Ozone National Ambient Air Quality Standard Health Exceedances on April 13, 2023

Exceedance Locations and Levels

On Thursday, April 13, 2023, there were nine (9) 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 4/13/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	67
Bayonne	61
Brigantine	54
Camden Spruce St	63
Chester	71
Clarksboro	73
Colliers Mills	75
Columbia	59
Flemington	72
Leonia	69
Millville	68
Monmouth University	71
Ramapo	71
Rider University	71
Rutgers University	72
Washington Crossing*	71
TOTAL EXCEEDANCES	9

*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 twelve (12) 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 4/13/2023

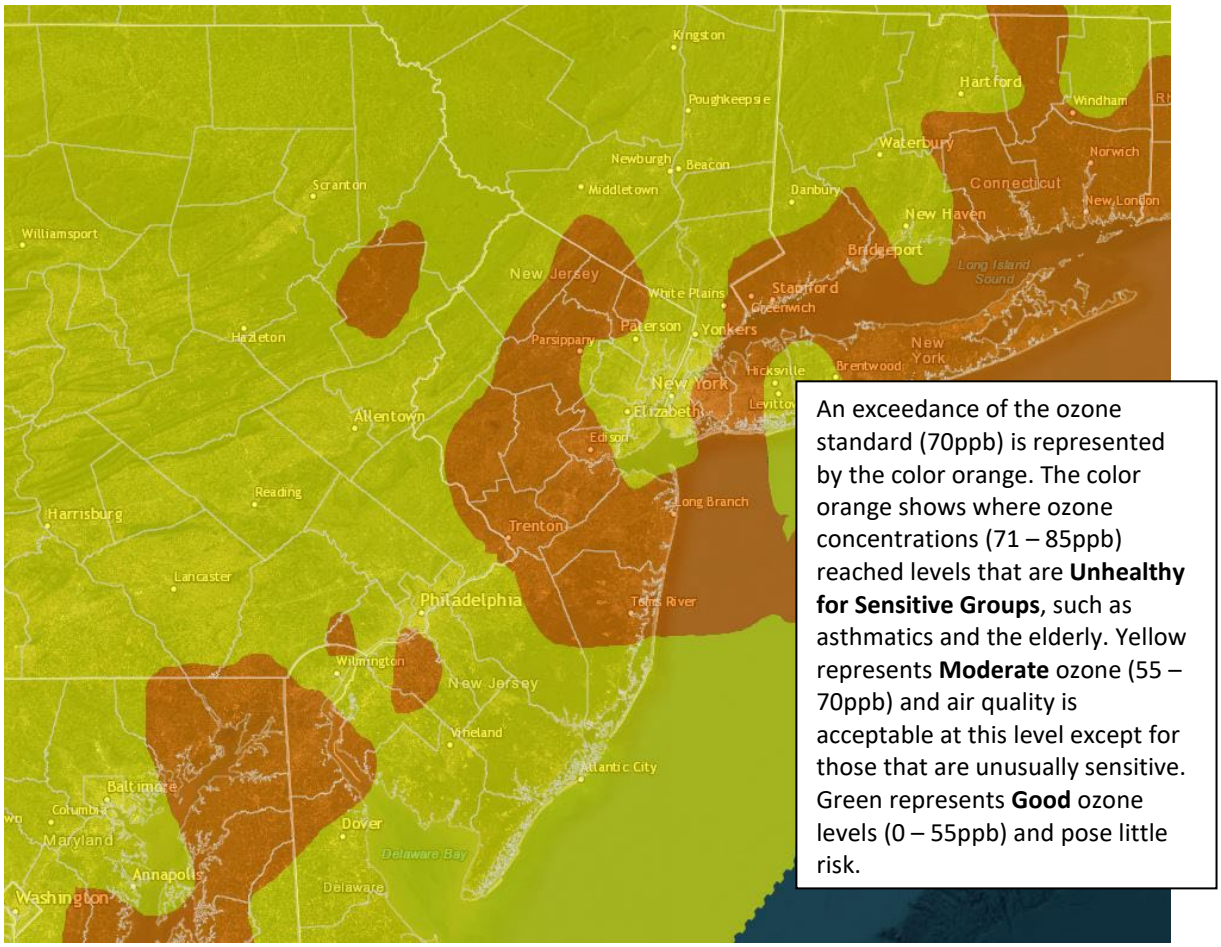
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	68
CT	Greenwich	72
CT	Madison-Beach Road	82
CT	Middletown-CVH-Shed	75
CT	New Haven	58
CT	Stratford	77
CT	Westport	79
DE	BCSP (New Castle Co.)	71
DE	BELLFNT2 (New Castle Co.)	70
DE	KILLENS (Kent Co.)	69
DE	LEWES (Sussex Co.)	67
DE	LUMS 2 (New Castle Co.)	72
DE	MLK (New Castle Co.)	69
DE	SEAFORD (Sussex Co.)	67
MD	Fair Hill	73
NY	Babylon	68
NY	Bronx - IS52	68
NY	CCNY	68
NY	Flax Pond	76
NY	Fresh Kills	69
NY	Holtsville	72
NY	Pfizer Lab	70
NY	Queens	75
NY	Riverhead	72
NY	Rockland Cty	67
NY	White Plains	70
PA	BRIS (Bucks Co.)	70
PA	CHES (Delaware Co.)	67
PA	NEWG (Chester Co.)	54
PA	NORR (Montgomery Co.)	58
PA	LAB (Philadelphia Co.)	60
PA	NEA (Philadelphia Co.)	68
PA	NEW (Philadelphia Co.)	66
	TOTAL EXCEEDANCES	12

