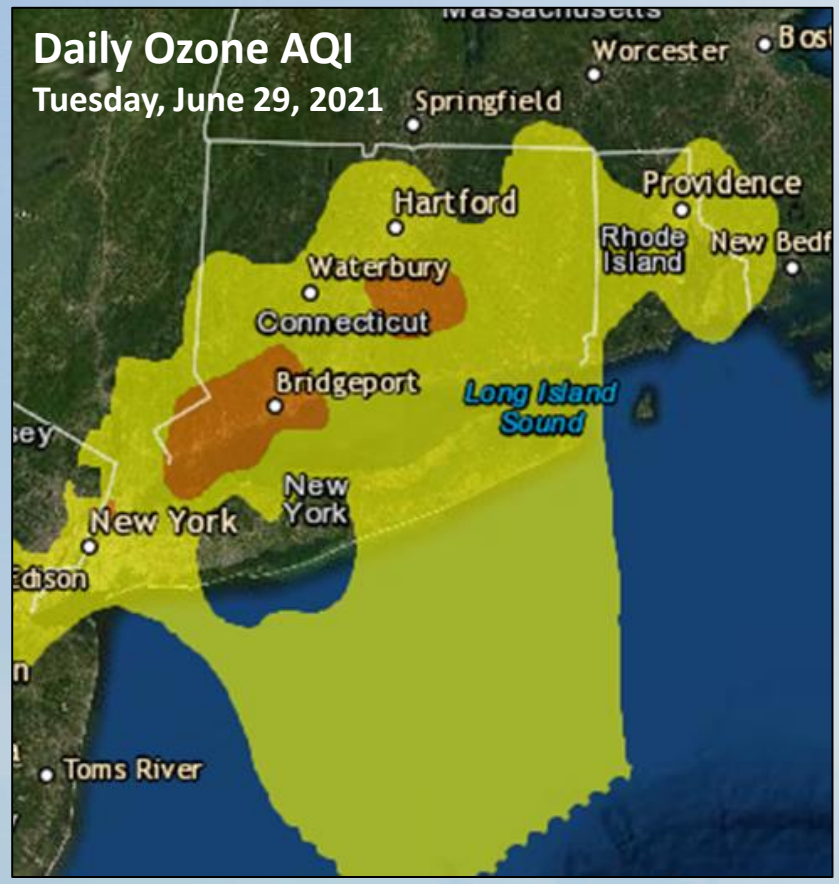


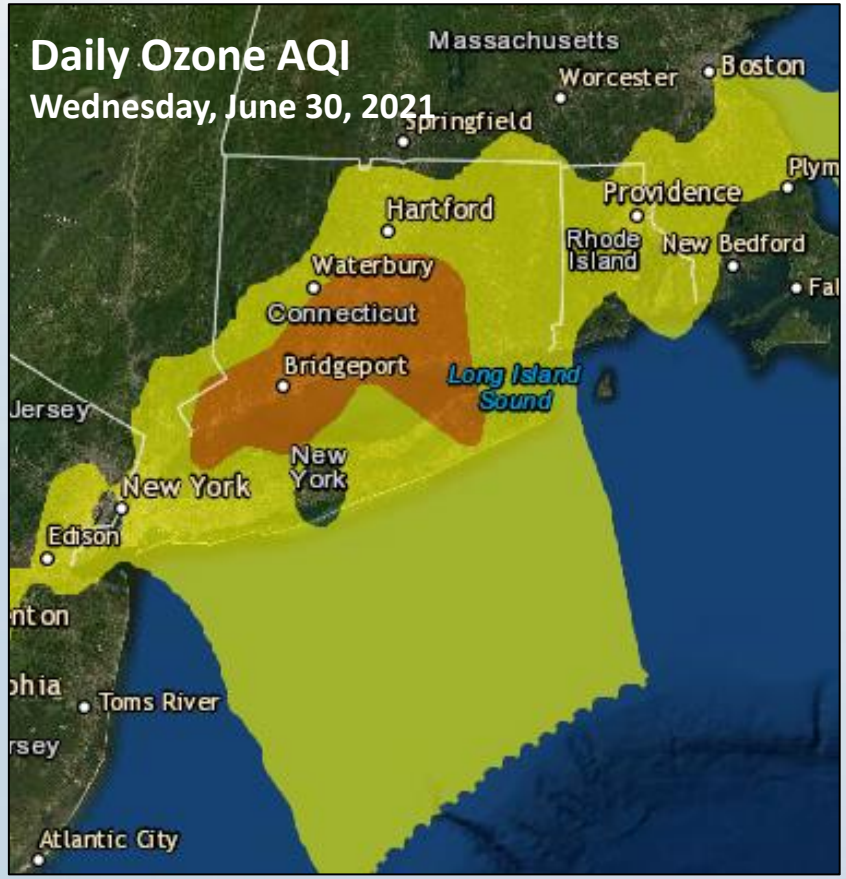
For all three days southwest winds dominated the lowest levels (10 m) with either west or southwest winds for the upper levels



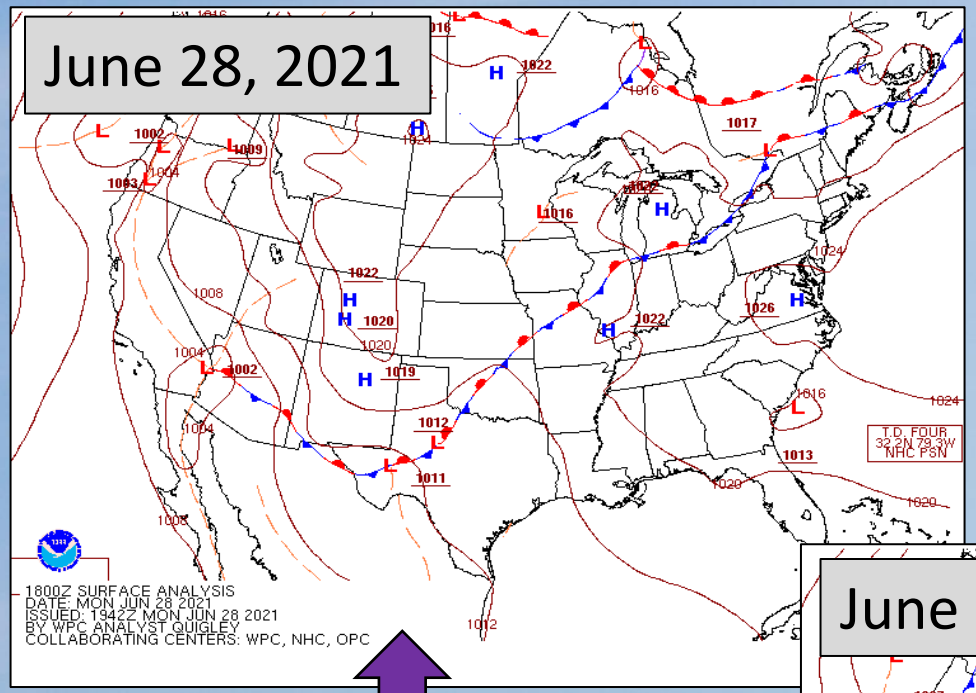
June 28th – 30th Ozone Event: AirNow Map

These events were more centralized over Connecticut from southwest corner to northeast corner



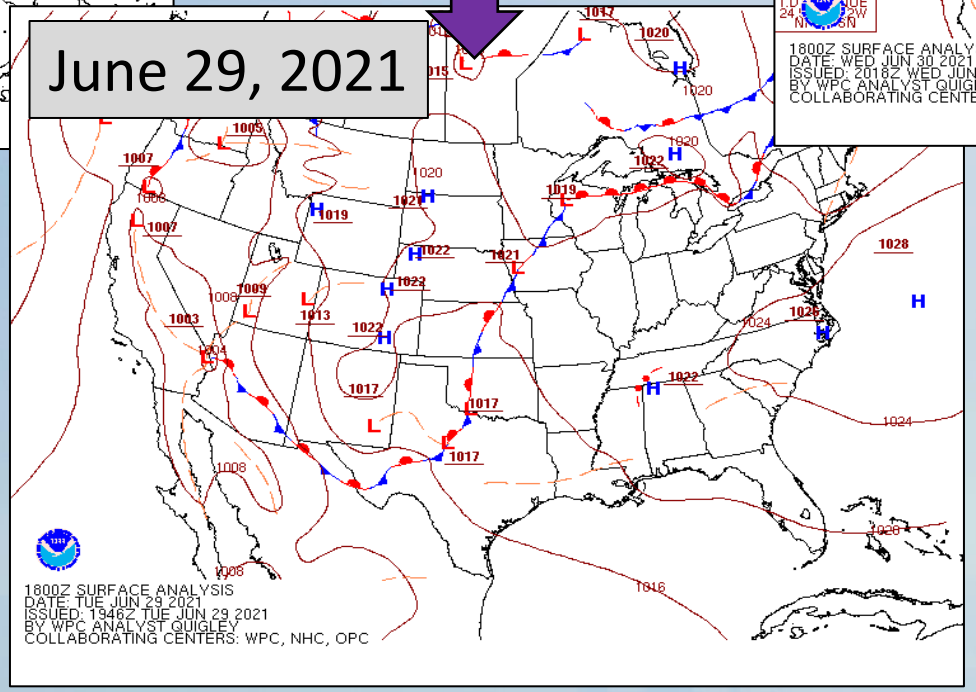


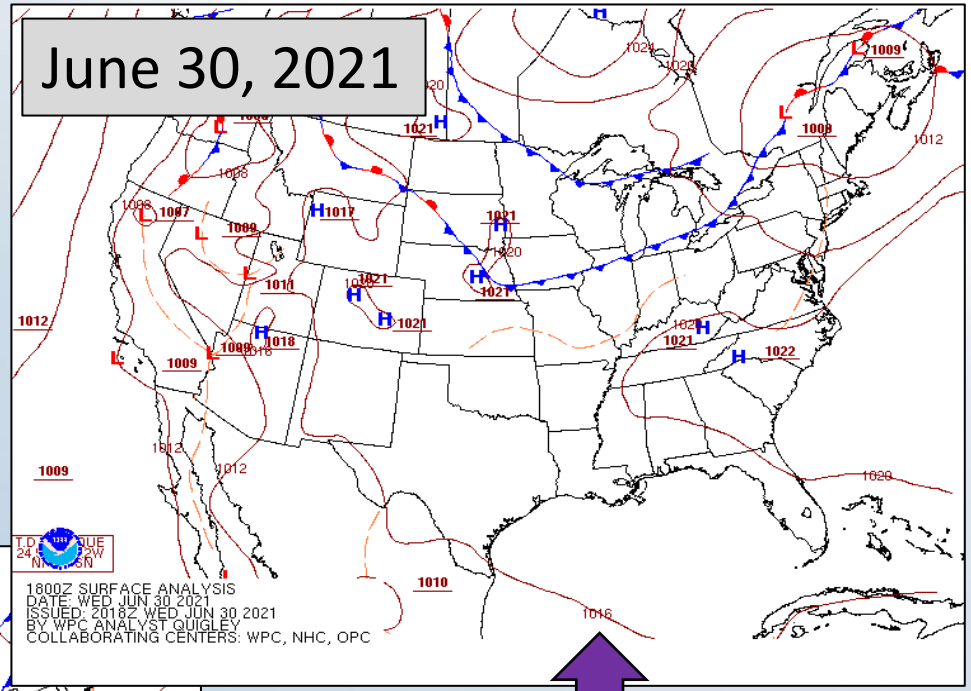
June 28th – 30th Ozone Event: Surface Analysis at 2pm



