Ozone National Ambient Air Quality Standard Health Exceedances on September 5, 2023

Exceedance Locations and Levels

On Tuesday, September 5, 2023, 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 9/5/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	66
Bayonne	61
Brigantine	67
Camden Spruce St	71
Chester	44
Clarksboro	63
Colliers Mills	60
Columbia	27
Flemington	47
Leonia	49
Millville	68
Monmouth University	82
Ramapo	41
Rider University	53
Rutgers University	57
Washington Crossing*	50
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 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 9/5/2023

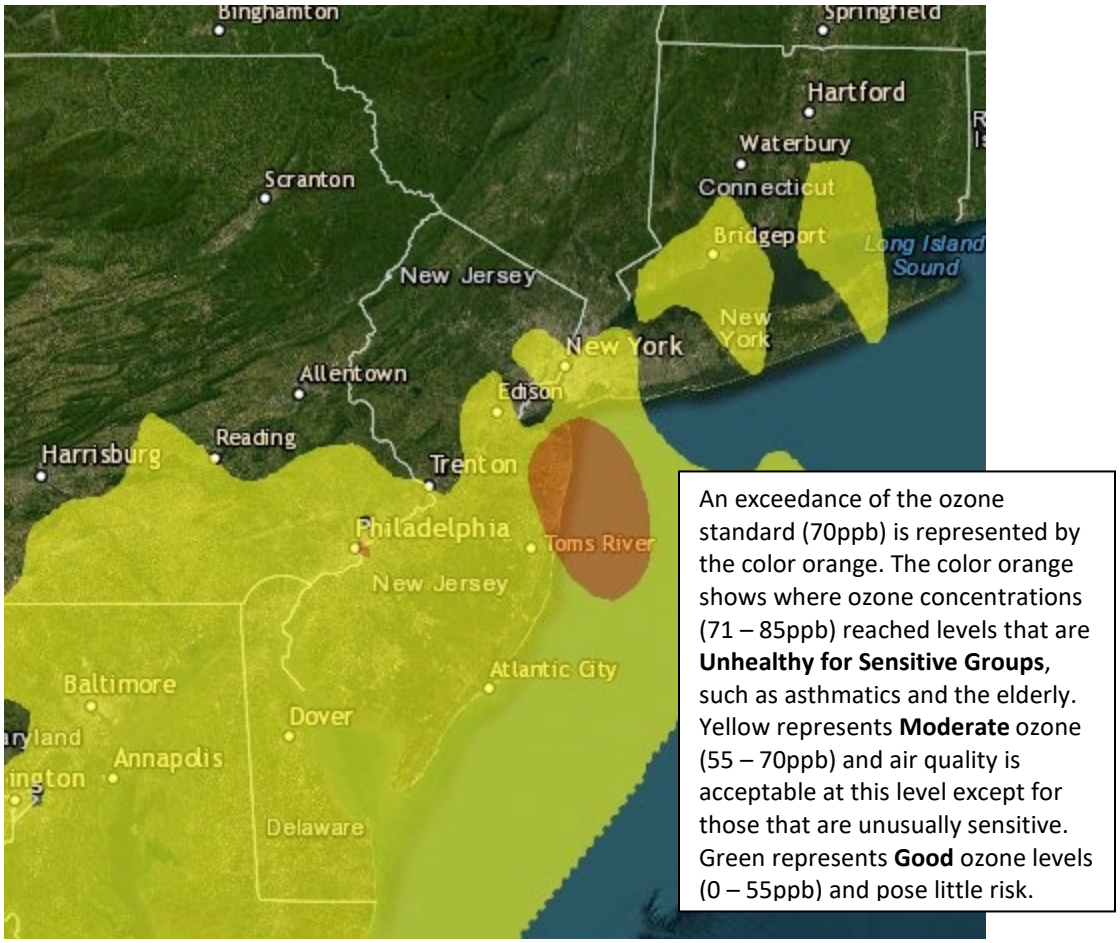
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	41
CT	Greenwich	55
CT	Madison-Beach Road	64
CT	Middletown-CVH-Shed	54
CT	New Haven	46
CT	Stratford	65
CT	Westport	57
DE	BCSP (New Castle Co.)	55
DE	BELLFNT2 (New Castle Co.)	57
DE	KILLENS (Kent Co.)	57
DE	LEWES (Sussex Co.)	65
DE	LUMS 2 (New Castle Co.)	60
DE	MLK (New Castle Co.)	57
DE	SEAFORD (Sussex Co.)	55
MD	Fair Hill	63
NY	Babylon	49
NY	Bronx - IS52	54
NY	CCNY	54
NY	Flax Pond	55
NY	Fresh Kills	50
NY	Holtsville	No Data
NY	Pfizer Lab	51
NY	Queens	58
NY	Riverhead	52
NY	Rockland Cty	45
NY	White Plains	42
PA	BRIS (Bucks Co.)	57
PA	CHES (Delaware Co.)	64
PA	NEWG (Chester Co.)	56
PA	NORR (Montgomery Co.)	58
PA	LAB (Philadelphia Co.)	52
PA	NEA (Philadelphia Co.)	59
PA	NEW (Philadelphia Co.)	57
	TOTAL EXCEEDANCES	0