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 13, 2023 NAAQS = 70 ppb
Connecticut	1
Delaware	1
Maryland	1
New Jersey	1
New York	1
Pennsylvania	0

Figure 1. Ozone Air Quality Index for April 13, 2023



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

Beginning on Monday, April 10th, a broad area of high pressure centered over the Mid-Atlantic provided a warming temperature trend and sunny skies for many days leading up to this ozone exceedance event on Thursday, April 13th. As a result, ozone levels across the region became increasingly polluted beginning on Monday as the persistent area of high pressure remained the dominant weather feature. By Thursday morning, high pressure had migrated just off the southeast US coast providing breezy westerly winds, and unseasonably warm temperatures soaring into the upper 80s by mid-day. Meanwhile, a surface trough developed over the nonattainment area allowing warm and polluted air aloft to mix down to the surface leading to many exceedances nearby and along this boundary. In addition, a regionally dry airmass and breezy winds may have contributed to favorable conditions for fire weather which may have helped to enhance ozone levels across the nonattainment area and Mid-Atlantic. Recent wildfires in New Jersey include Jimmy's Waterhole in Ocean County, Kanouse in Passaic/Morris County, as well as, nearby at Crystal Lake in Luzerne County, PA.

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	Madison–Beach Road	82
CT	Middletown-CVH-Shed	75
CT	Westport	79
DE	LUMS 2 (New Castle Co.)	72
NJ	Colliers Mills	75
NJ	Ramapo	71
NJ	Rutgers	72
NJ	Washington Crossing	71
NY	Holtsville	72
NY	Queens	75

