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

Exceedance Locations and Levels

On Wednesday, June 26, 2024, there were four (4) 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 6/26/2024

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	57
Bayonne	67
Brigantine	44
Camden Spruce St	No Data
Chester	68
Clarksboro	76
Colliers Mills	70
Columbia	No Data
Flemington	70
Leonia	71
Millville	50
Monmouth University	52
Ramapo	No Data
Rider University	76
Rutgers University	69
Washington Crossing*	73
TOTAL EXCEEDANCES	4

*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 eleven (11) 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 6/26/2024

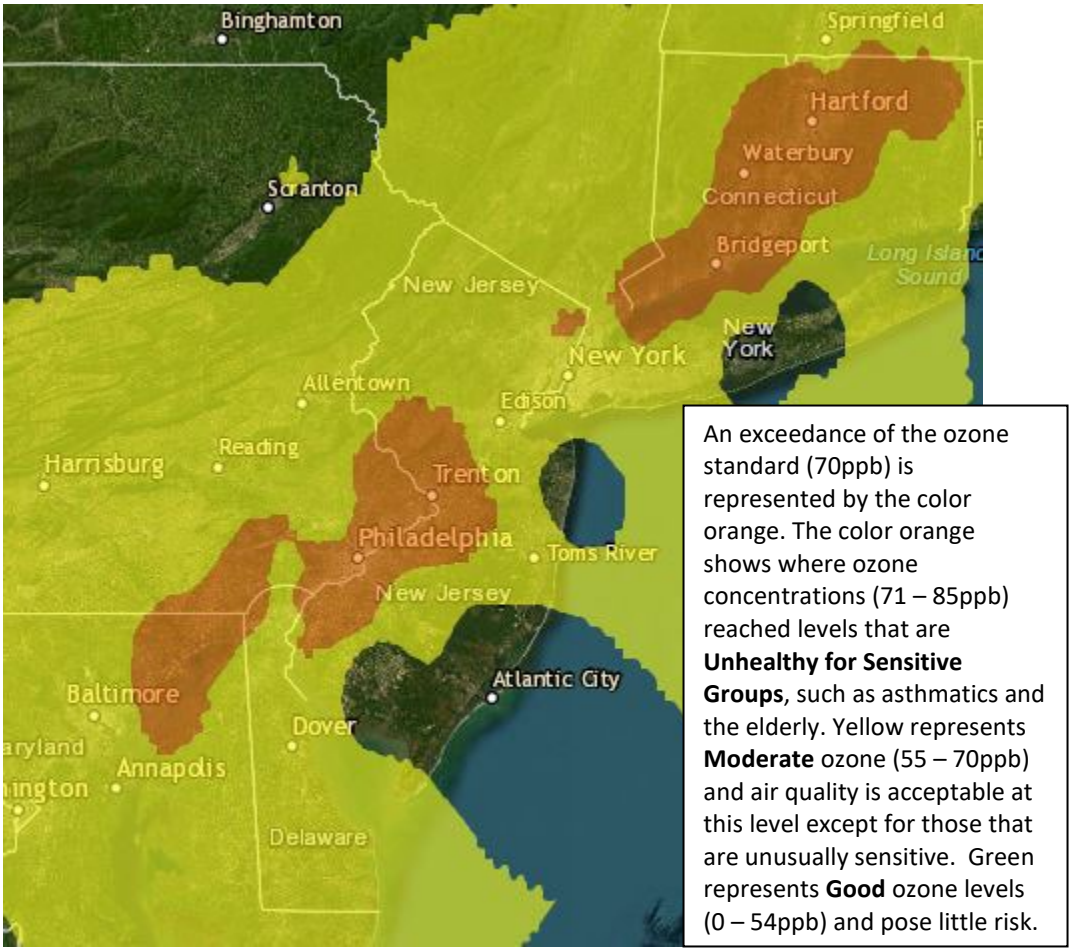
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	69
CT	Greenwich	80
CT	Madison-Beach Road	64
CT	Middletown-CVH-Shed	No Data
CT	New Haven	76
CT	Stratford	78
CT	Westport	82
DE	BCSP (New Castle Co.)	68
DE	BELLFNT2 (New Castle Co.)	73
DE	KILLENS (Kent Co.)	59
DE	LEWES (Sussex Co.)	58
DE	LUMS 2 (New Castle Co.)	69
DE	MLK (New Castle Co.)	69
DE	SEAFORD (Sussex Co.)	58
MD	Fair Hill	78
NY	Babylon	No Data
NY	Bronx - IS52	69
NY	CCNY	No Data
NY	Flax Pond	No Data
NY	Fresh Kills	No Data
NY	Holtsville	51
NY	Pfizer Lab	70
NY	Queens	64
NY	Riverhead	53
NY	Rockland Cty	55
NY	White Plains	70
PA	BRIS (Bucks Co.)	85
PA	CHES (Delaware Co.)	73
PA	NEWG (Chester Co.)	76
PA	NORR (Montgomery Co.)	68
PA	LAB (Philadelphia Co.)	No Data
PA	NEA (Philadelphia Co.)	71
PA	NEW (Philadelphia Co.)	81
	TOTAL EXCEEDANCES	11

