Ozone National Ambient Air Quality Standard Health Exceedances on July 15 & July 16, 2024

Exceedance Locations and Levels

On Monday, July 15, 2024, there were three (3) exceedances in New Jersey of the National Ambient Air Quality Standard (NAAQS) and on Tuesday, July 16, 2024, there were four (4) exceedances of the NAAQS for ozone (daily maximum 8-hour average of 70 ppb). See Table 1.

Table 1. New Jersey Ozone Concentrations on 7/15/2024 and 7/16/2024

STATION	Daily Maximum 8-Hr Average (ppb) 7/15/2024	Daily Maximum 8-Hr Average (ppb) 7/16/2024
Ancora State Hospital	65	57
Bayonne	66	70
Brigantine	52	53
Camden Spruce St	No Data	No Data
Chester	62	61
Clarksboro	77	61
Colliers Mills	82	60
Columbia	60	68
Flemington	64	No Data
Leonia	78	77
Millville	57	52
Monmouth University	54	60
Ramapo	65	65
Rider University	69	73
Rutgers University	66	70
Washington Crossing*	68	75
TOTAL EXCEEDANCES	3	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 six (6) exceedances of the ozone NAAQS on Monday, July 15, 2024 and seven (7) exceedances of the ozone NAAQS on Tuesday, July 16, 2024. See Table 2.

Table 2. Ozone Concentrations at Out-of-State Monitoring Stations in New Jersey's Ozone Nonattainment Areas on 7/15/2024 and 7/16/2024

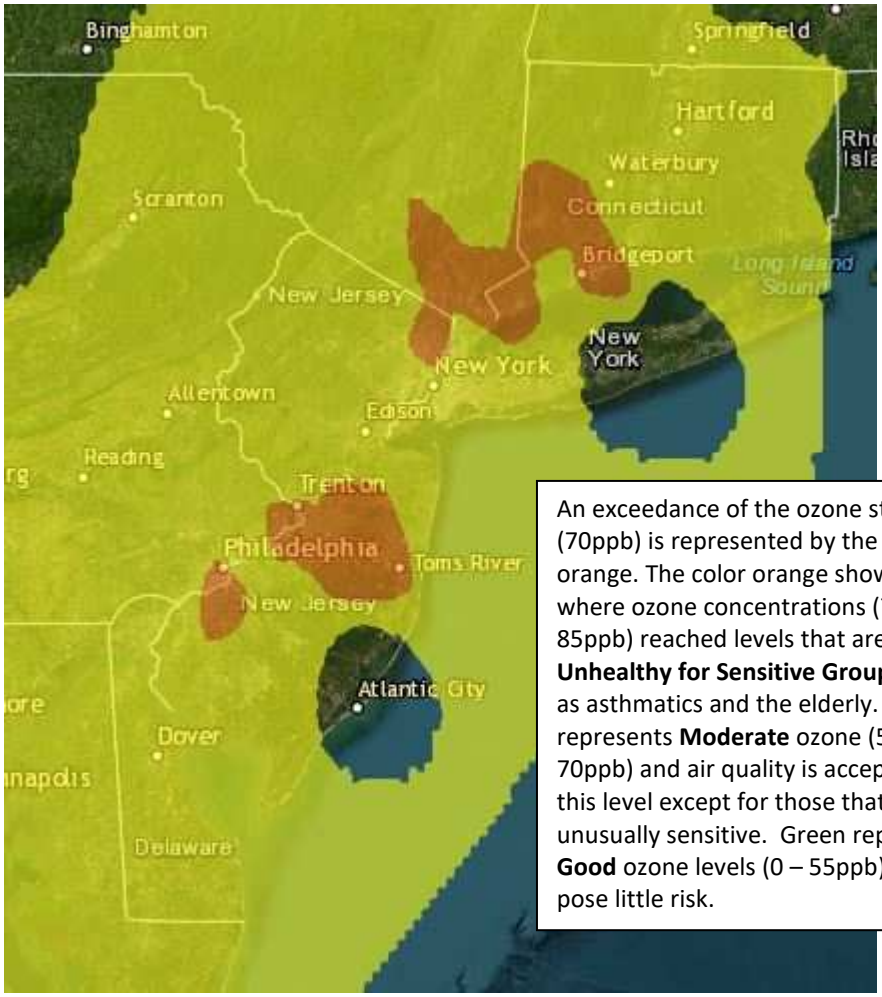
STATE	STATION	Daily Maximum 8-Hr Average (ppb) 7/15/2024	Daily Maximum 8-Hr Average (ppb) 7/16/2024
CT	Danbury	78	78
CT	Greenwich	74	81
CT	Madison-Beach Road	66	68
CT	Middletown-CVH-Shed	63	75
CT	New Haven	63	74
CT	Stratford	81	78
CT	Westport	68	85
DE	BCSP (New Castle Co.)	61	56
DE	BELLFNT2 (New Castle Co.)	67	61
DE	KILLENS (Kent Co.)	60	52
DE	LEWES (Sussex Co.)	61	54
DE	LUMS 2 (New Castle Co.)	60	55
DE	MLK (New Castle Co.)	66	62
DE	SEAFORD (Sussex Co.)	67	54
MD	Fair Hill	65	60
NY	Babylon	56	67
NY	Bronx - IS52	66	66
NY	CCNY	70	68
NY	Flax Pond	55	66
NY	Fresh Kills	59	63
NY	Holtsville	51	66
NY	Pfizer Lab	66	68
NY	Queens	56	67
NY	Riverhead	49	66
NY	Rockland Cty	72	70
NY	White Plains	75	76
PA	BRIS (Bucks Co.)	73	69
PA	CHES (Delaware Co.)	68	63
PA	NEWG (Chester Co.)	67	No Data
PA	NORR (Montgomery Co.)	65	60
PA	LAB (Philadelphia Co.)	59	59
PA	NEA (Philadelphia Co.)	67	66
PA	NEW (Philadelphia Co.)	69	66
	TOTAL EXCEEDANCES	6	7

