Ozone National Ambient Air Quality Standard Health Exceedances on July 1, 2023

Exceedance Locations and Levels

On Saturday, July 1, 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 7/1/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	59
Bayonne	65
Brigantine	47
Camden Spruce St	59
Chester	59
Clarksboro	59
Colliers Mills	58
Columbia	48
Flemington	60
Leonia	71
Millville	58
Monmouth University	62
Ramapo	65
Rider University	56
Rutgers University	62
Washington Crossing*	60
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 sixteen (16) 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 7/1/2023

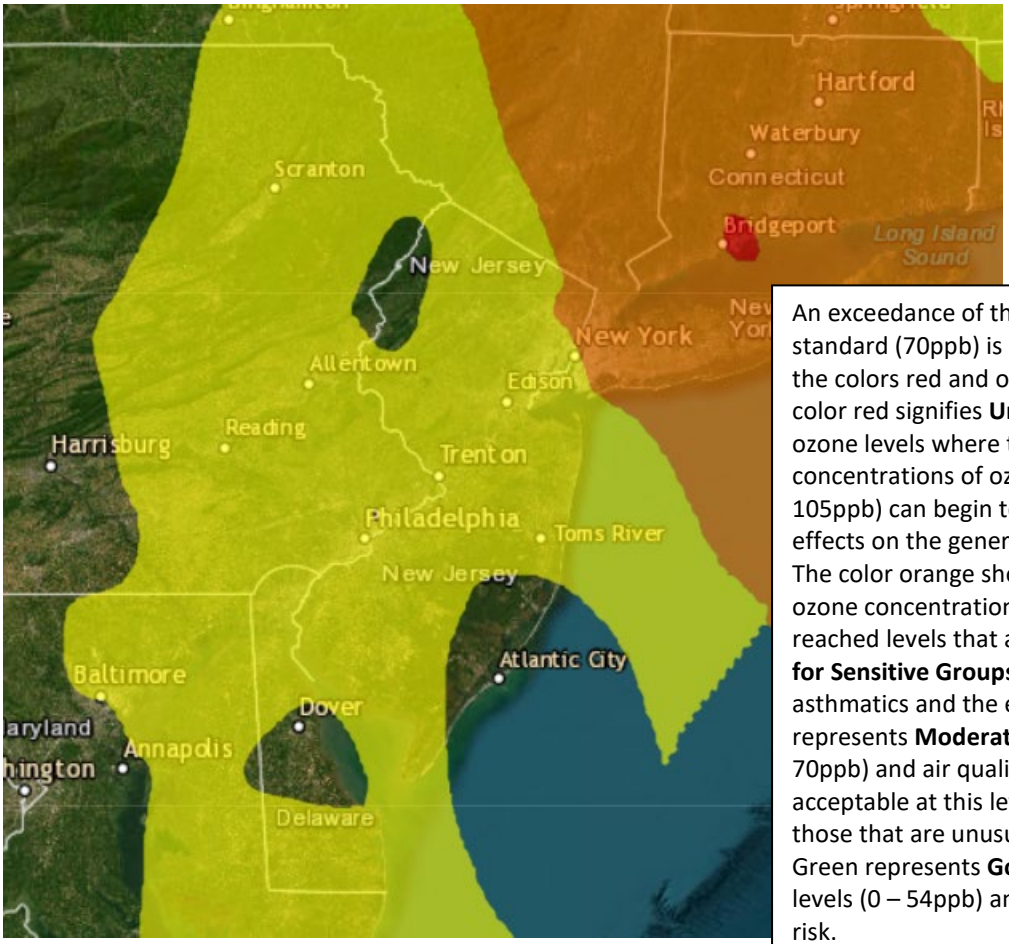
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	88
CT	Greenwich	82
CT	Madison-Beach Road	77
CT	Middletown-CVH-Shed	80
CT	New Haven	72
CT	Stratford	91
CT	Westport	82
DE	BCSP (New Castle Co.)	55
DE	BELLFNT2 (New Castle Co.)	57
DE	KILLENS (Kent Co.)	52
DE	LEWES (Sussex Co.)	54
DE	LUMS 2 (New Castle Co.)	59
DE	MLK (New Castle Co.)	61
DE	SEAFORD (Sussex Co.)	56
MD	Fair Hill	58
NY	Babylon	74
NY	Bronx - IS52	72
NY	CCNY	73
NY	Flax Pond	76
NY	Fresh Kills	65
NY	Holtsville	71
NY	Pfizer Lab	75
NY	Queens	74
NY	Riverhead	70
NY	Rockland Cty	74
NY	White Plains	74
PA	BRIS (Bucks Co.)	61
PA	CHES (Delaware Co.)	63
PA	NEWG (Chester Co.)	62
PA	NORR (Montgomery Co.)	57
PA	LAB (Philadelphia Co.)	53
PA	NEA (Philadelphia Co.)	64
PA	NEW (Philadelphia Co.)	60
	TOTAL EXCEEDANCES	16