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 – June 26, 2024 NAAQS = 70 ppb
Connecticut	10
Delaware	3
Maryland	1
New Jersey	8
New York	8
Pennsylvania	5

Figure 1. Ozone Air Quality Index for June 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 Wednesday June 26th, widespread ozone exceedances were observed across the nonattainment area. High pressure moved into the region on Tuesday, with winds shifting out of the southwest. Moderate levels of ozone were observed, and with no change in airmass, ozone levels remained slightly elevated on Wednesday morning. Continued southwest flow across the nonattainment area caused temperatures and dewpoints to increase throughout the day. Heat advisories were observed across the urban corridor and temperatures climbed into the mid and upper 90s. As a cold front approached the region, a prefrontal trough lingered over the I-95 corridor, allowing any pollutants aloft to mix down to the surface. Favorable meteorological conditions on Wednesday, along with a previously polluted airmass, allowed ozone levels to reach the Unhealthy for Sensitive Groups (USG) category along the I-95 corridor across the nonattainment area.

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)
CT	Greenwich	80
CT	Stratford	78
CT	New Haven	76
NJ	Clarksboro	76
NJ	Rider University	76
NJ	Leonia	71
PA	NEW	81
PA	NEA	71
DE	BELLFNT2	73
MD	Fair Hill	78