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 5, 2023 NAAQS = 70 ppb
Connecticut	19
Delaware	4
Maryland	3
New Jersey	16
New York	14
Pennsylvania	10

Figure 1. Ozone Air Quality Index for September 5, 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 Tuesday, September 5th, an area of high pressure continued to build through the northeast for another day allowing hot temperatures and sunny skies to persist across the region for an extended period. In the early morning hours on September 5th, winds were light and tended out of the north/northwest while temperatures quickly rose into the upper 80s by mid-morning and ultimately soared into the 90s by the afternoon. Meanwhile, under widespread sunshine and favorable meteorological conditions, ozone production began to ramp up across the nonattainment area allowing ozone levels to quickly spike into the USG category at the Monmouth and Camden, New Jersey monitors. Additionally, a sea breeze developed in the afternoon hours allowing any pollutants from upwind locations that had previously been blown offshore, to recirculate back on land. This likely exacerbated existing ozone concentrations at the surface, specifically at the Monmouth University monitor where ozone levels reached the upper end of the USG category. Favorable weather conditions, along with localized and regional transport of pollutants all contributed to the exceedances observed in Monmouth and Camden, New Jersey 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)
NJ	Camden Spruce St	71
NJ	Monmouth University	82

Figure 2. 48-hour Back Trajectories for September 5, 2023 at 10 meters

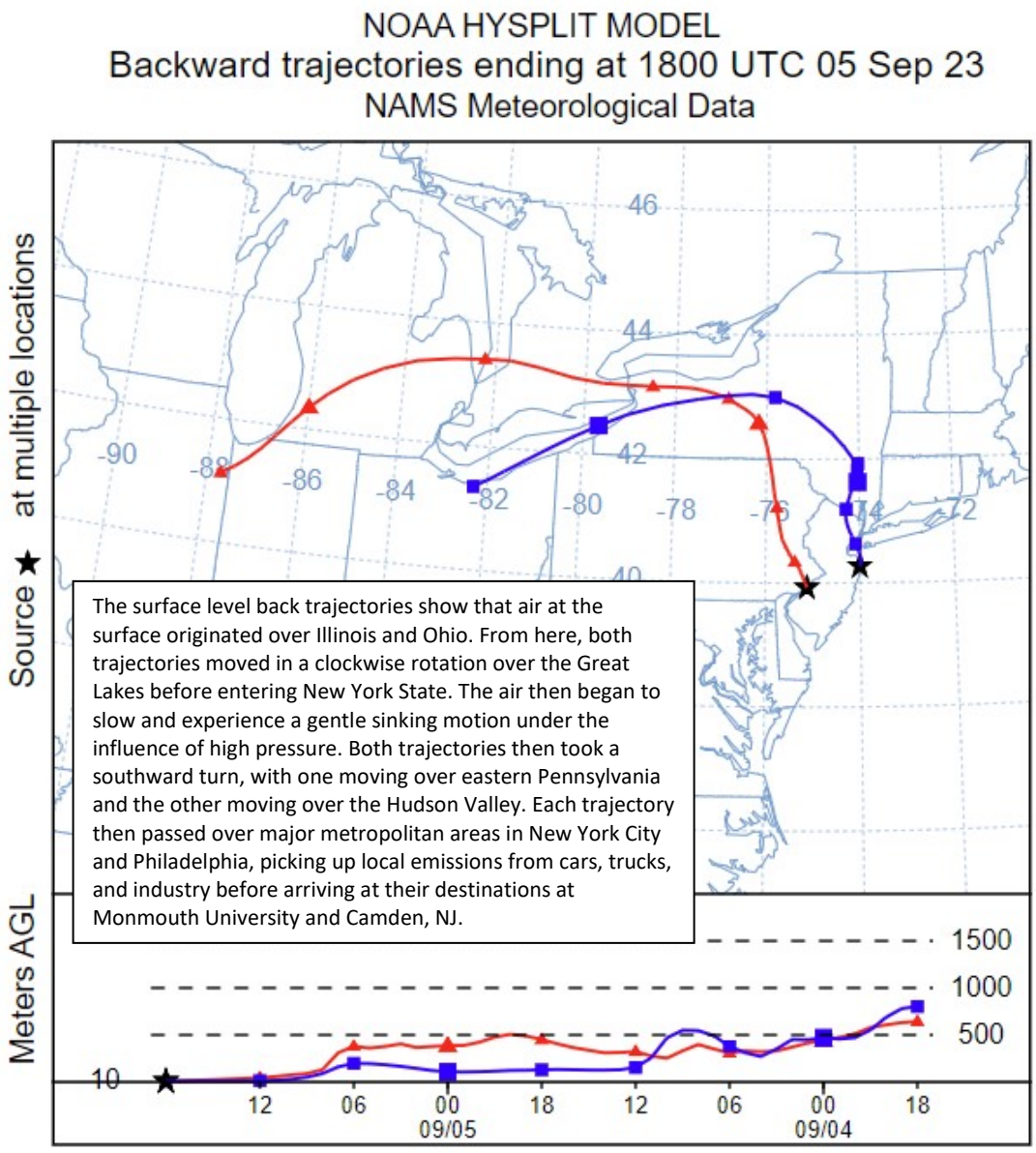


Figure 3. 48-hour Back Trajectories for September 5, 2023 at 500 meters

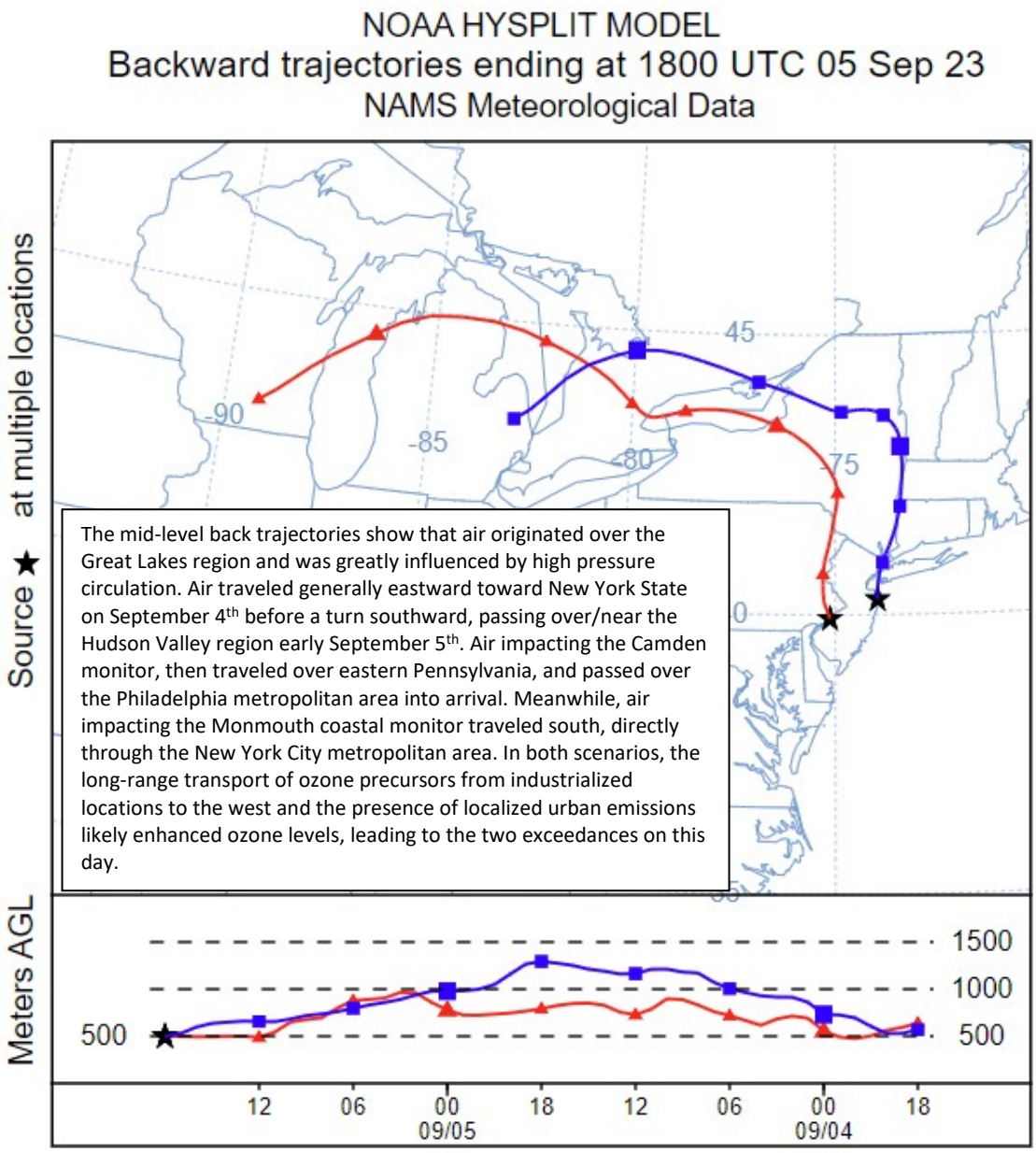


Figure 4. 48-hour Back Trajectories for September 5, 2023 at 1500 meters

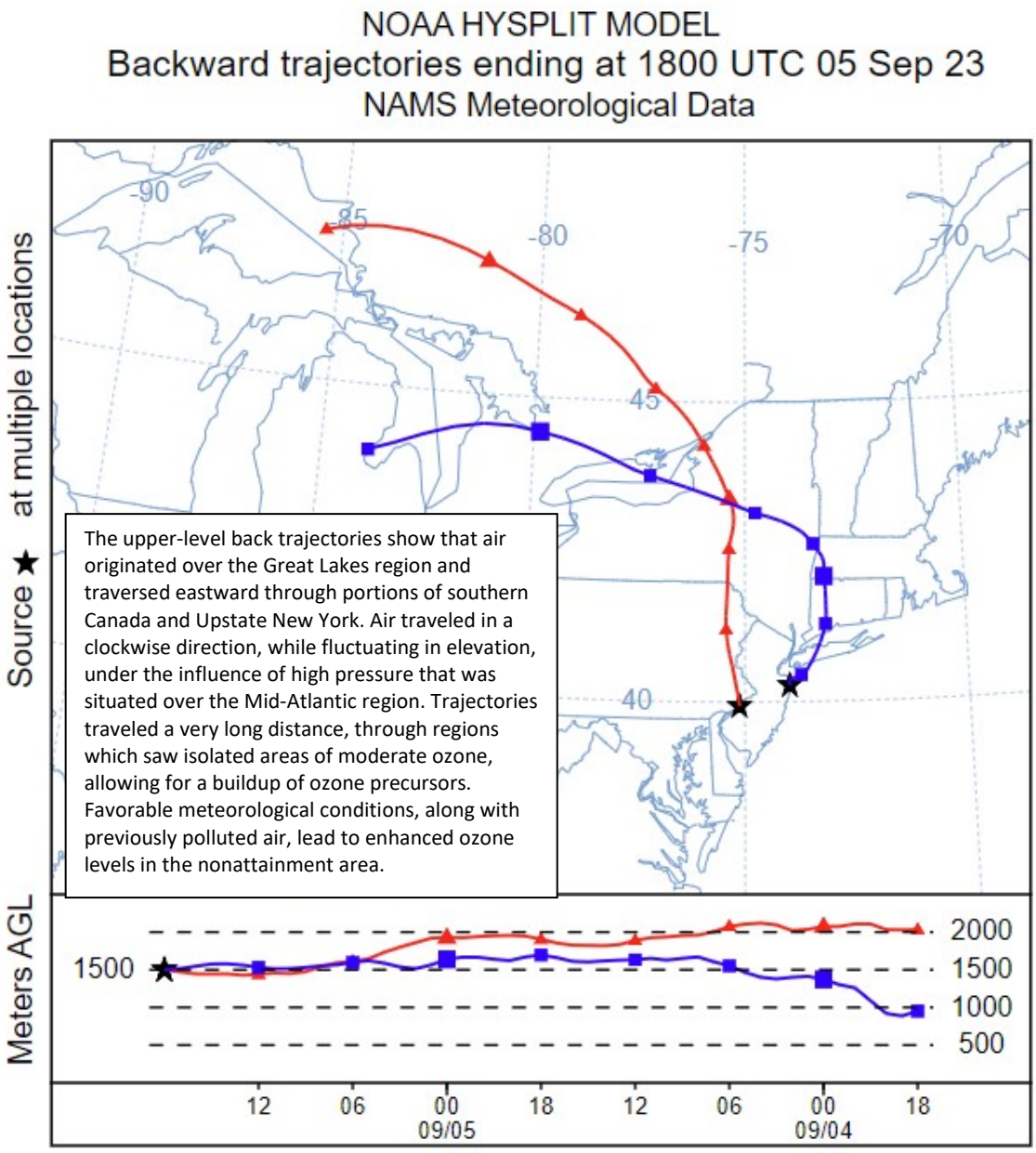
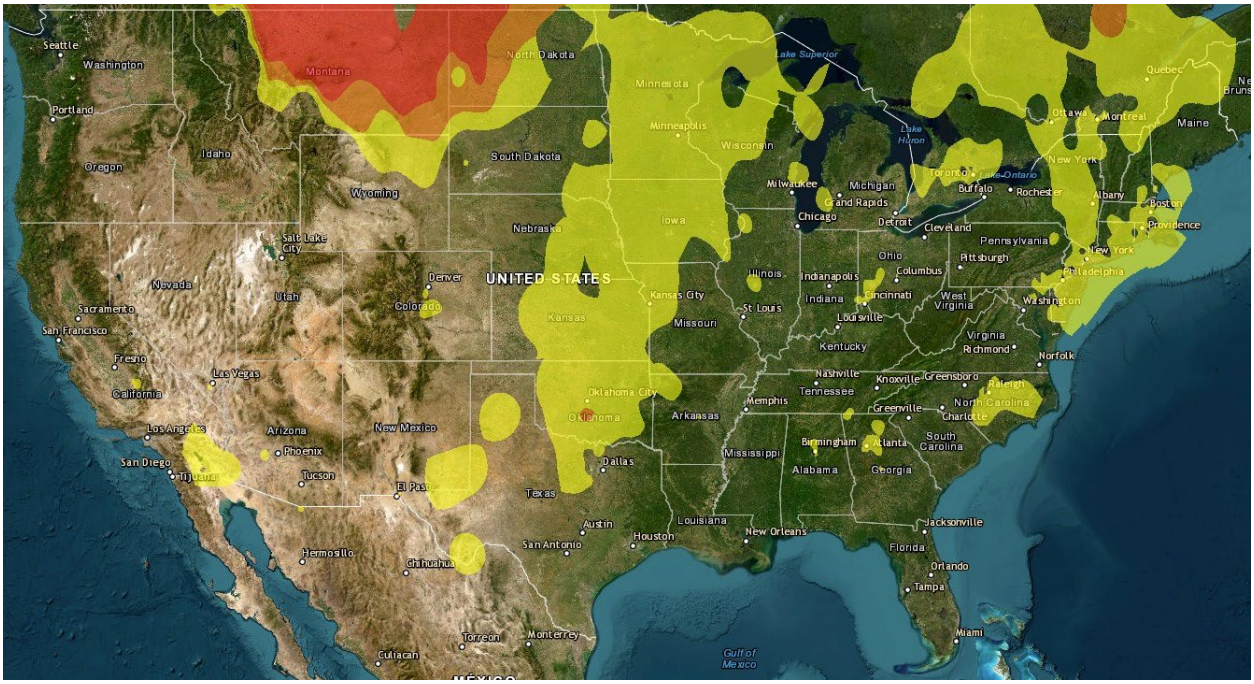


Figure 5. Air Quality Index for the United States on September 4, 2023



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 .