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 1, 2023 NAAQS = 70 ppb
Connecticut	8
Delaware	4
Maryland	3
New Jersey	9
New York	7
Pennsylvania	6

Figure 1. Ozone Air Quality Index for Saturday, July 1, 2023



An exceedance of the ozone standard (70ppb) is represented by the colors red and orange. The color red signifies **Unhealthy** ozone levels where the concentrations of ozone (86 – 105ppb) can begin to have adverse effects on the general population. The color orange shows where ozone concentrations (71 – 85ppb) reached levels that are **Unhealthy for Sensitive Groups**, such as asthmatics and the elderly. Yellow represents **Moderate** ozone (55 – 70ppb) and air quality is acceptable at this level except for those that are unusually sensitive. Green represents **Good** ozone levels (0 – 54ppb) and pose little risk.

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 Saturday July 1st, favorable meteorological conditions for ozone formation/transport continued throughout the nonattainment area for the third day of a multi-day exceedance event. With persistent high pressure over the Mid-Atlantic and low pressure moving offshore, winds began to shift out of the south-southeast. This created an onshore flow for the majority of New Jersey, which aided in cleaning out elevated ozone levels aside from far northeastern portions of the state. The dense ozone plume and residual Canadian wildfire smoke was able to push northward, resulting in widespread Unhealthy for Sensitive Groups (USG) and an isolated region of Unhealthy ozone levels for the NYC metropolitan area 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 these days. 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 (Figures 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)
CT	Danbury	88
CT	Greenwich	82
CT	Madison-Beach Road	77
CT	Middletown-CVH-Shed	80
CT	Stratford	91
NJ	Leonia	71
NY	Babylon	74
NY	Queens	74
NY	Rockland Cty	74
NY	White Plains	74

