Ozone National Ambient Air Quality Standard Health Exceedances on July 29, 2024

Exceedance Locations and Levels

On Monday, July 29, 2024, 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 7/29/2024

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	44
Bayonne	56
Brigantine	45
Camden Spruce St	No Data
Chester	59
Clarksboro	51
Colliers Mills	46
Columbia	60
Flemington	62
Leonia	52
Millville	44
Monmouth University	46
Ramapo	76
Rider University	63
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 were no 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 7/29/2024

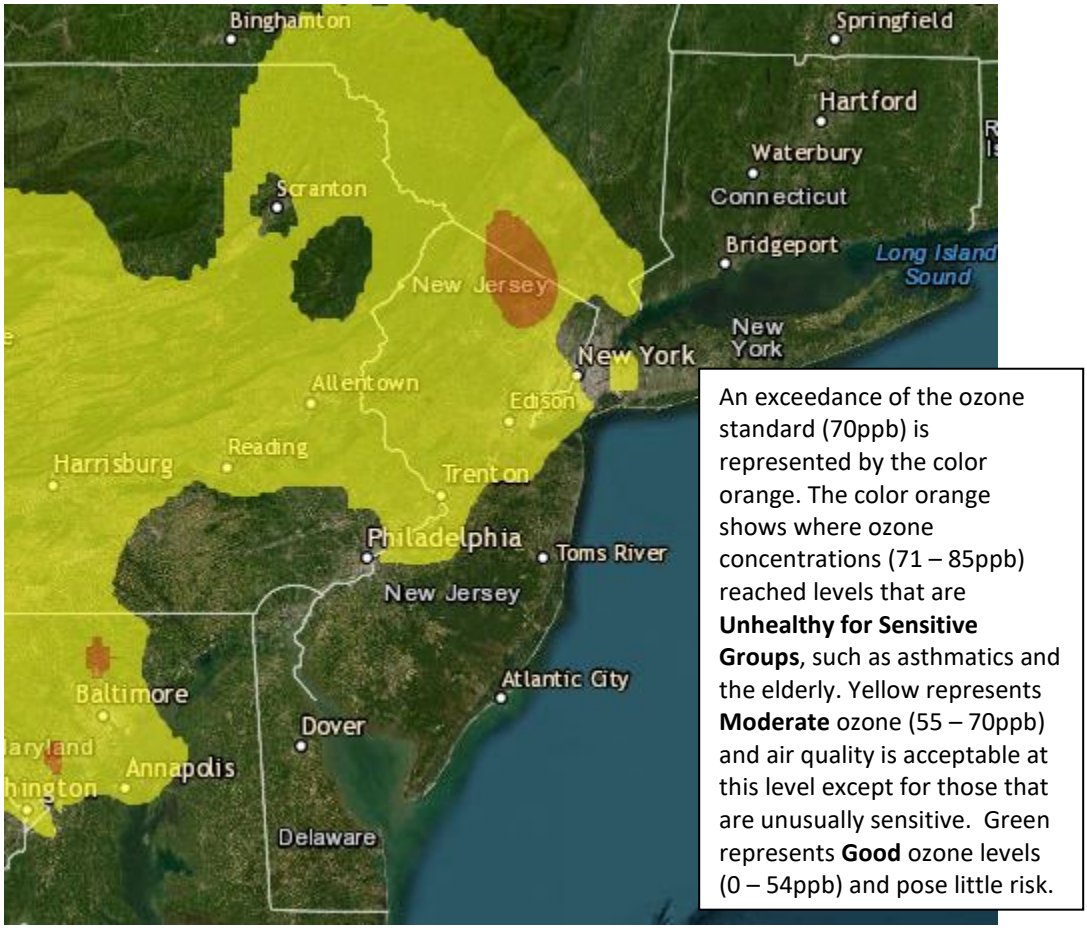
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	48
CT	Greenwich	51
CT	Madison-Beach Road	41
CT	Middletown-CVH-Shed	34
CT	New Haven	43
CT	Stratford	50
CT	Westport	53
DE	BCSP (New Castle Co.)	48
DE	BELLFNT2 (New Castle Co.)	49
DE	KILLENS (Kent Co.)	47
DE	LEWES (Sussex Co.)	39
DE	LUMS 2 (New Castle Co.)	47
DE	MLK (New Castle Co.)	52
DE	SEAFORD (Sussex Co.)	46
MD	Fair Hill	48
NY	Babylon	49
NY	Bronx - IS52	48
NY	CCNY	48
NY	Flax Pond	47
NY	Fresh Kills	63
NY	Holtsville	45
NY	Pfizer Lab	51
NY	Queens	55
NY	Riverhead	42
NY	Rockland Cty	65
NY	White Plains	57
PA	BRIS (Bucks Co.)	60
PA	CHES (Delaware Co.)	54
PA	NEWG (Chester Co.)	50
PA	NORR (Montgomery Co.)	54
PA	LAB (Philadelphia Co.)	53
PA	NEA (Philadelphia Co.)	57
PA	NEW (Philadelphia Co.)	55
	TOTAL EXCEEDANCES	0

