Ozone National Ambient Air Quality Standard Health Exceedances on May 12, 2023

Exceedance Locations and Levels

On Friday, May 12, 2023, there was one (1) exceedance 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 5/12/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	58
Bayonne	54
Brigantine	42
Camden Spruce St	59
Chester	65
Clarksboro	66
Colliers Mills	72
Columbia	48
Flemington	62
Leonia	62
Millville	57
Monmouth University	65
Ramapo	61
Rider University	65
Rutgers University	64
Washington Crossing*	65
TOTAL EXCEEDANCES	1

*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 was one (1) exceedance 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 5/12/2023

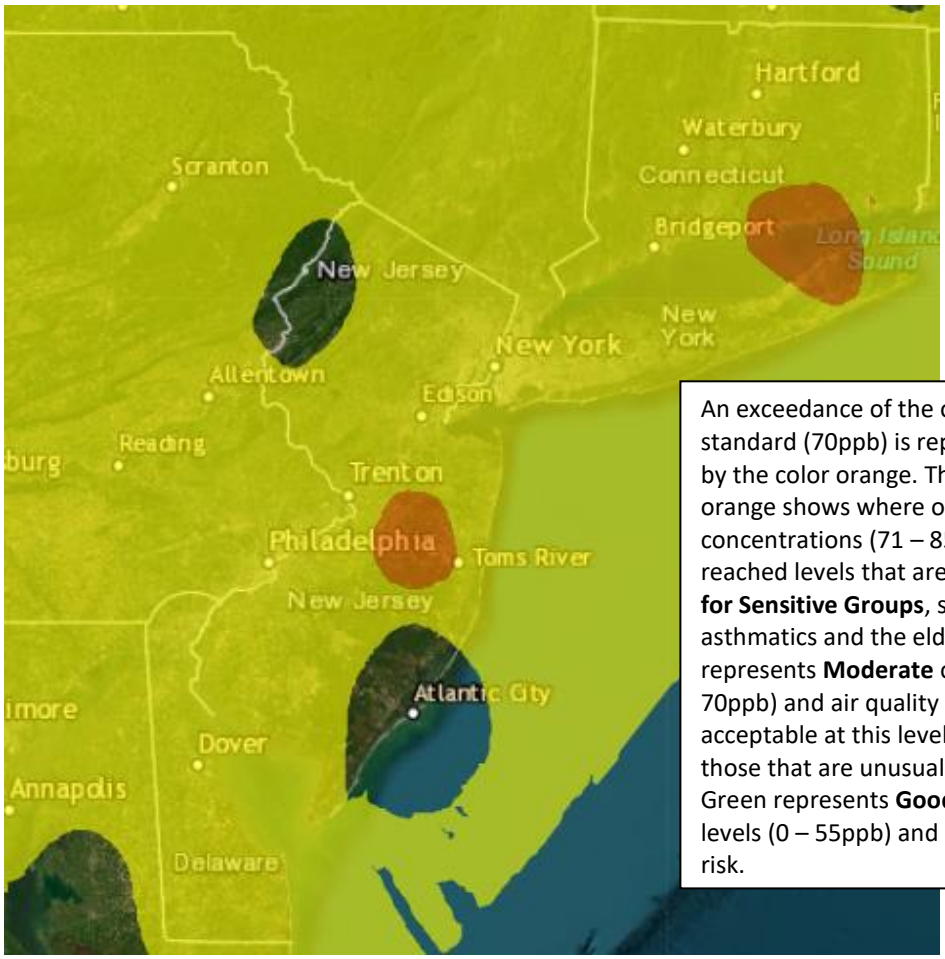
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	60
CT	Greenwich	66
CT	Madison-Beach Road	75
CT	Middletown-CVH-Shed	62
CT	New Haven	64
CT	Stratford	69
CT	Westport	70
DE	BCSP (New Castle Co.)	60
DE	BELLFNT2 (New Castle Co.)	59
DE	KILLENS (Kent Co.)	60
DE	LEWES (Sussex Co.)	55
DE	LUMS 2 (New Castle Co.)	57
DE	MLK (New Castle Co.)	58
DE	SEAFORD (Sussex Co.)	55
MD	Fair Hill	58
NY	Babylon	65
NY	Bronx - IS52	61
NY	CCNY	60
NY	Flax Pond	70
NY	Fresh Kills	60
NY	Holtsville	65
NY	Pfizer Lab	61
NY	Queens	66
NY	Riverhead	65
NY	Rockland Cty	61
NY	White Plains	59
PA	BRIS (Bucks Co.)	69
PA	CHES (Delaware Co.)	56
PA	NEWG (Chester Co.)	61
PA	NORR (Montgomery Co.)	58
PA	LAB (Philadelphia Co.)	54
PA	NEA (Philadelphia Co.)	64
PA	NEW (Philadelphia Co.)	64
	TOTAL EXCEEDANCES	1

