Ozone National Ambient Air Quality Standard Health Exceedances on July 26, 2023

Exceedance Locations and Levels

On Wednesday, July 26, 2023, there were three (3) 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 7/26/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	61
Bayonne	67
Brigantine	54
Camden Spruce St	67
Chester	63
Clarksboro	67
Colliers Mills	63
Columbia	50
Flemington	70
Leonia	71
Millville	62
Monmouth University	62
Ramapo	52
Rider University	78
Rutgers University	77
Washington Crossing*	68
TOTAL EXCEEDANCES	3

*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 five (5) 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 7/26/2023

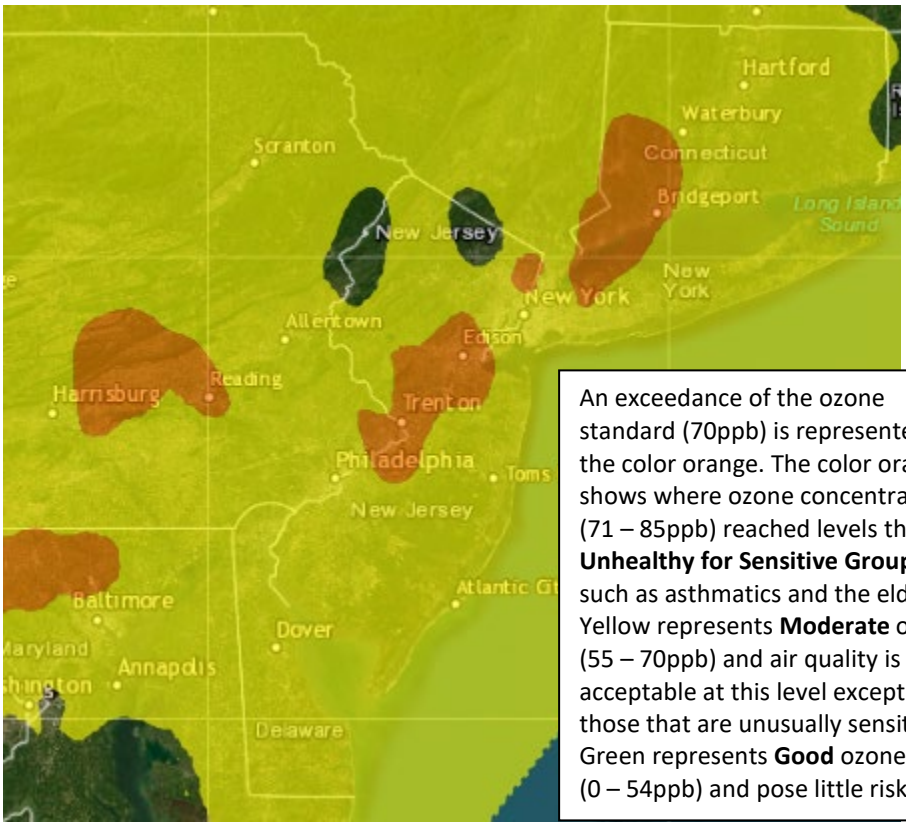
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	75
CT	Greenwich	82
CT	Madison-Beach Road	64
CT	Middletown-CVH-Shed	63
CT	New Haven	No Data
CT	Stratford	70
CT	Westport	75
DE	BCSP (New Castle Co.)	No Data
DE	BELLFNT2 (New Castle Co.)	61
DE	KILLENS (Kent Co.)	54
DE	LEWES (Sussex Co.)	56
DE	LUMS 2 (New Castle Co.)	60
DE	MLK (New Castle Co.)	64
DE	SEAFORD (Sussex Co.)	55
MD	Fair Hill	57
NY	Babylon	67
NY	Bronx - IS52	67
NY	CCNY	70
NY	Flax Pond	65
NY	Fresh Kills	76
NY	Holtsville	63
NY	Pfizer Lab	70
NY	Queens	70
NY	Riverhead	60
NY	Rockland Cty	60
NY	White Plains	68
PA	BRIS (Bucks Co.)	77
PA	CHES (Delaware Co.)	66
PA	NEWG (Chester Co.)	59
PA	NORR (Montgomery Co.)	70
PA	LAB (Philadelphia Co.)	64
PA	NEA (Philadelphia Co.)	58
PA	NEW (Philadelphia Co.)	68
	TOTAL EXCEEDANCES	5