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 – July 29, 2024 NAAQS = 70 ppb
Connecticut	14
Delaware	4
Maryland	2
New Jersey	14
New York	12
Pennsylvania	9

Figure 1. Ozone Air Quality Index for July 29, 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, July 29th, favorable meteorological conditions throughout the nonattainment zone resulted in an isolated ozone exceedance in northern New Jersey. High pressure previously anchored over the eastern seaboard began to slowly retreat further inland early in the day as low pressure began to build in from off the Northeastern coast. As the morning progressed, an additional low pressure area was noted just south of New Jersey, causing calm winds to pick up to a southeasterly flow, allowing previously polluted air to funnel into northern New Jersey. Passing clouds were observed in the early afternoon, but cleared to sunny conditions, with temperatures rising into the mid-to-upper 80s. In addition, smoke from the western U.S. and Canadian wildfires was present aloft and at the surface in portions of northern New Jersey, with a surface trough draped across the Garden State, allowing any additional pollution aloft to mix down to the surface. Combined with warm temperatures and mostly sunny skies, ozone levels were able to rise into the USG category in Ramapo, New Jersey.

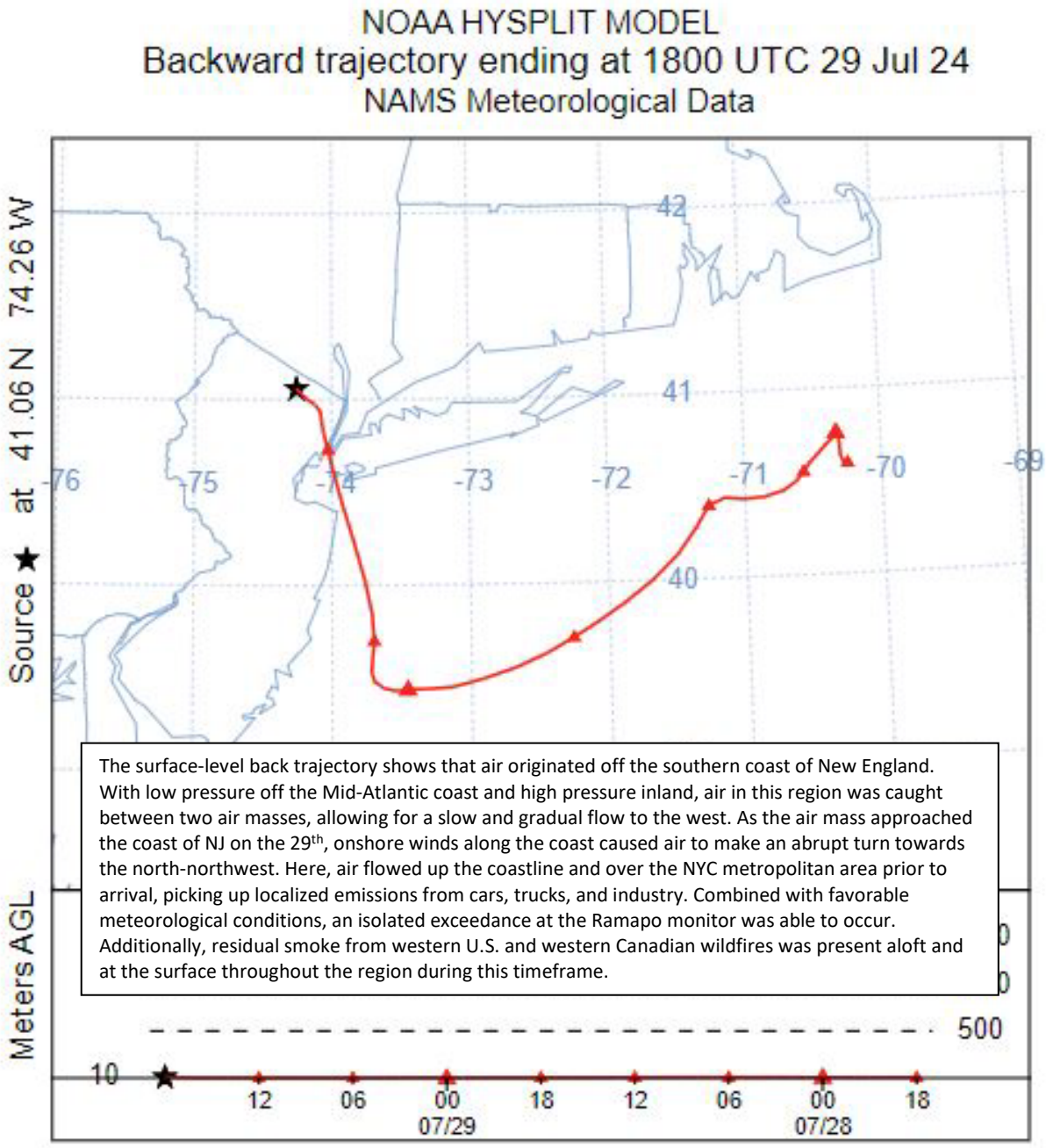
Where Did the Air Pollution that Caused Ozone Come From?