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

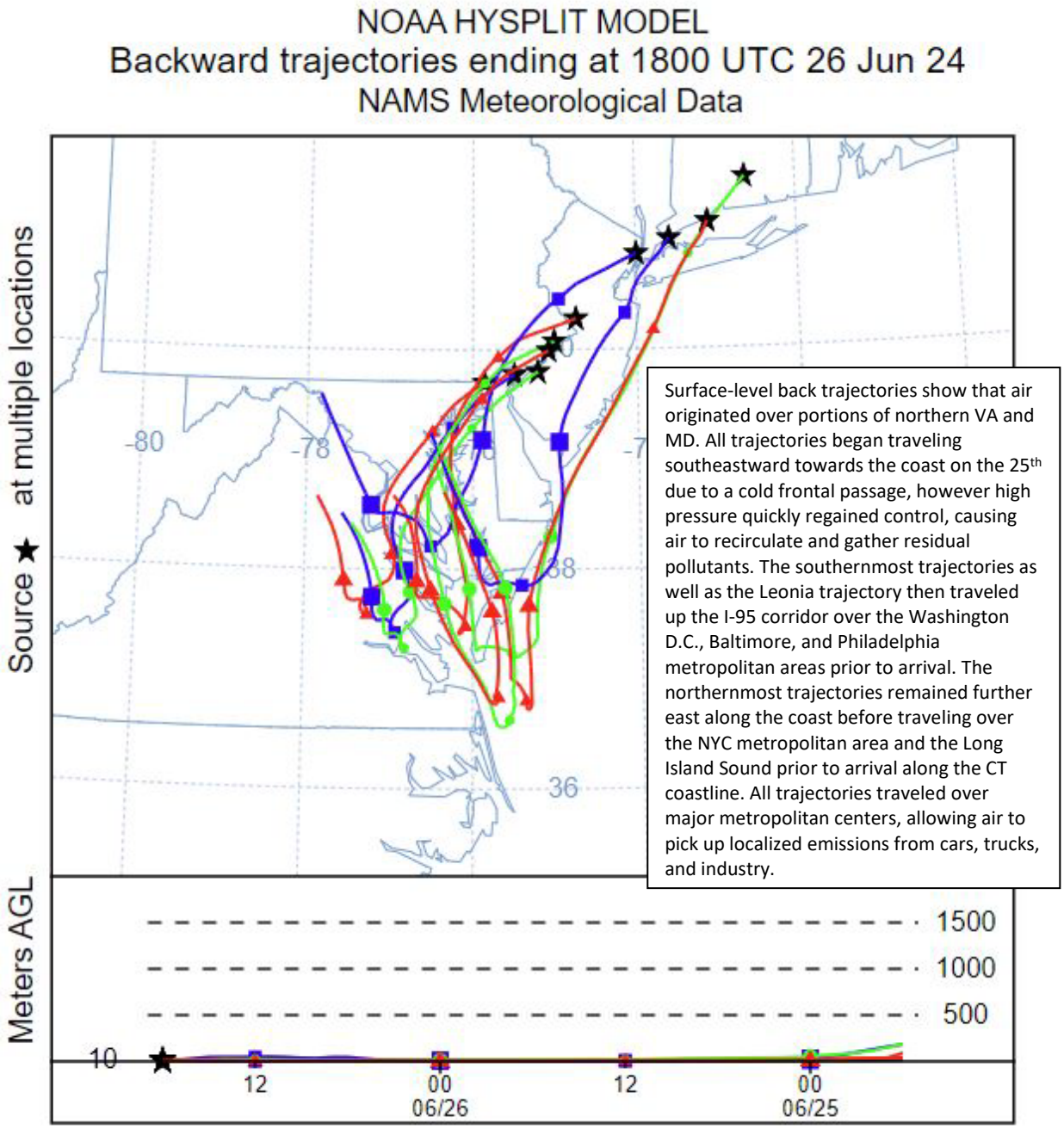