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 – May 12, 2023 NAAQS = 70 ppb
Connecticut	3
Delaware	1
Maryland	1
New Jersey	3
New York	2
Pennsylvania	0

Figure 1. Ozone Air Quality Index for May 12, 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 Wednesday, May 10th, a strong 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 Friday, May 12th, this area of high pressure had migrated off the Mid-Atlantic coast allowing winds to shift generally out of the west-southwest while fueling warmer temperatures and increased humidity across the region. Throughout the day, some locations experienced mid to high level cloudiness which may have helped to suppress ozone concentrations across the state. However, exceedances were observed in isolated locations, such as central New Jersey, which received the most sunshine, particularly in the afternoon hours. These features in combination with the transport of emissions from upwind states led to two exceedances 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)
CT	Madison Beach Road	75
NJ	Colliers Mills	72

Figure 2. 48-hour Back Trajectories for May 12, 2023 at 10 meters

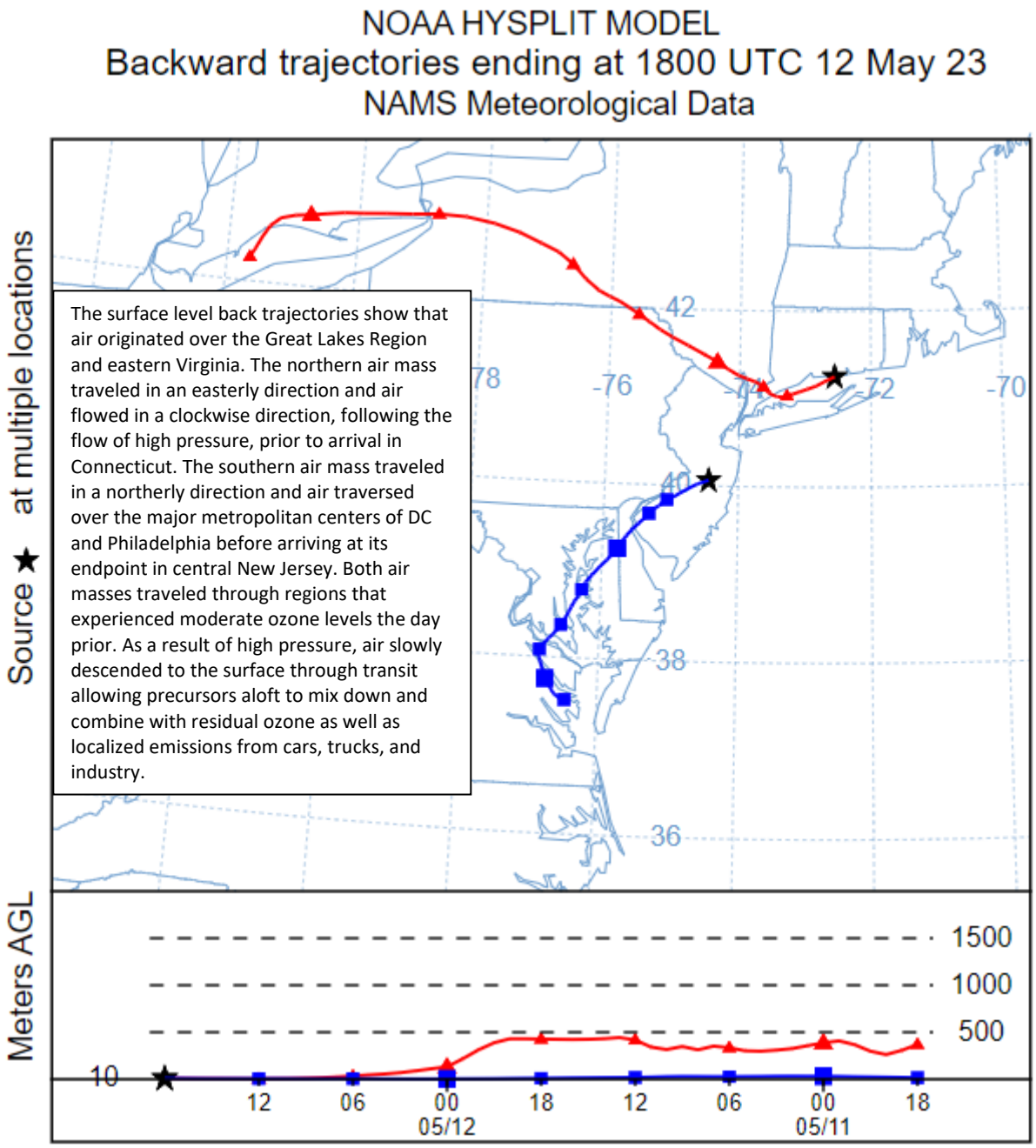