Figure 2. 48-hour Back Trajectories for April 13, 2023 at 10 meters

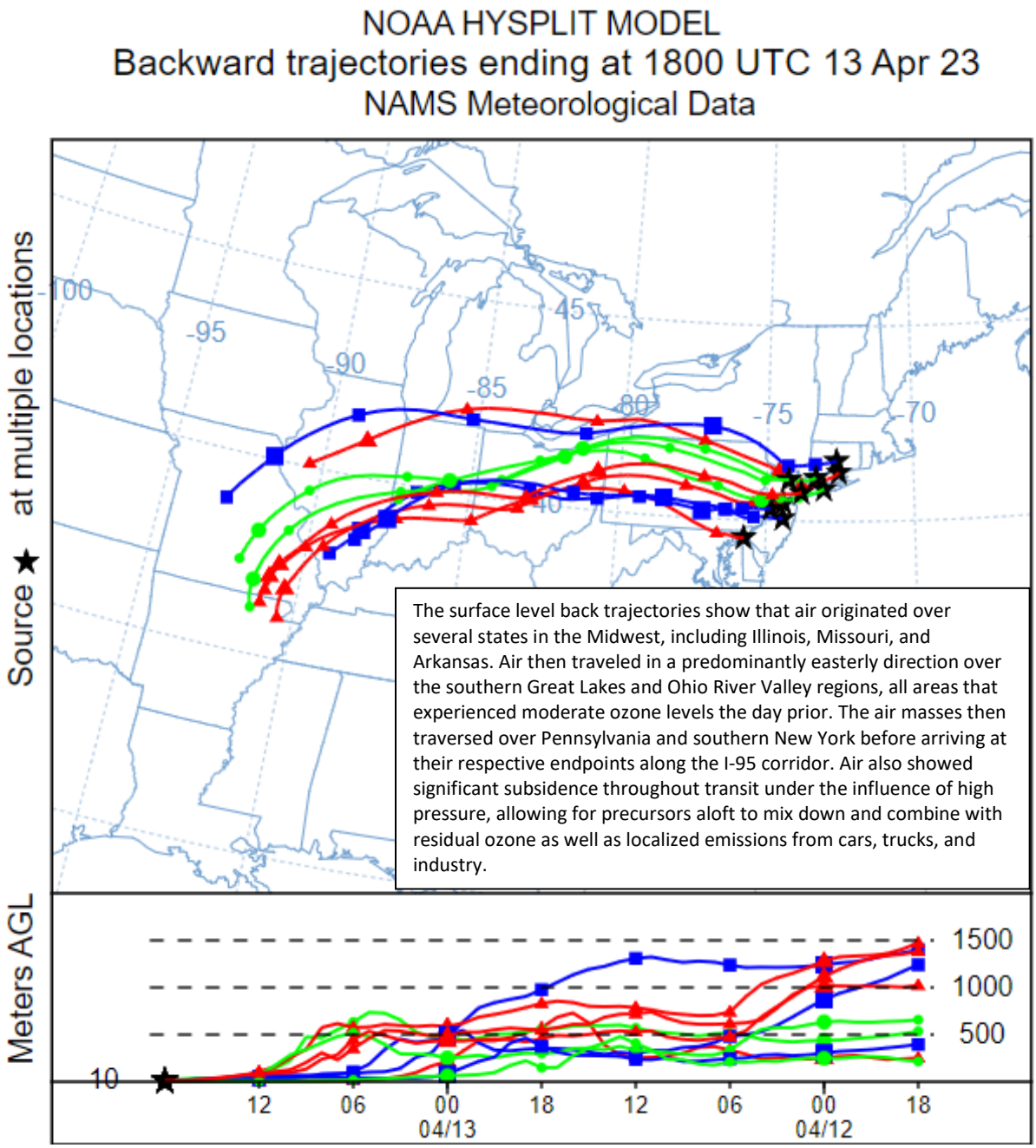


Figure 3. 48-hour Back Trajectories for April 13, 2023 at 500 meters