On June 28th, high pressure is in control ahead a slow moving cold front along the Canadian border

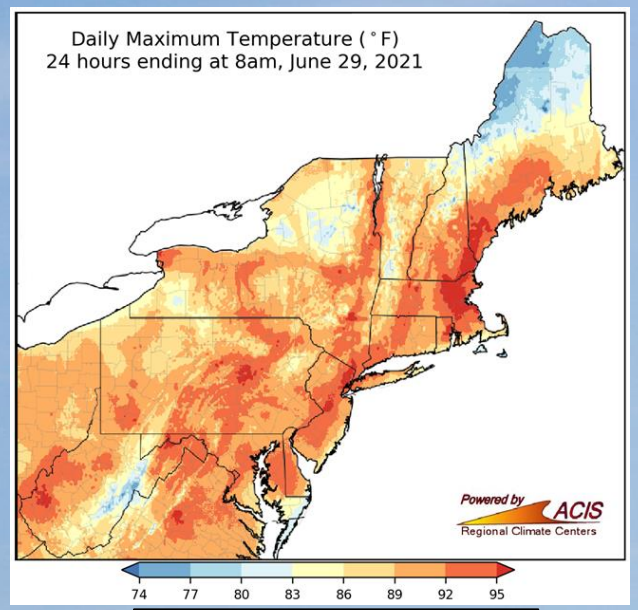
On June 29th, high pressure remains offshore as the front stalls along the Canadian border



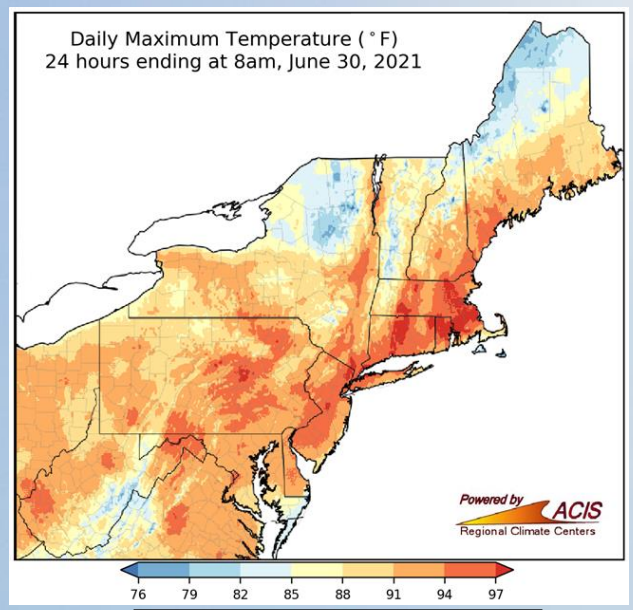


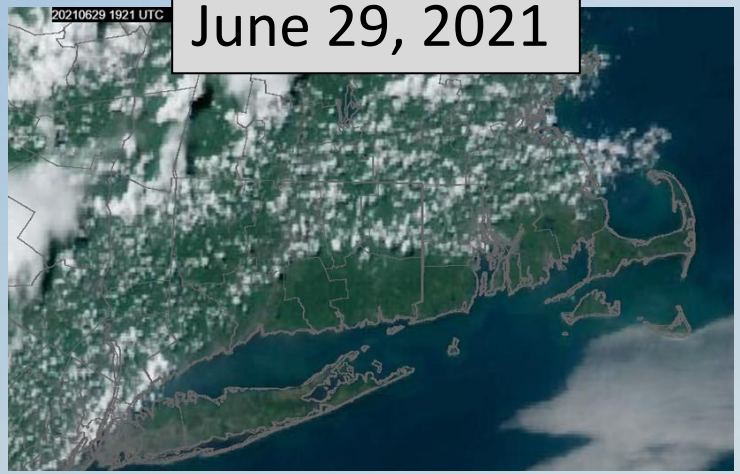
On June 30th, high pressure still remains offshore as an East Coast trough sets up from North Carolina to Massachusetts

