Ozone National Ambient Air Quality Standard Health Exceedances on August 26, 2024

Exceedance Locations and Levels

On Monday, August 26, 2024, there were two (2) 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 8/26/2024

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	50
Bayonne	64
Brigantine	45
Chester	52
Clarksboro	71
Colliers Mills	58
Columbia	44
Flemington	58
Leonia	68
Millville	54
Monmouth University	51
Ramapo	50
Rider University	60
Rutgers University	65
South Camden	75
Washington Crossing*	59
TOTAL EXCEEDANCES	2

*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 three (3) 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 8/26/2024

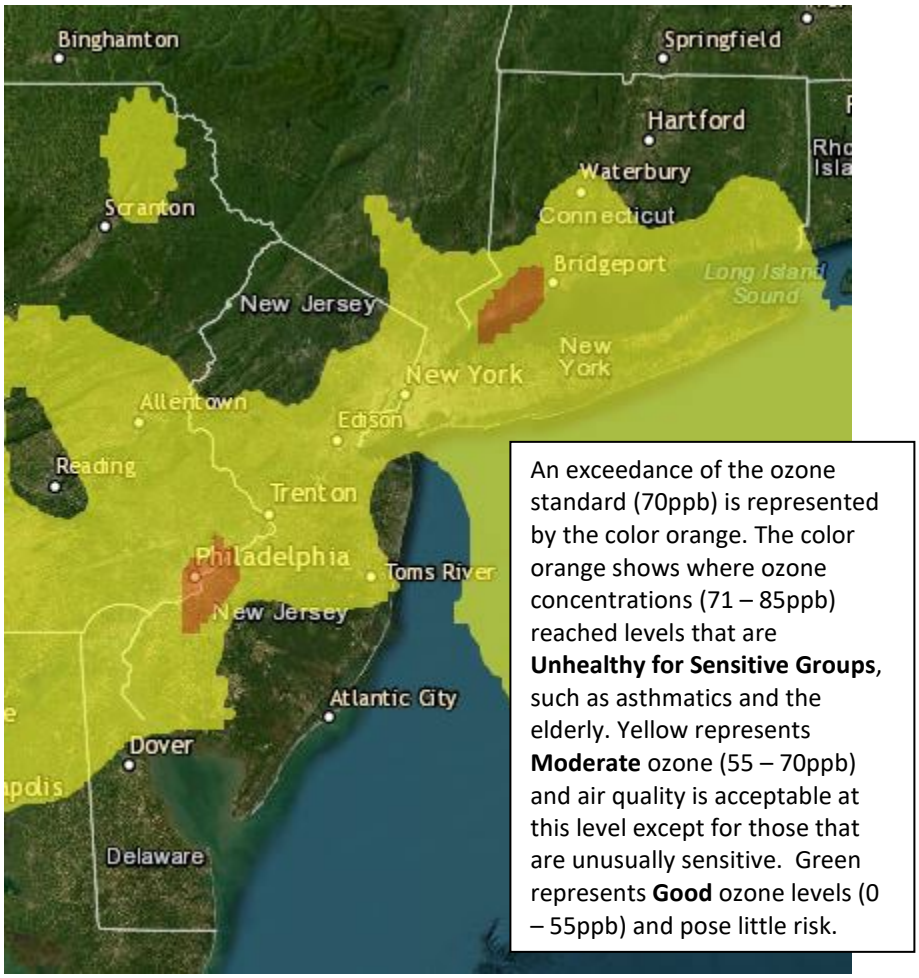
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	53
CT	Greenwich	71
CT	Madison-Beach Road	57
CT	Middletown-CVH-Shed	49
CT	New Haven	59
CT	Stratford	66
CT	Westport	72
DE	BCSP (New Castle Co.)	56
DE	BELLFNT2 (New Castle Co.)	60
DE	KILLENS (Kent Co.)	50
DE	LEWES (Sussex Co.)	46
DE	LUMS 2 (New Castle Co.)	63
DE	MLK (New Castle Co.)	60
DE	SEAFORD (Sussex Co.)	46
MD	Fair Hill	63
NY	Babylon	67
NY	Bronx - IS52	68
NY	CCNY	70
NY	Flax Pond	60
NY	Fresh Kills	58
NY	Holtsville	67
NY	Pfizer Lab	69
NY	Queens	65
NY	Riverhead	67
NY	Rockland Cty	55
NY	White Plains	56
PA	BRIS (Bucks Co.)	69
PA	CHES (Delaware Co.)	62
PA	NEWG (Chester Co.)	61
PA	NORR (Montgomery Co.)	56
PA	LAB (Philadelphia Co.)	69
PA	NEA (Philadelphia Co.)	70
PA	NEW (Philadelphia Co.)	74
	TOTAL EXCEEDANCES	3

