

2023 Exceptional Event SIPRAC Briefing February 2024

2023-06-06 20:00:21 UTC



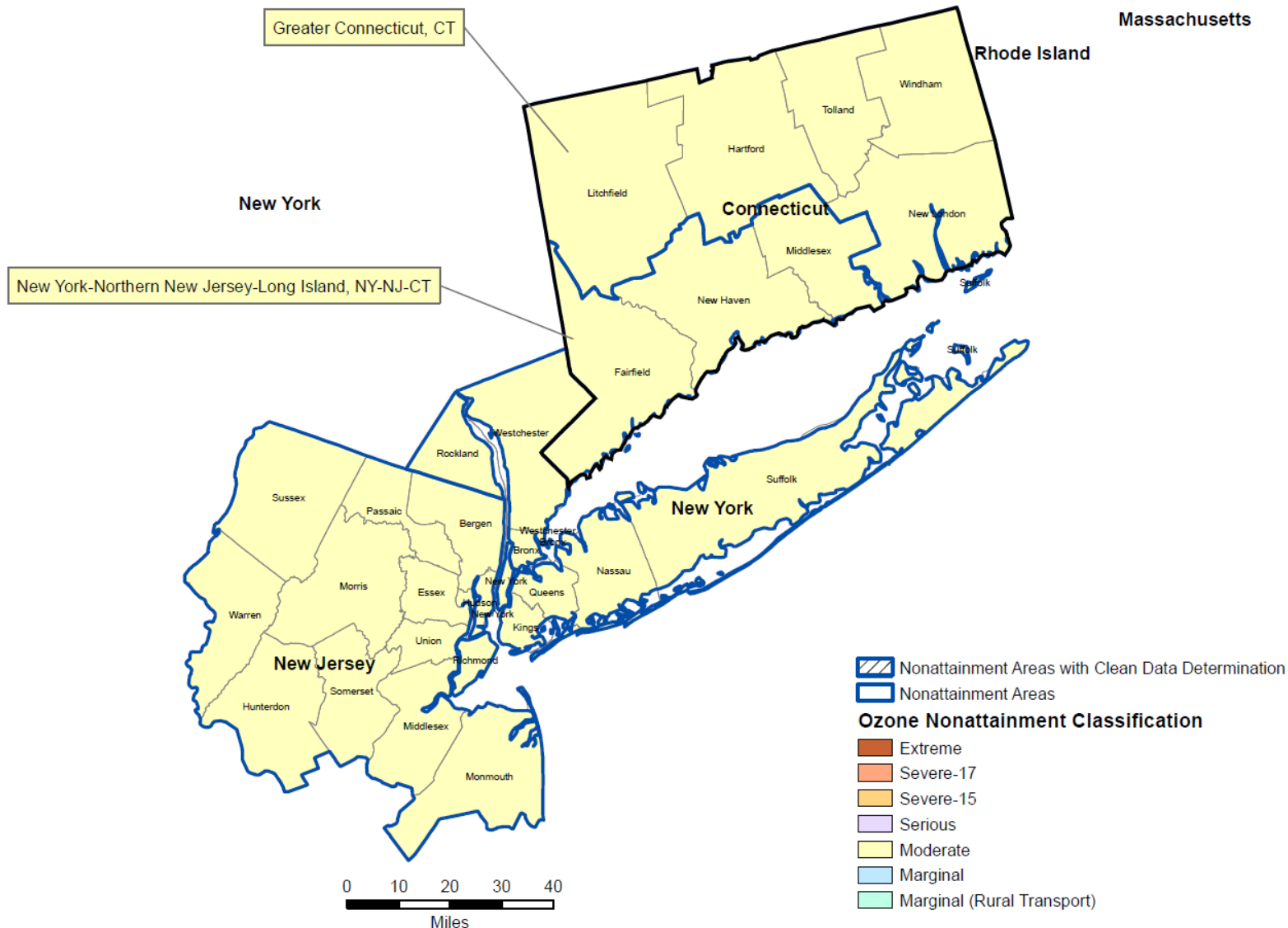
Michael Geigert
Bureau of Air Management



2015 Ozone NAAQS Status Refresher

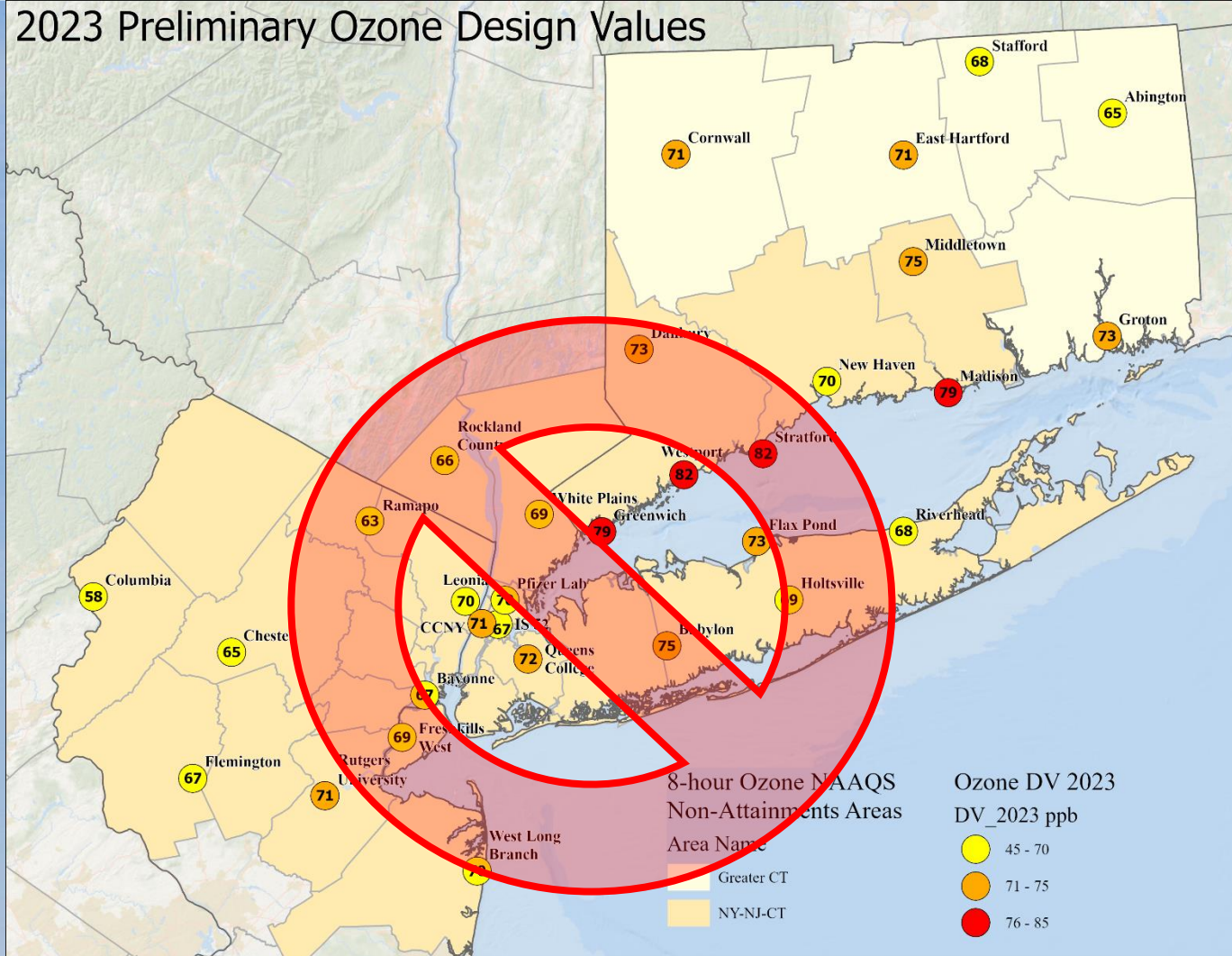
Connecticut 8-hour Ozone Nonattainment Areas (2015 Standard)

01/31/2024



- On November 7, 2022, all of Connecticut was redesigned to “Moderate” non-attainment for the 2015 ozone NAAQS.
- All of Connecticut must now attain by August 3, 2024.
- The NY-NJ-CT will not attain by this date, but Greater Connecticut would “if” the EPA accepts the Exceptional Event Demonstration by that date.

2015 Ozone NAAQS Status



- Southwest Connecticut will not attain the 2015 ozone NAAQS, so it was determined not to be “Regulatorily Significant” for an exceptional event request.
- Only the three non-attainment monitors in Greater Connecticut will be requested for an EE concurrence.

Latest Timeline

- January 10, 2024: Initial Notification sent to EPA Region 1. ✓
-EPA needs to respond within 60 days.
- February: EPA/ DEEP Management Draft EE Demonstration Review
- March: State/ Public Comment Period on Proposed Demonstration
- Late April : Data Certification and EE Demo Submittal
- July: EPA Exception Event demonstration Decision
- August: EPA clean data or attainment determination NPRM

Greater Connecticut Highest Ozone 2023

These days are flagged for exceptional events:

April 13-14

June 30-July 1

July 12

Greater Connecticut 10 Highest Ozone Values per Monitor										
Cornwall	4/14/2023	7/1/2023	6/30/2023	6/1/2023	4/13/2023	7/26/2023	5/12/2023	6/11/2023	4/12/2023	7/13/2023
	82	79	78	76	67	67	65	65	62	62
East Hartford	4/14/2023	7/1/2023	6/30/2023	6/1/2023	5/28/2023	7/6/2023	6/2/2023	4/13/2023	7/12/2023	7/26/2023
	84	82	73	73	70	69	69	67	64	64
Groton	7/12/2023	7/1/2023	4/13/2023	4/14/2023	7/29/2023	6/30/2023	5/12/2023	7/28/2023	9/7/2023	7/6/2023
	81	76	76	73	71	70	70	69	64	62
Stafford	4/14/2023	7/1/2023	4/13/2023	5/28/2023	6/30/2023	6/1/2023	5/12/2023	6/12/2023	9/2/2023	4/4/2023
	88	76	71	70	68	65	64	63	62	61
Abington	4/14/2023	7/1/2023	4/13/2023	5/12/2023	5/16/2023	5/28/2023	6/1/2023	6/12/2023	7/13/2023	4/12/2023
	74	71	69	63	63	62	61	61	59	58

	April 13 - 14, 2023 Event June 30 – July 1, 2023 Event July 12, 2023 Event
	Fourth High excluding Exceptional Events

Regulatory Significance

The following events are being considered for regulatory significance:

Greater Connecticut only- Cornwall, East Hartford and Groton

- April 13-14
- June 30-July 1
- July 12

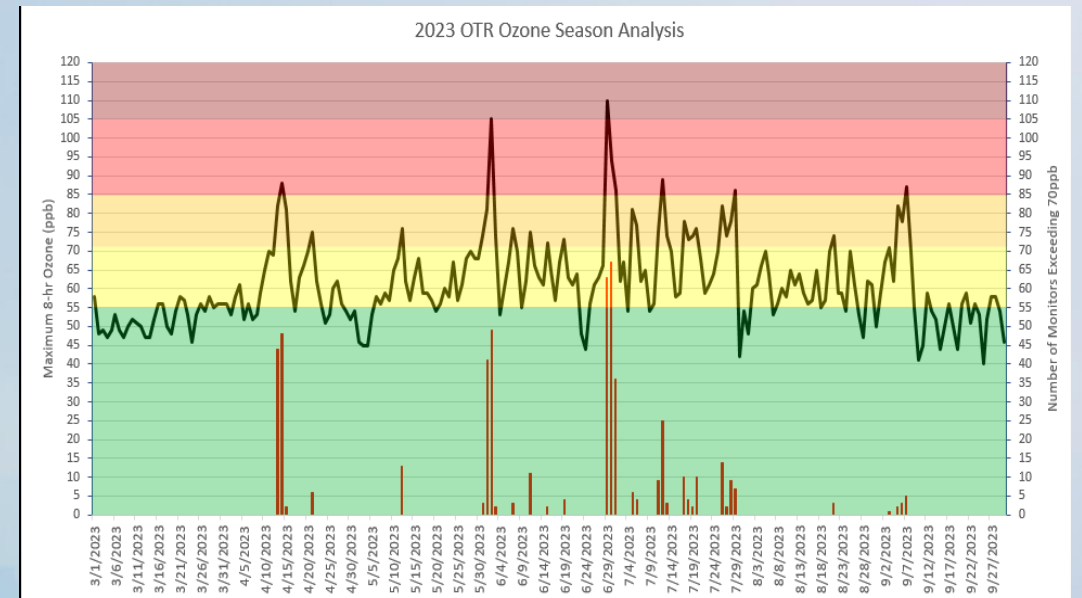
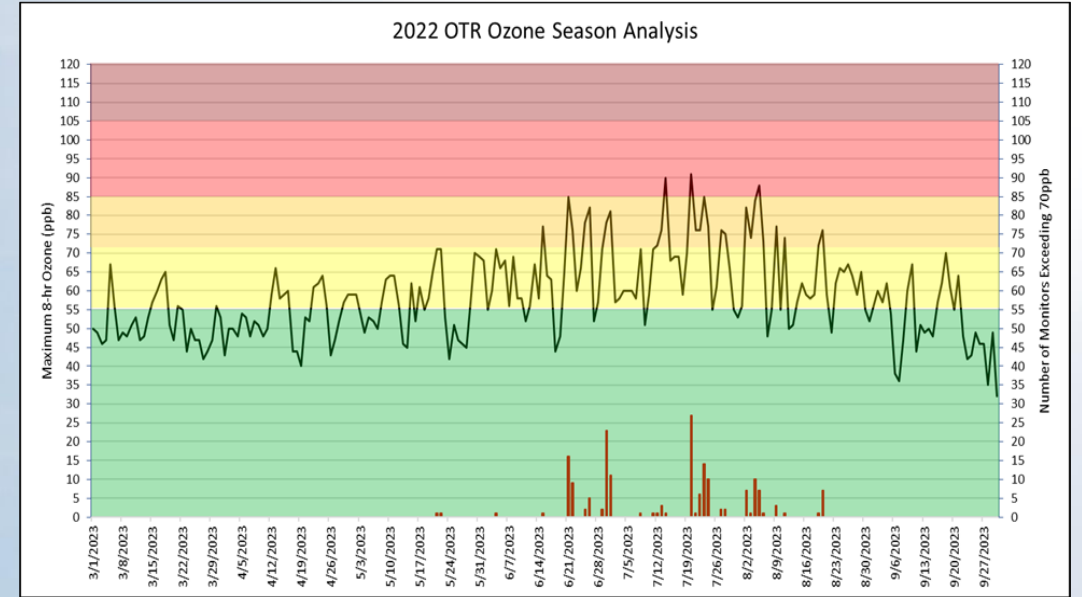
Site	Current 4th High	Current DV	April 13	April 14	June 30	July 1	July 12	2021 4th High	2022 4th High	2023 EE 4th High	Resulting DV
Greater CT											
Cornwall	76	71	67	82	78	79	57	68	70	65	67
East Hartford	73	71	67	84	73	82	64	66	74	69	69
Groton	73	73	76	73	70	76	81	75	71	64	70

- Groton needs all 3 events to lower DV to 70 ppb.
- Cornwall and East Hartford need only 1 day for attainment, so we have chosen July 1st.

Site	(A) 2021 4 th High	(B) 2022 4 th High	(C) Highest Allowed Critical Value $C < 3*71 -(A+B)$
Cornwall	68	70	$C < 213-(68+70) = 75$
East Hartford	66	74	$C < 213-(66+74) = 73$

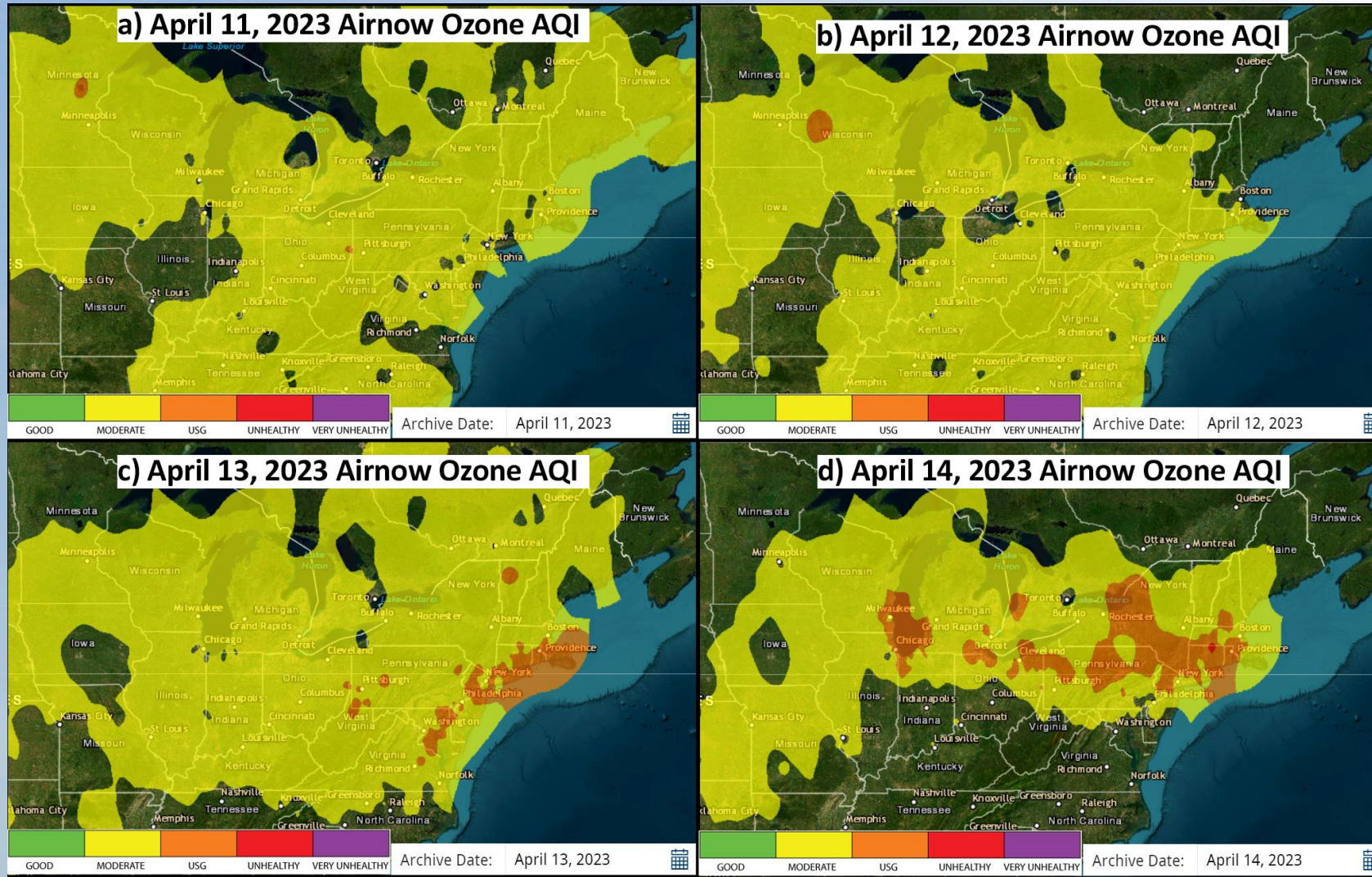
2022 and 2023 OTR Ozone Analysis

- 2022 was a relatively ‘smoke-free’ year for the OTR.
- Only 2 days had more than 20 site exceedances during 2022.
- 2023 had 8 days with greater than 20 site exceedances, peaking at 67 on June 30th.



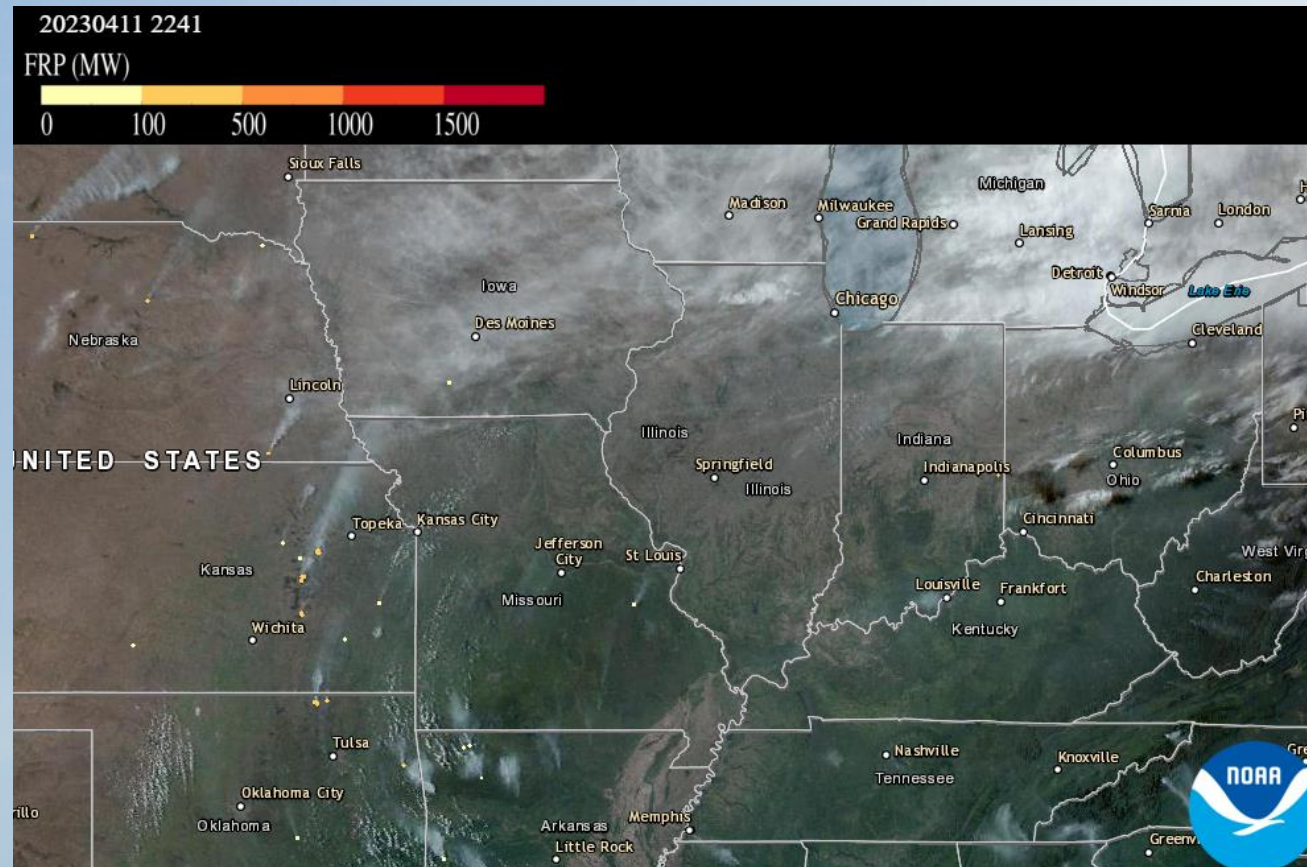
April 11-14, 2023

- Elevated ozone was occurring over a large area prior to the April 13-14th ozone exceedances in Connecticut.

