Ozone National Ambient Air Quality Standard Health Exceedances on June 2, 2023

Exceedance Locations and Levels

On Friday, June 2, 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 6/2/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	67
Bayonne	68
Brigantine	41
Camden Spruce St	81
Chester	59
Clarksboro	89
Colliers Mills	74
Columbia	No Data
Flemington	67
Leonia	78
Millville	64
Monmouth University	65
Ramapo	60
Rider University	98
Rutgers University	92
Washington Crossing*	No Data
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 nineteen (19) 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 6/2/2023

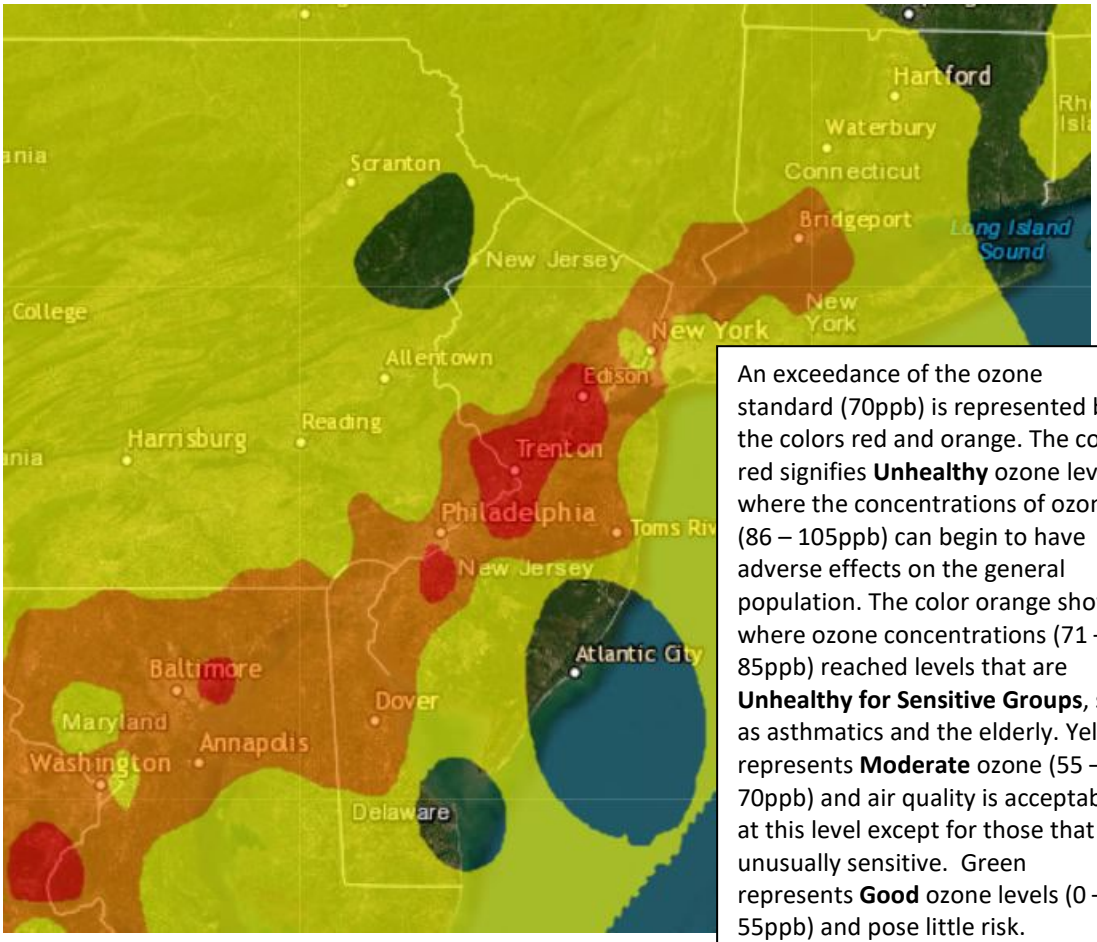
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	58
CT	Greenwich	81
CT	Madison-Beach Road	66
CT	Middletown-CVH-Shed	68
CT	New Haven	65
CT	Stratford	75
CT	Westport	80
DE	BCSP (New Castle Co.)	71
DE	BELLFNT2 (New Castle Co.)	77
DE	KILLENS (Kent Co.)	72
DE	LEWES (Sussex Co.)	53
DE	LUMS 2 (New Castle Co.)	85
DE	MLK (New Castle Co.)	80
DE	SEAFORD (Sussex Co.)	68
MD	Fair Hill	71
NY	Babylon	56
NY	Bronx - IS52	65
NY	CCNY	77
NY	Flax Pond	78
NY	Fresh Kills	83
NY	Holtsville	61
NY	Pfizer Lab	73
NY	Queens	66
NY	Riverhead	67
NY	Rockland Cty	60
NY	White Plains	74
PA	BRIS (Bucks Co.)	105
PA	CHES (Delaware Co.)	78
PA	NEWG (Chester Co.)	68
PA	NORR (Montgomery Co.)	61
PA	LAB (Philadelphia Co.)	74
PA	NEA (Philadelphia Co.)	79
PA	NEW (Philadelphia Co.)	82
	TOTAL EXCEEDANCES	19