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

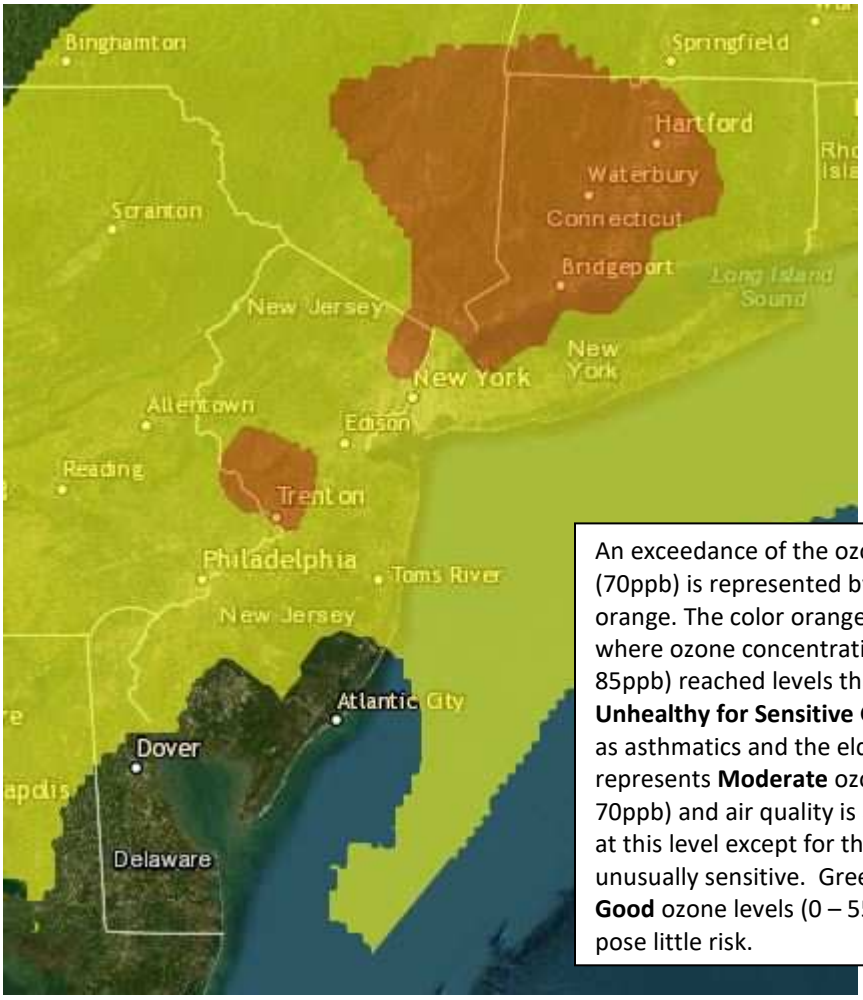
STATE	# of Days NAAQS was Exceeded January 1 – July 16, 2024 NAAQS = 70 ppb
Connecticut	13
Delaware	4
Maryland	2
New Jersey	12
New York	11
Pennsylvania	8

Figure 1. Ozone Air Quality Index for Monday, July 15, 2024



An exceedance of the ozone standard (70ppb) is represented by the color orange. 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 – 55ppb) and pose little risk.