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 – July 26, 2023 NAAQS = 70 ppb
Connecticut	14
Delaware	4
Maryland	3
New Jersey	14
New York	13
Pennsylvania	10

Figure 1. Ozone Air Quality Index for July 26, 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

High pressure settled over the eastern half of the United States on Wednesday July 26th as a surface trough developed, extending from southern New England southwestward over the NYC metropolitan area and New Jersey. This atmospheric setup allowed for abundant sunshine across the region with hot temperatures and light westerly winds, becoming southerly throughout the course of the day. Hazy conditions were also noted with rising humidity and the presence of lingering Canadian wildfire smoke in the upper atmosphere. Ozone levels steadily increased across much of the nonattainment area in the afternoon hours while atmospheric mixing, associated with both the previously mentioned surface trough and the development of a coastal seabreeze, likely further enhanced ozone along portions of the I-95 corridor, leading to multiple exceedances in this location.

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.

The back trajectories and AQI map below indicate that air aloft originated and traveled over the eastern Great Lakes and Ohio River Valley regions prior to arrival, both areas that observed widespread moderate and isolated Unhealthy for Sensitive Groups (USG) air quality the day prior. In combination with the favorable meteorological conditions mentioned above, this previously deteriorated air mass was transported to the region and helped contribute to the ozone exceedances observed throughout the nonattainment area.

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	Greenwich	82
CT	Danbury	75
CT	Westport	75
NJ	Rider University	78
NJ	Rutgers University	77
NJ	Leonia	71
PA	Bristol	77
NY	Fresh Kills	76