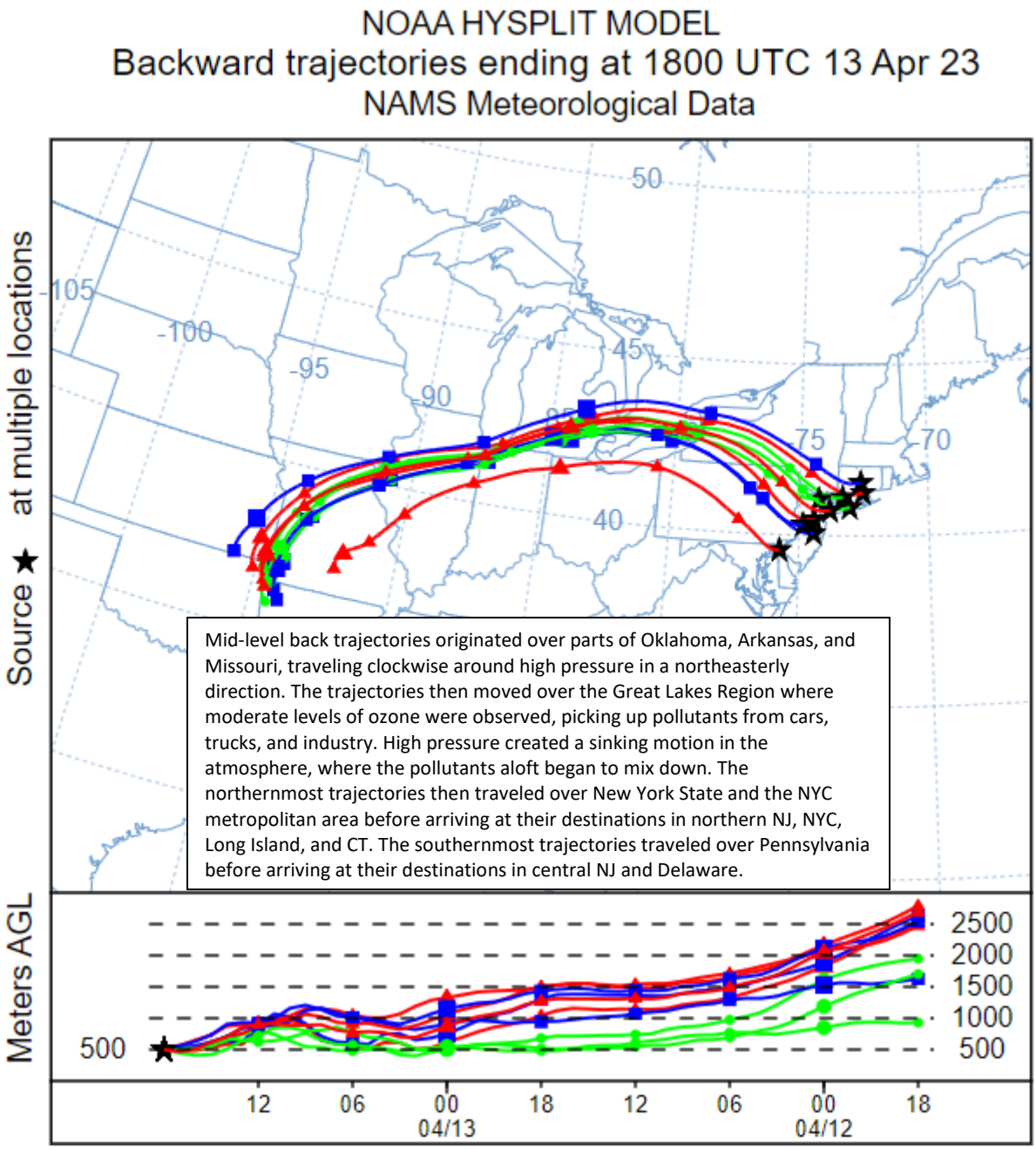


Figure 4. 48-hour Back Trajectories for April 13, 2023 at 1500 meters

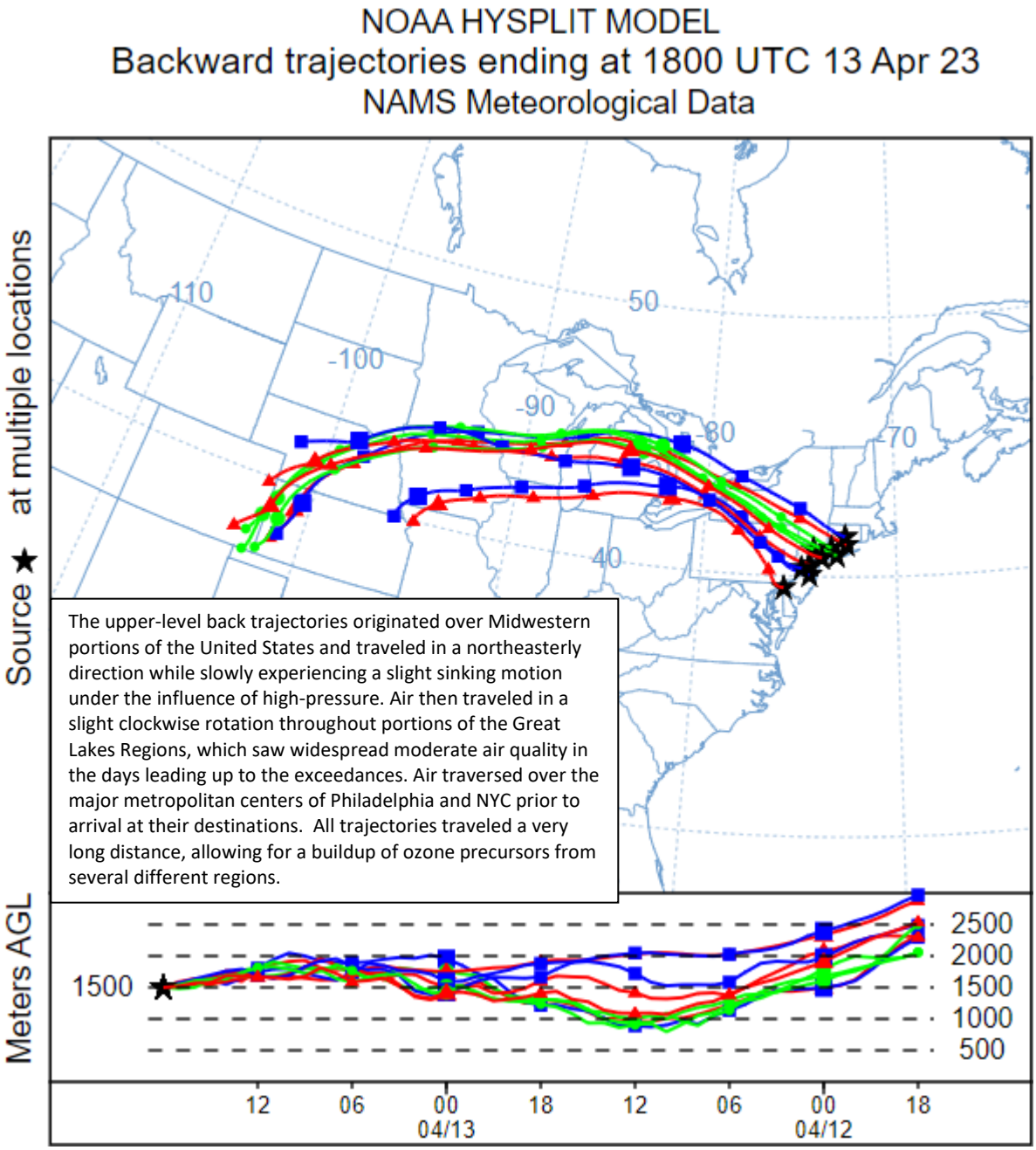