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 – June 2, 2023 NAAQS = 70 ppb
Connecticut	5
Delaware	2
Maryland	2
New Jersey	5
New York	3
Pennsylvania	2

Figure 1. Ozone Air Quality Index for June 2, 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 (0 – 55ppb) and pose little risk.

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, June 2nd, widespread ozone exceedances occurred across the nonattainment area due to favorable meteorological conditions in combination with residual wildfire smoke. In the days leading up to this ozone exceedance event, strong high pressure had remained in control of the weather across the Northeast, allowing for light/variable winds, sunny skies, and increasing temperatures soaring into the low 90s by Friday. By mid-morning on Friday, a surface trough developed across the nonattainment area allowing polluted air and residual wildfire smoke from Nova Scotian wildfires to mix down to the surface and increase ozone concentrations. With a deteriorated air mass already in place from days prior, and with the addition of residual wildfire smoke at the surface, ozone concentrations were able to spike into the unhealthy and unhealthy for sensitive groups (USG) category at many locations across the nonattainment area on this day.

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)
PA	BRIS (Bucks Co.)	105
NJ	Rider University	98
NJ	Rutgers University	92
NJ	Clarksboro	89
CT	Greenwich	81
CT	Stratford	75
NY	Pfizer Lab	73
DE	KILLENS (Kent Co.)	72
DE	BCSP (New Castle Co.)	71
MD	Fair Hill	71