June 28th – 30th Ozone Event: Temperature & Cloud Cover at 2pm

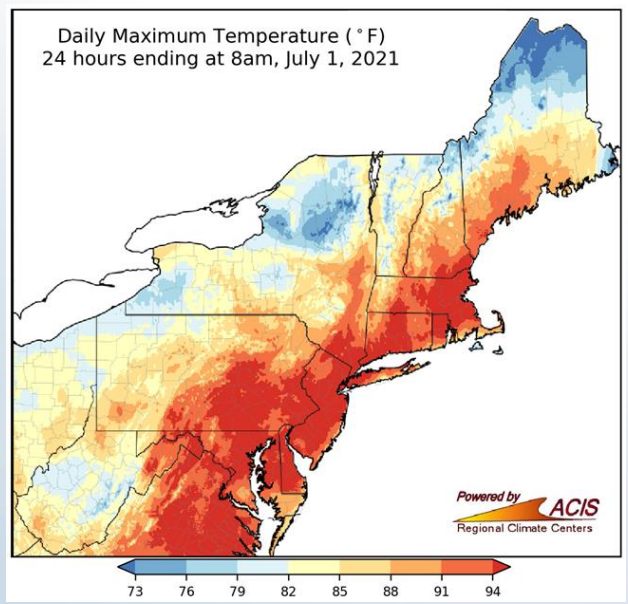


June 28, 2021



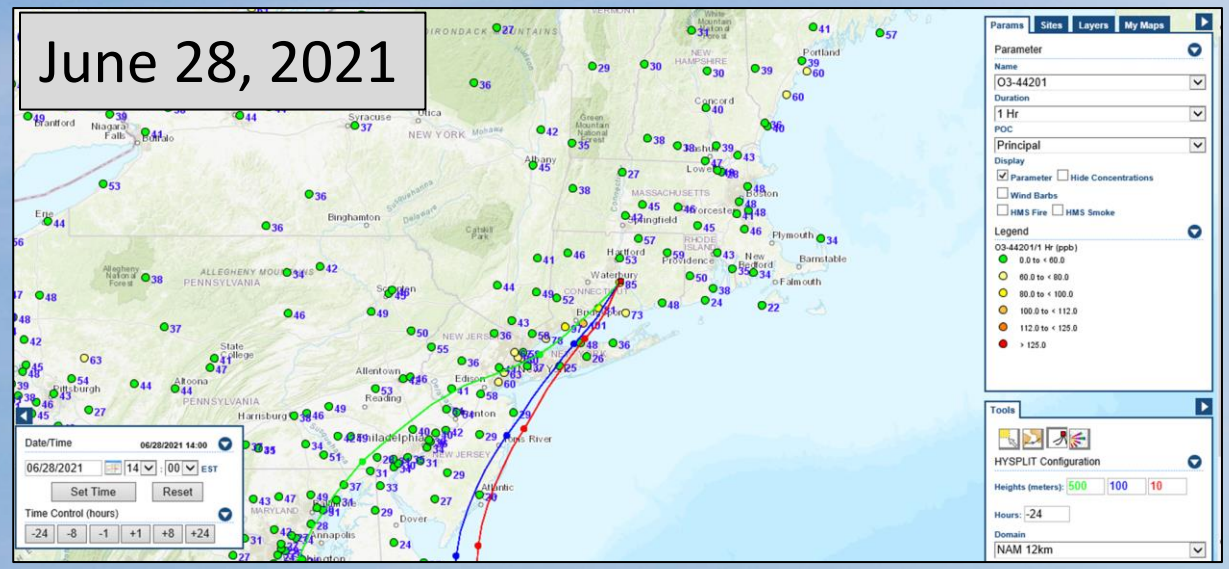


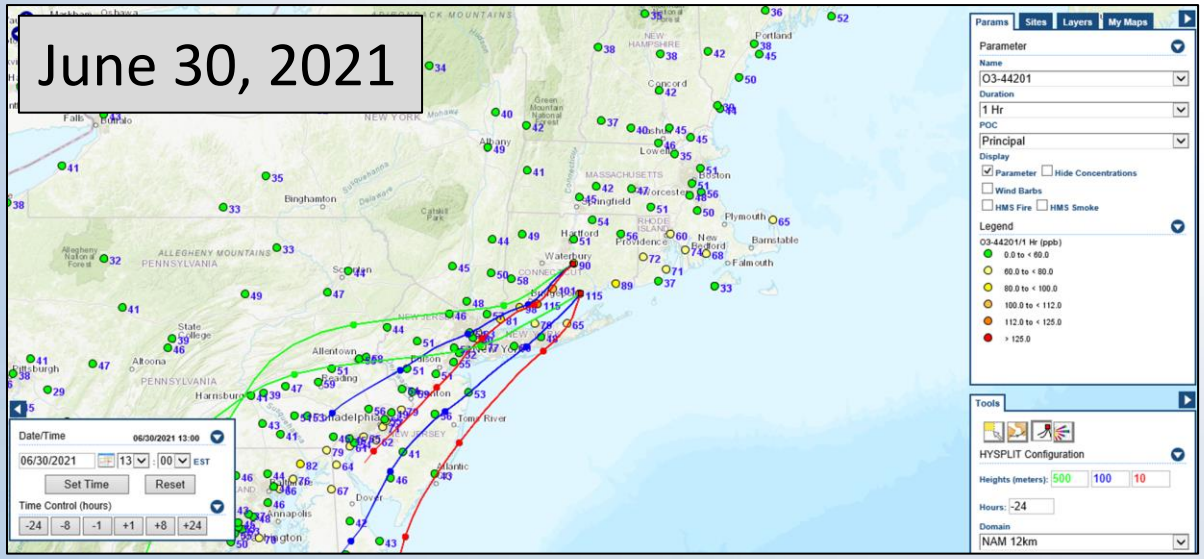
June 29, 2021

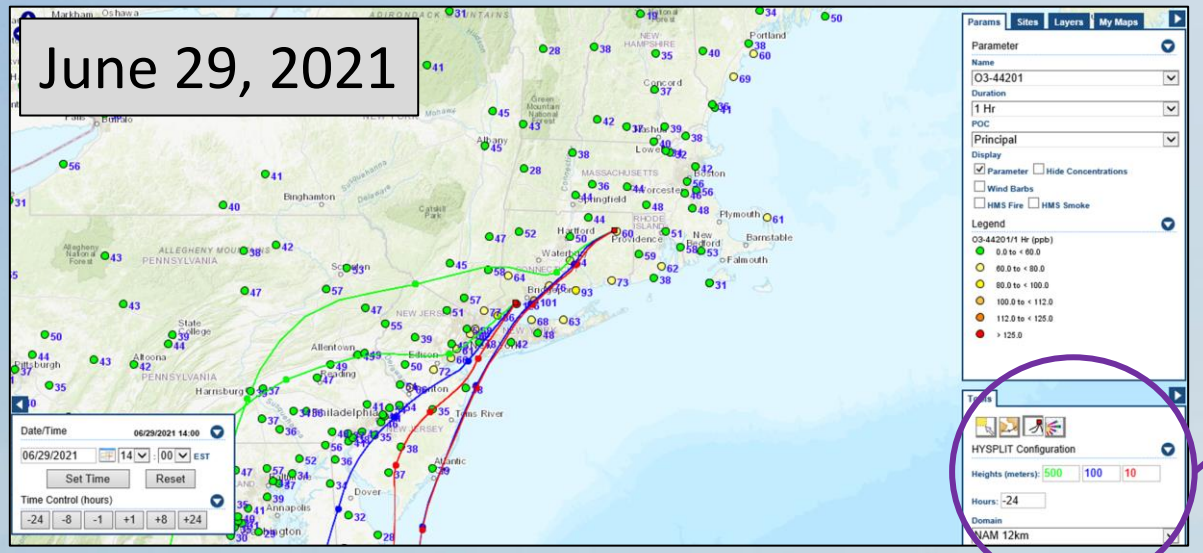


June 30, 2021

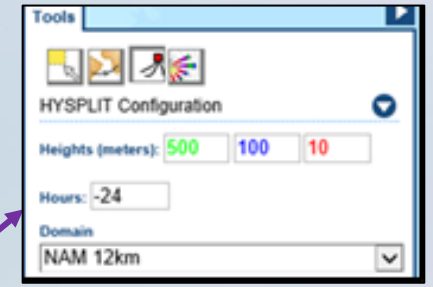
June 28th – 30th Ozone Event: Back Trajectories at 2pm



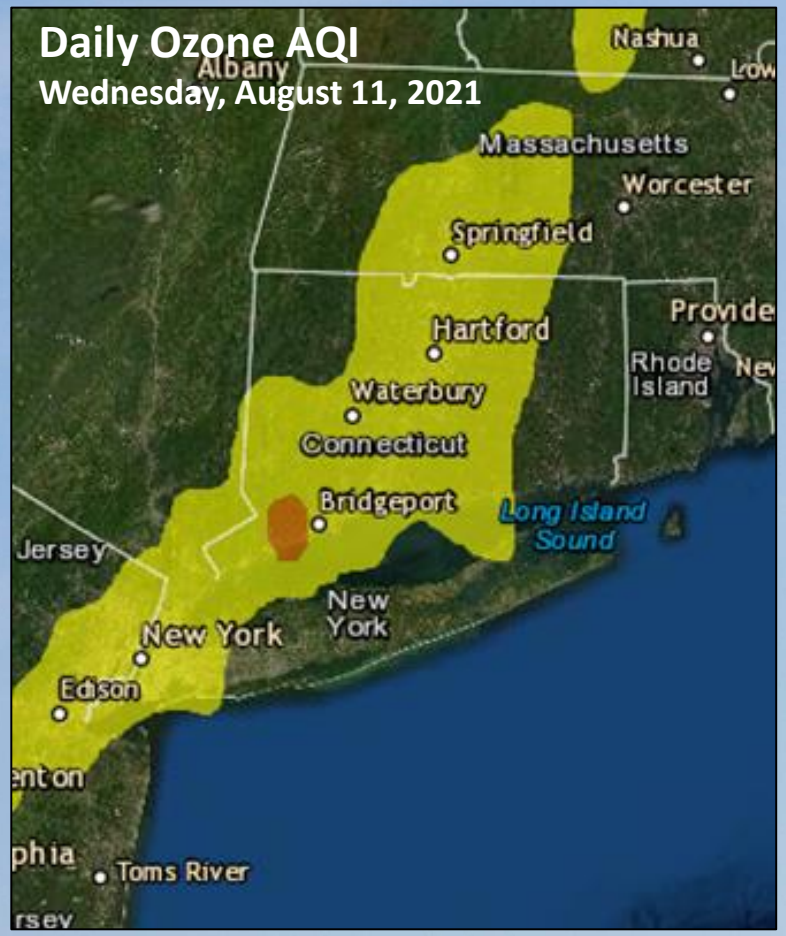




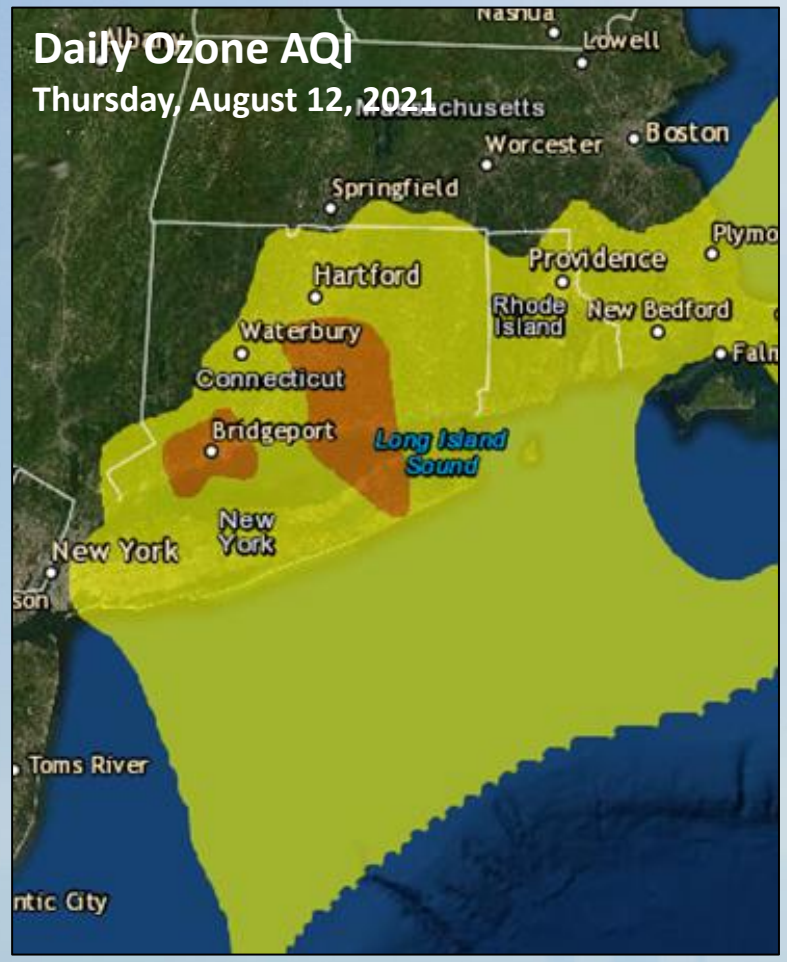
For all three days southwest winds dominated both the lower and upper levels (10 – 500 m)