The number of days in 2024 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 2024

STATE	# of Days NAAQS was Exceeded January 1 – August 26, 2024 NAAQS = 70 ppb
Connecticut	17
Delaware	4
Maryland	3
New Jersey	17
New York	14
Pennsylvania	11

Figure 1. Ozone Air Quality Index for August 26, 2024



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 Monday, August 26th, multiple ozone exceedances were observed throughout the nonattainment area. During the early morning hours on Monday, high pressure was situated to our south propelling light southwesterly winds, sunny skies, and favorable conditions for ozone formation into our region. As the day progressed, a surface trough was noted over the nonattainment area, enhancing atmospheric mixing which allowed previously polluted air from a stagnant air mass to mix down to the surface. Ahead of a low pressure system moving into New Jersey from the north, slow moving thunderstorms developed in southern New Jersey by early afternoon with a focus generally along the coast. This resulted in increased cloud cover and precipitation that helped further inhibit ozone production in these locations. Ozone formation was still able to reach the Unhealthy for Sensitive Groups (USG) category along the northern and southern areas of the I-95 corridor in New Jersey, Pennsylvania, and Connecticut.

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)
NJ	Clarksboro	71
NJ	South Camden	75
PA	NEW (Philadelphia Co.)	74
CT	Westport	72
CT	Greenwich	71

