Ozone National Ambient Air Quality Standard Health Exceedances on September 6, 2023

Exceedance Locations and Levels

On Wednesday, September 6, 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 9/6/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	59
Bayonne	60
Brigantine	55
Camden Spruce St	No Data
Chester	44
Clarksboro	61
Colliers Mills	58
Columbia	34
Flemington	51
Leonia	55
Millville	62
Monmouth University	78
Ramapo	41
Rider University	55
Rutgers University	53
Washington Crossing*	52
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 9/6/2023

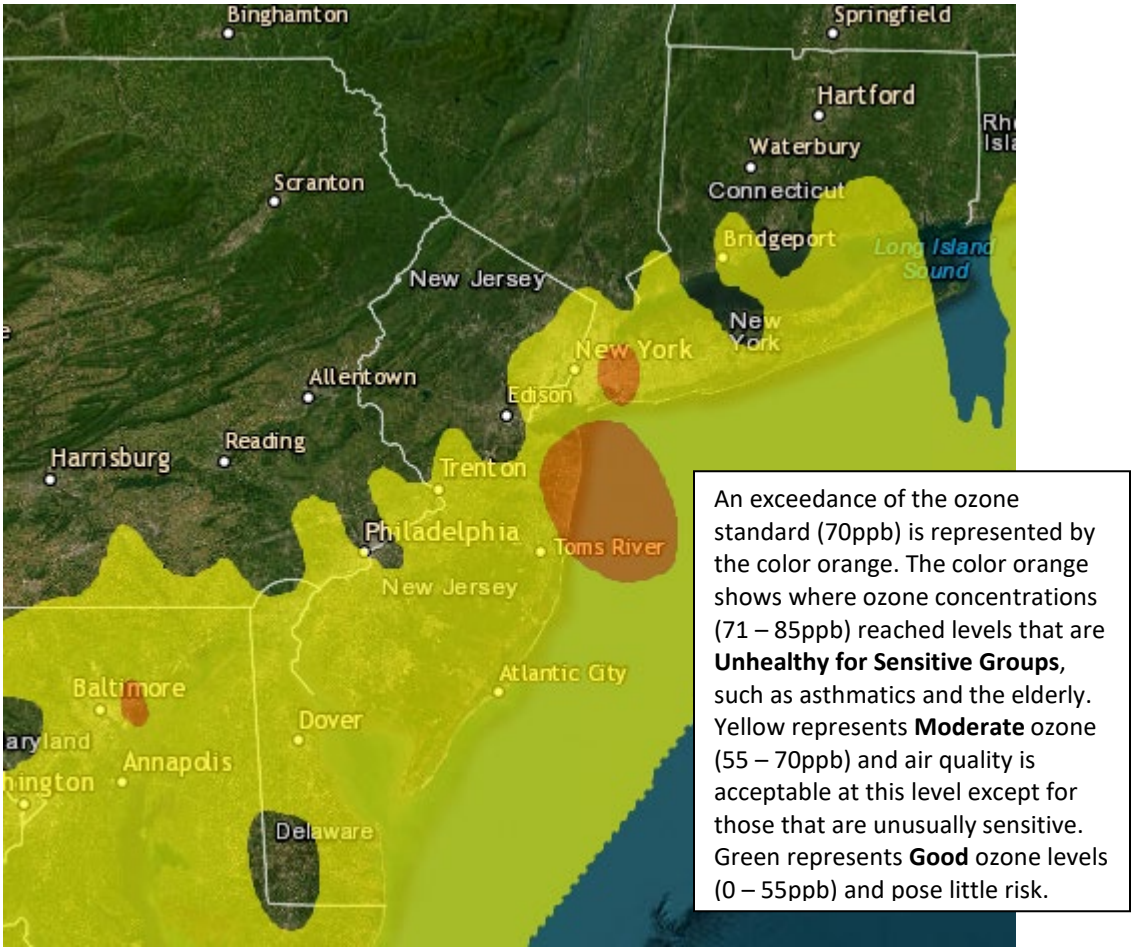
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	41
CT	Greenwich	61
CT	Madison-Beach Road	61
CT	Middletown-CVH-Shed	53
CT	New Haven	40
CT	Stratford	61
CT	Westport	51
DE	BCSP (New Castle Co.)	52
DE	BELLFNT2 (New Castle Co.)	56
DE	KILLENS (Kent Co.)	55
DE	LEWES (Sussex Co.)	63
DE	LUMS 2 (New Castle Co.)	59
DE	MLK (New Castle Co.)	55
DE	SEAFORD (Sussex Co.)	53
MD	Fair Hill	62
NY	Babylon	68
NY	Bronx - IS52	64
NY	CCNY	63
NY	Flax Pond	53
NY	Fresh Kills	55
NY	Holtsville	No Data
NY	Pfizer Lab	61
NY	Queens	73
NY	Riverhead	58
NY	Rockland Cty	49
NY	White Plains	46
PA	BRIS (Bucks Co.)	57
PA	CHES (Delaware Co.)	59
PA	NEWG (Chester Co.)	52
PA	NORR (Montgomery Co.)	54
PA	LAB (Philadelphia Co.)	48
PA	NEA (Philadelphia Co.)	59
PA	NEW (Philadelphia Co.)	53
	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 – September 6, 2023 NAAQS = 70 ppb
Connecticut	19
Delaware	4
Maryland	3
New Jersey	17
New York	15
Pennsylvania	10