Figure 2. 48-hour Back Trajectories for July 1, 2023 at 10 meters

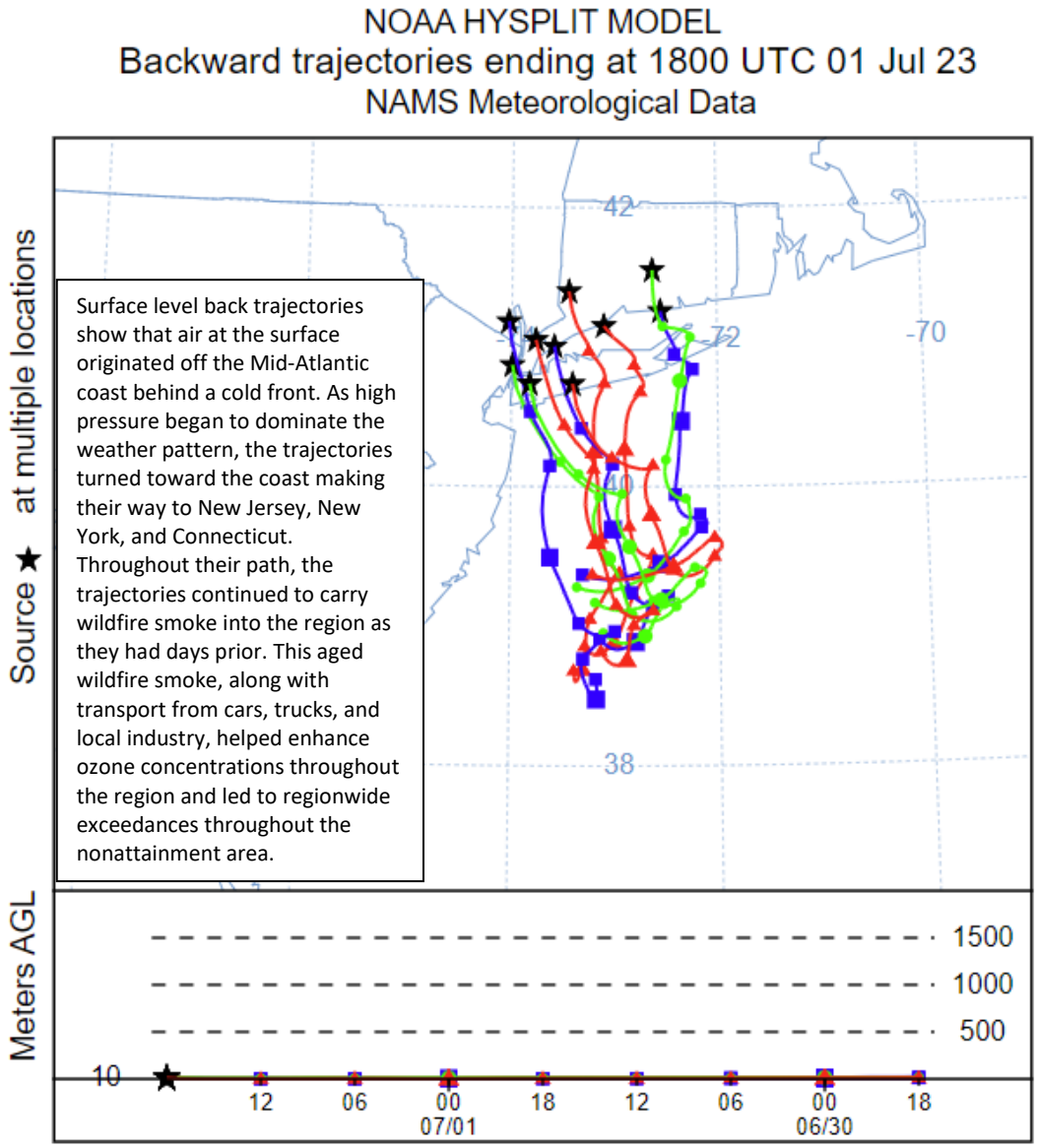


Figure 3. 48-hour Back Trajectories for July 1, 2023 at 500 meters