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

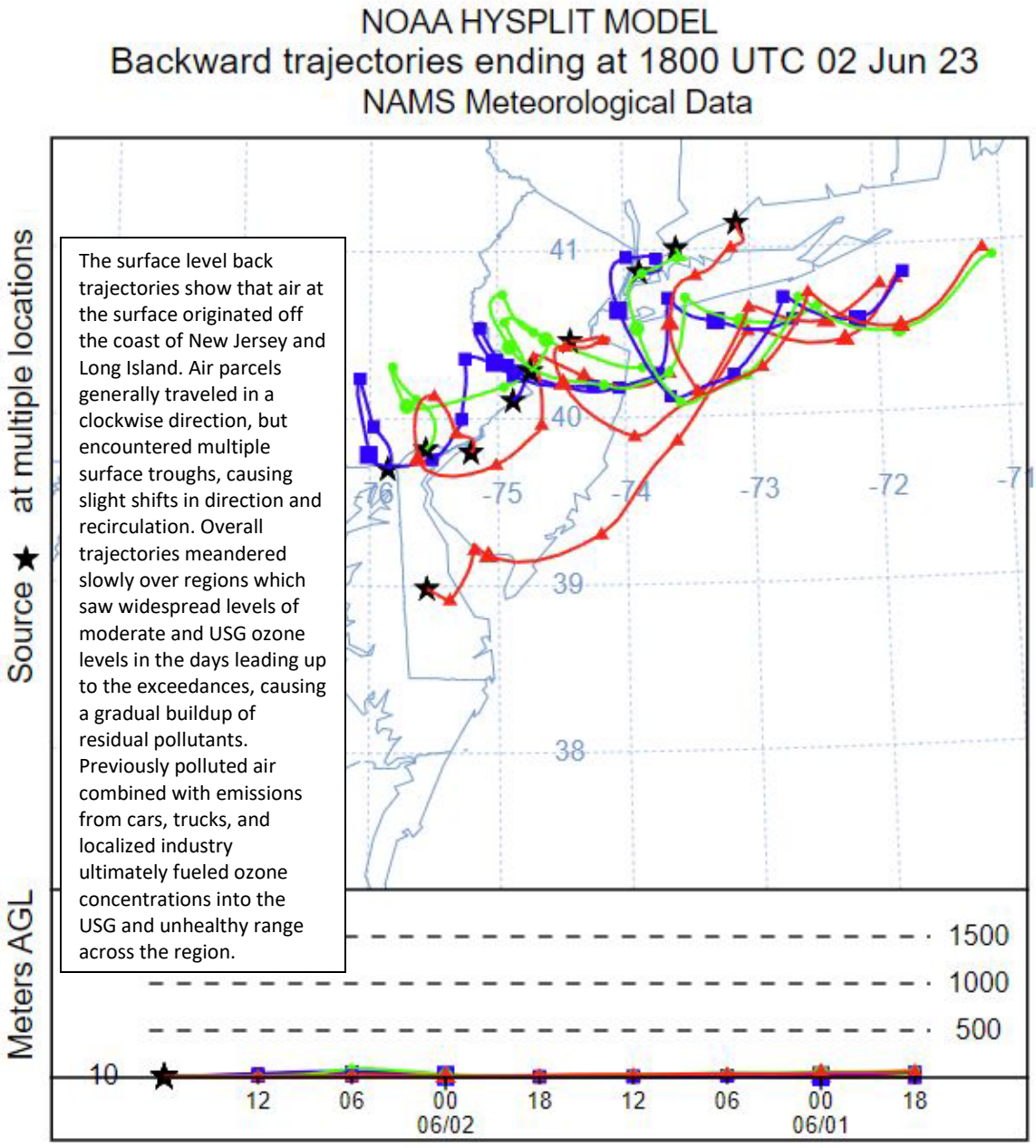


Figure 3. 48-hour Back Trajectories for June 2, 2023 at 500 meters