Figure 2. Ozone Air Quality Index for Tuesday, July 16, 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

Monday, July 15th and Tuesday, July 16th were days one and two of a multi-day ozone exceedance event that occurred throughout the nonattainment area. Hot and muggy conditions were observed throughout the region on Monday as Bermuda high pressure was located off the coast. Temperatures were able to soar into the mid 80s to upper 90s throughout the nonattainment area due to light southwesterly flow and sunny skies. A surface trough also lingered over the area throughout the day, meandering back and forth from the coast to locations further inland. This trough created mixing in the atmosphere, allowing pollutants aloft to mix down to the surface and enhance ozone that was building up in the region. These favorable conditions allowed ozone levels to reach the Unhealthy for Sensitive (USG) category in multiple locations throughout New Jersey, New York, Connecticut, and Pennsylvania.

With Bermuda high pressure still in place, light winds continued to tend out of the southwest leading into Tuesday, July 16th. Mostly sunny skies and hot temperatures in the mid-upper 90s were also

observed for the second day in a row, helping to aid in rising ozone levels throughout New Jersey. This persistent synoptic pattern allowed for little atmospheric ventilation throughout the region for several days, allowing for a stagnant air mass and a buildup of pollutants. Winds along the coast also shifted out of the south-southeast as the day progressed, causing air to converge inland along the I-95 corridor. As a result, ozone levels were able to remain in the USG category throughout New Jersey, New York, and Connecticut. In addition, the New Jersey Forest Fire Service was notified of a wildfire, referred to as the Whip-poor-will Wildfire, on July 16th at Warren Grove Air to Ground Range in Burlington County.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 3, 4, and 5 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 approximate 72 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 days (Figures 6 & 7). 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 72-hr Back Trajectories

STATE	DATE	STATION	Daily Maximum 8-Hr Average (ppb)
NJ	7/15	Colliers Mills	82
NJ	7/15	Clarksboro	77
NJ	7/15, 7/16	Leonia	78, 77
NJ	7/16	Rider University	73
CT	7/15, 7/16	Danbury	78, 78
CT	7/15, 7/16	Greenwich	74, 81
CT	7/15, 7/16	Stratford	81, 78
NY	7/15, 7/16	White Plains	75, 76
NY	7/15	Rockland Cty	72
PA	7/15	BRIS (Bucks Co.)	73