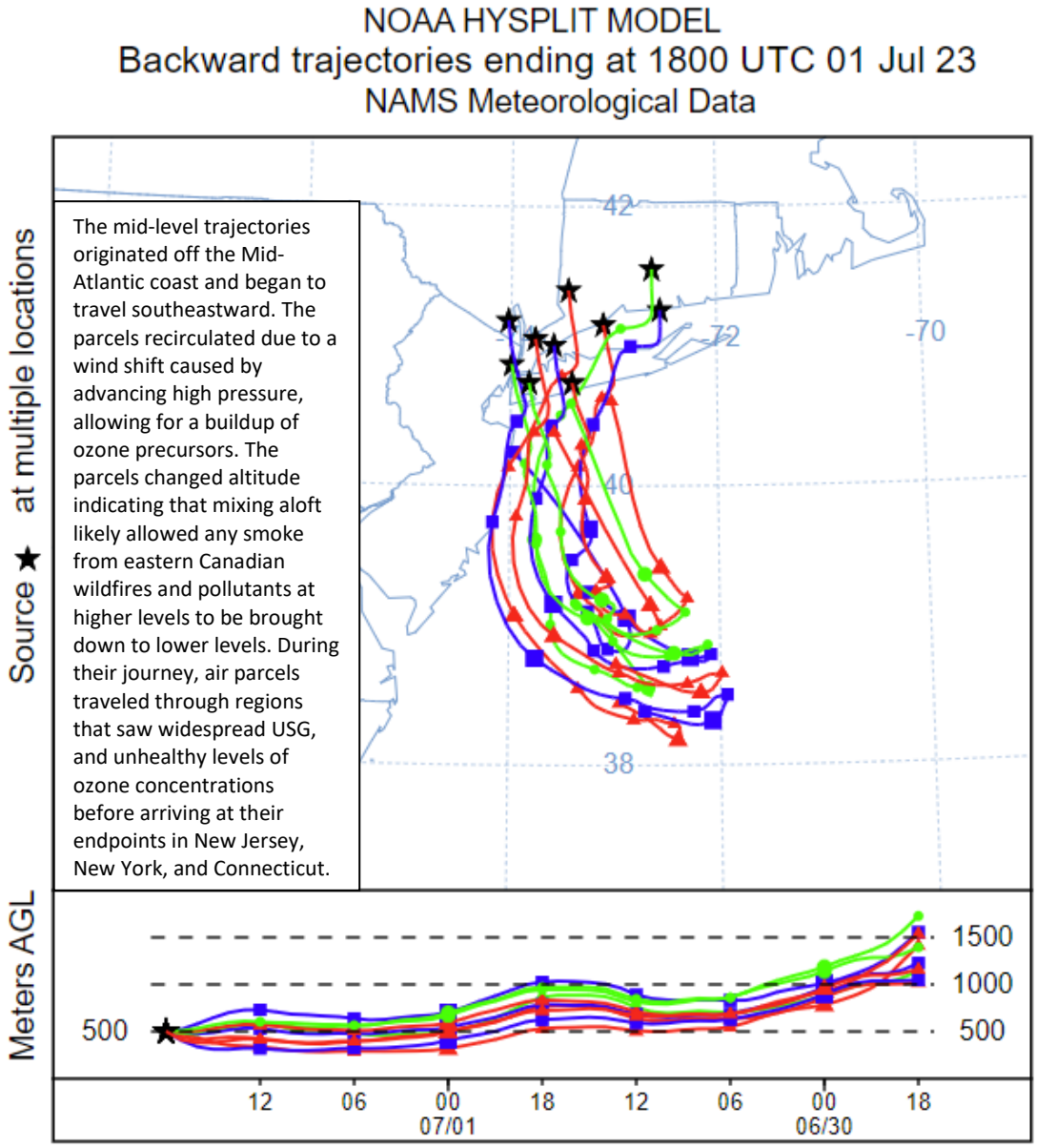


Figure 4. 48-hour Back Trajectories for July 1, 2023 at 1500 meters

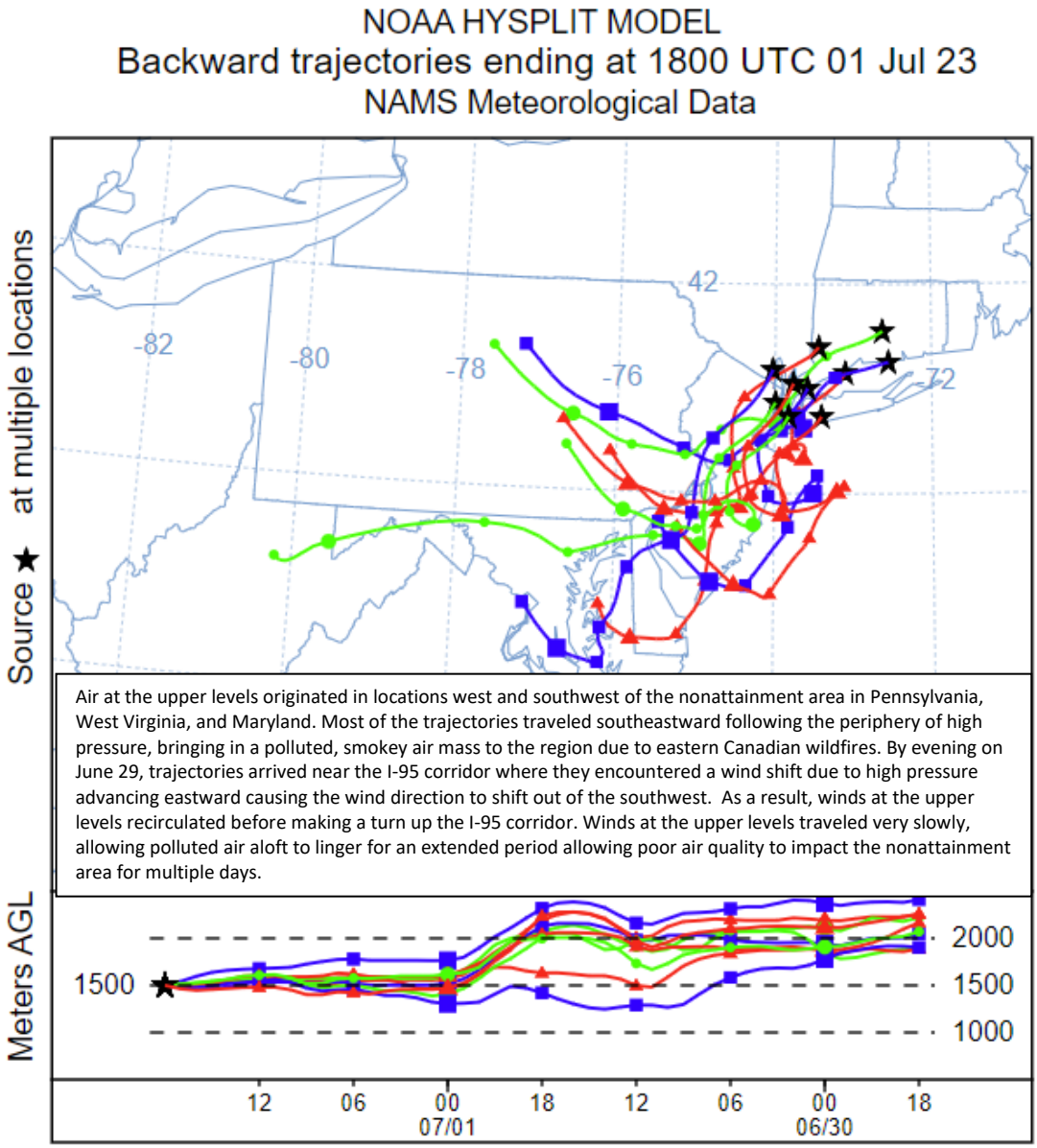