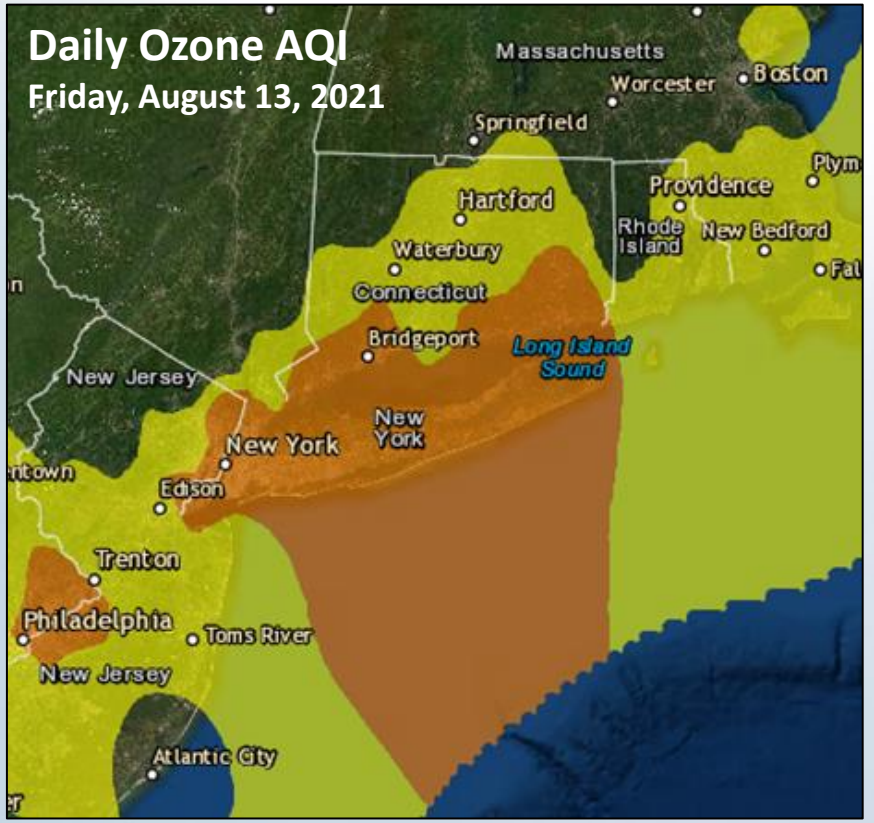


August 11th – 13th Ozone Event: AirNow Map

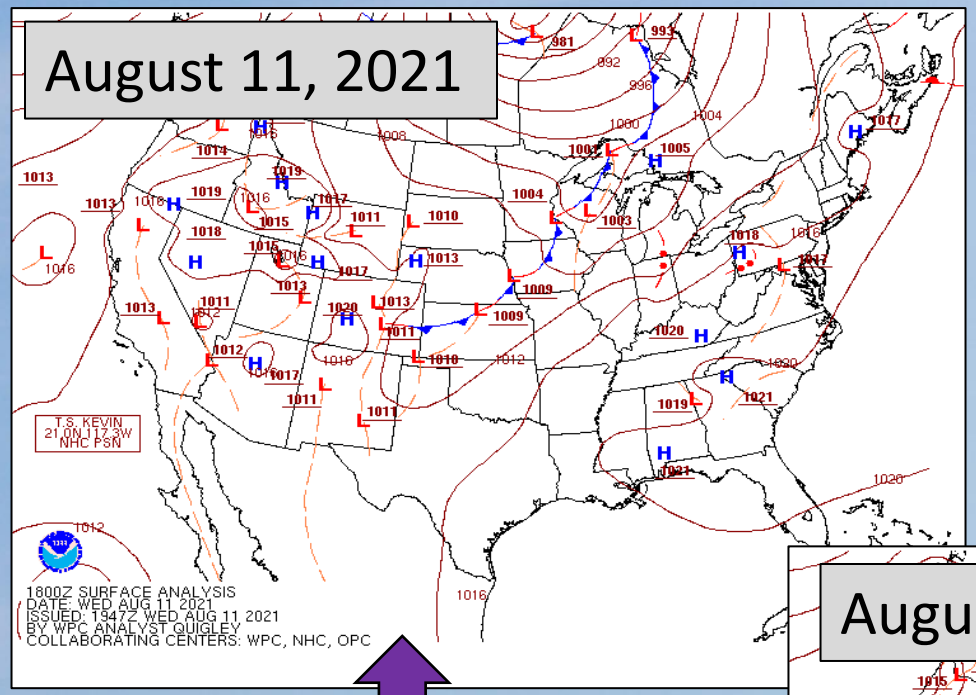


Moderates and USG were located along the I-95 corridor, intensifying each day

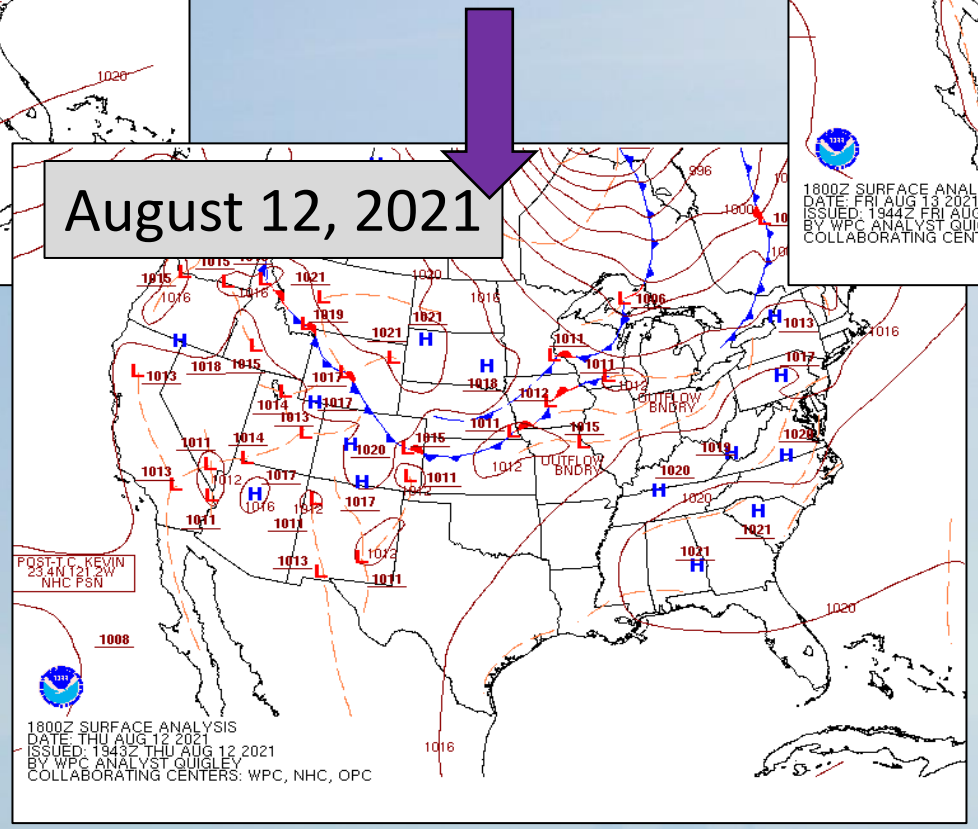


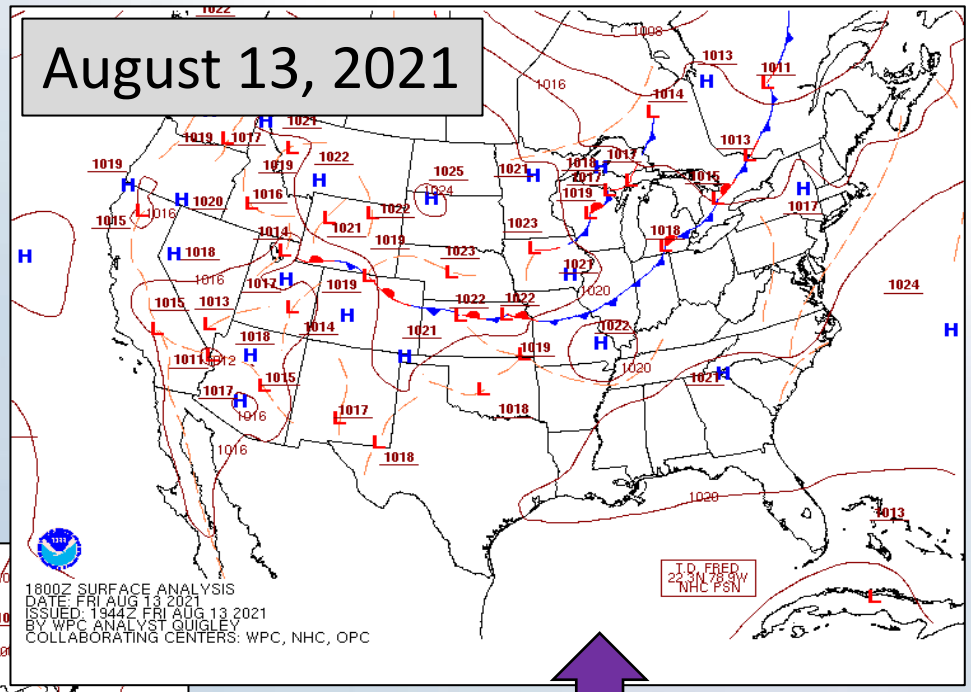


August 11th – 13th Ozone Event: Surface Analysis at 2pm



On August 12th, high pressure is still dominating along the East Coast

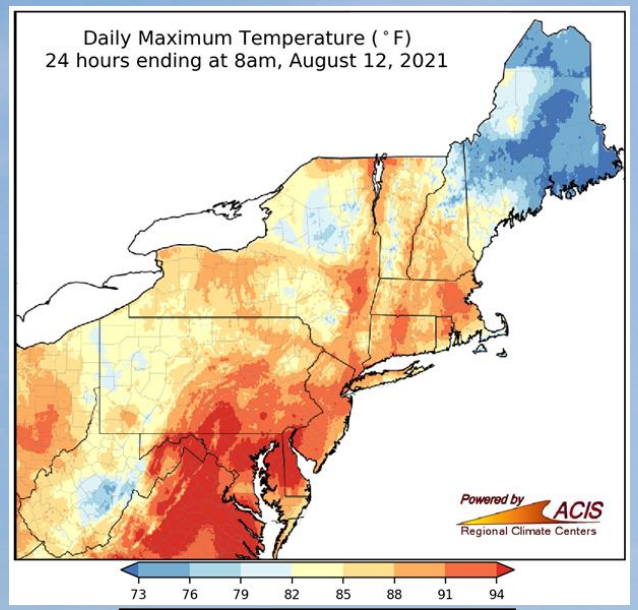




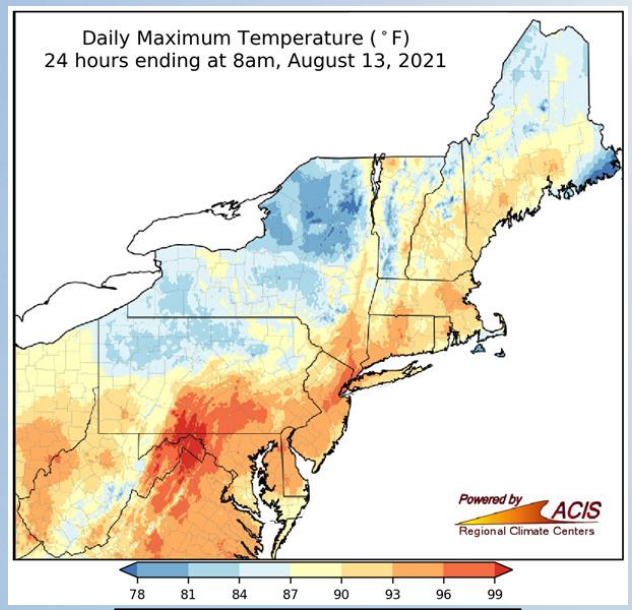
On August 11th, high pressure is in control along most of the East Coast from Florida to Maine, allowing for southwest flow

On August 13th, high pressure is still in control for the Eastern US with an East Coast trough setting up

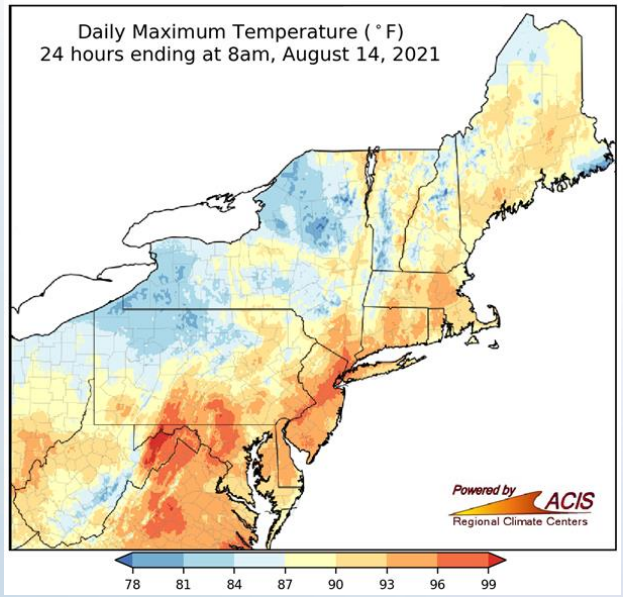
August 11th – 13th Ozone Event: Temperature & Cloud Cover at 2pm