Figure 2. 48-hour Back Trajectories for July 26, 2023 at 10 meters

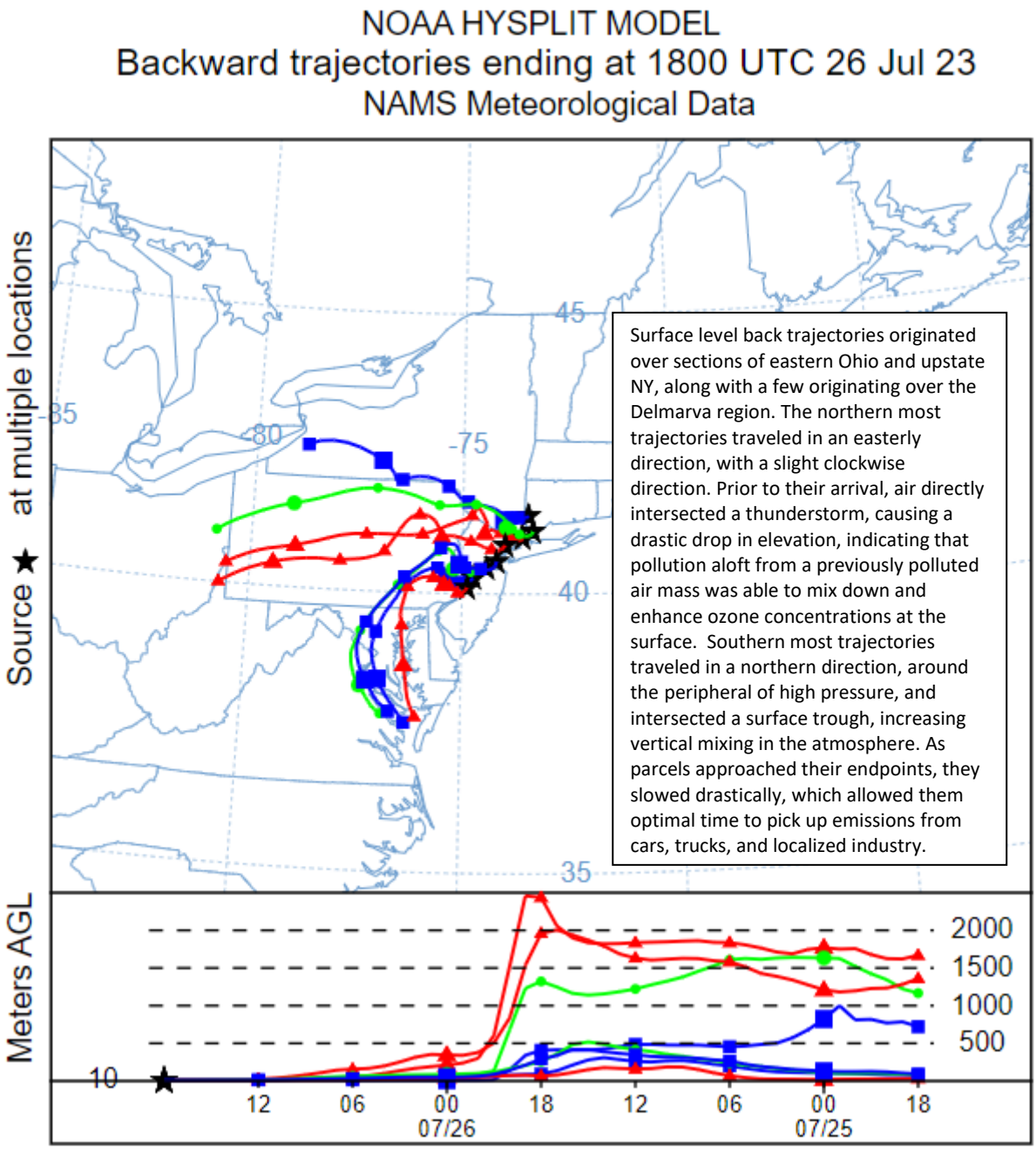


Figure 3. 48-hour Back Trajectories for July 26, 2023 at 500 meters

