Ozone National Ambient Air Quality Standard Health Exceedances on April 14, 2023

Exceedance Locations and Levels

On Friday, April 14, 2023, there were six (6) exceedances in New Jersey of the National Ambient Air Quality Standard (NAAQS) for ozone (daily maximum 8-hour average of 70 ppb). See Table 1.

Table 1. New Jersey Ozone Concentrations on 4/14/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	59
Bayonne	70
Brigantine	43
Camden Spruce St	54
Chester	78
Clarksboro	60
Colliers Mills	68
Columbia	63
Flemington	76
Leonia	71
Millville	54
Monmouth University	58
Ramapo	78
Rider University	67
Rutgers University	74
Washington Crossing*	72
TOTAL EXCEEDANCES	6

*The Washington Crossing station is operated and maintained by EPA as part of the nationwide Clean Air Status and Trends Network (CASTNET).

From the out-of-state stations within New Jersey's ozone nonattainment areas, there were nine (9) exceedances of the ozone NAAQS. See Table 2.

Table 2. Ozone Concentrations at Out-of-State Monitoring Stations in New Jersey's Ozone Nonattainment Areas on 4/14/2023

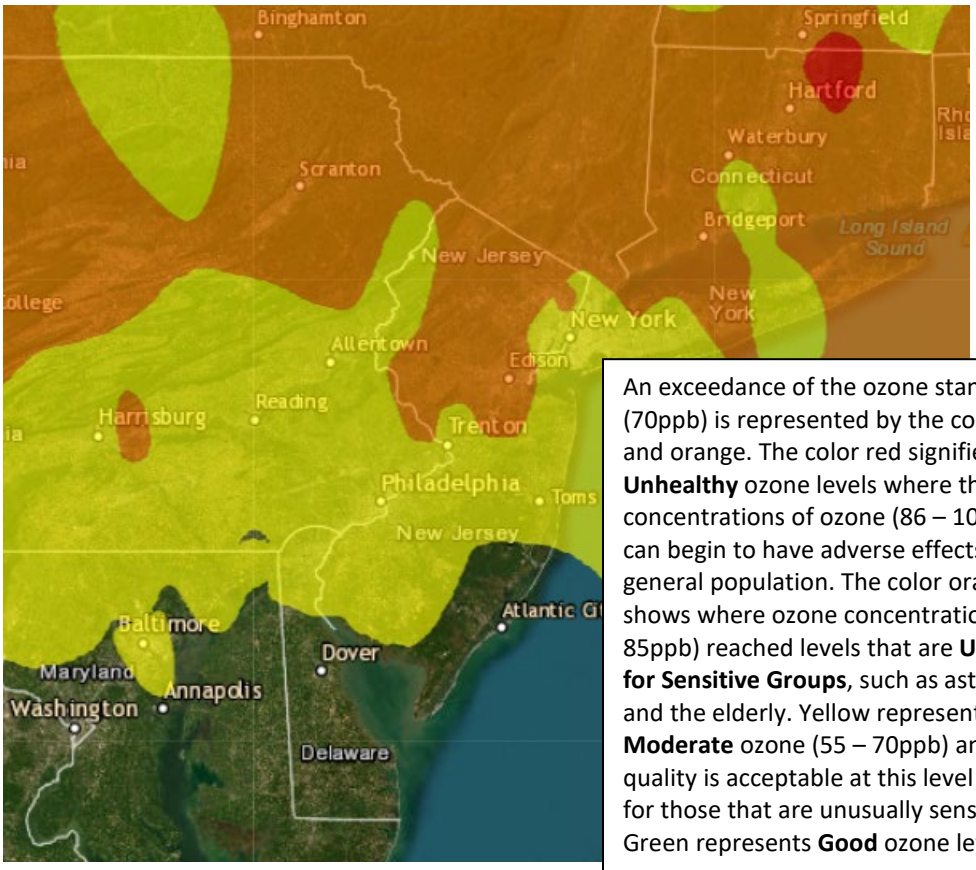
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	85
CT	Greenwich	76
CT	Madison-Beach Road	75
CT	Middletown-CVH-Shed	82
CT	New Haven	66
CT	Stratford	72
CT	Westport	78
DE	BCSP (New Castle Co.)	55
DE	BELLFNT2 (New Castle Co.)	53
DE	KILLENS (Kent Co.)	49
DE	LEWES (Sussex Co.)	47
DE	LUMS 2 (New Castle Co.)	53
DE	MLK (New Castle Co.)	54
DE	SEAFORD (Sussex Co.)	43
MD	Fair Hill	55
NY	Babylon	66
NY	Bronx - IS52	58
NY	CCNY	63
NY	Flax Pond	72
NY	Fresh Kills	70
NY	Holtsville	70
NY	Pfizer Lab	67
NY	Queens	64
NY	Riverhead	69
NY	Rockland Cty	80
NY	White Plains	72
PA	BRIS (Bucks Co.)	63
PA	CHES (Delaware Co.)	57
PA	NEWG (Chester Co.)	43
PA	NORR (Montgomery Co.)	52
PA	LAB (Philadelphia Co.)	49
PA	NEA (Philadelphia Co.)	62
PA	NEW (Philadelphia Co.)	58
	TOTAL EXCEEDANCES	9