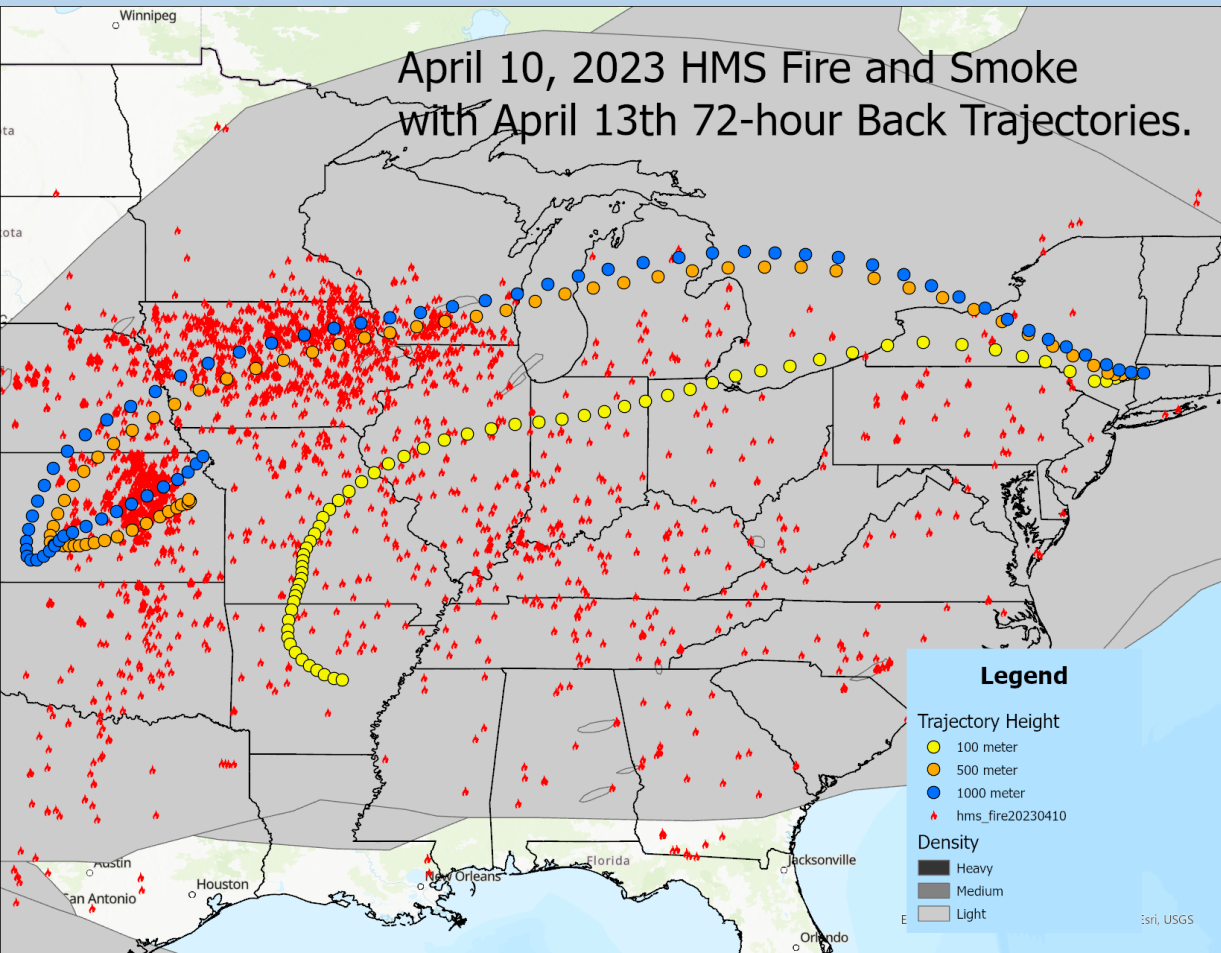


April 13-14, 2023

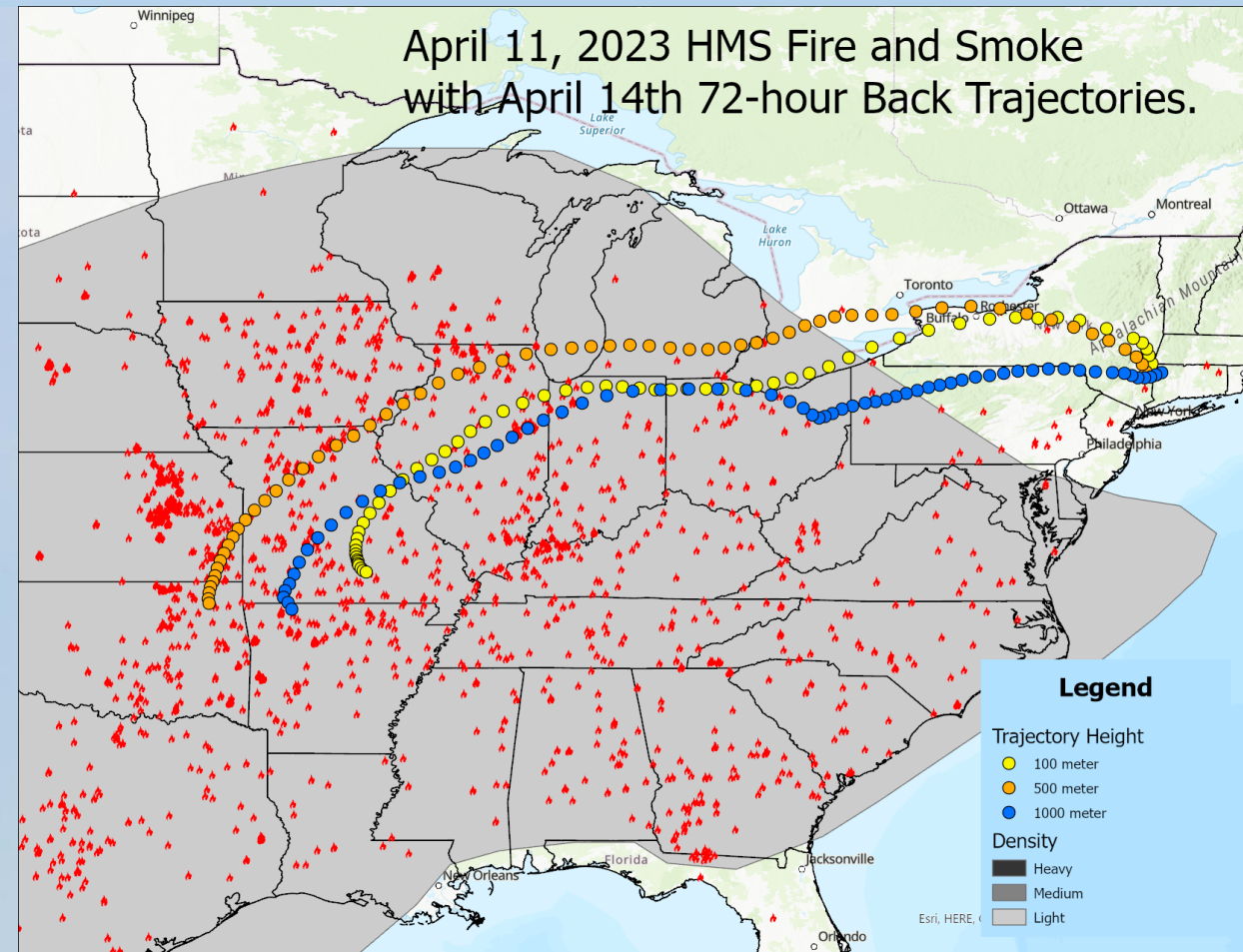
- During April 13-14, 2023, Connecticut experienced a rare ozone exceedance event in April, the first since 2016.
- Due to the widespread nature of this event, it is likely that smoke from fires upwind of Connecticut contributed to the unusually high ozone levels.



April 13-14, 2023 Back-Trajectories from Cornwall

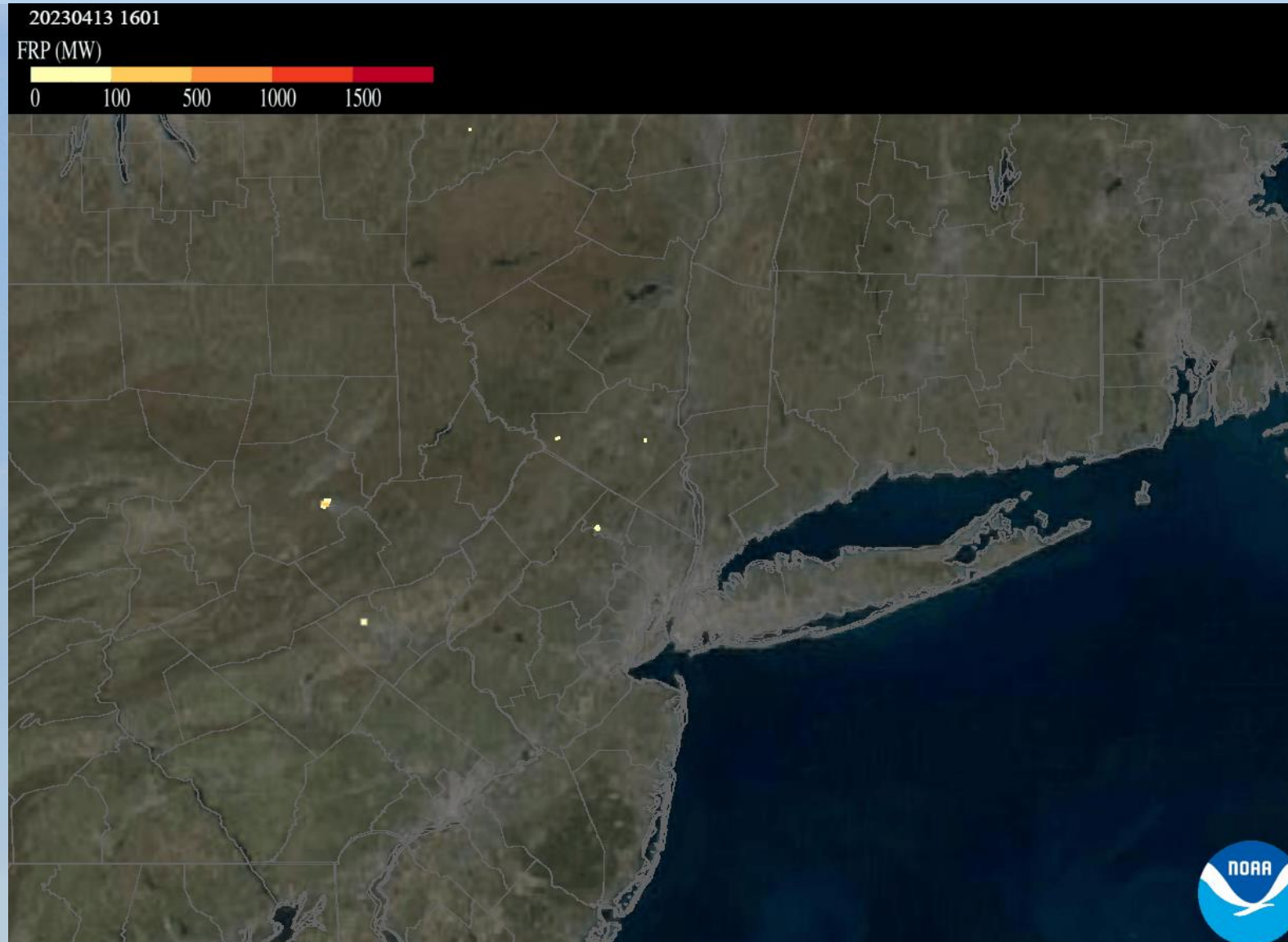


This map shows that 72 hour back-trajectories with the HMS smoke/fire analysis on April 10th. This is a more realistic depiction of the fires that would have contributed to the smoke near the beginning of the trajectory. Note the fires burning at the Flint Hills of eastern Kansas.



This map shows that 72 hour back-trajectories with the HMS smoke/fire analysis on April 11th. Note the numerous fires burning near the beginning of the trajectories, three days before the April 14th ozone exceedances.