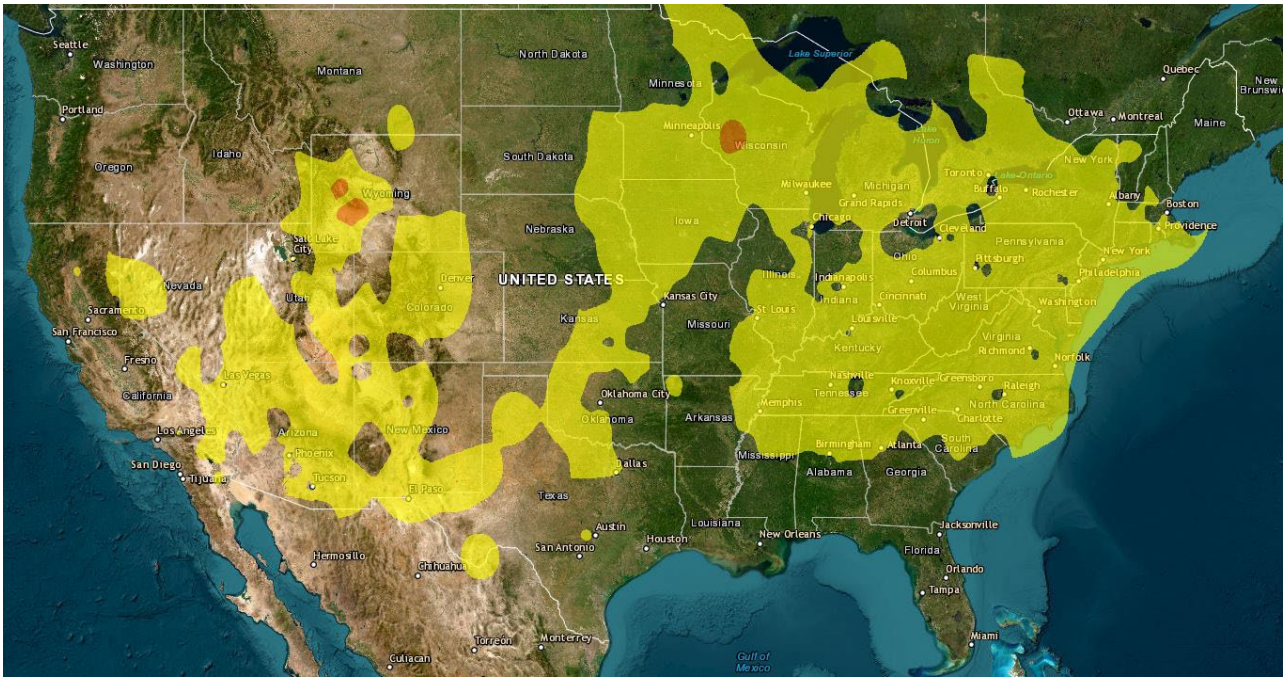


Figure 5. Air Quality Index for the United States on April 12, 2023



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 .