Figure 3. 72-hour Back Trajectories for July 16, 2024 at 10 meters

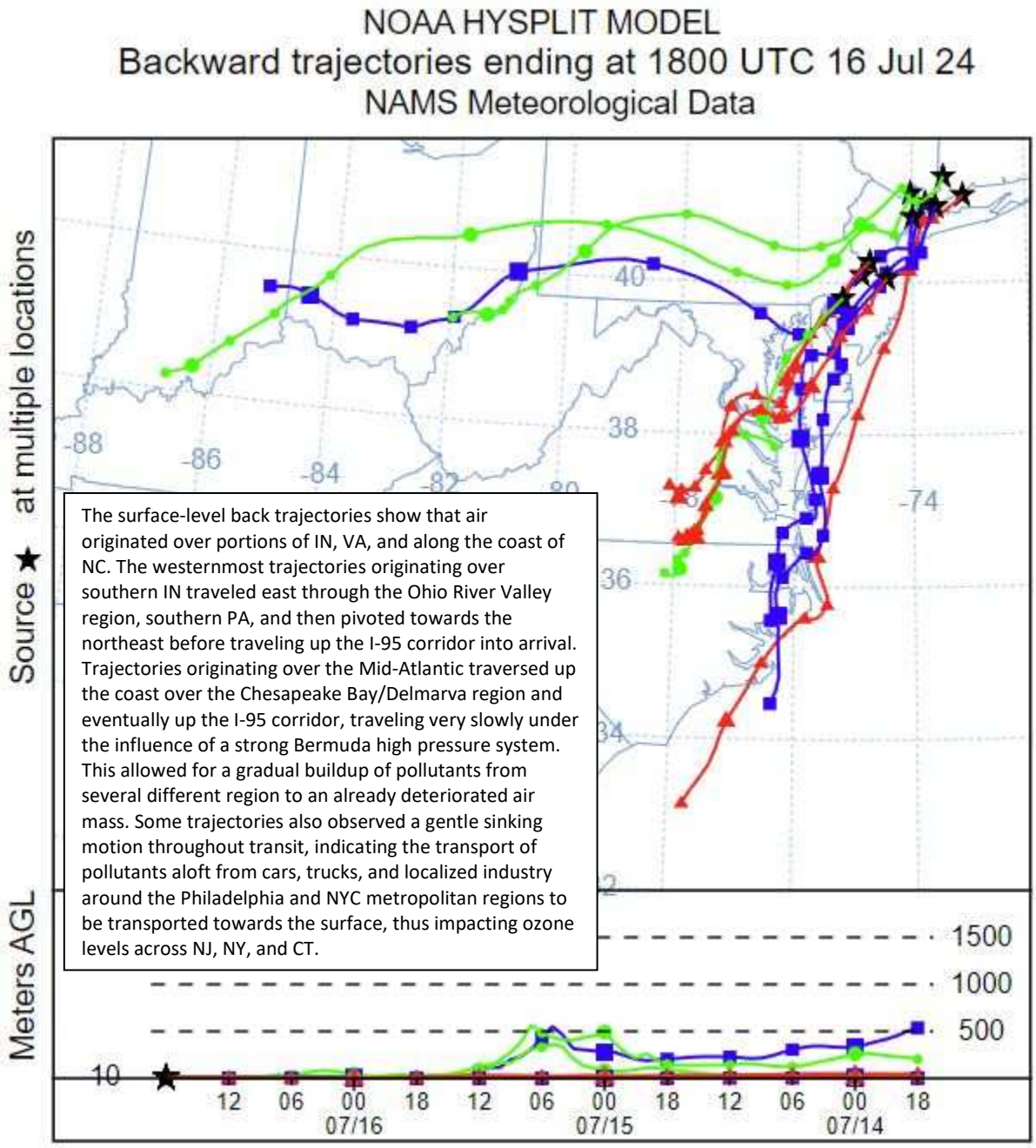


Figure 4. 