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

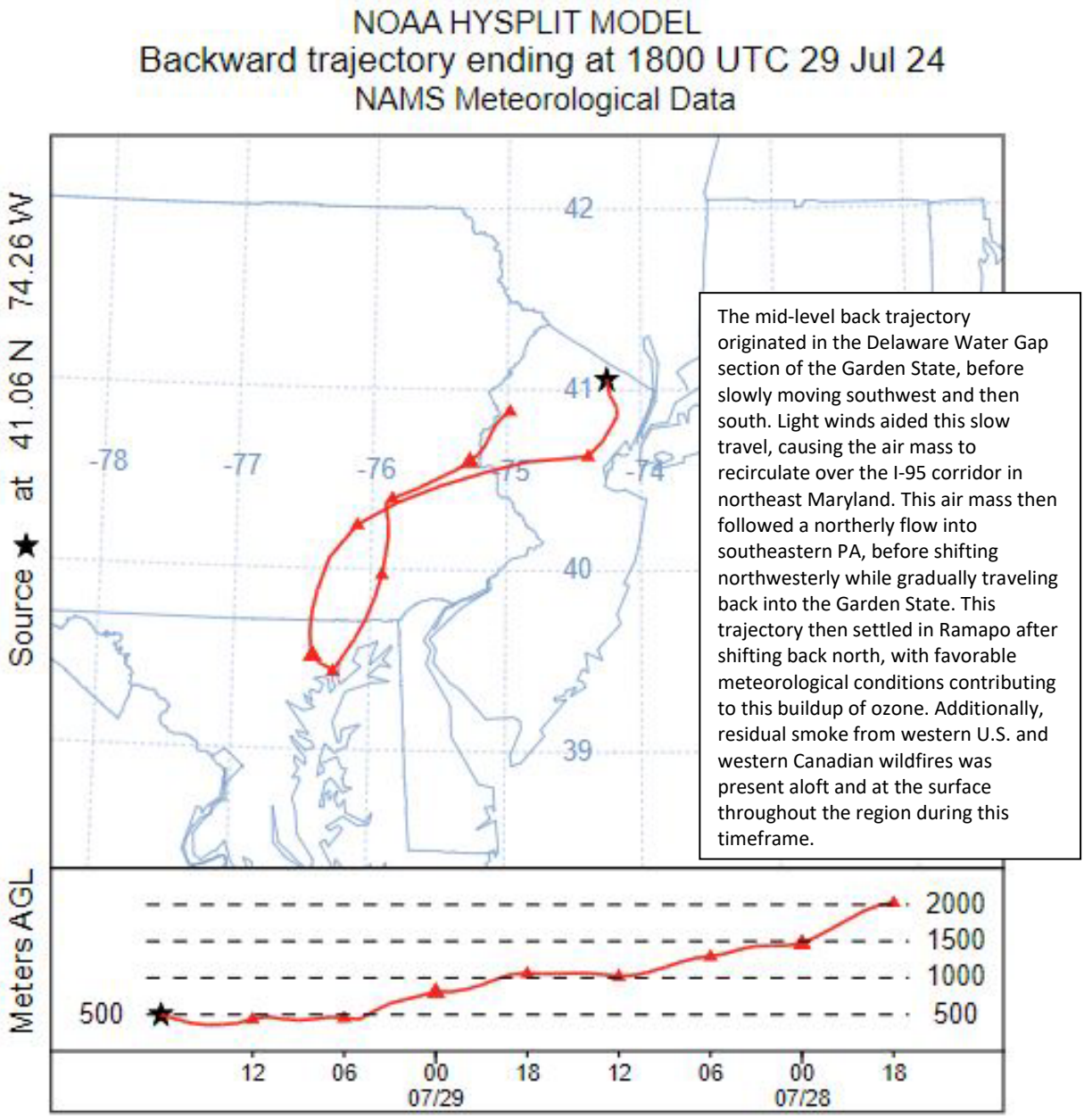
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
NJ	Ramapo	76