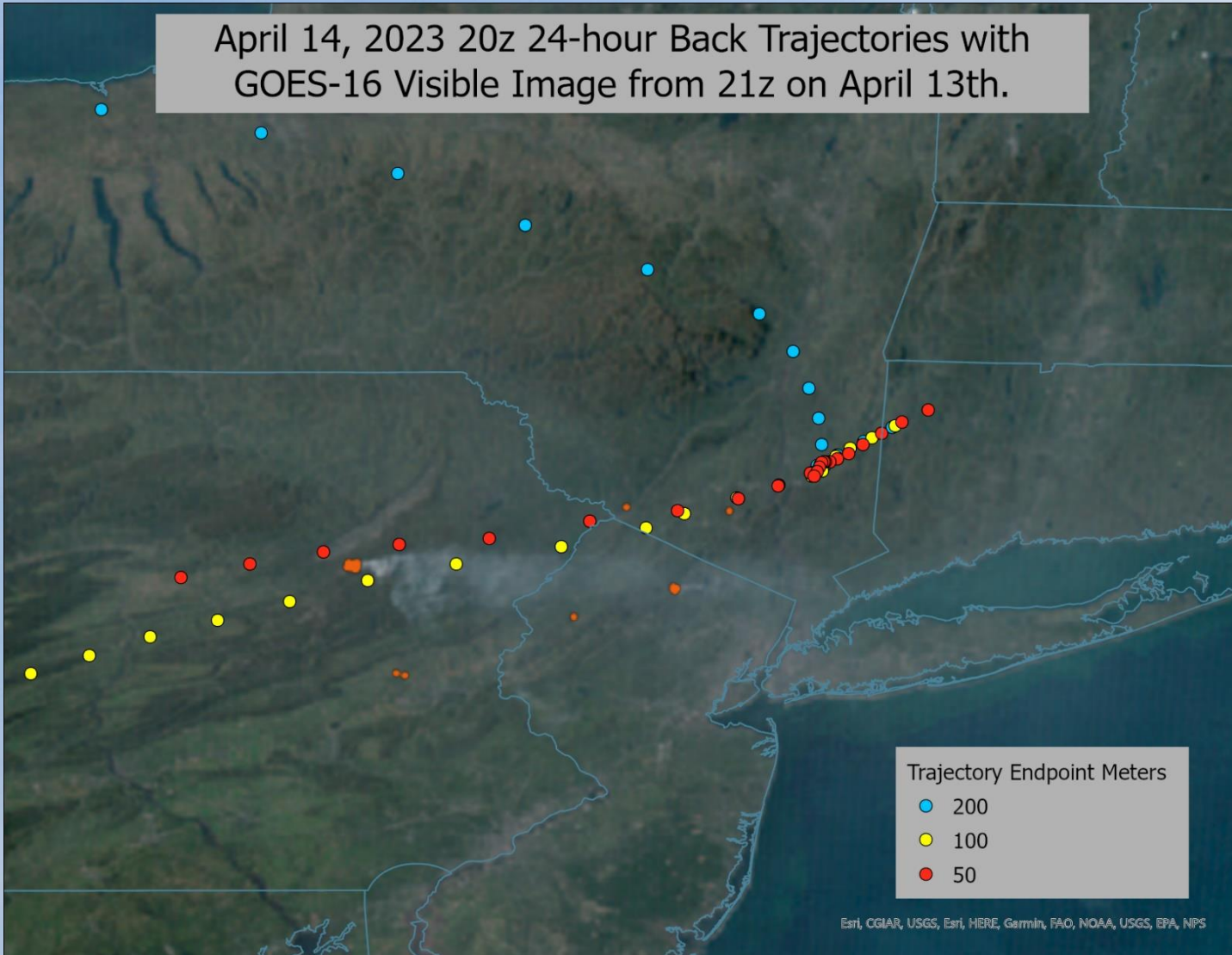
April 13th Satellite Animation



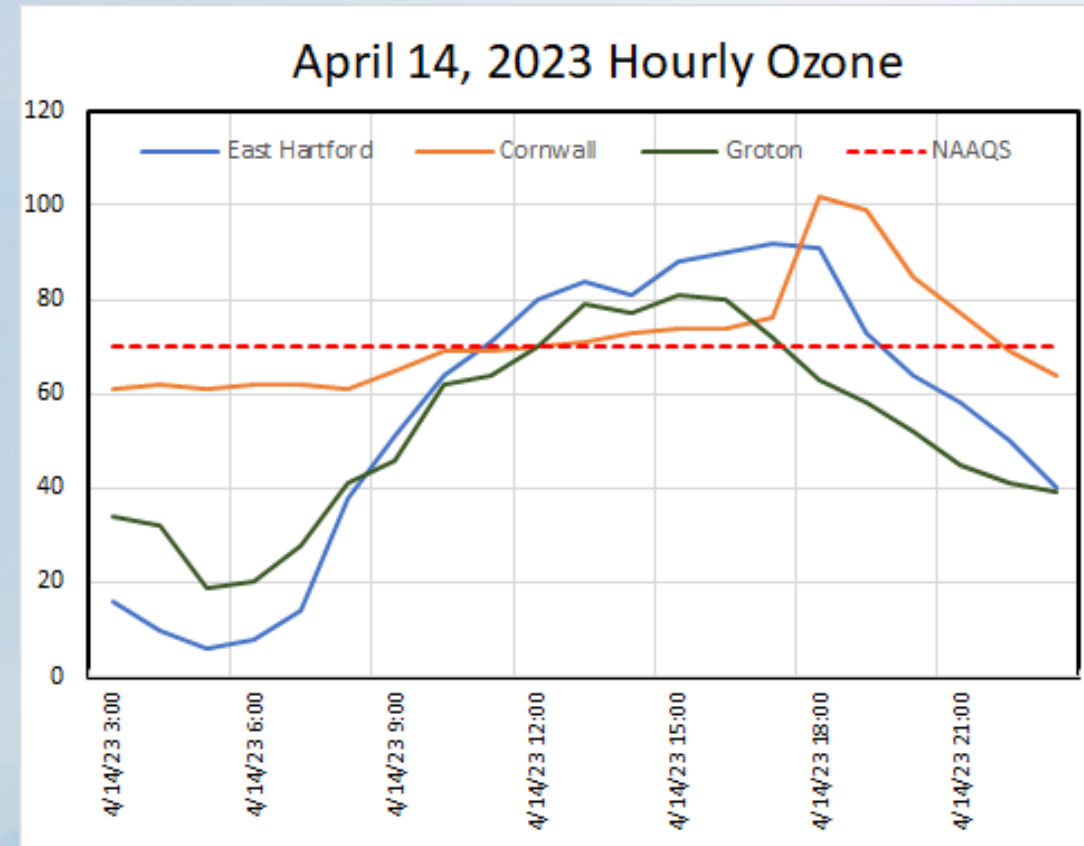
Wildfires in Pennsylvania and New Jersey produced visible plumes.

April 14th Hourly Ozone

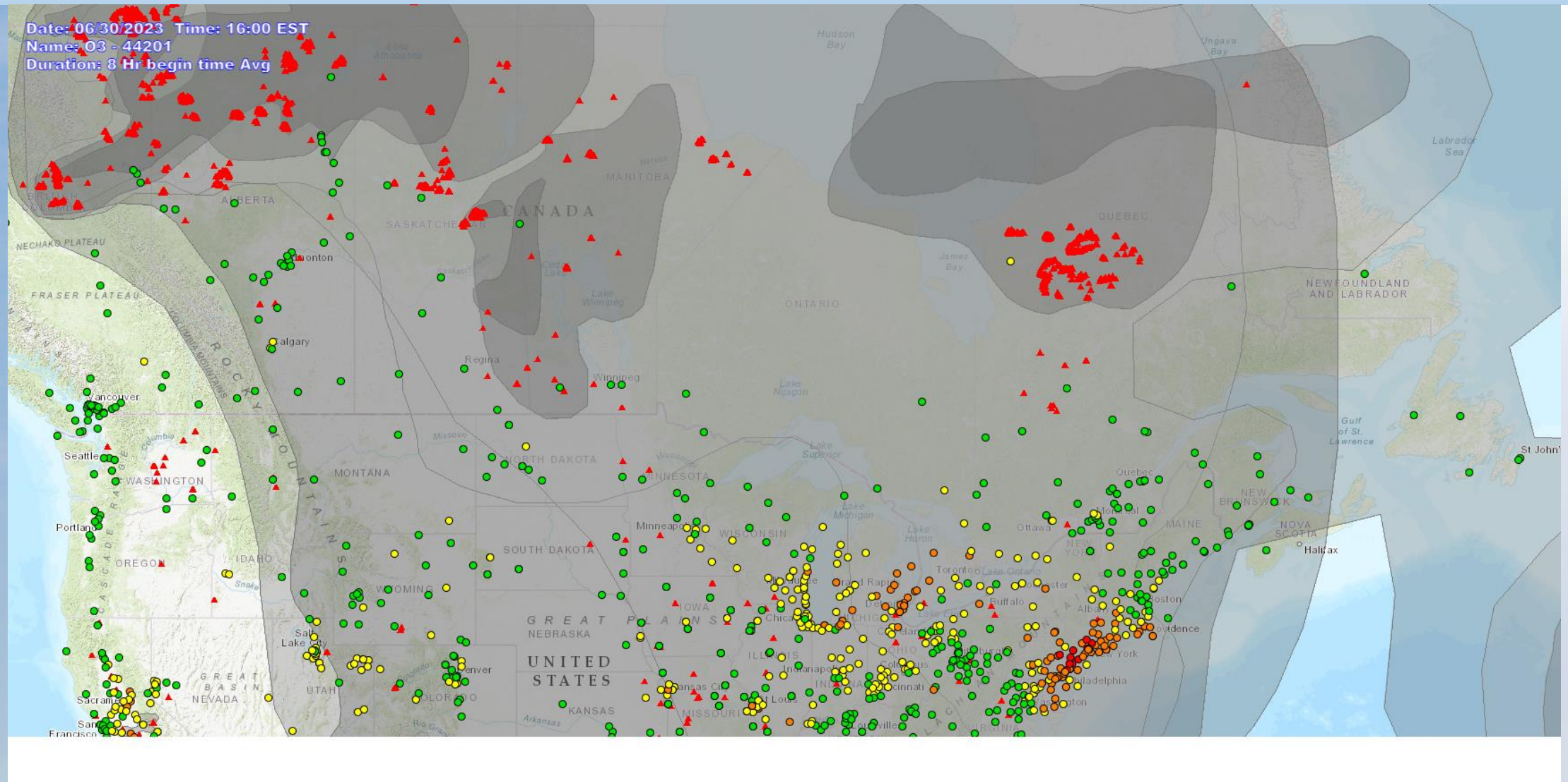
April 14, 2023 20z 24-hour Back Trajectories with GOES-16 Visible Image from 21z on April 13th.



Note the ozone spike on April 14th at 18:00 at Cornwall. This was likely due to the added smoke emissions from a large wildfire in eastern Pennsylvania from the day before.