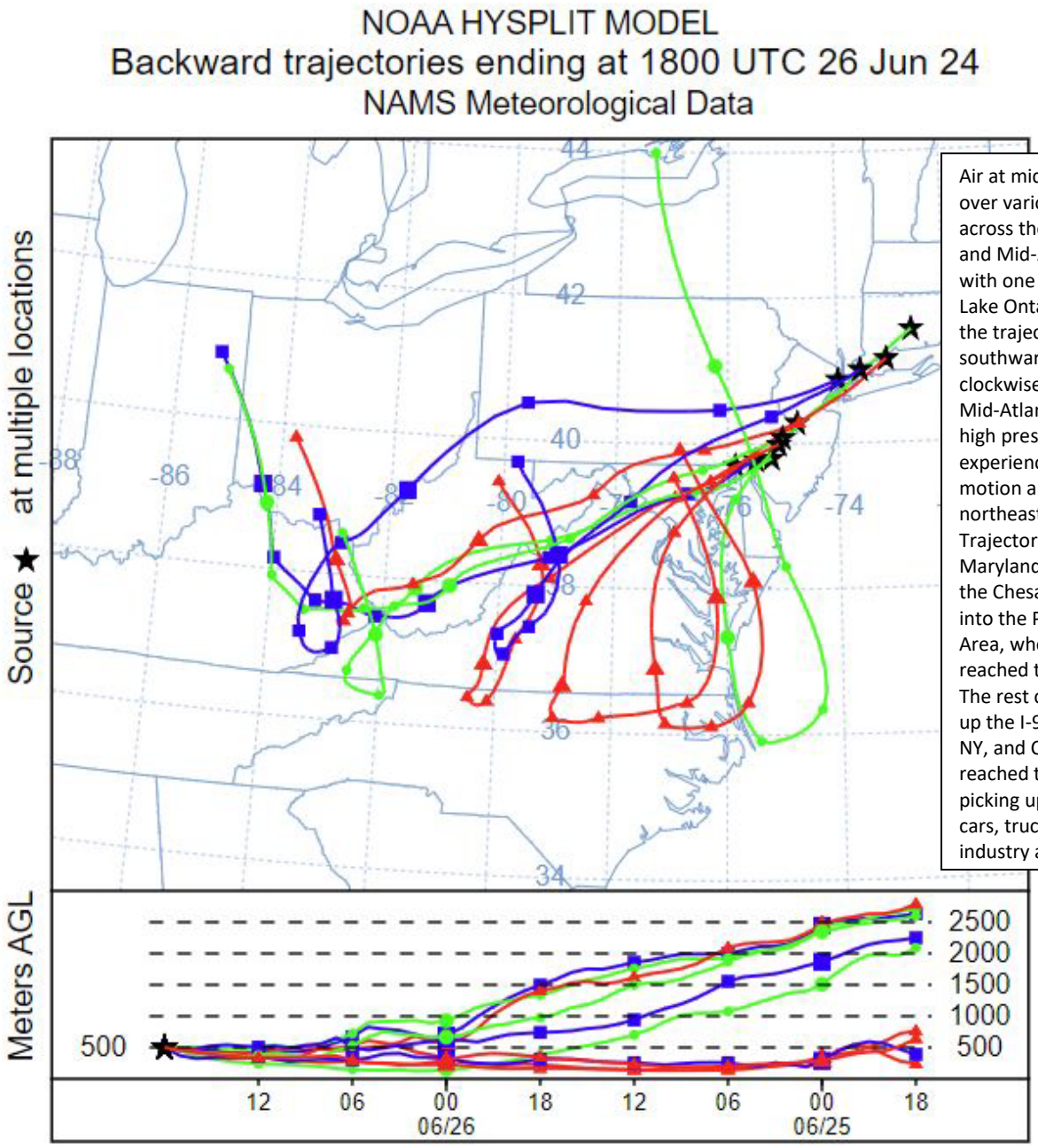
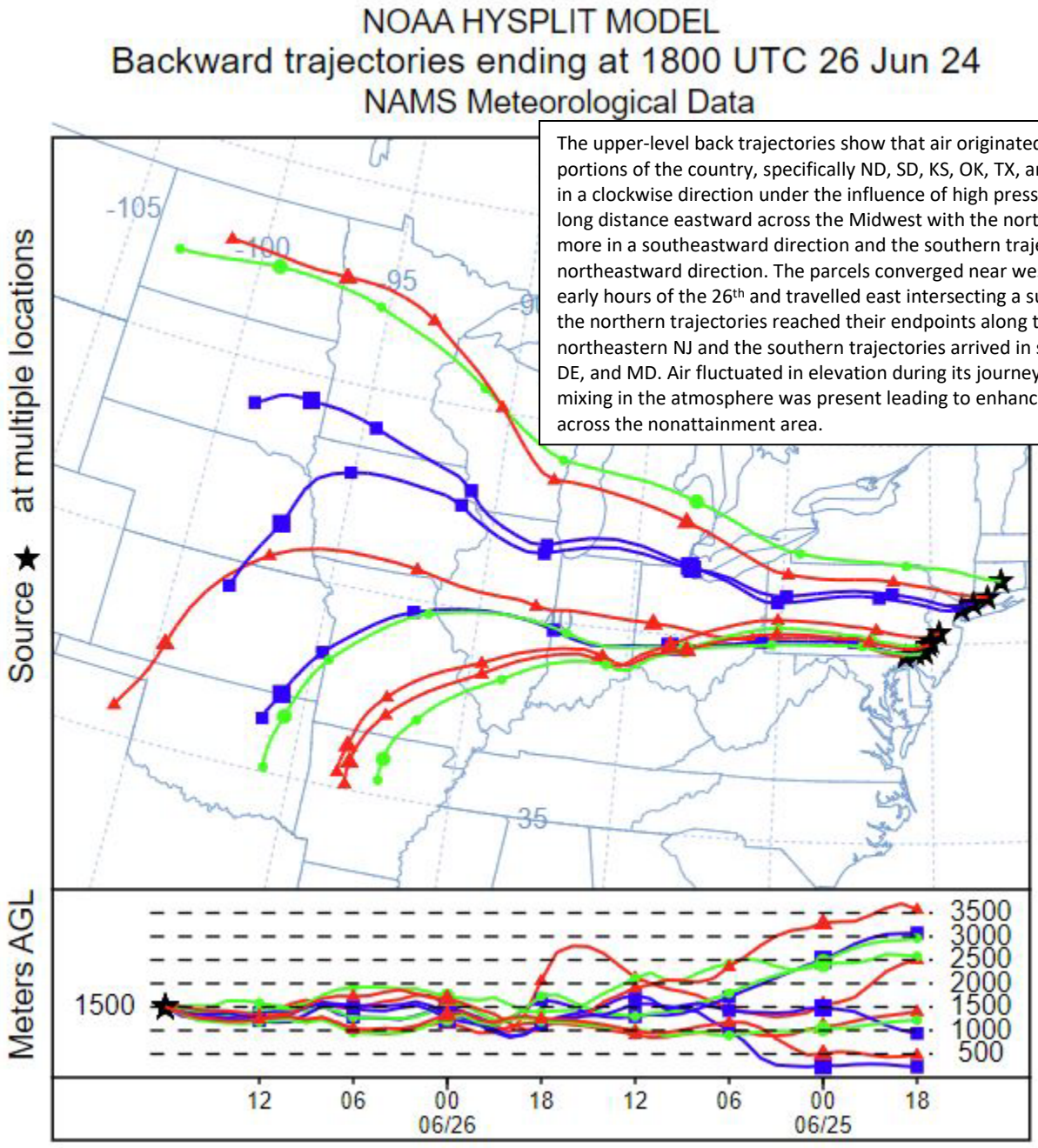