72-hour Back Trajectories for July 16, 2024 at 500 meters

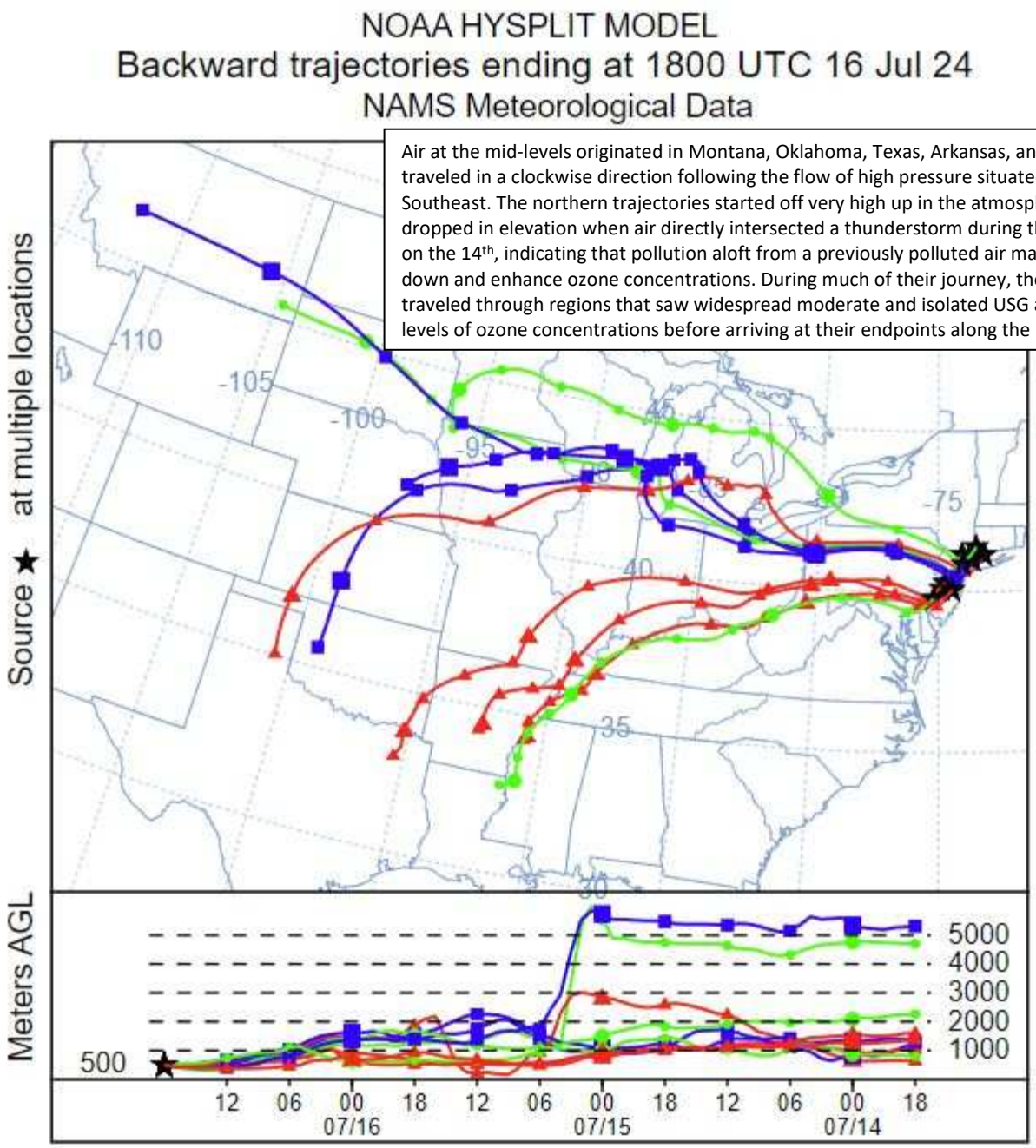
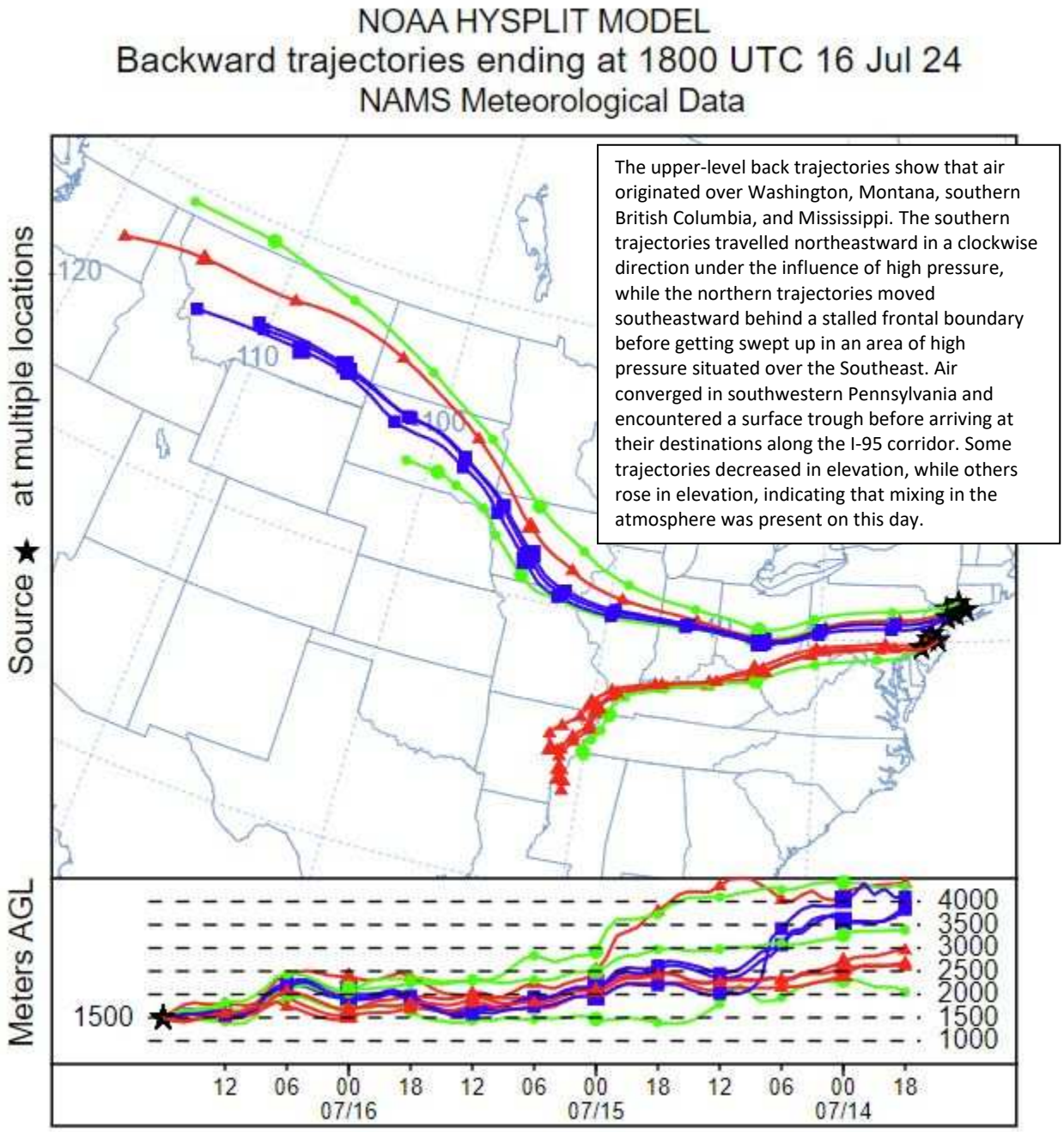