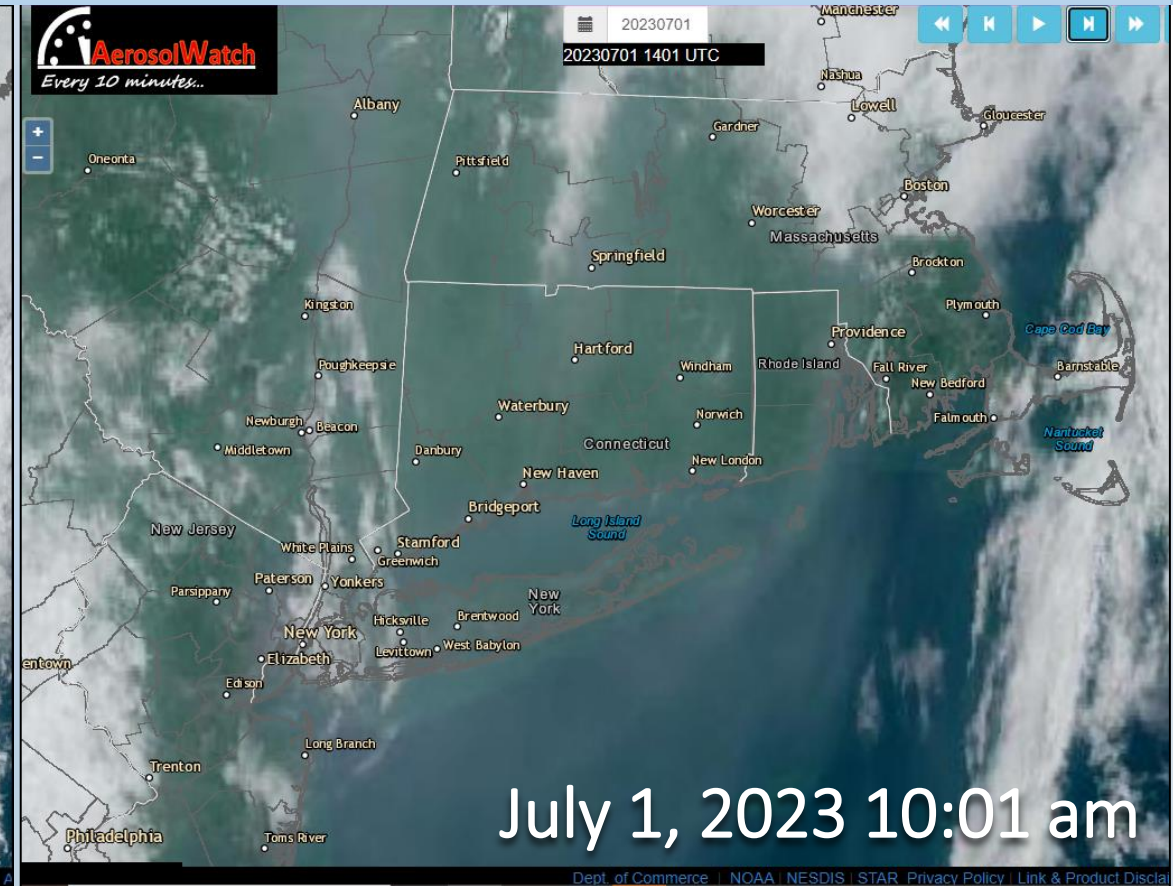
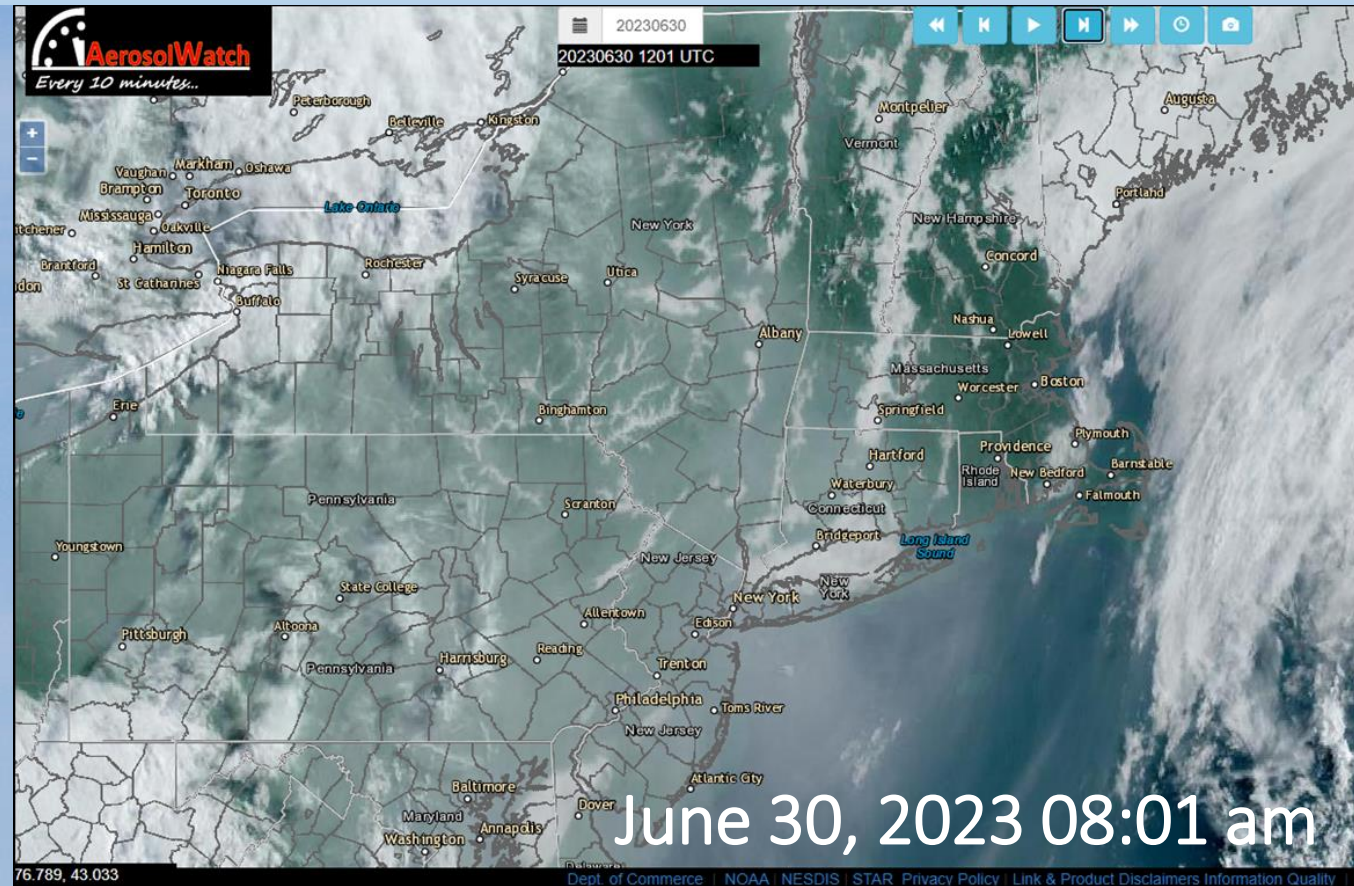


June 30, 2023 Ozone and Smoke Plume



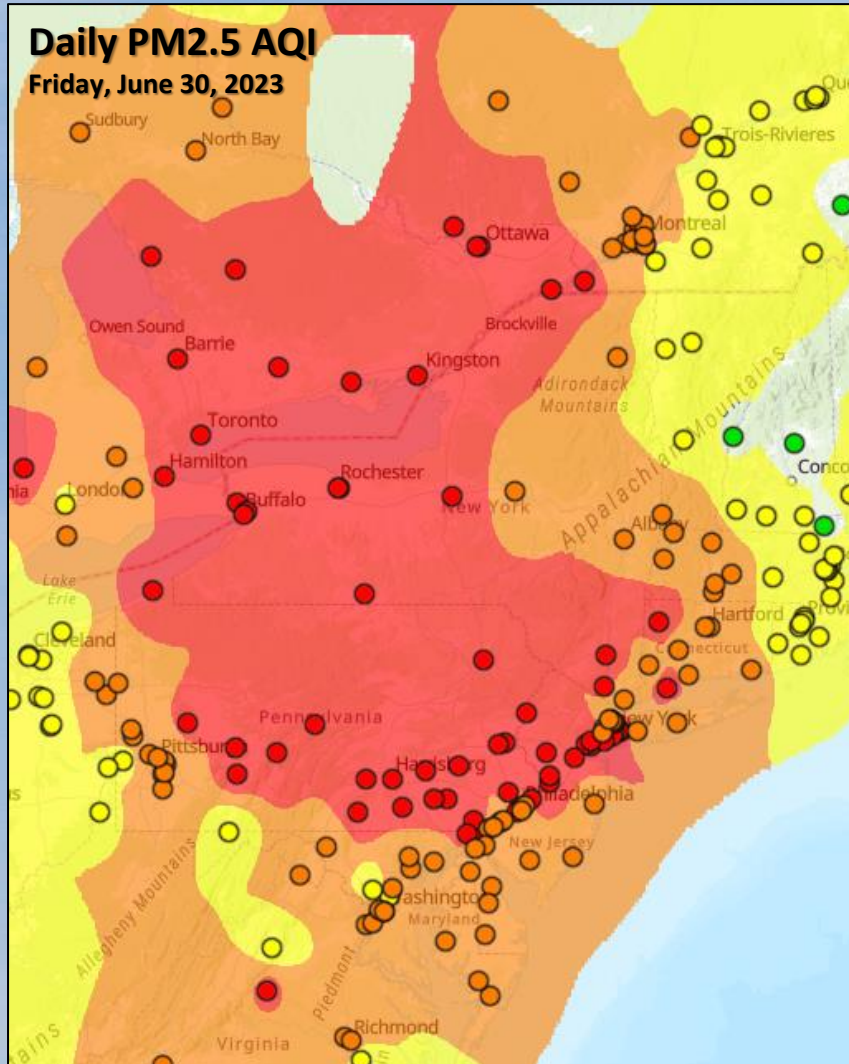
Smoke from Canadian fires were again blanketing much of the country, raising ozone levels in the Northeast.

July 30-July 1, 2023 Satellite Images

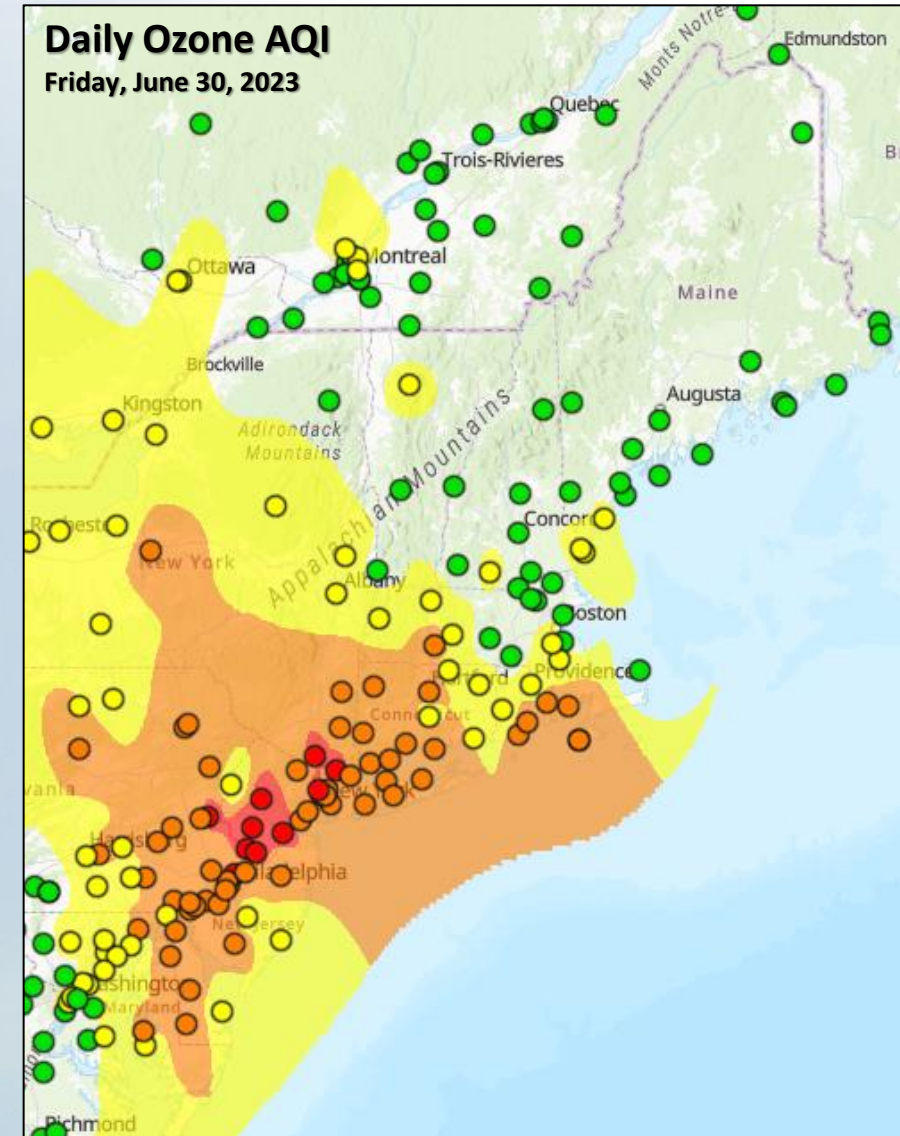


- Smoke was evident on satellite images on both these days.