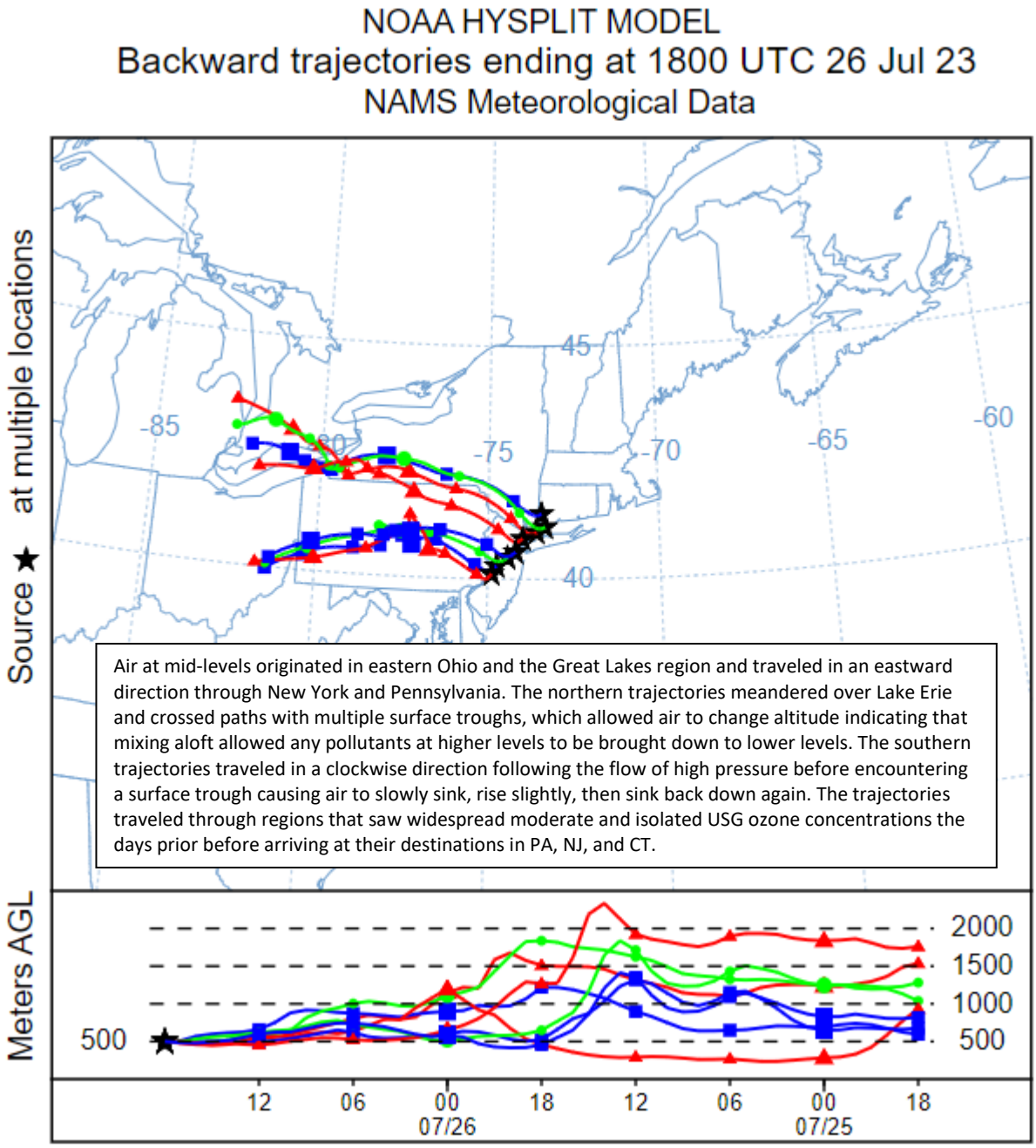


Figure 4. 48-hour Back Trajectories for July 26, 2023 at 1500 meters

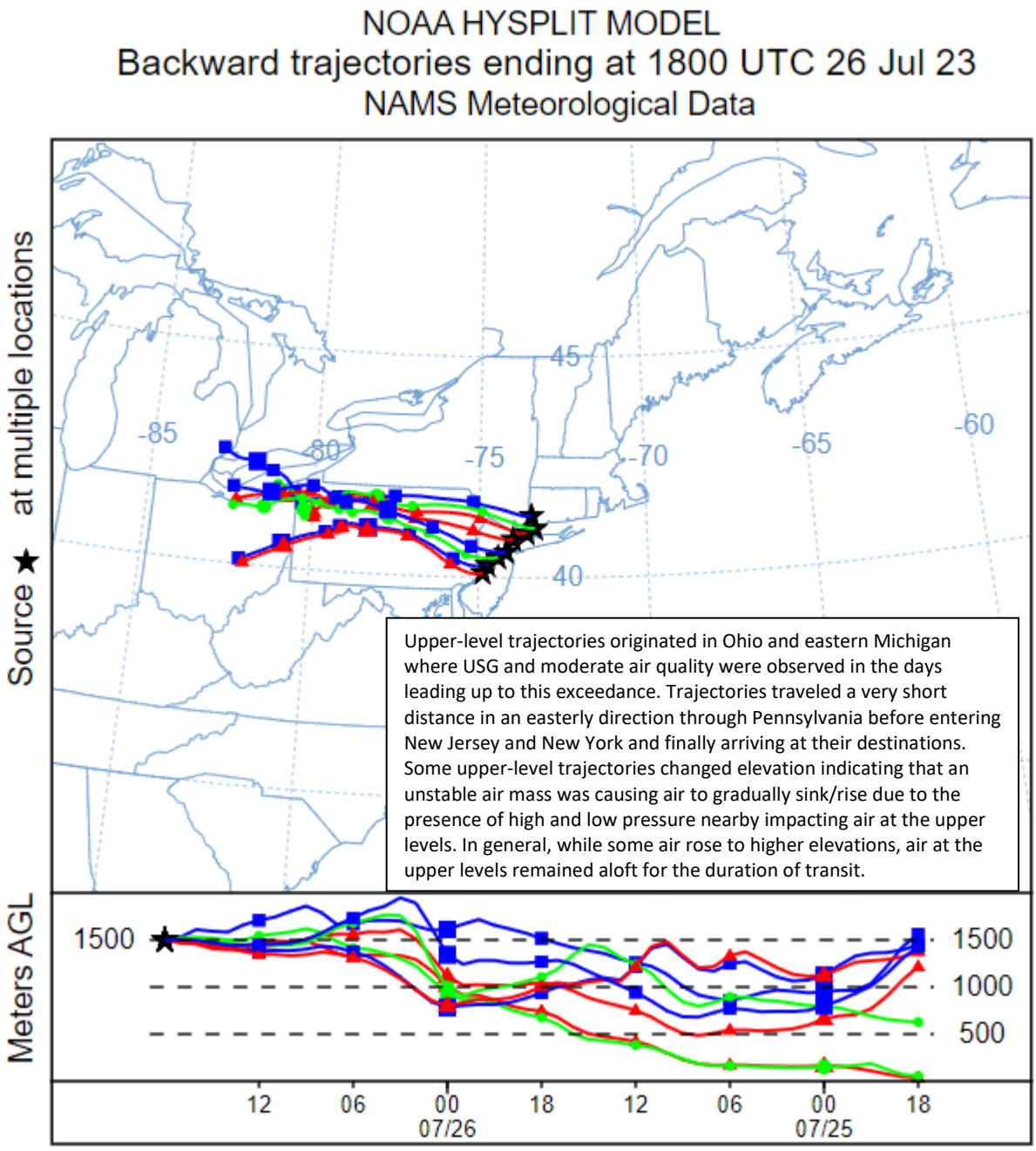