Figure 5. 72-hour Back Trajectories for July 16, 2024 at 1500 meters



The upper-level back trajectories show that air originated over Washington, Montana, southern British Columbia, and Mississippi. The southern trajectories travelled northeastward in a clockwise direction under the influence of high pressure, while the northern trajectories moved southeastward behind a stalled frontal boundary before getting swept up in an area of high pressure situated over the Southeast. Air converged in southwestern Pennsylvania and encountered a surface trough before arriving at their destinations along the I-95 corridor. Some trajectories decreased in elevation, while others rose in elevation, indicating that mixing in the atmosphere was present on this day.

Figure 6. Air Quality Index for the United States on July 14, 2024

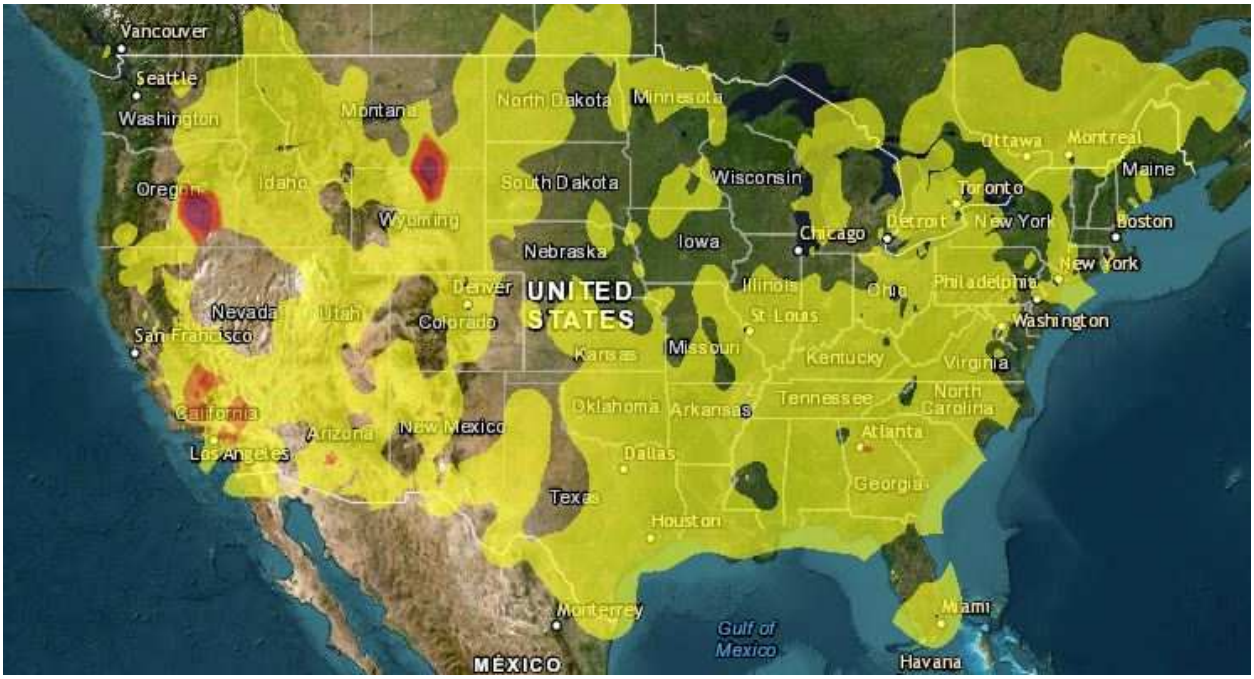


Figure 7. Air Quality Index for the United States on July 15, 2024

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/.