August 11, 2021

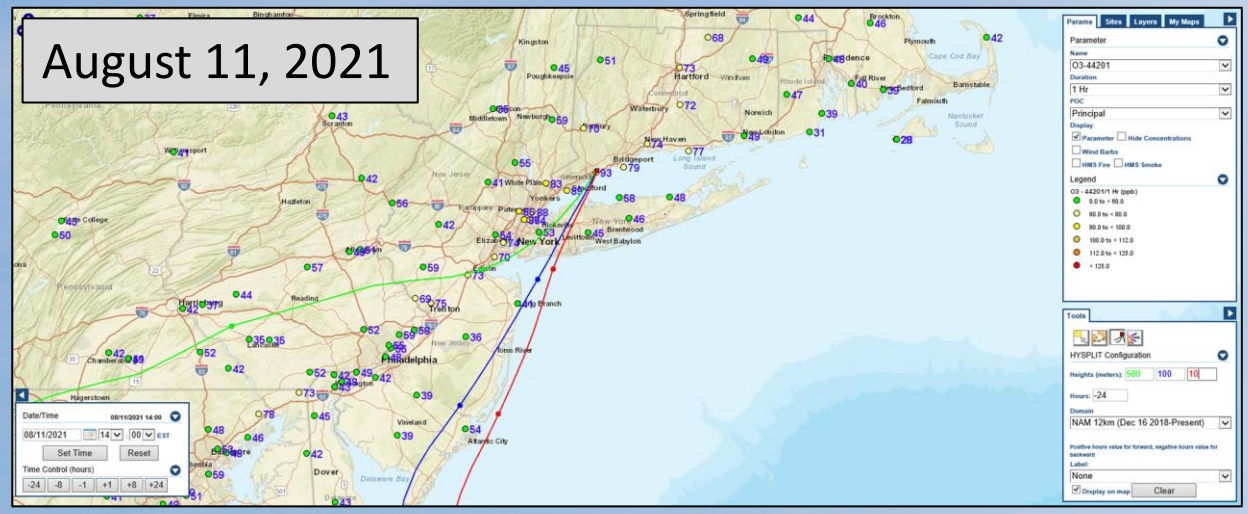


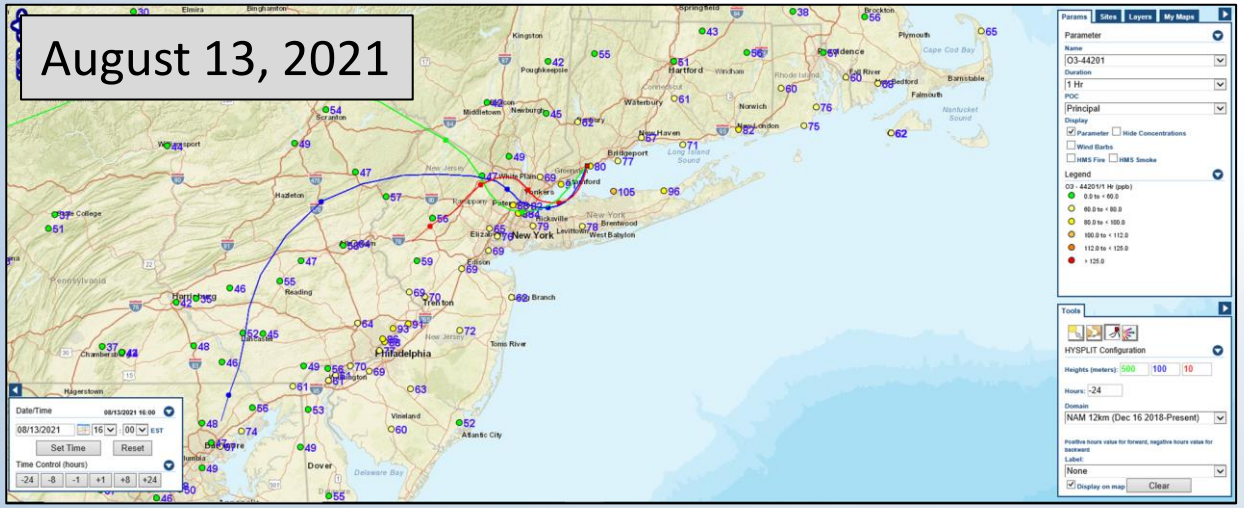
August 12, 2021



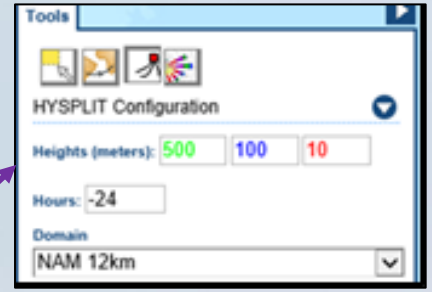
August 13, 2021

August 11th -13th Ozone Event: Back Trajectories at 2pm

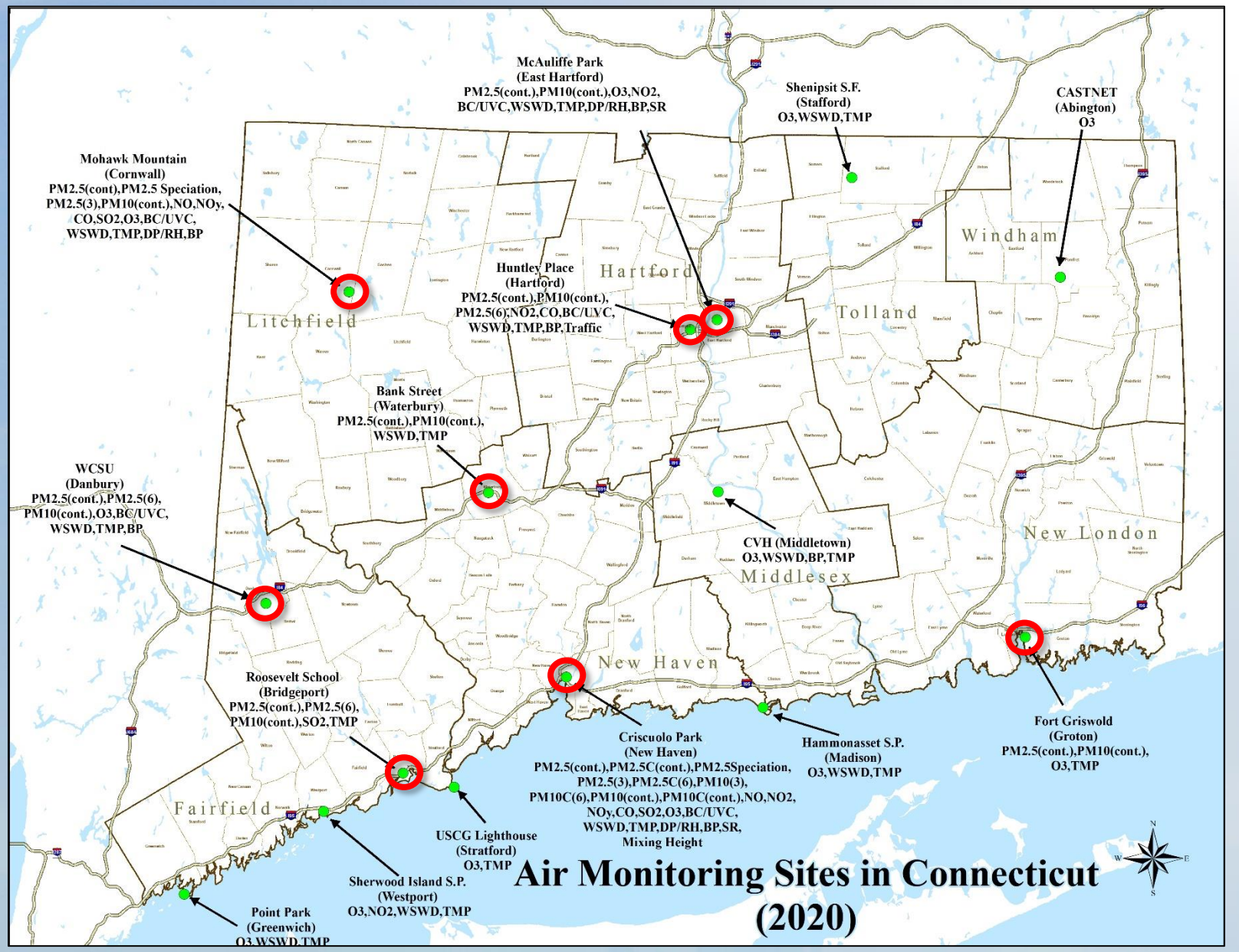




For all three days, winds are southwest with a more westerly component as height increases



CT PM2.5 Monitoring Sites



PM2.5 Exceedance Days

July 20, 2021

Regional Sites

Site	7/20
Washington	72.2
Bronx - IS52	62.1
Rockland Cty	61.7
Manhattan	61.5
Allentown	60.2
Bklyn - PS274	59.9
NEW	57.8
CCNY	56.4
Norristown	55.4
Fresh Kills	55.0
Newburgh	55.0
Port Richmond	54.8
Freemansburg	54.7
York	54.5
Queens Near-roa	53.9
Maspeth	53.7
MLK	52.8
TOR	52.7
Waterbury	**52.6**
Bklyn - PS 314	52.1
Chester	52.0
White Plains	51.4

Connecticut Sites

Site	7/20
Waterbury	52.6
Cornwall	50.3
Danbury	49.5
Hartford-Huntle	43.9
East Hartford	42
Bridgeport	40.8
New Haven - Cri	37.7
Groton Fort Gri	31.5

The highest PM2.5 levels occurred in New York and Pennsylvania. However, Connecticut still had 7 sites exceed the NAAQS.