Figure 2. 48-hour Back Trajectories for July 29, 2024 at 10 meters



The surface-level back trajectory shows that air originated off the southern coast of New England. With low pressure off the Mid-Atlantic coast and high pressure inland, air in this region was caught between two air masses, allowing for a slow and gradual flow to the west. As the air mass approached the coast of NJ on the 29th, onshore winds along the coast caused air to make an abrupt turn towards the north-northwest. Here, air flowed up the coastline and over the NYC metropolitan area prior to arrival, picking up localized emissions from cars, trucks, and industry. Combined with favorable meteorological conditions, an isolated exceedance at the Ramapo monitor was able to occur. Additionally, residual smoke from western U.S. and western Canadian wildfires was present aloft and at the surface throughout the region during this timeframe.

Figure 3. 48-hour Back Trajectories for July 29, 2024 at 500 meters



The mid-level back trajectory originated in the Delaware Water Gap section of the Garden State, before slowly moving southwest and then south. Light winds aided this slow travel, causing the air mass to recirculate over the I-95 corridor in northeast Maryland. This air mass then followed a northerly flow into southeastern PA, before shifting northwesterly while gradually traveling back into the Garden State. This trajectory then settled in Ramapo after shifting back north, with favorable meteorological conditions contributing to this buildup of ozone. Additionally, residual smoke from western U.S. and western Canadian wildfires was present aloft and at the surface throughout the region during this timeframe.