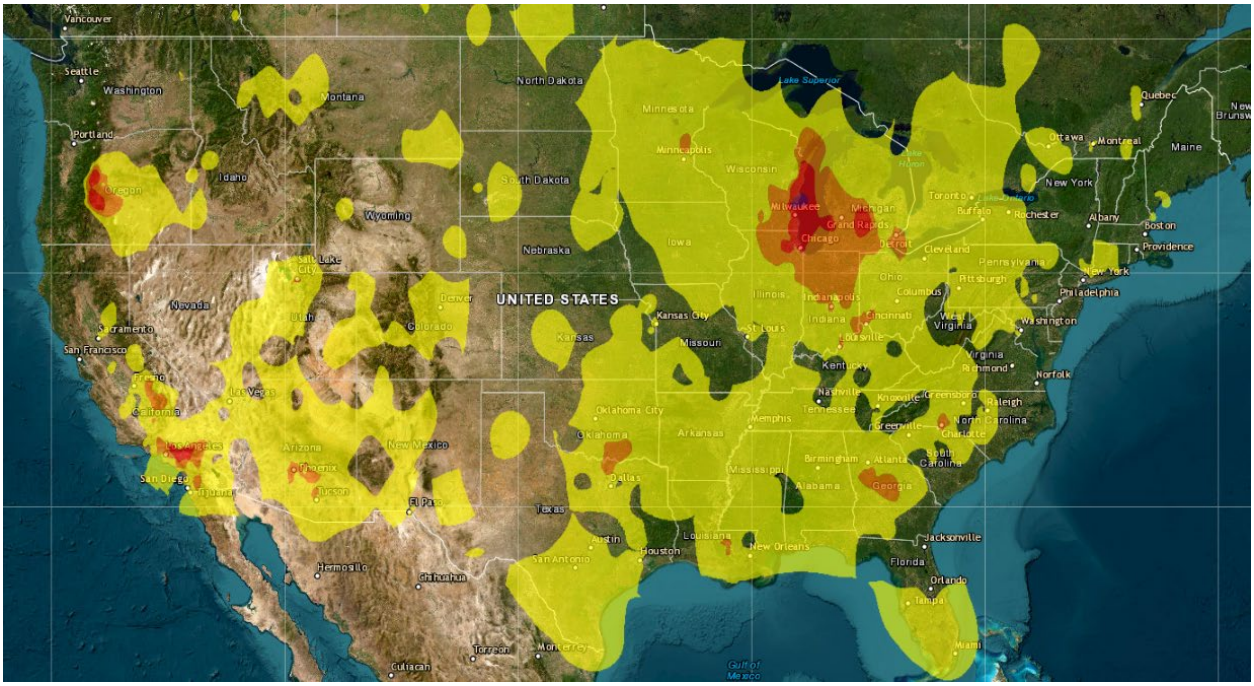


Figure 5. Air Quality Index for the United States on July 25, 2023



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 .