The number of days in 2023 on which exceedances of the ozone NAAQS were recorded for all the states within New Jersey's ozone nonattainment areas is summarized in Table 3.

Table 3. Number of Days Ozone NAAQS was Exceeded in NJ's Nonattainment Areas in 2023

STATE	# of Days NAAQS was Exceeded January 1 – April 14, 2023 NAAQS = 70 ppb
Connecticut	2
Delaware	1
Maryland	1
New Jersey	2
New York	2
Pennsylvania	0

Figure 1. Ozone Air Quality Index for April 14, 2023



An exceedance of the ozone standard (70ppb) is represented by the colors red and orange. The color red signifies **Unhealthy** ozone levels where the concentrations of ozone (86 – 105ppb) can begin to have adverse effects on the general population. The color orange shows where ozone concentrations (71 – 85ppb) reached levels that are **Unhealthy for Sensitive Groups**, such as asthmatics and the elderly. Yellow represents **Moderate** ozone (55 – 70ppb) and air quality is acceptable at this level except for those that are unusually sensitive. Green represents **Good** ozone levels.

Source: www.airnow.gov

For ozone terminology definitions see NJDEP Air Quality Planning's Glossary and Acronyms webpage: https://www.nj.gov/dep/airmon/glossary.html

Weather

On Friday, April 14th, high pressure continued to dominate the weather pattern for the second day of this ozone exceedance event. Starting on Monday, April 10th, high pressure was centered off the Mid-Atlantic and provided warming temperatures and sunny skies for the nonattainment area. Ozone levels continued to build as the week progressed, with Thursday seeing multiple exceedances throughout the region. By Friday, this polluted airmass remained over the region as high pressure pushed eastward and centered over Bermuda. Light southwesterly winds and temperatures in the upper 80s were observed throughout the area, along with a surface trough centered over the northern nonattainment area. This weather pattern created favorable conditions for ozone formation and allowed ozone concentrations to reach the unhealthy for sensitive groups (USG) category throughout northern New Jersey, New York, and Connecticut. In addition, wildfires in New Jersey, including Log Swamp Wildfire in Ocean County and Kanouse Wildfire in Passaic/Morris County, along with one nearby wildfire in Pennsylvania at Crystal Lake in Luzerne County may have helped enhance ozone levels throughout the region.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2, 3, and 4 show the back trajectories of different wind heights for the monitored exceedance(s) on this day. The figures illustrate where the air came from during the 48 hours preceding the 8-hour ozone standard exceedances. A transport analysis is provided with each figure shown below along with a map of the National Air Quality Index for the previous day (Figure 5). The monitoring station(s) that were chosen to model back trajectories are listed in Table 4.