Figure 4. 48-hour Back Trajectories for July 29, 2024 at 1500 meters

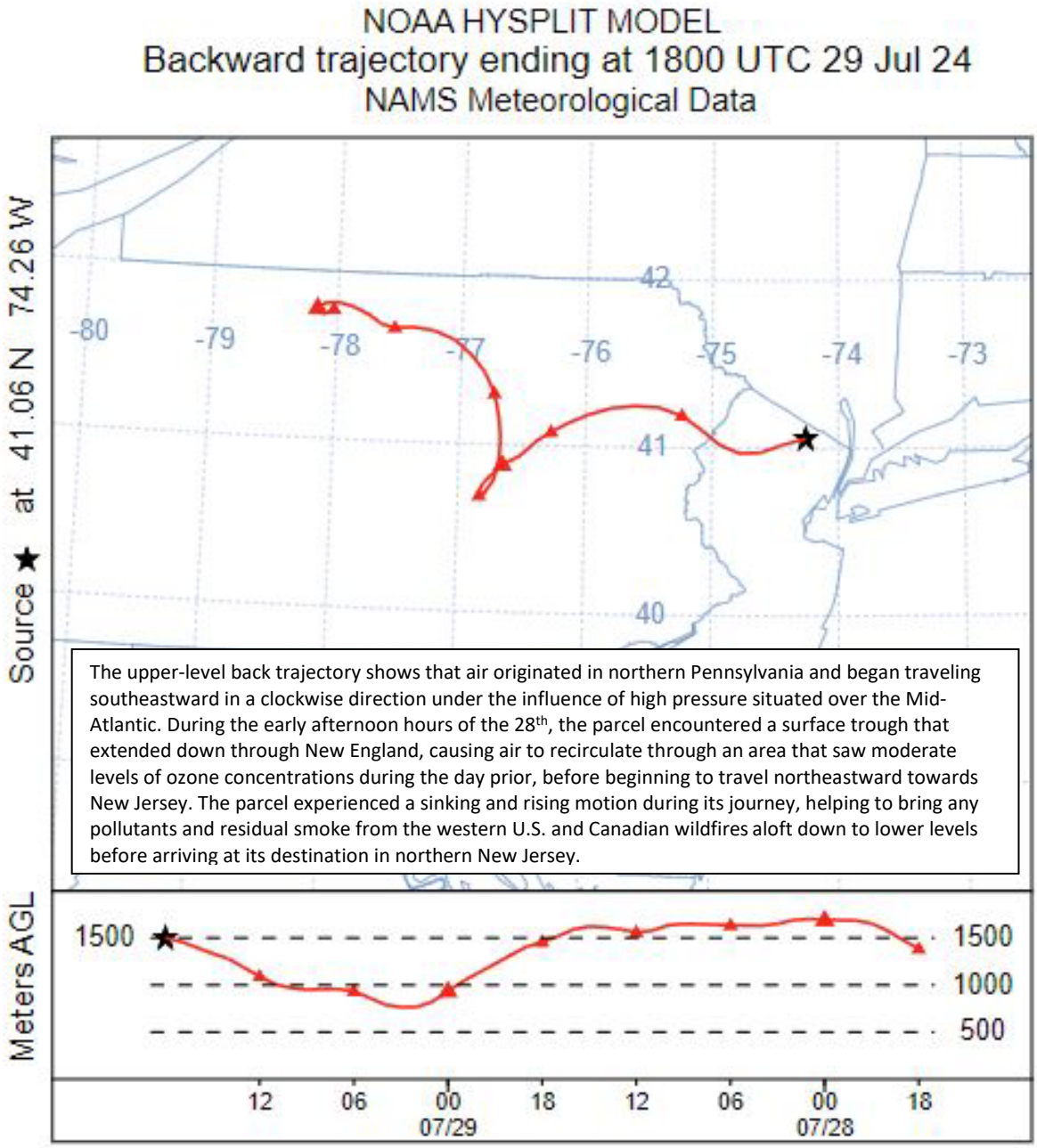
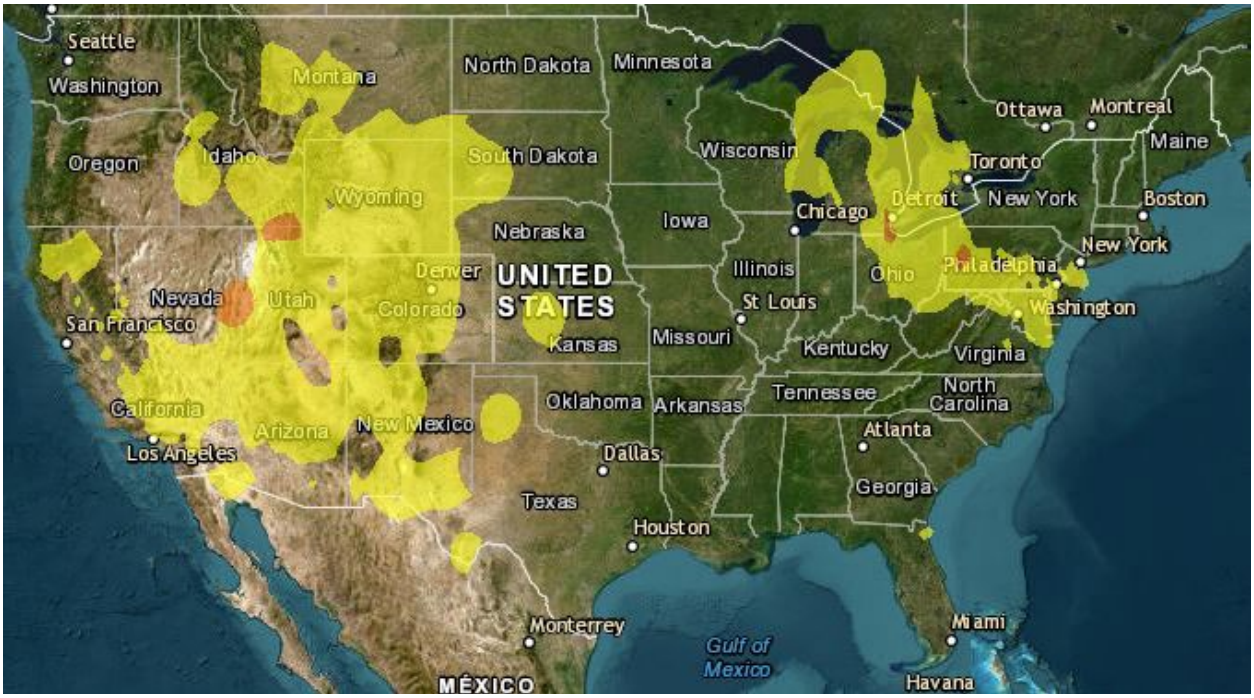


Figure 5. Air Quality Index for the United States on July 28, 2024



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/.