Figure 2. 48-hour Back Trajectories for August 26, 2024 at 10 meters

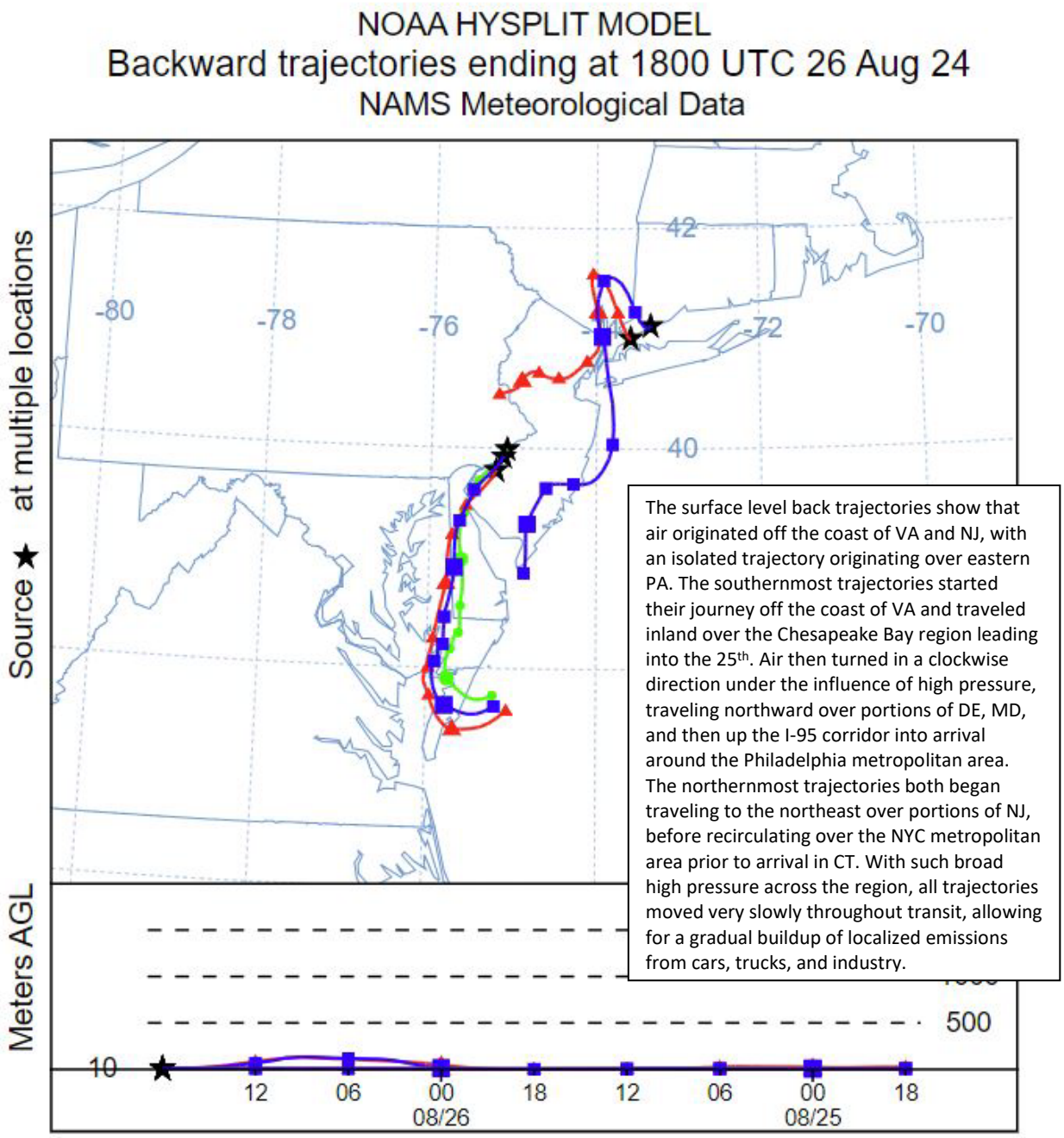
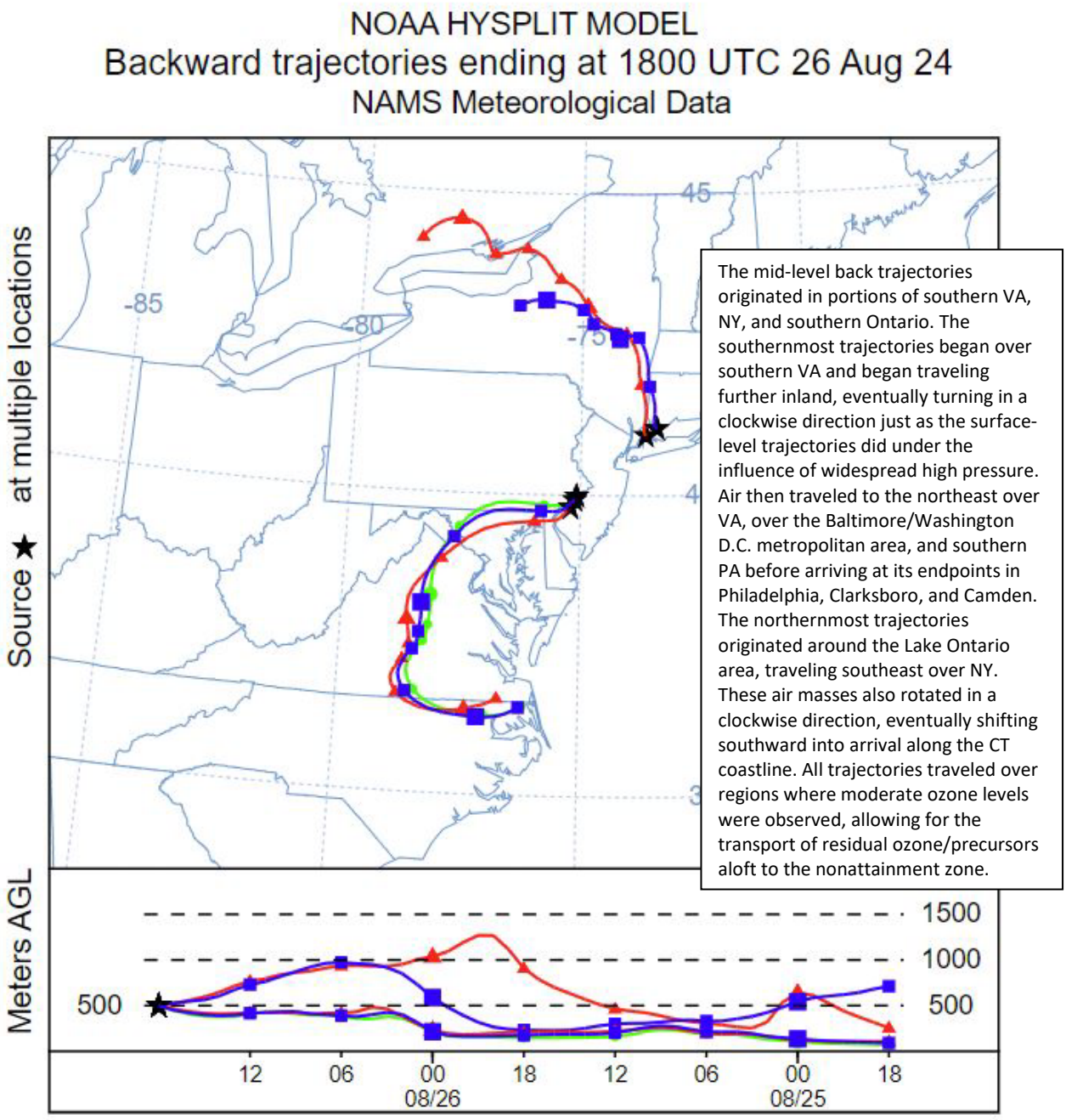