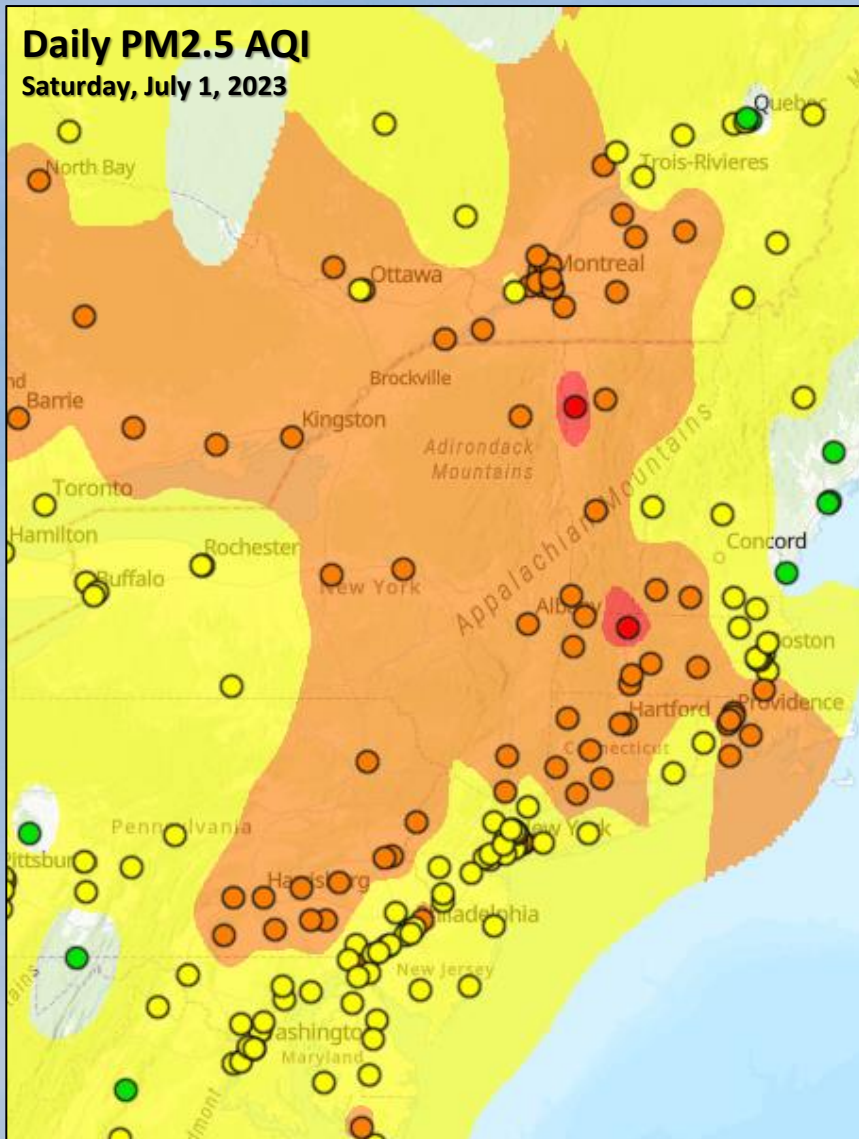
PM2.5 & Ozone AQI Map: June 30, 2023



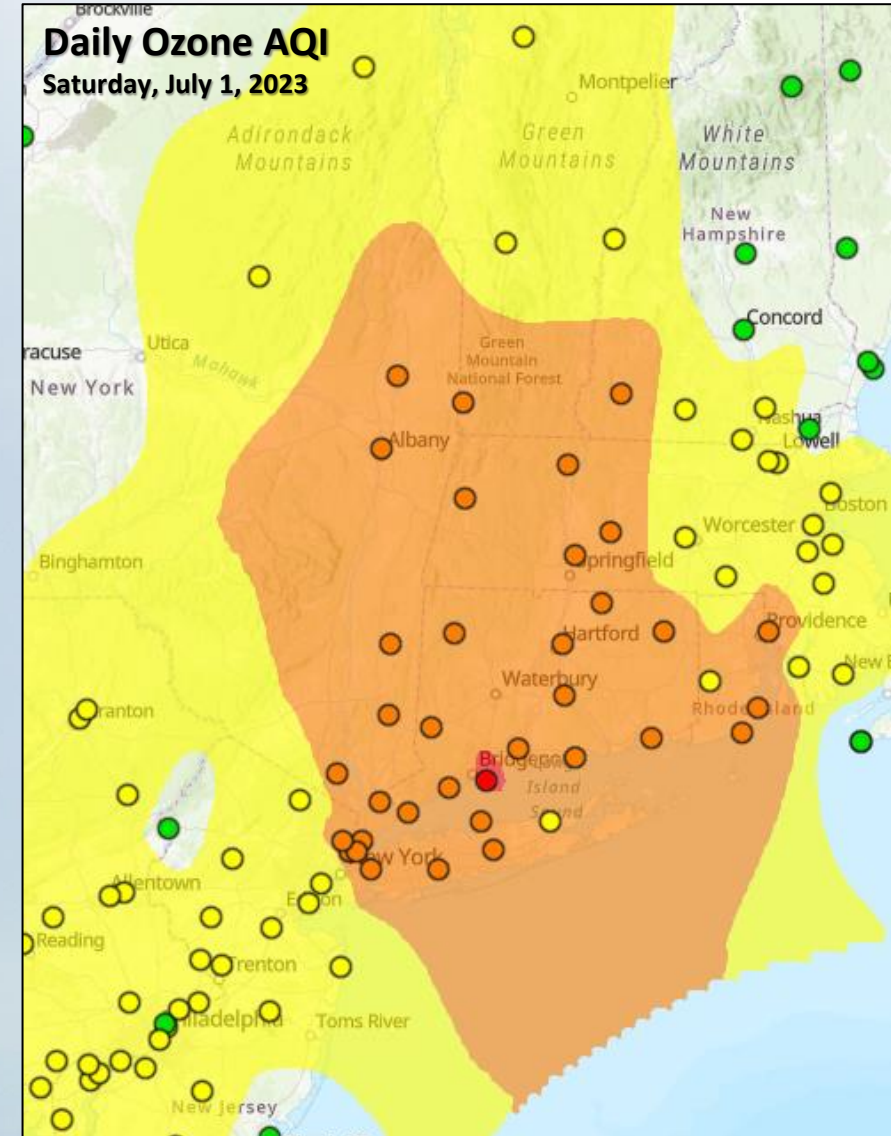
- *PM2.5*: Widespread **USG** and **UNHEALTHY** plume over most of the Mid-Atlantic region and western parts of the Northeast.
- *Ozone*: Widespread **USG** for southern parts of the Northeast with **UNHEALTHY** levels mixed in for eastern parts of the Mid-Atlantic region.



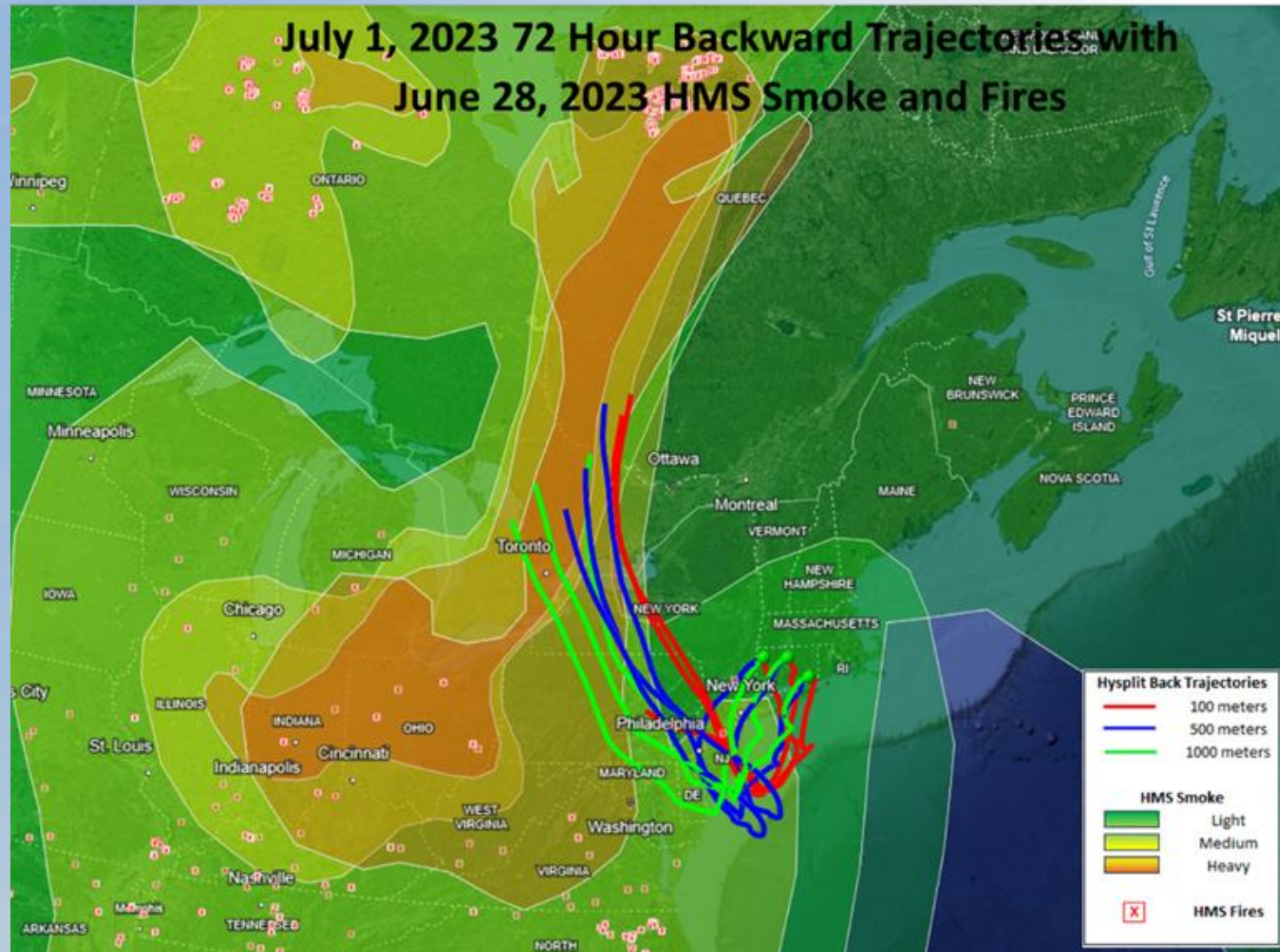
PM2.5 & Ozone AQI Map: July 1, 2023



- *PM2.5*: Widespread **USG** plume across the Northeast with a few **UNHEALTHY** values mixed in.
- *Ozone*: Widespread **USG** and **MODERATE** levels within the vicinity of the PM2.5 **USG** plume with one **UNHEALTHY** value in Connecticut.