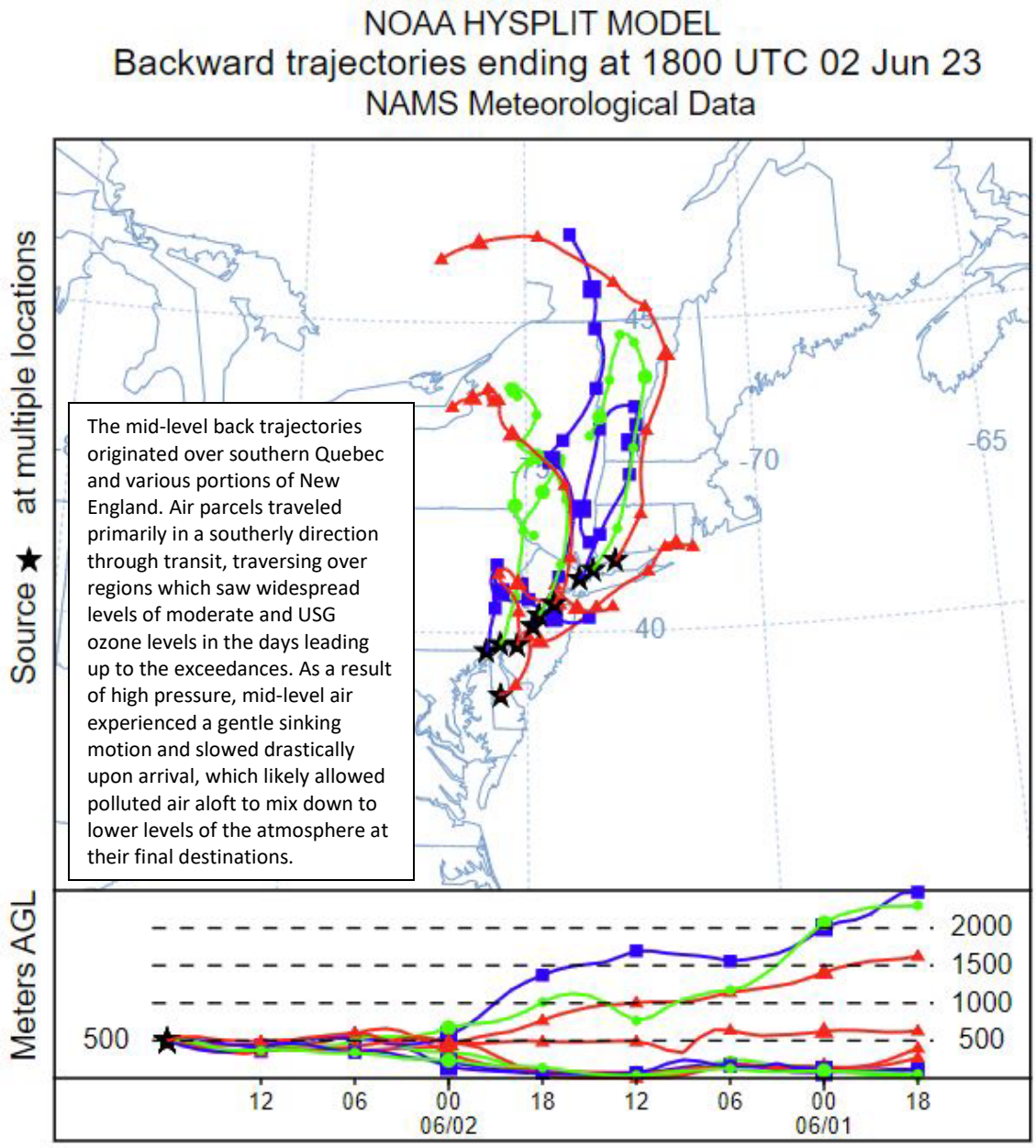


Figure 4. 48-hour Back Trajectories for June 2, 2023 at 1500 meters

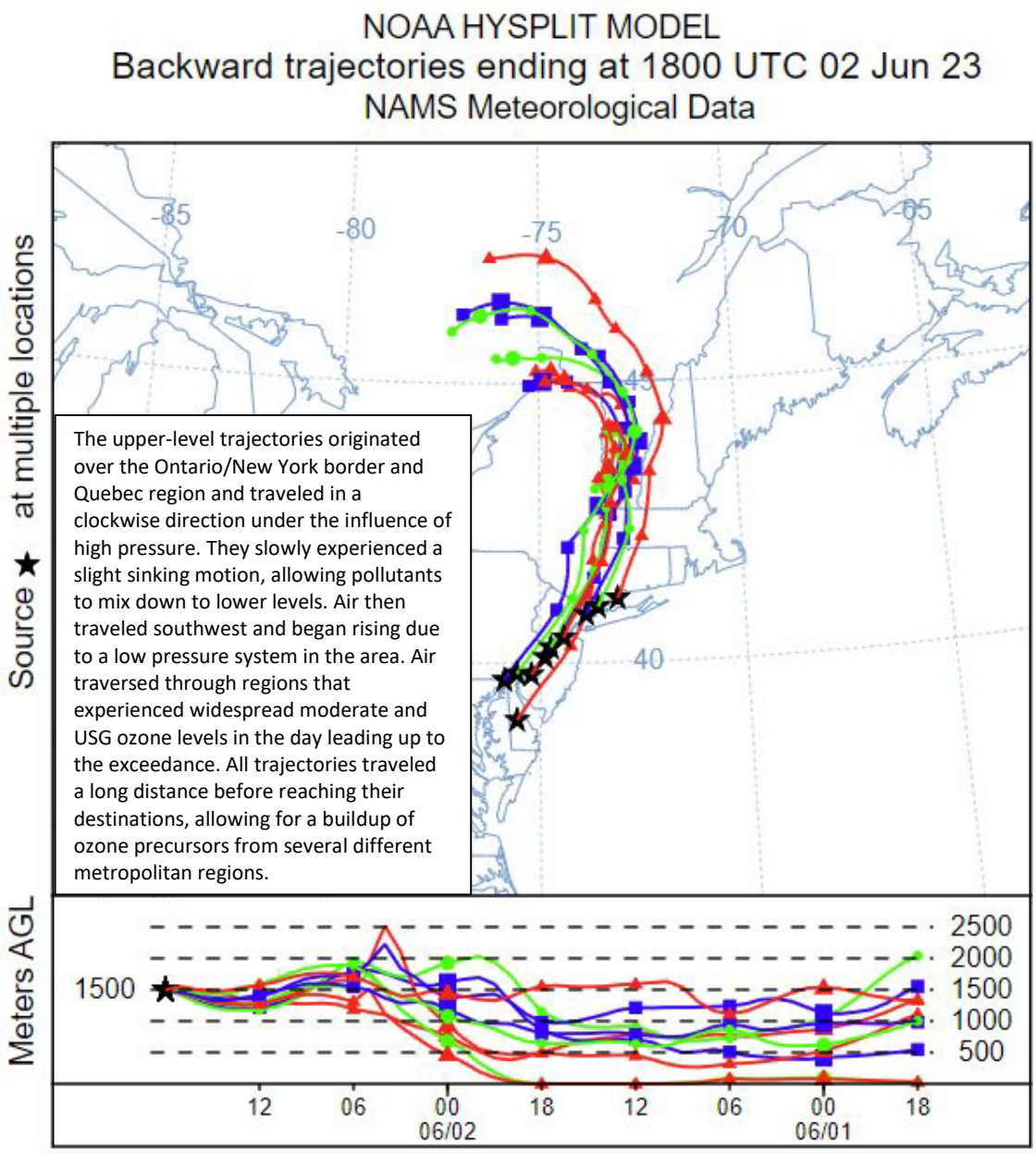