Figure 3. 48-hour Back Trajectories for August 26, 2024 at 500 meters



The mid-level back trajectories originated in portions of southern VA, NY, and southern Ontario. The southernmost trajectories began over southern VA and began traveling further inland, eventually turning in a clockwise direction just as the surface-level trajectories did under the influence of widespread high pressure. Air then traveled to the northeast over VA, over the Baltimore/Washington D.C. metropolitan area, and southern PA before arriving at its endpoints in Philadelphia, Clarksboro, and Camden. The northernmost trajectories originated around the Lake Ontario area, traveling southeast over NY. These air masses also rotated in a clockwise direction, eventually shifting southward into arrival along the CT coastline. All trajectories traveled over regions where moderate ozone levels were observed, allowing for the transport of residual ozone/precursors aloft to the nonattainment zone.

Figure 4. 48-hour Back Trajectories for August 26, 2024 at 1500 meters

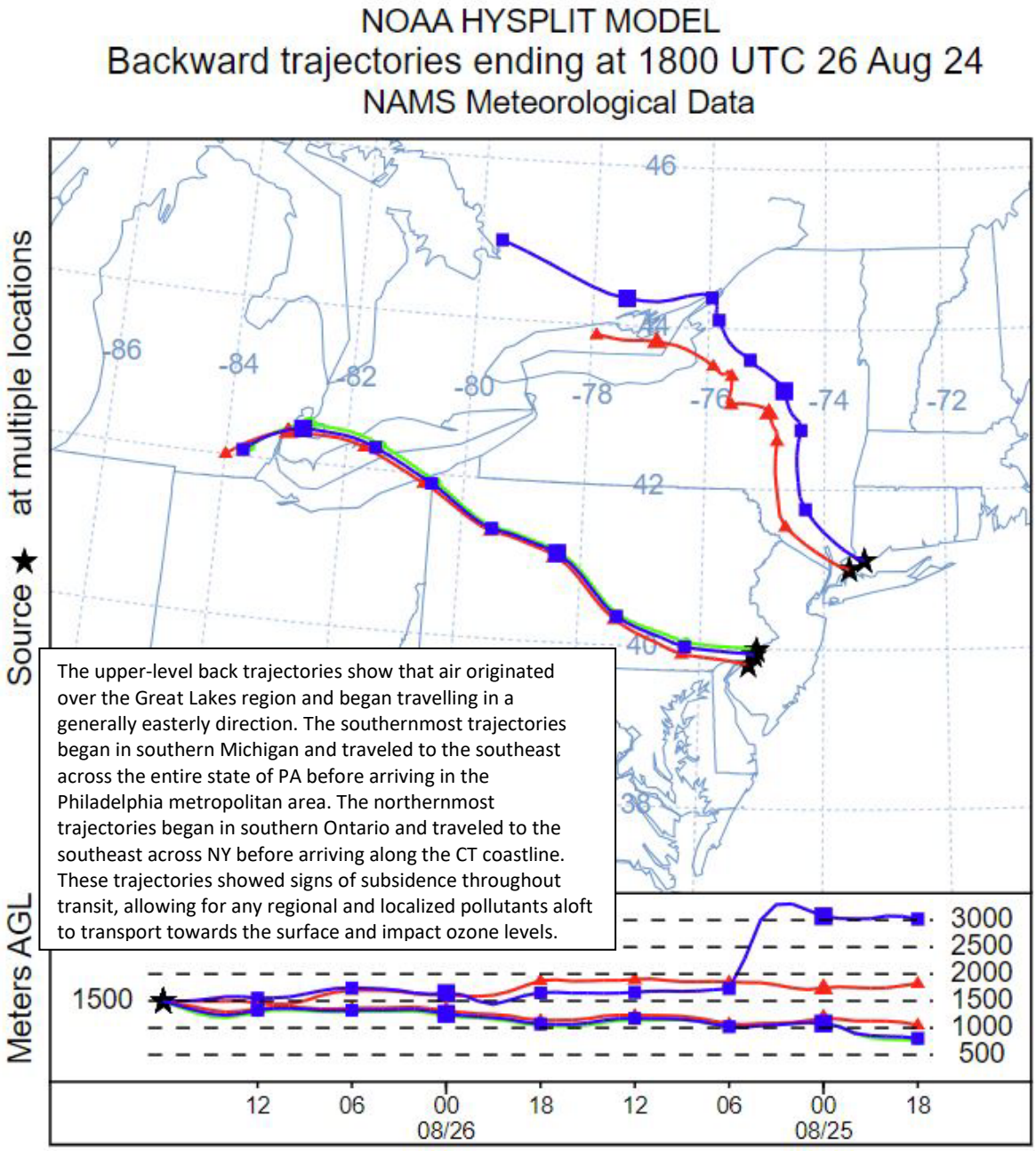
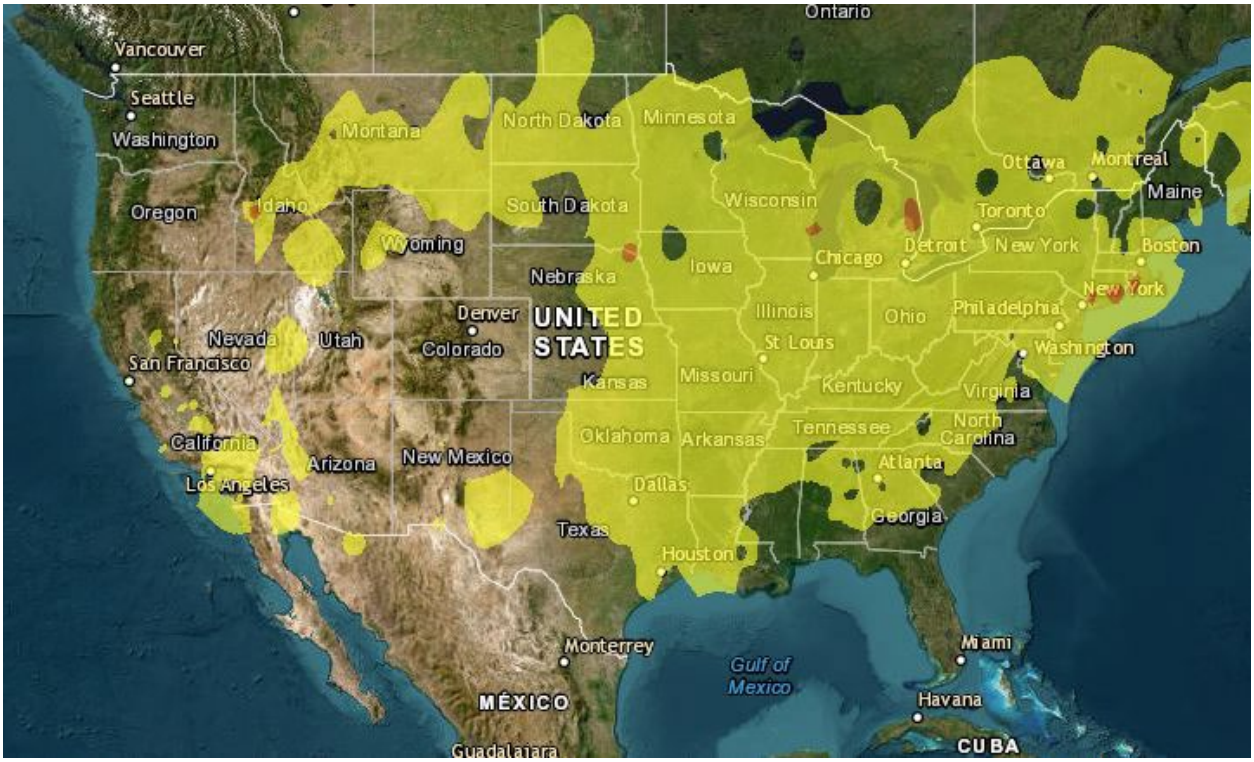


Figure 5. Air Quality Index for the United States on August 25, 2024



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://dep.nj.gov/airplanning/aqi-today/.