Figure 3. 48-hour Back Trajectories for June 26, 2024 at 500 meters



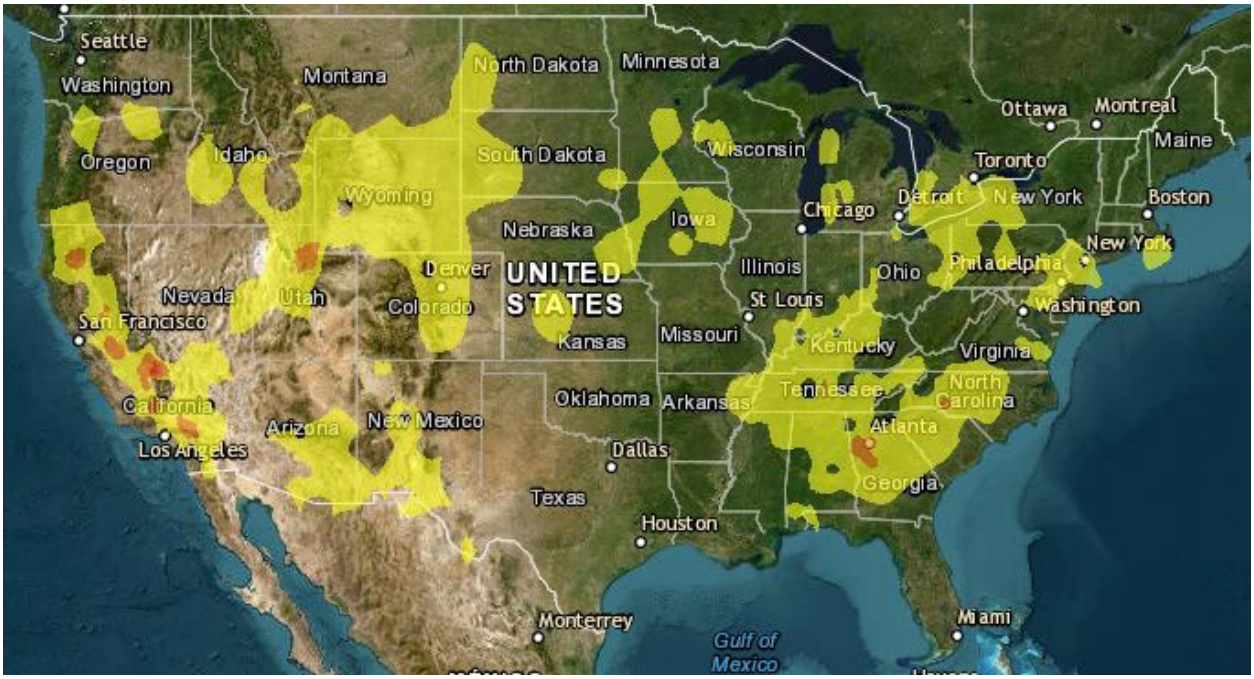
Air at mid-levels originated over various locations across the Ohio River Valley and Mid-Atlantic regions, with one originating over Lake Ontario. From here, all the trajectories moved southward before making a clockwise turn over the Mid-Atlantic. Influenced by high pressure, the air experienced a sinking motion and then moved in a northeasterly direction. Trajectories converged over Maryland and moved over the Chesapeake Bay and into the Philadelphia Metro Area, where several reached their destinations. The rest continued to move up the I-95 corridor over NJ, NY, and CT where they reached their endpoints, picking up emissions from cars, truck, and local industry along the way.

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



The upper-level back trajectories show that air originated over middle portions of the country, specifically ND, SD, KS, OK, TX, and AR, and travelled in a clockwise direction under the influence of high pressure. Air traversed a long distance eastward across the Midwest with the northern trajectories more in a southeastward direction and the southern trajectories more in a northeastward direction. The parcels converged near western PA during the early hours of the 26th and travelled east intersecting a surface trough before the northern trajectories reached their endpoints along the CT coastline and northeastern NJ and the southern trajectories arrived in southwestern NJ, PA, DE, and MD. Air fluctuated in elevation during its journey indicating that mixing in the atmosphere was present leading to enhanced ozone levels across the nonattainment area.

Figure 5. Air Quality Index for the United States on June 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/ .