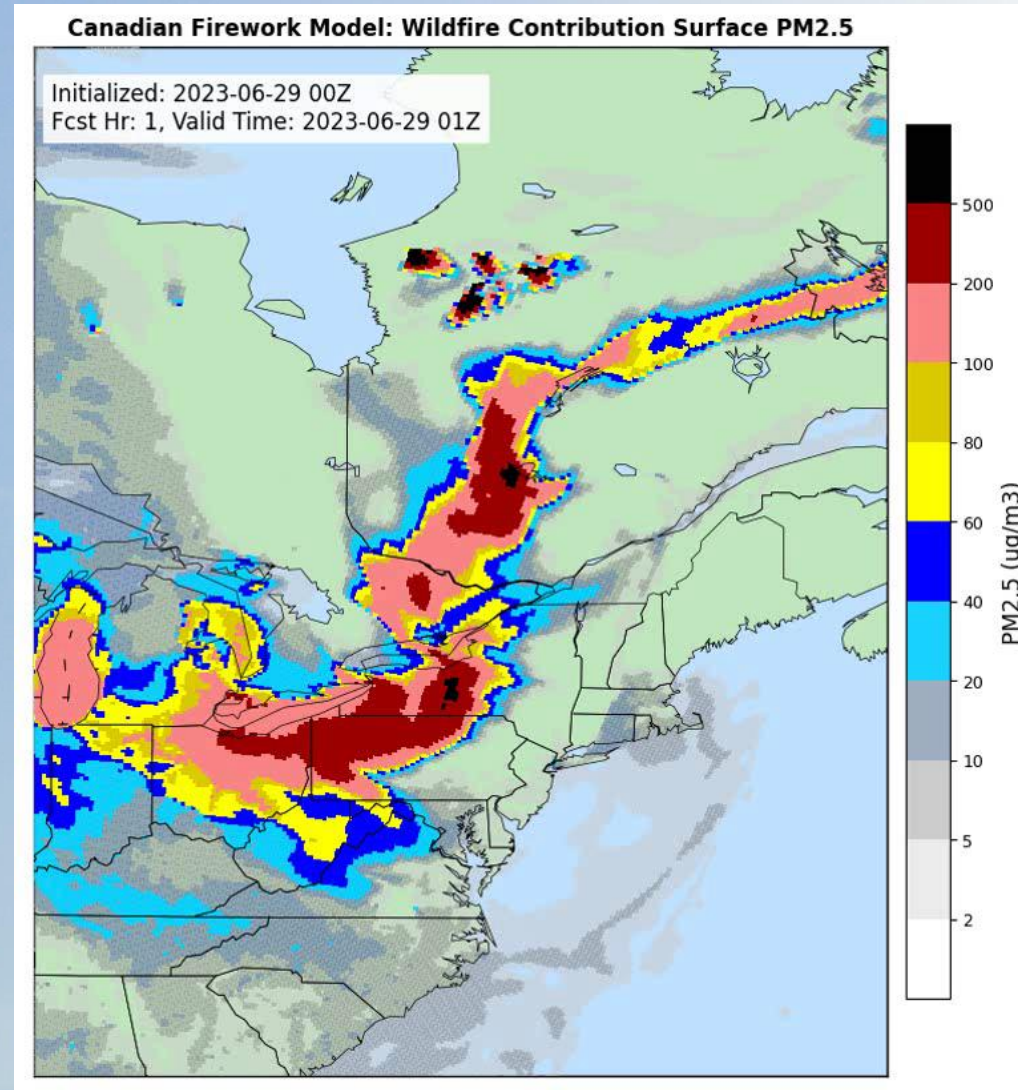


July 1, 2023 Back Trajectories

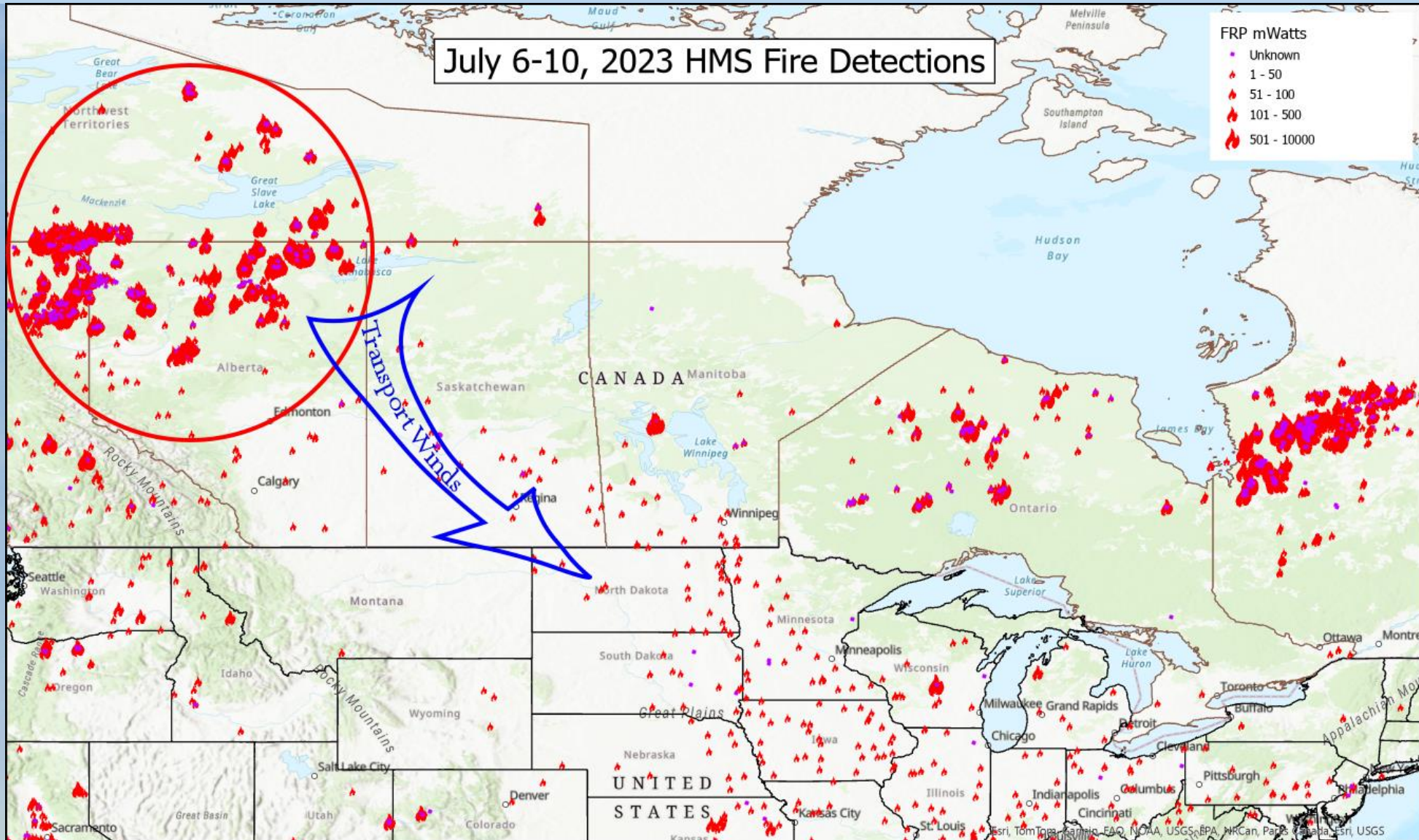


By July 1st, smoke from the Quebec wildfires was transported to the mid-Atlantic States and then recirculated back north over Connecticut.

June 29-30, 2023 Canadian Firework Model Animation

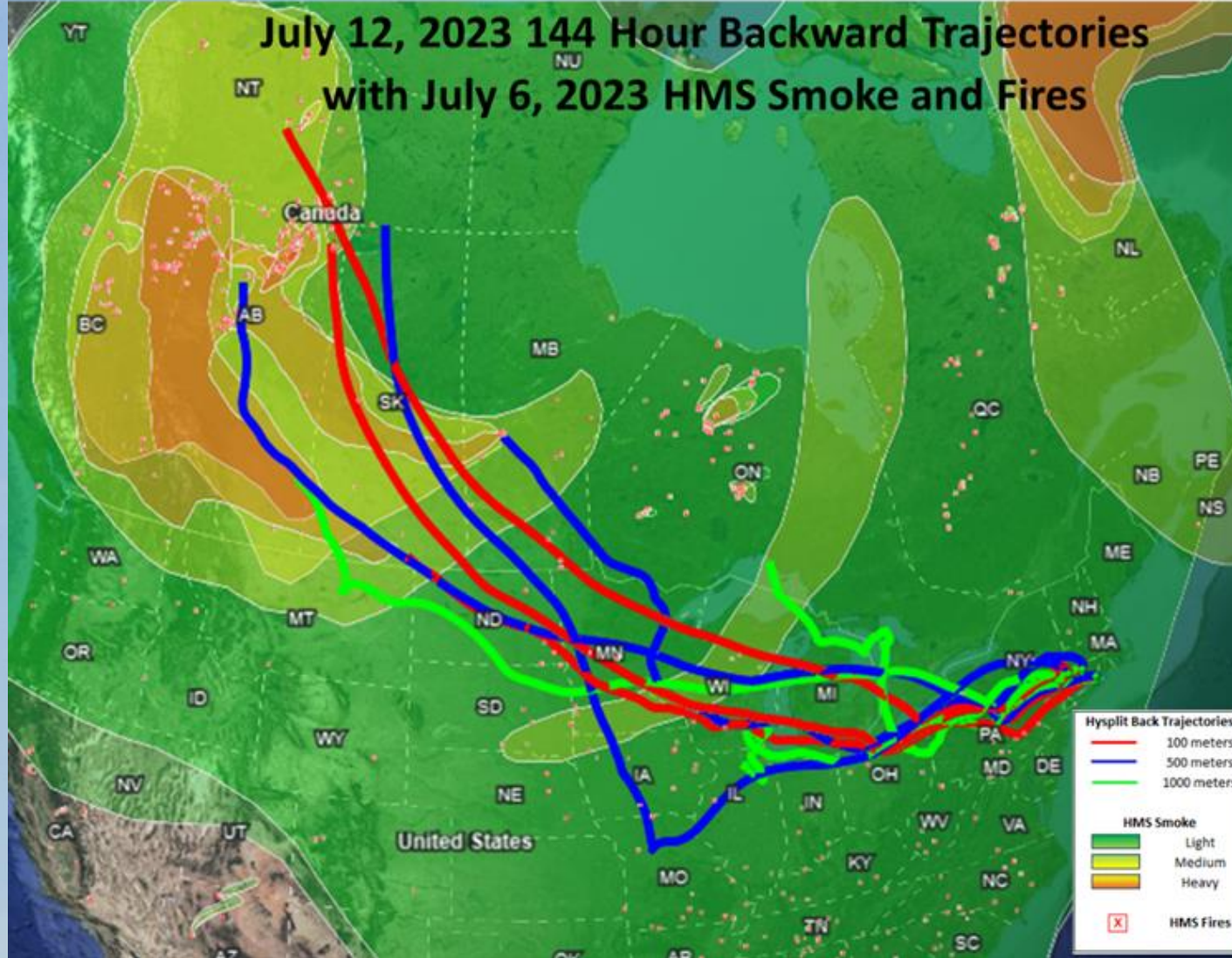


July 6-10, 2023 HMS Fire Detection Map



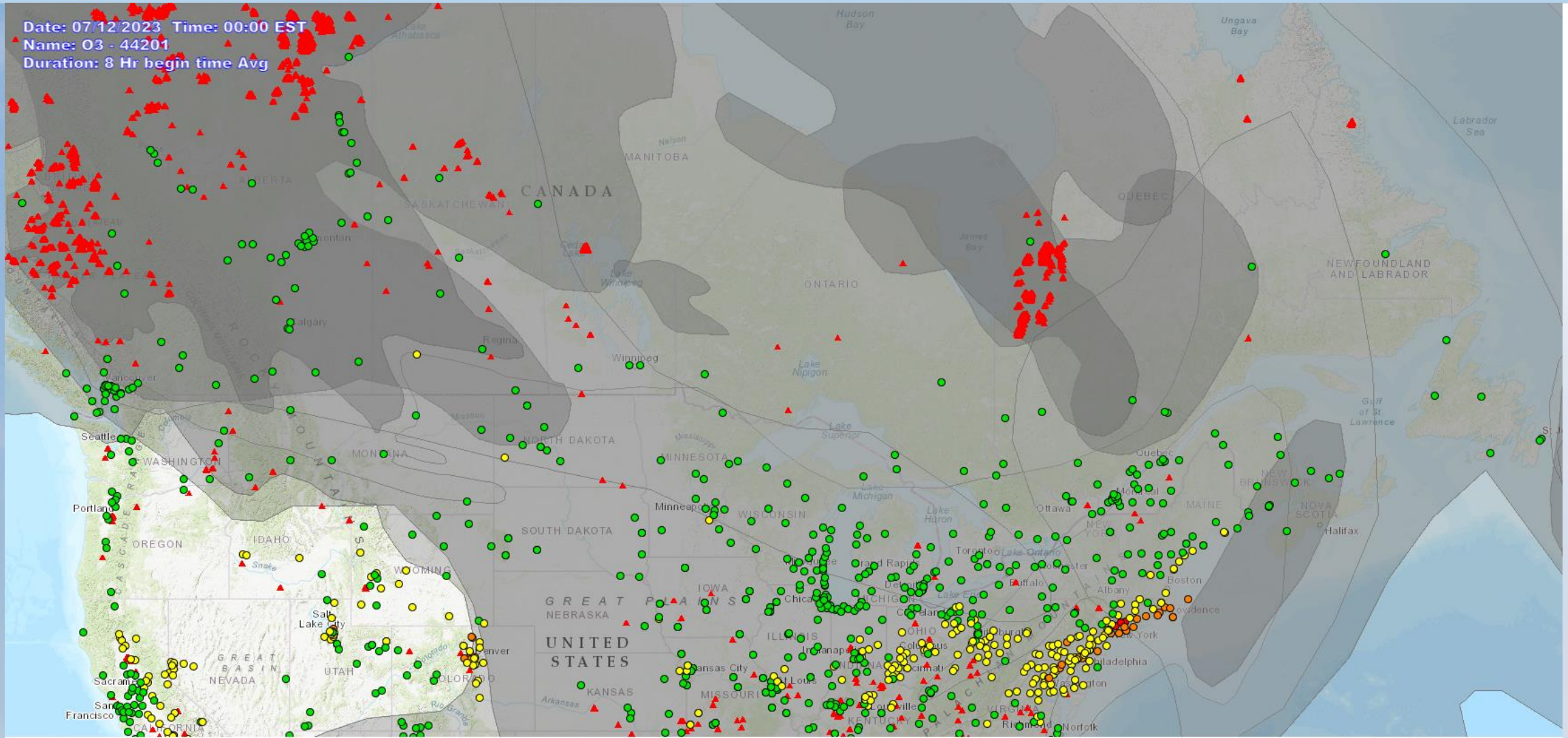
Smoke from western Canadian fires was transported southeast blanketing much of the Northeast.