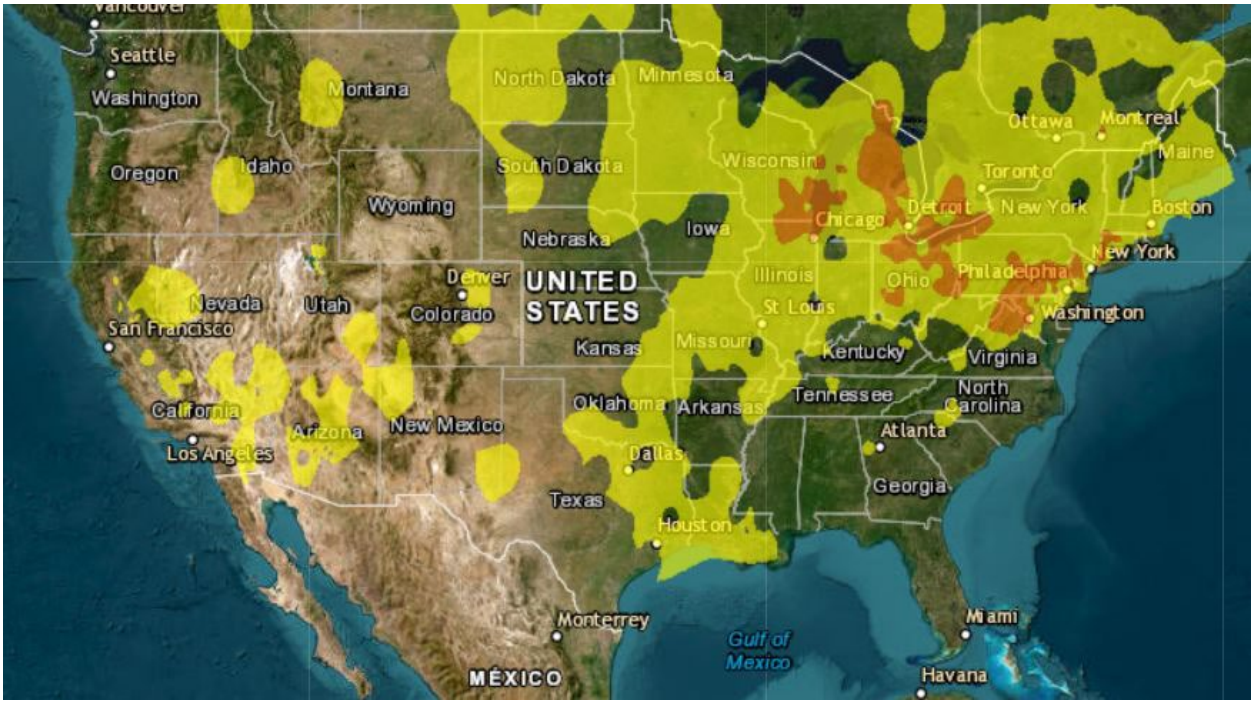


Figure 5. Air Quality Index for the United States on June 1, 2023



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 .