Figure 3. 48-hour Back Trajectories for May 12, 2023 at 500 meters

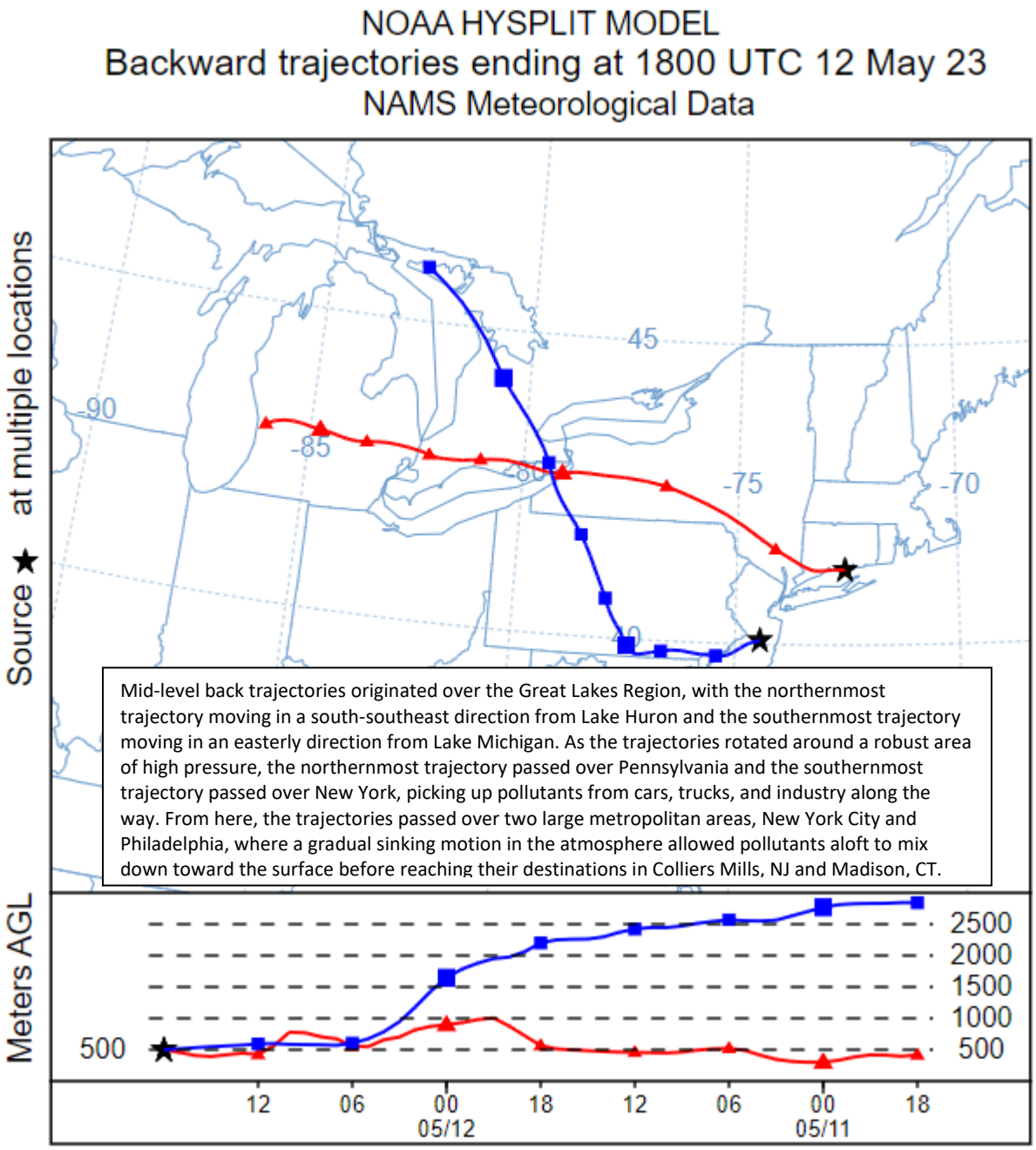


Figure 4. 48-hour Back Trajectories for May 12, 2023 at 1500 meters

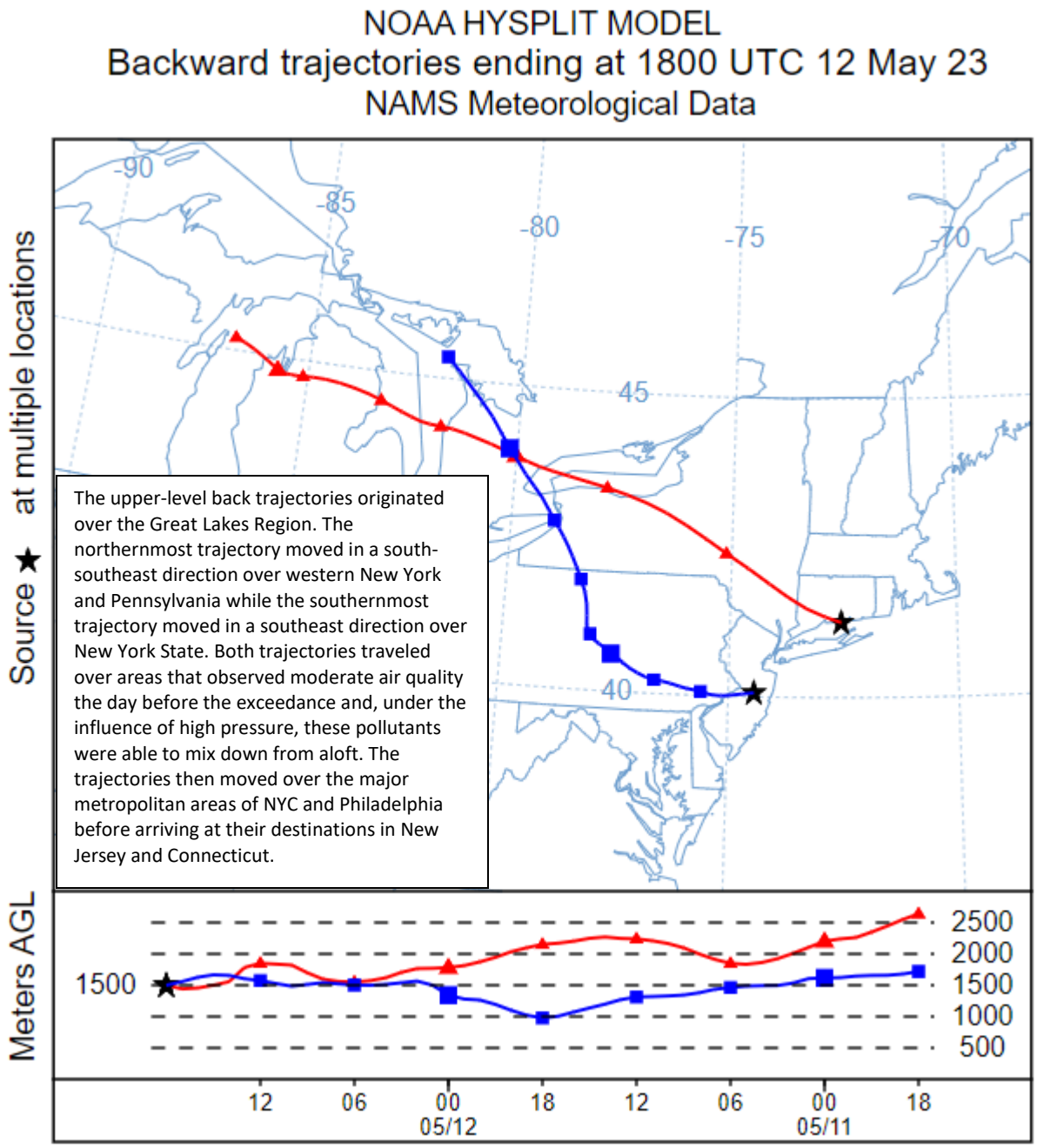
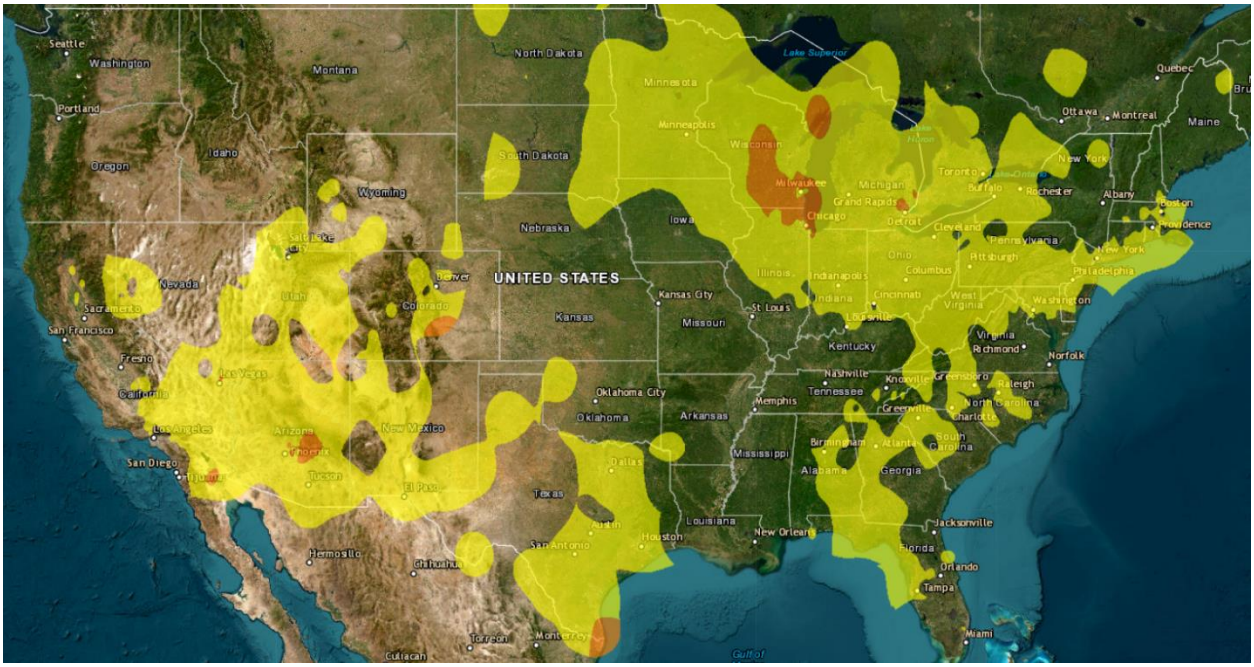


Figure 5. Air Quality Index for the United States on May 11, 2023



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 .