July 26, 2021

Regional Sites

Site	7/26
ChelmsfordNR	59.0
Londonderry - M	54.1
BOSTON-KENMORE	53.4
Miller State Pa	53.0
Cornwall	**52.2**
Waterbury	**50.9**
WeymouthFR	50.0
East Hartford	**49.8**
Hartford-Huntle	**49.6**
Portsmouth	47.7
Burlington	47.0
Underhill	46.2
Keene	45.9
Worcester	45.2
LYNN	44.3
Boston-Von Hill	44.1
E Providence	42.5
W Greenwich	42.3
CHICOPEE	41.4
Near Road	41.4
Bennington	41.2
Boston - Roxbur	41.1

Connecticut Sites

Site	7/26
Cornwall	52.2
Waterbury	50.9
East Hartford	49.8
Hartford-Huntle	49.6
New Haven - Cri	37
Danbury	36.4
Bridgeport	35.8
Groton Fort Gri	25.1

Four Connecticut sites are among the top 10 sites with the highest PM2.5 levels for July 26th. Again, there was 7 monitor sites that exceeded the NAAQS.

July 27, 2021

Regional Sites

Site	7/27
New Haven - Cri	**40**
Waterbury	**38.3**
Groton Fort Gri	**37.5**
Bridgeport	**34.9**
East Hartford	**33.8**
Danbury	**33.6**
Bklyn - PS 314	33.3
Hartford-Huntle	**33.2**
Fall River	31.6
Bklyn - PS274	31.5
Londonderry - M	31.4
RIT	30.4
Bronx - IS52	30.3
Portsmouth	30.2
Queens Near-roa	29.7
Brockton	29.5
Chelsea HP	29.5
Haverhill	29.1
Portland - Deer	29.1
Liberty (SAHS)	28.7
ChelmsfordNR	28.5
WeymouthFR	27.8

Connecticut Sites

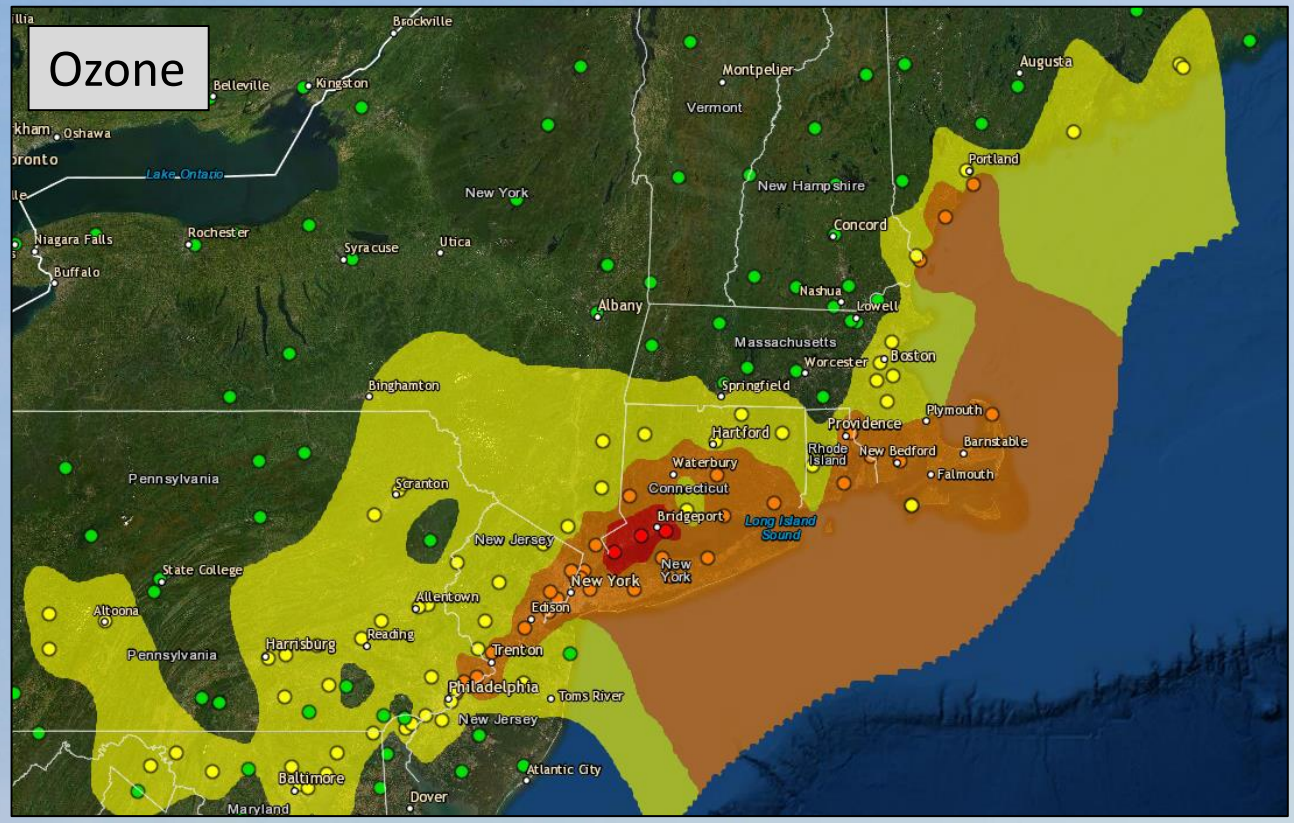
Site	7/27
New Haven - Cri	40.0
Waterbury	38.3
Groton Fort Gri	37.5
Bridgeport	34.9
East Hartford	33.8
Danbury	33.6
Hartford-Huntle	33.2
Cornwall	18.8

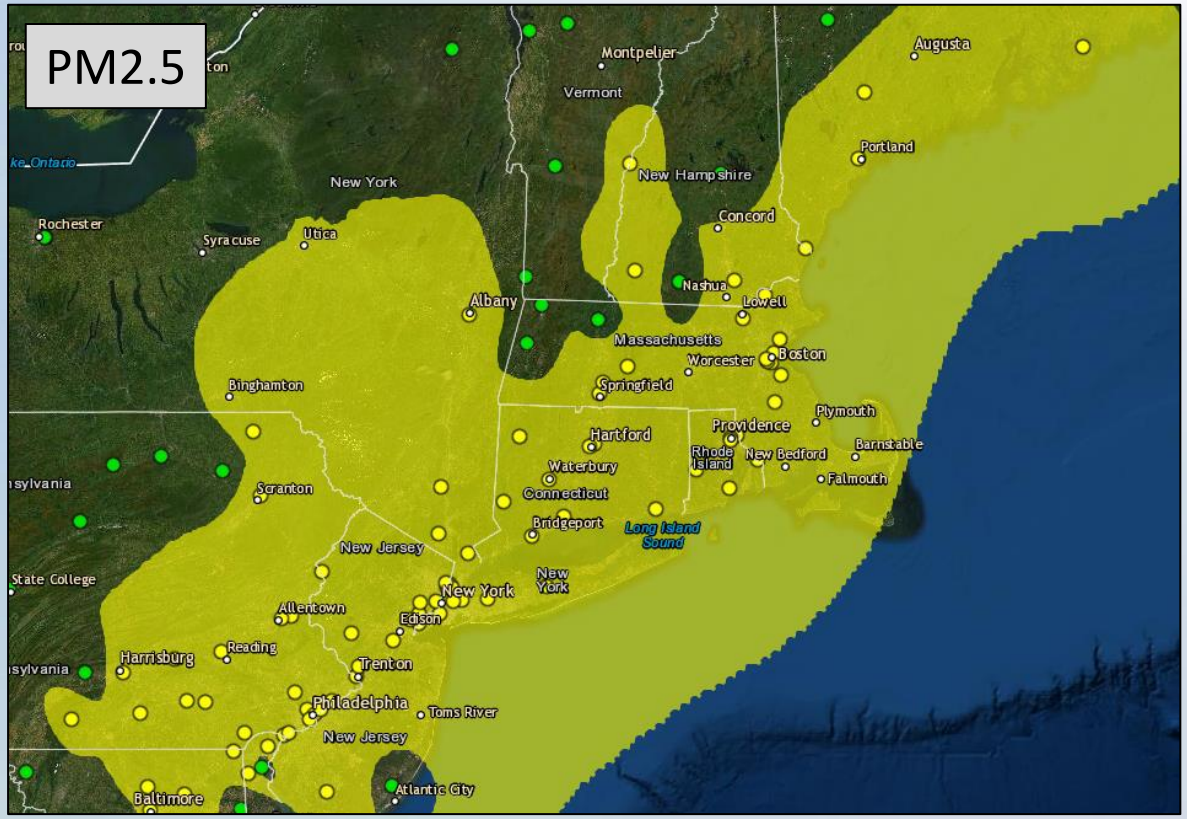
Connecticut sites observed the highest PM2.5 values for July 27th. Only three sites exceeded the NAAQS.

All PM2.5 values are 24-Hr Daily Averages (µg/m3).