July 12, 2023 Back Trajectories



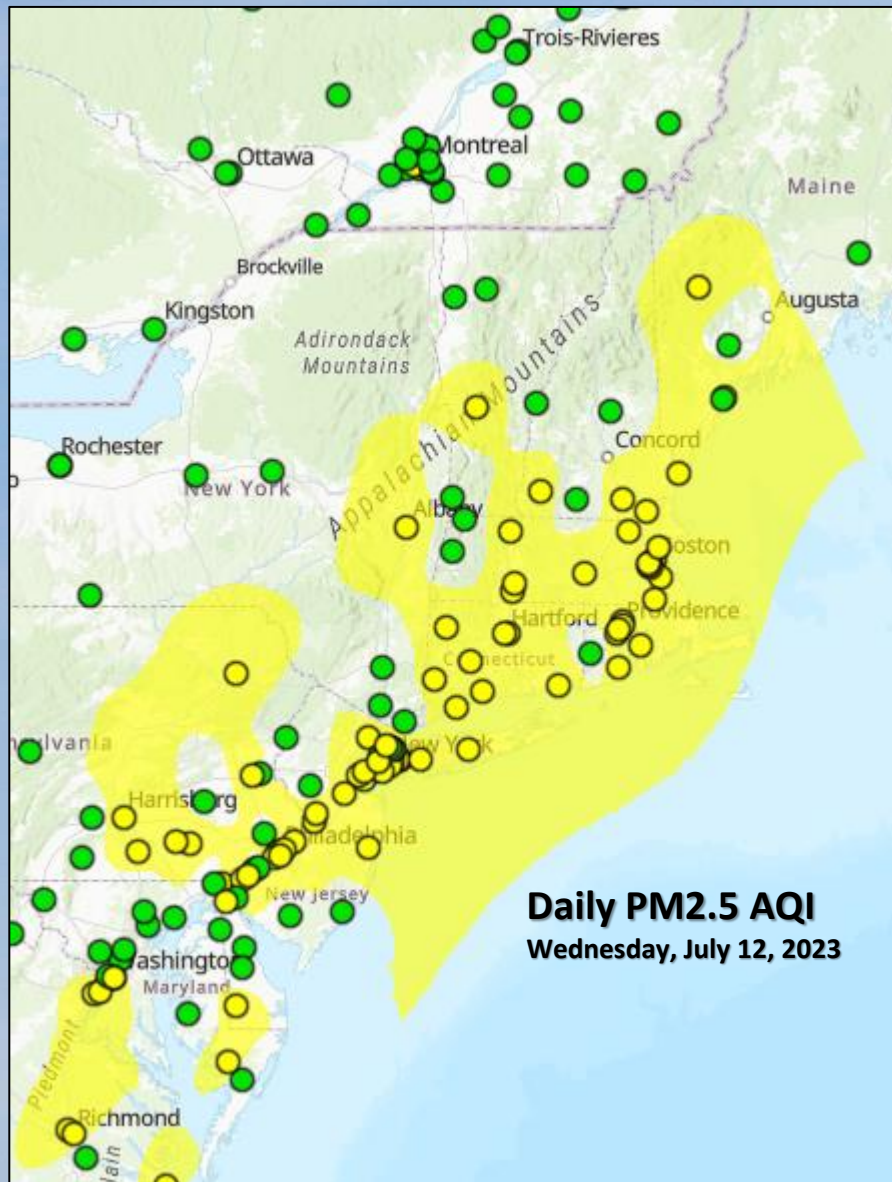
Transport from the western Canadian wildfires began 6 days before the event.

July 12, 2023 Ozone Smoke Map

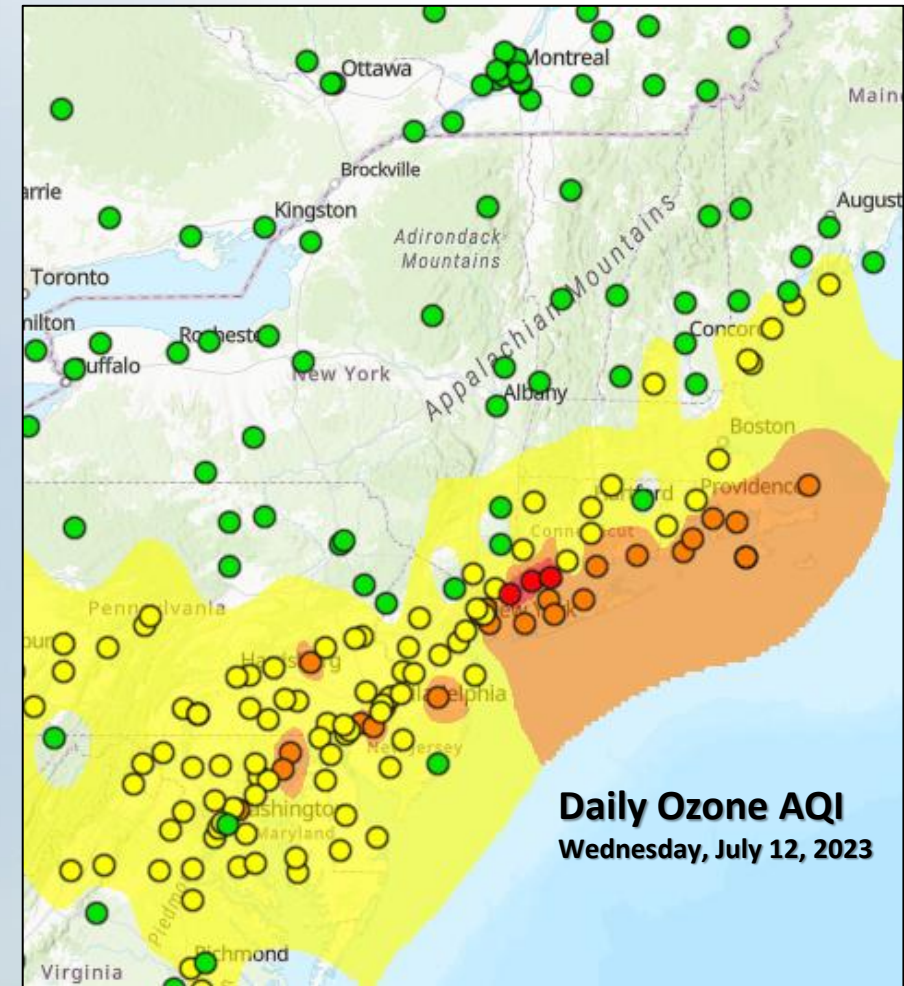


Smoke from western Canadian fires were again blanketing much of the country, raising ozone levels in the Northeast.

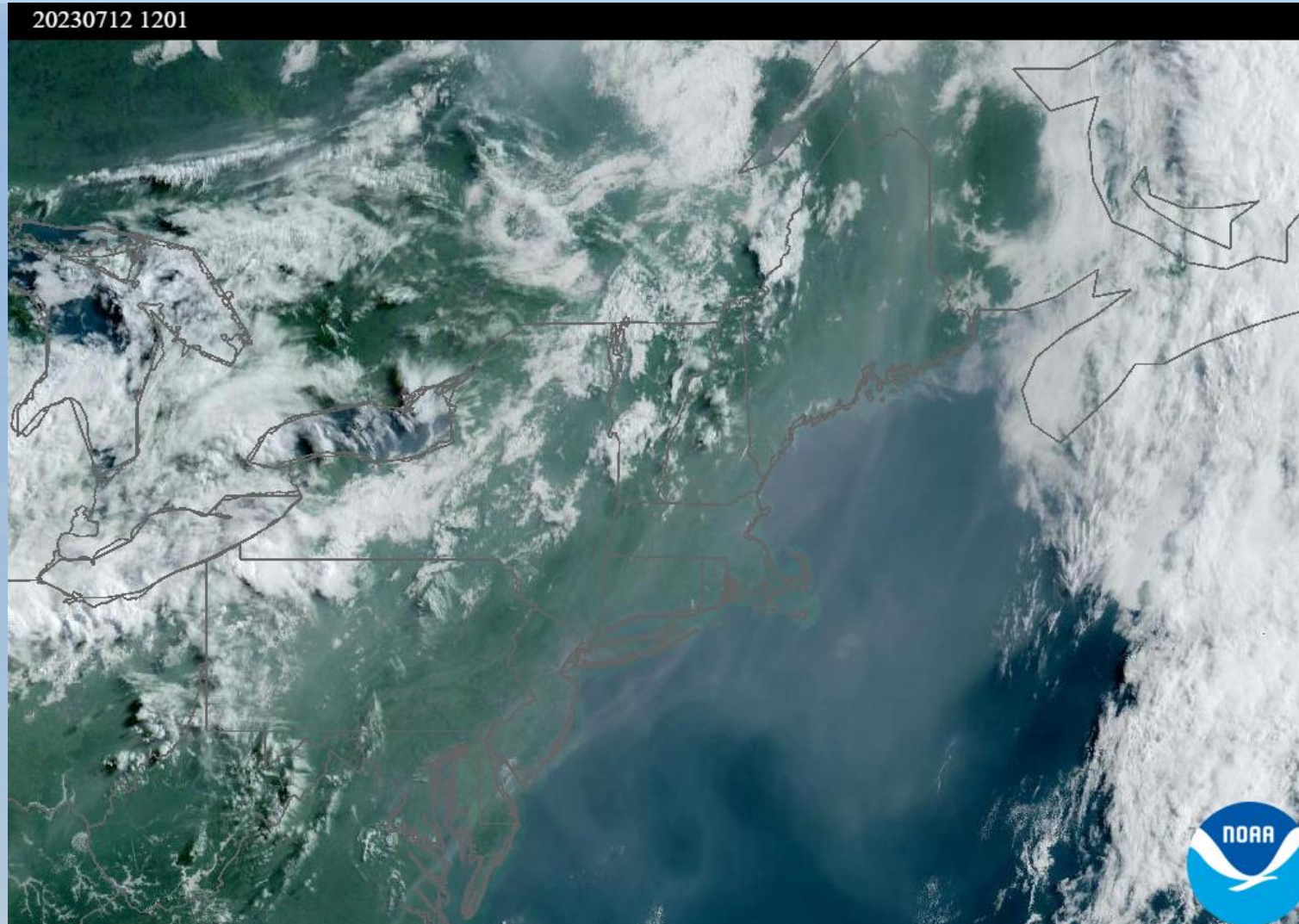
PM2.5 & Ozone AQI Map: July 12, 2023



- *PM2.5*: Widespread **MODERATE** plume across New England and along the I-95 corridor.
- *Ozone*: Widespread **MODERATE** plume along the I-95 corridor with **UNHEALTHY** levels in southwest Connecticut and **USG** levels along the I-95 corridor in southern New England.



July 12, 2023 Satellite Image



- Smoke was evident on satellite image at 8:00 am.

Challenges

- Must move quickly to finish draft.
- April 13-14th event is challenging because of number of fires. Most were far away and prescribed, but several close-by wildfires also had an effect.
- EPA Region 3 has a tighter timeline and Maryland has already submitted their draft EE for public comment!