Table 4. Monitoring Stations with an 8-hr Ozone Exceedance that were selected to Run 48-hr Back Trajectories

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	85
CT	Madison–Beach Road	75
CT	Westport	78
NJ	Chester	78
NJ	Flemington	76
NJ	Leonia	71
NJ	Rutgers University	74
NJ	Washington Crossing	72
NY	Flax Pond	72
NY	Rockland Cty	80

Figure 2. 48-hour Back Trajectories for April 14, 2023 at 10 meters

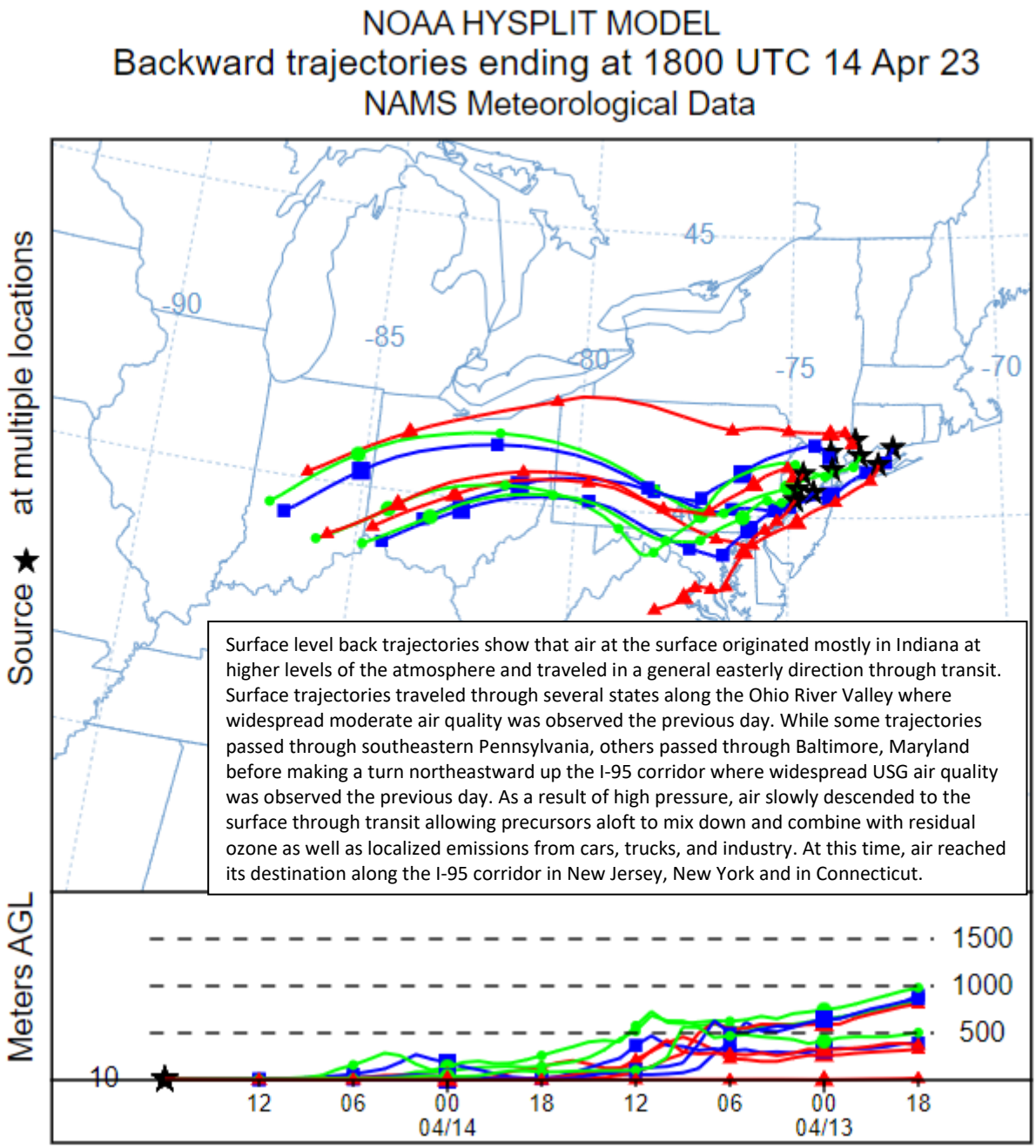


Figure 3. 48-hour Back Trajectories for April 14, 2023 at 500 meters

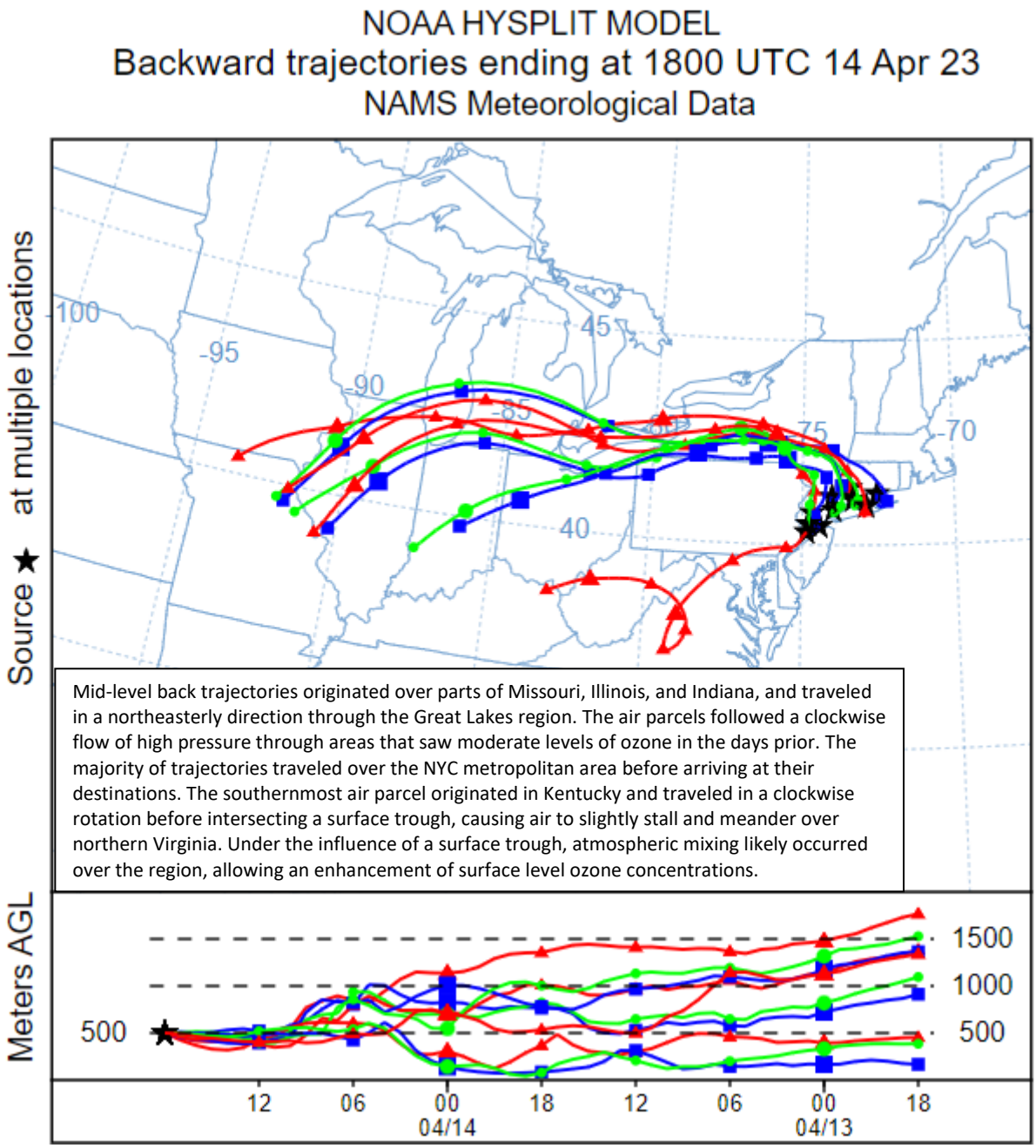


Figure 4. 48-hour Back Trajectories for April 14, 2023 at 1500 meters

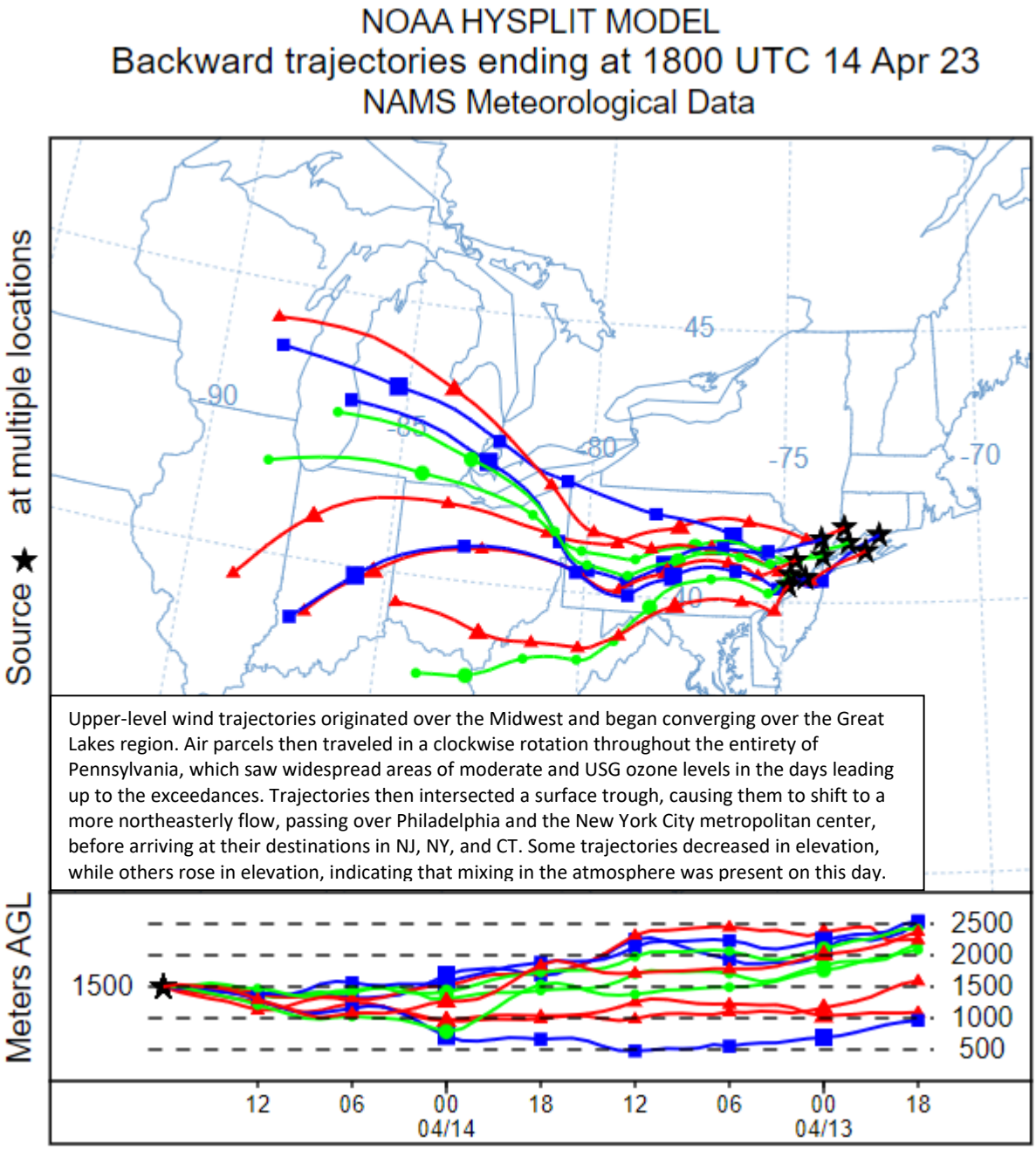
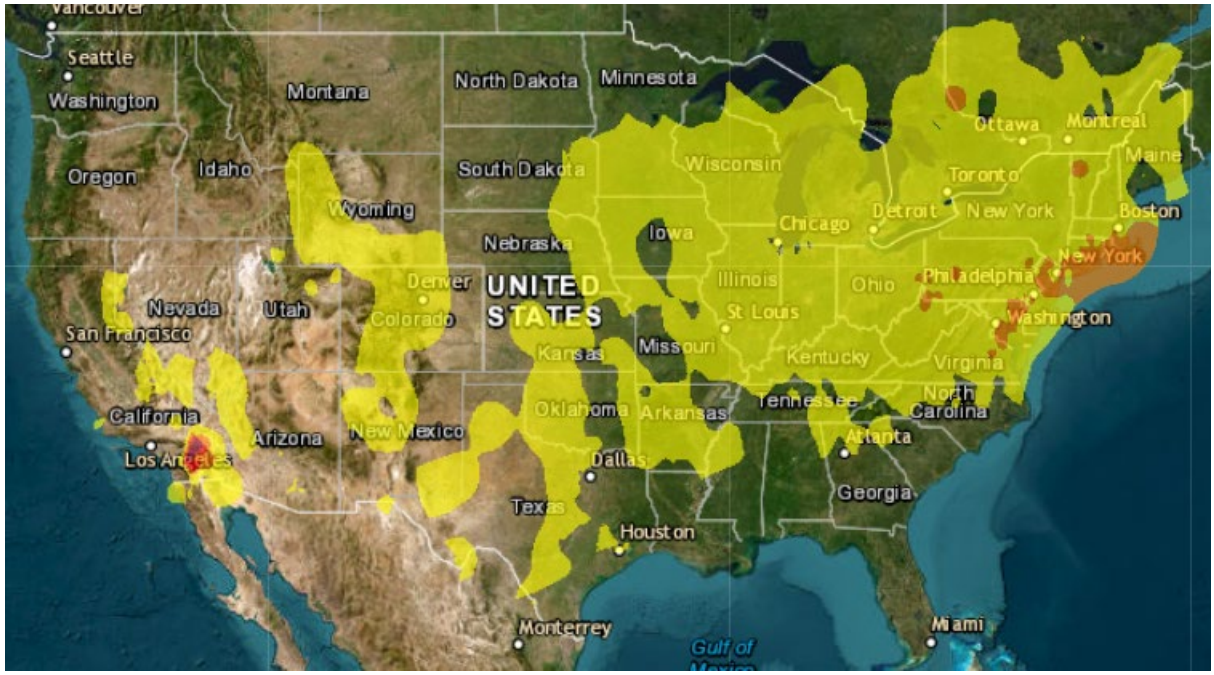


Figure 5. Air Quality Index for the United States on April 13, 2023



Source: www.airnow.gov

How is Ozone Created?

Ground-level ozone is an air pollutant known to cause several health effects and negatively impact air quality and the environment in New Jersey. Ozone is formed when oxides of nitrogen (NOx) and volatile organic compounds (VOCs) react in the presence of sunlight. Ozone can irritate any person's lungs, but the effect may be more pronounced for those with existing lung-related deficiencies, and therefore, one should take extra precautions on bad ozone days.

Find Out About Air Quality Every Day

Learn more about your local ozone air quality forecast by visiting the "What's Your Air Quality Today?" page at https://www.nj.gov/dep/baqp/aqitoday.html .