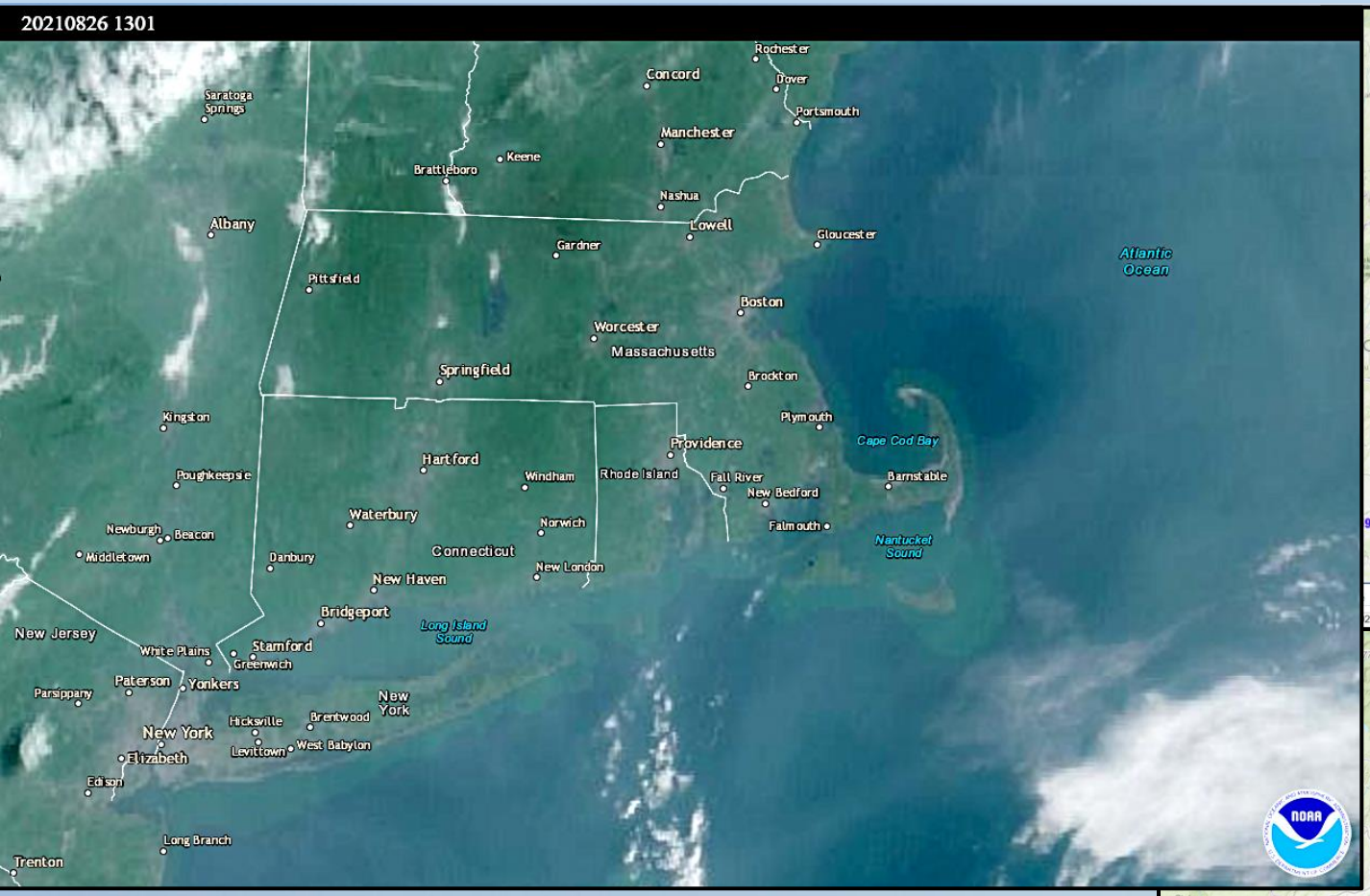
August 26, 2021: AirNow Maps

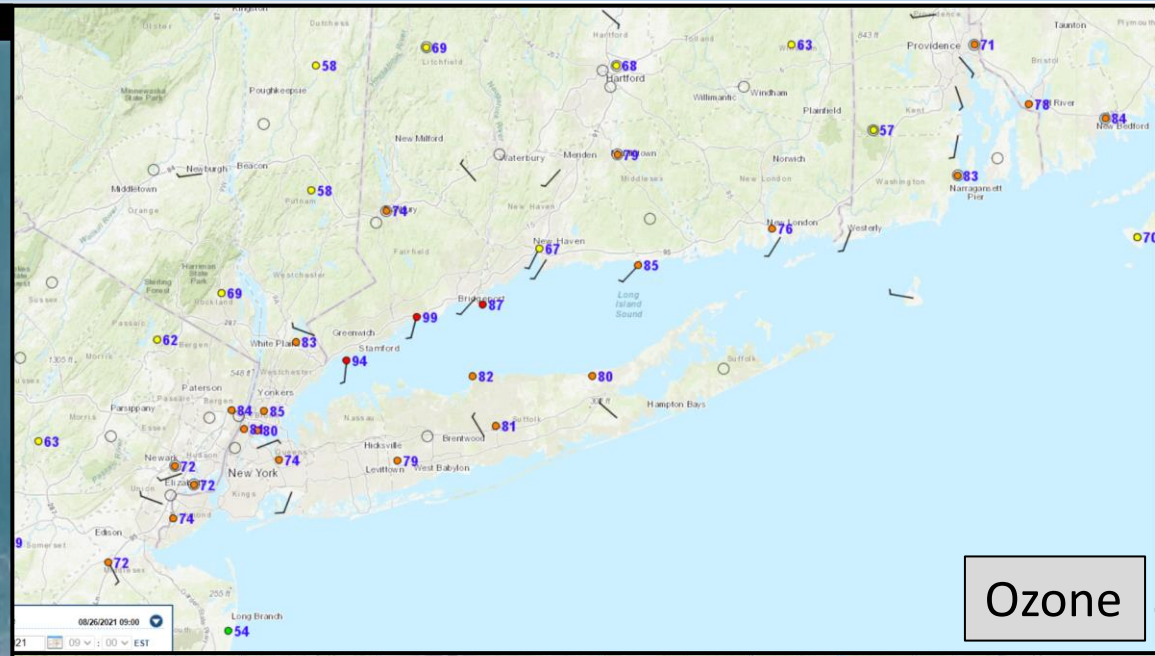
The ozone plume lies along the I-95 corridor from Philadelphia to southern Maine with widespread USG and unhealthy values in Connecticut. PM2.5 also showed a widespread moderate plume along the I-95 corridor from Baltimore to northern Maine. The higher ozone levels follow really close with the elevated PM2.5 levels.