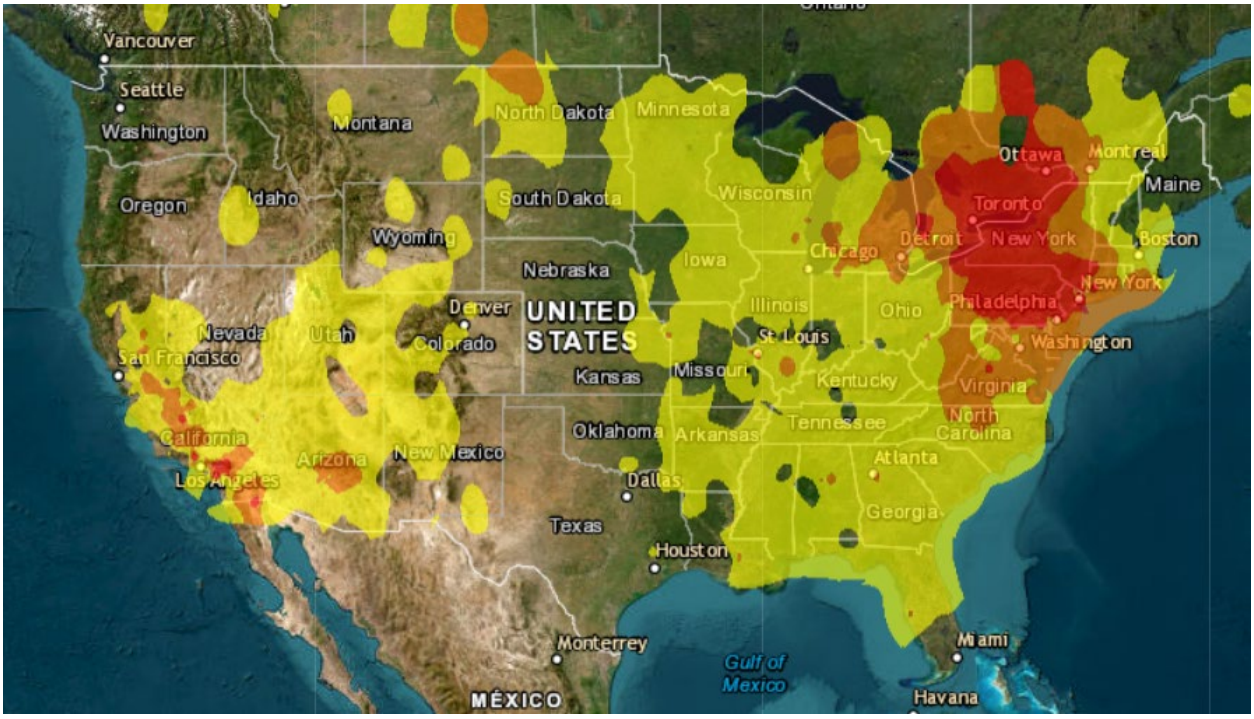


Figure 5. Air Quality Index for the United States on June 30, 2023



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 .