Figure 1. Ozone Air Quality Index for September 6, 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

On Wednesday September 6th, multiple USG exceedances in the northern portions of the nonattainment area occurred due to continued hot and humid conditions, along with a previously polluted air mass lingering over the region. High pressure persisted in dominating the region for the sixth day in a row, aiding in a northwesterly flow before shifting to a light west-southwesterly flow in the afternoon, leading to a buildup of localized emissions around the New York City metropolitan region. Additionally, a sea-breeze likely developed along the coastline by early afternoon, potentially aiding in ozone pooled off the coast recirculating back onshore. With a heat advisory in effect, abundant sunshine dominated the area, while temperatures reached the low-to-mid 90s throughout the region, with heat indices reaching just over 100. Dew points in the low-70s aided in the development of humid conditions. Later in the day a surface trough was noted over the nonattainment area, enhancing atmospheric mixing, which allowed previously polluted air to mix down to the surface. Favorable meteorological conditions, along with the transport of polluted air, lead to the exceedances in New Jersey and New York.

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	Monmouth University	78
NY	Queens	73

Figure 2. 48-hour Back Trajectories for September 6, 2023 at 10 meters

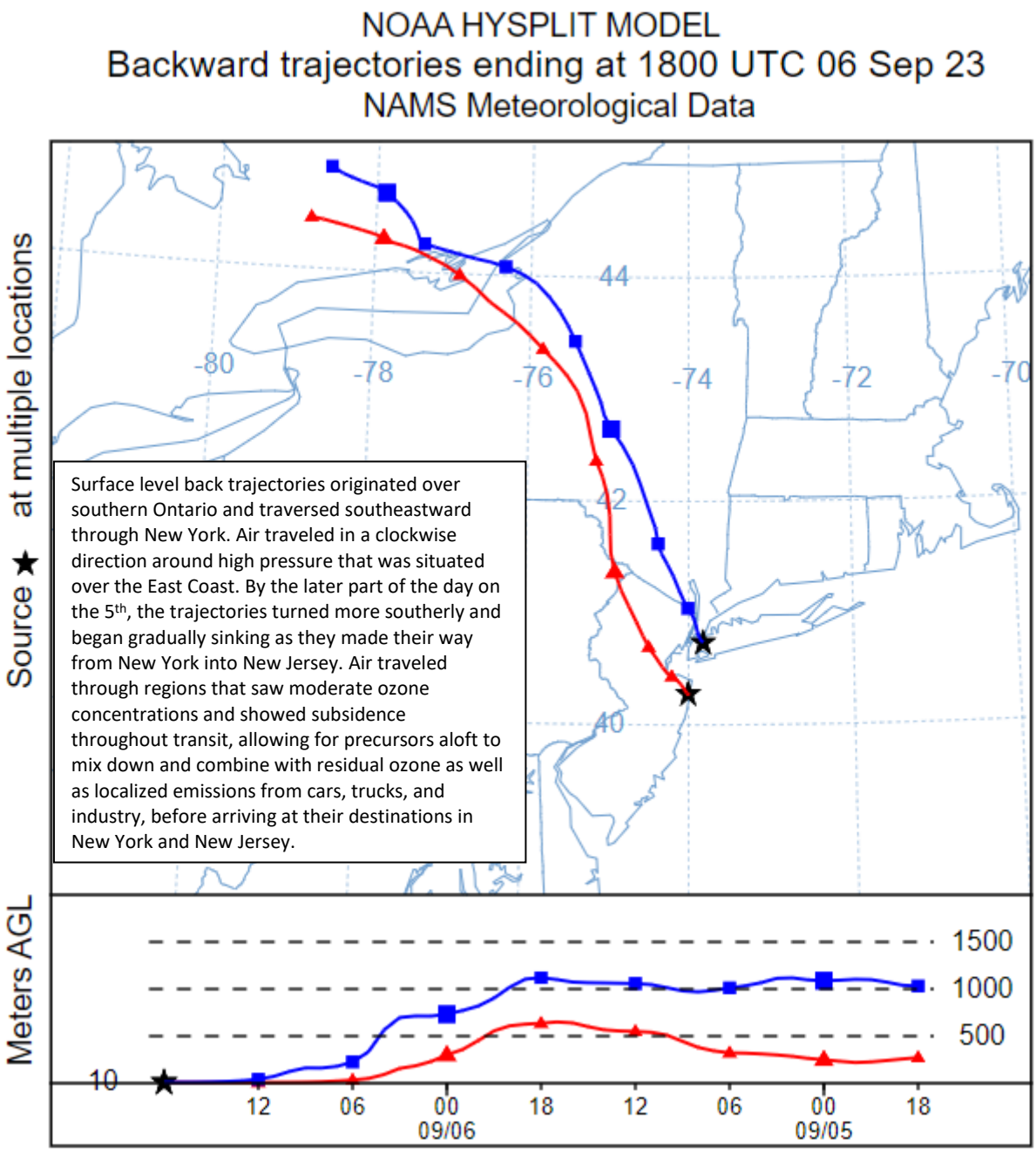


Figure 3. 48-hour Back Trajectories for September 6, 2023 at 500 meters

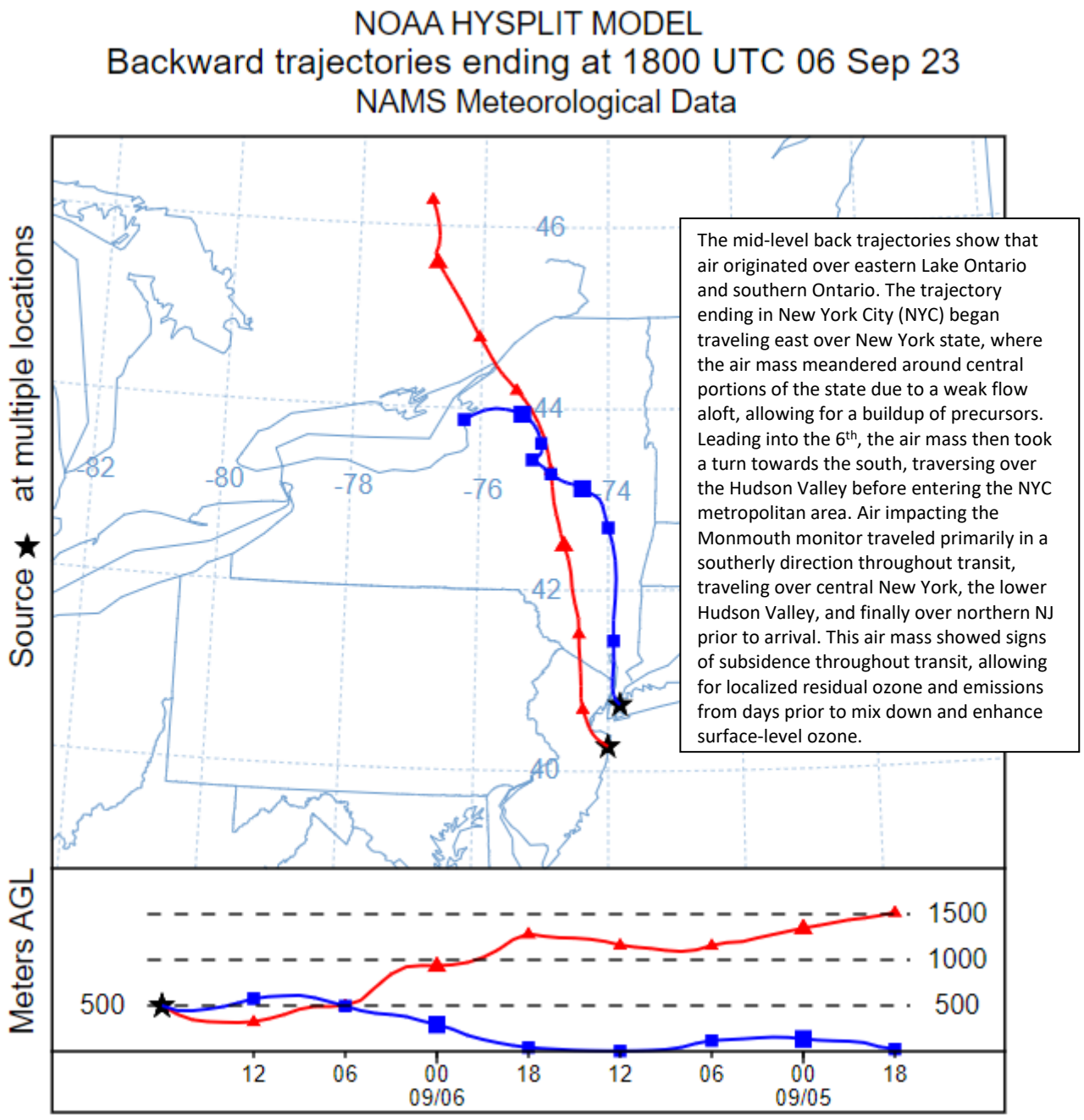


Figure 4. 48-hour Back Trajectories for September 6, 2023 at 1500 meters

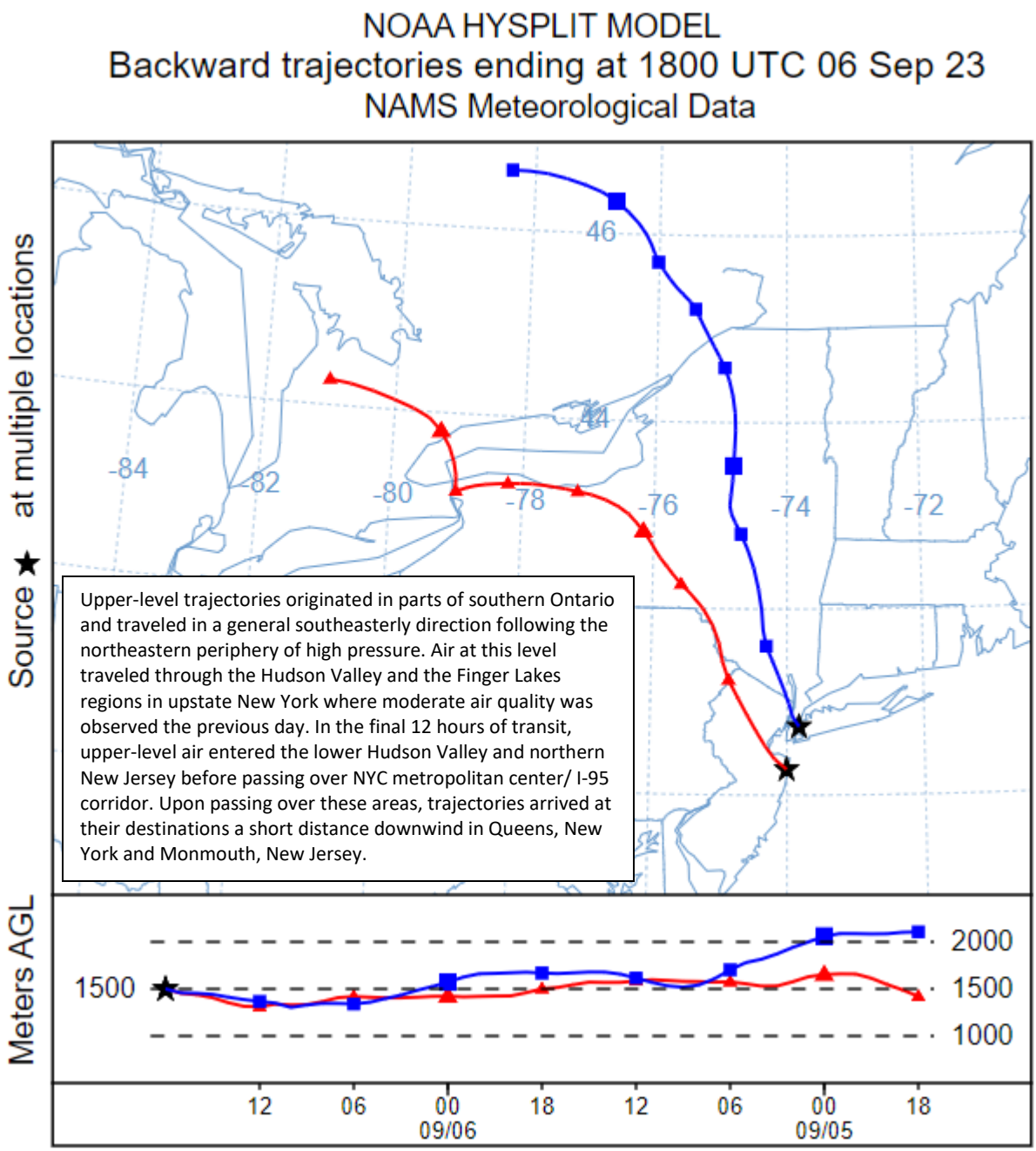
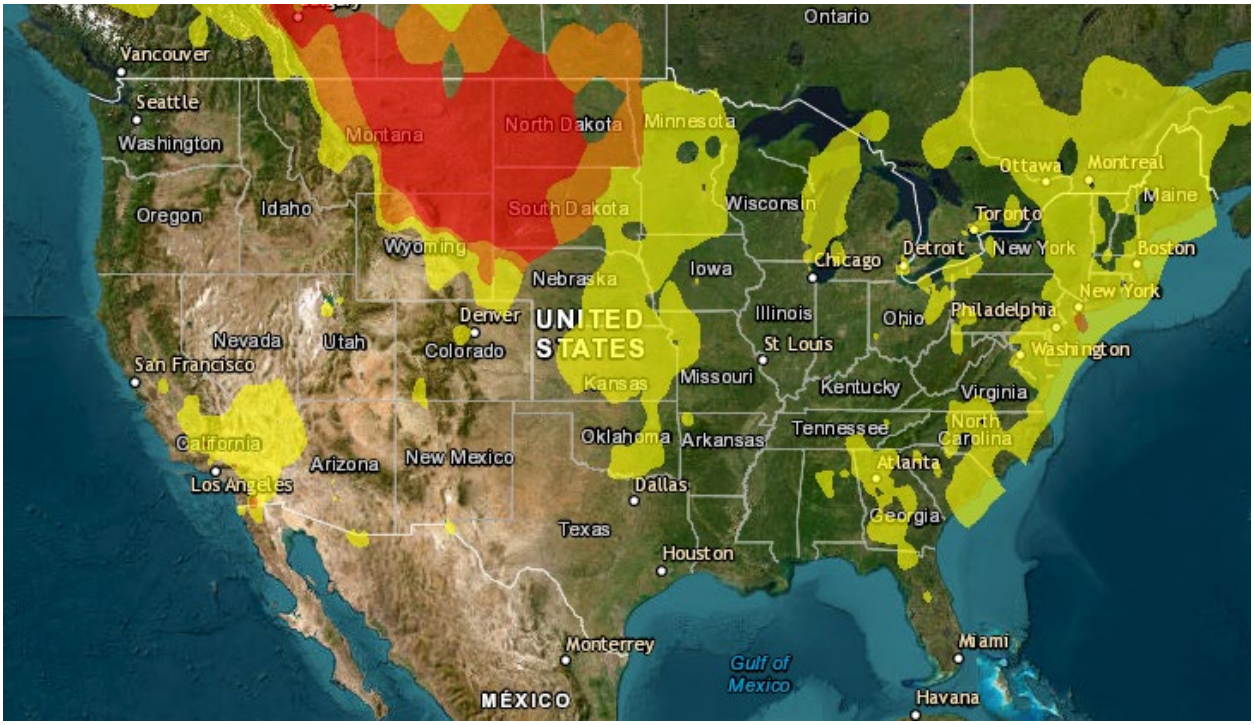


Figure 5. Air Quality Index for the United States on September 5, 2023



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 .