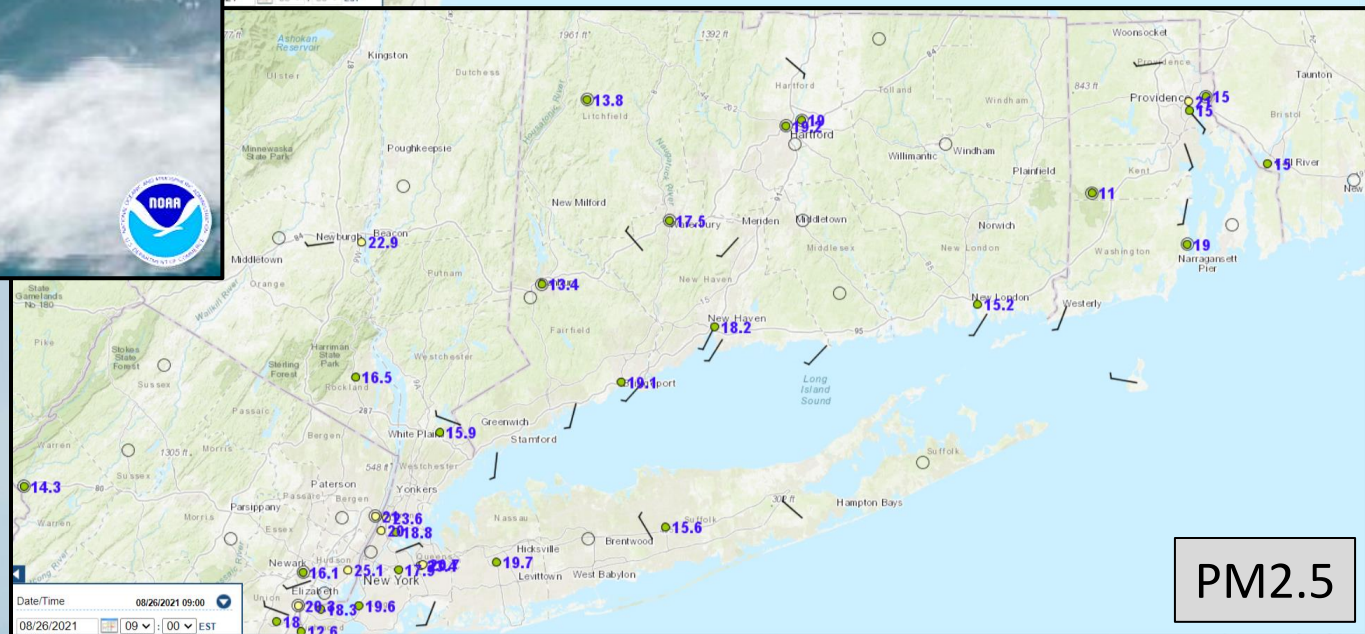




August 26, 2021: Smoke Enhancement

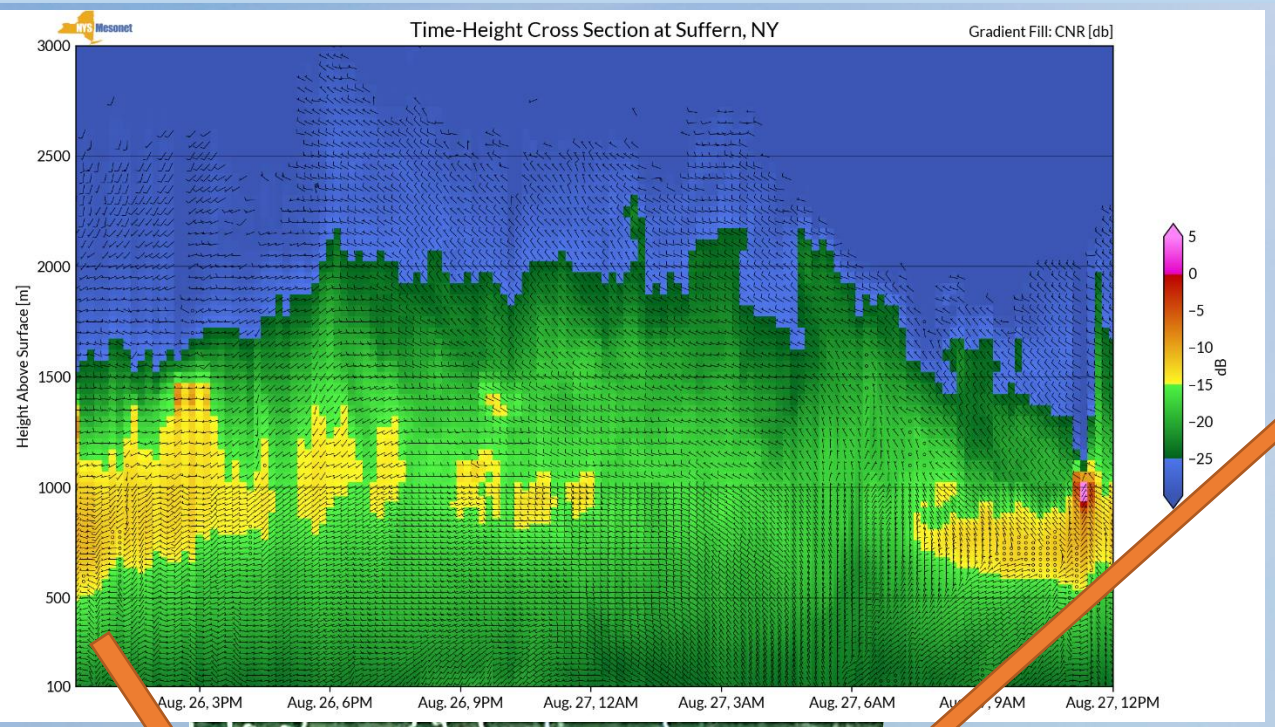


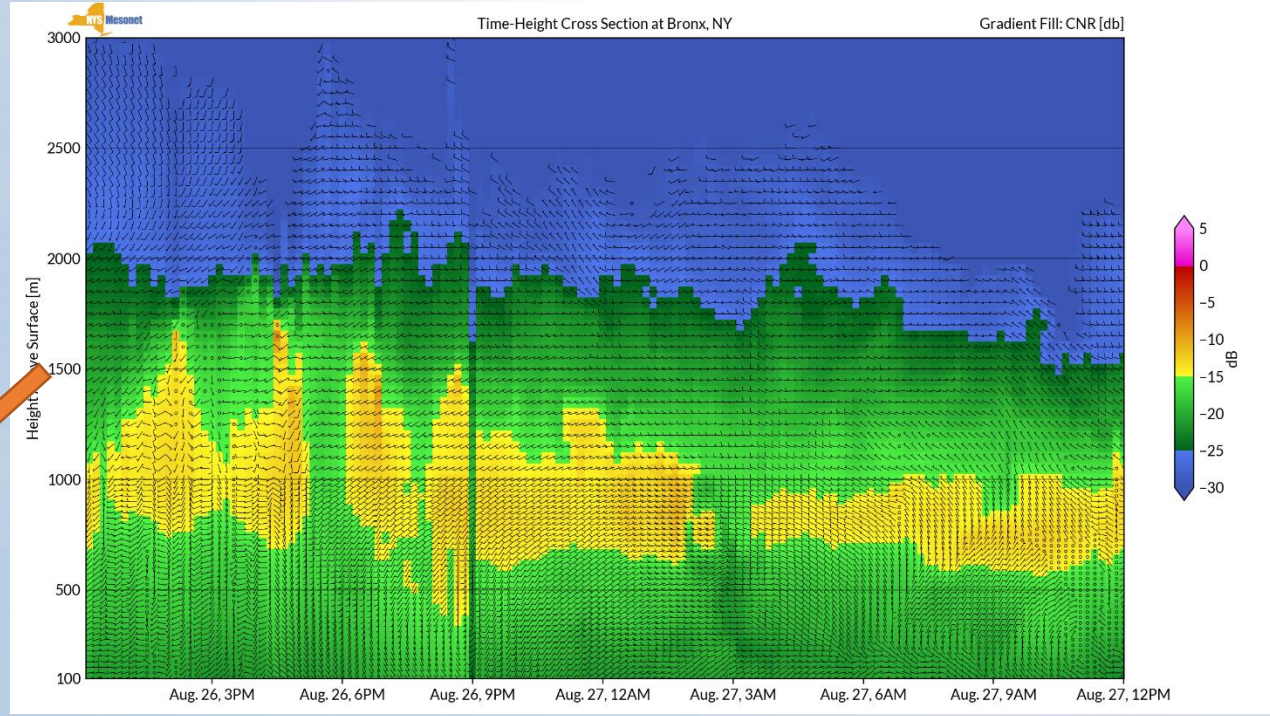




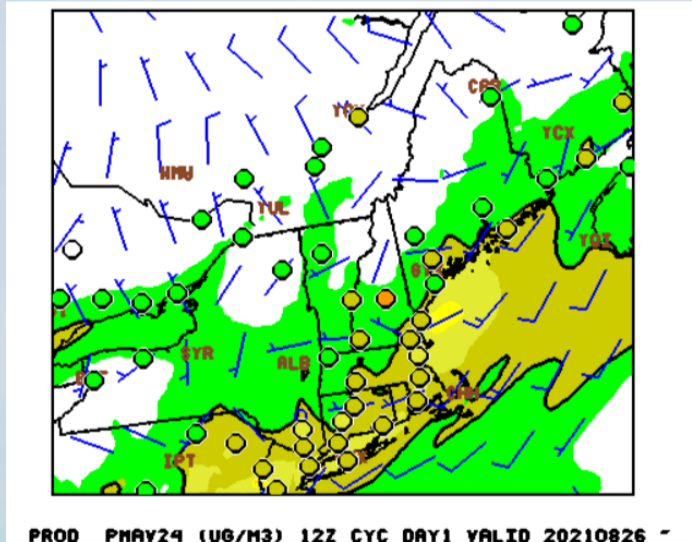
Moderate levels of PM2.5 reached the ground and elevated ozone levels were recorded over a wide area of southern New England and the mid-Atlantic States. Unusually high levels occurred in NYC, suggesting that smoke plume VOCs may have been a factor.

August 26, 2021: NYDEC Mesonet LIDAR





The LIDARs showed most of the smoke plume staying aloft. The PM2.5 model appears to have done well with the placement of the surface smoke plume, which may have contributed to the ozone model performing well. This may be a case where the gaseous smoke pollutants properly enhanced the modeled ozone.



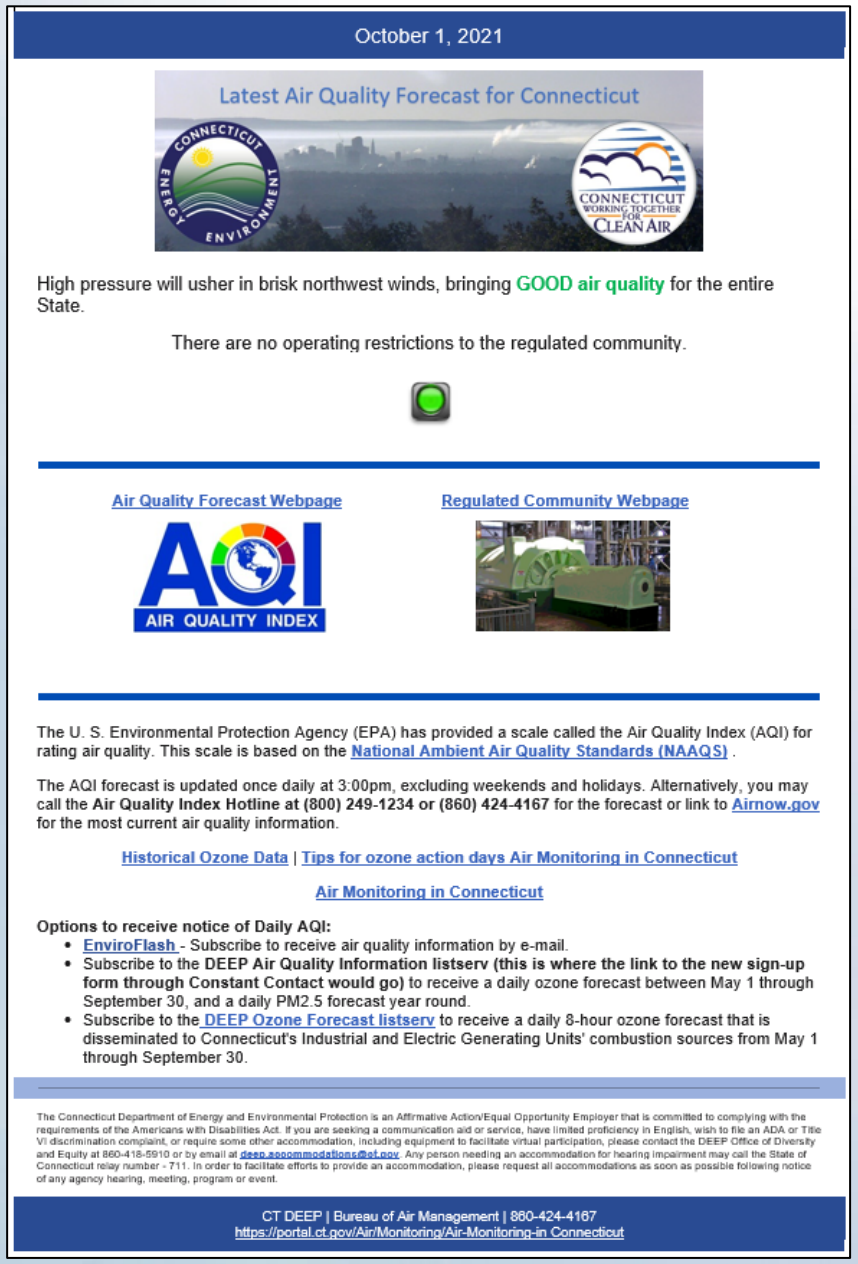
2021 Ozone Season Summary

- Connecticut had 21 ozone exceedance days in 2021, compared to 17 ozone exceedance days in 2020.
  - Also, Connecticut had three PM2.5 exceedance days due to smoke for 2021.
- Design values in Southwest Connecticut continues to exceed the 2008 and 2015 standards.
- The design value for Greater Connecticut exceeds 2015 NAAQS; we maintain our clean data designation for the 2008 standard.
- Connecticut's major ozone exceedance events were dominated by high pressure systems over the East Coast and flow from the southwest New York metropolitan area.
- Smoke was present aloft for most of the summer, but the smoke significantly impaired visibility and increased ozone and particulate on occasion.
- Connecticut had a slightly cooler and wetter summer than 2020.
- Despite the trend in increasing temperatures, the long term trend in sites exceedances has decreased.

Transitioning Air Quality Forecast Notifications

- We intend to combine our current air quality forecast notifications into one email
- We plan to eliminate the pdf attachment for the regulated community as we streamline our AQI Forecast process
- In lieu of the pdf attachment, we will have a link to the forecast for the Regulated Community

Please send any recommendations/comments to: Amanda.Fritz@ct.gov



October 1, 2021

Latest Air Quality Forecast for Connecticut

High pressure will usher in brisk northwest winds, bringing **GOOD air quality** for the entire State.

There are no operating restrictions to the regulated community.

Air Quality Forecast Webpage

Regulated Community Webpage

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 forecast is updated once daily at 3:00pm, excluding weekends and holidays. Alternatively, you may call the **Air Quality Index Hotline at (800) 249-1234 or (860) 424-4167** for the forecast or link to Airnow.gov for the most current air quality information.

Historical Ozone Data | Tips for ozone action days Air Monitoring in Connecticut

Air Monitoring in Connecticut

Options to receive notice of Daily AQI:

- EnviroFlash - Subscribe to receive air quality information by e-mail.
- Subscribe to the **DEEP Air Quality Information listserv (this is where the link to the new sign-up form through Constant Contact would go)** to receive a daily ozone forecast between May 1 through September 30, and a daily PM2.5 forecast year round.
- Subscribe to the DEEP Ozone Forecast listserv to receive a daily 8-hour ozone forecast that is disseminated to Connecticut's Industrial and Electric Generating Units' combustion sources from May 1 through September 30.

CT DEEP | Bureau of Air Management | 860-424-4167
https://portal.ct.gov/Air/Monitoring/Air-Monitoring-in Connecticut