Ozone National Ambient Air Quality Standard Health Exceedances on May 24 & May 25, 2024

Exceedance Locations and Levels

On Friday, May 24, 2024, there were three (3) exceedances in New Jersey of the National Ambient Air Quality Standard (NAAQS) and on Saturday, May 25, 2024, there was one (1) exceedance of the NAAQS for ozone (daily maximum 8-hour average of 70 ppb). See Table 1.

Table 1. New Jersey Ozone Concentrations on 5/24/2024 and 5/25/2024

STATION	Daily Maximum 8-Hr Average (ppb) 5/24/2024	Daily Maximum 8-Hr Average (ppb) 5/25/2024
Ancora State Hospital	64	66
Bayonne	65	55
Brigantine	46	47
Camden Spruce St	69	68
Chester	63	63
Clarksboro	79	75
Colliers Mills	75	62
Columbia	61	66
Flemington	70	62
Leonia	64	58
Millville	60	70
Monmouth University	76	51
Ramapo	No Data	63
Rider University	69	63
Rutgers University	66	50
Washington Crossing*	70	65
TOTAL EXCEEDANCES	**3**	**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 eight (8) exceedances of the ozone NAAQS on Friday, May 24, 2024 and three (3) exceedances of the ozone NAAQS on Saturday, May 25, 2024. See Table 2.

Table 2. Ozone Concentrations at Out-of-State Monitoring Stations in New Jersey's Ozone Nonattainment Areas on 5/24/2024 and 5/25/2024

STATE	STATION	Daily Maximum 8-Hr Average (ppb) 5/24/2024	Daily Maximum 8-Hr Average (ppb) 5/25/2024
CT	Danbury	60	61
CT	Greenwich	64	43
CT	Madison-Beach Road	72	40
CT	Middletown-CVH-Shed	62	46
CT	New Haven	57	44
CT	Stratford	64	43
CT	Westport	66	45
DE	BCSP (New Castle Co.)	No Data	61
DE	BELLFNT2 (New Castle Co.)	78	69
DE	KILLENS (Kent Co.)	No Data	68
DE	LEWES (Sussex Co.)	No Data	63
DE	LUMS 2 (New Castle Co.)	72	64
DE	MLK (New Castle Co.)	78	73
DE	SEAFORD (Sussex Co.)	No Data	66
MD	Fair Hill	65	60
NY	Babylon	80	49
NY	Bronx - IS52	67	55
NY	CCNY	67	56
NY	Flax Pond	70	42
NY	Fresh Kills	64	46
NY	Holtsville	76	43
NY	Pfizer Lab	64	57
NY	Queens	74	55
NY	Riverhead	71	41
NY	Rockland Cty	58	66
NY	White Plains	59	56
PA	BRIS (Bucks Co.)	70	69
PA	CHES (Delaware Co.)	69	67
PA	NEWG (Chester Co.)	67	63
PA	NORR (Montgomery Co.)	67	69
PA	LAB (Philadelphia Co.)	70	74
PA	NEA (Philadelphia Co.)	65	69
PA	NEW (Philadelphia Co.)	70	74
	TOTAL EXCEEDANCES	**8**	**3**

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 – May 25, 2024 NAAQS = 70 ppb
Connecticut	1
Delaware	2
Maryland	0
New Jersey	2
New York	1
Pennsylvania	1

Figure 1. Ozone Air Quality Index for Friday, May 24, 2024

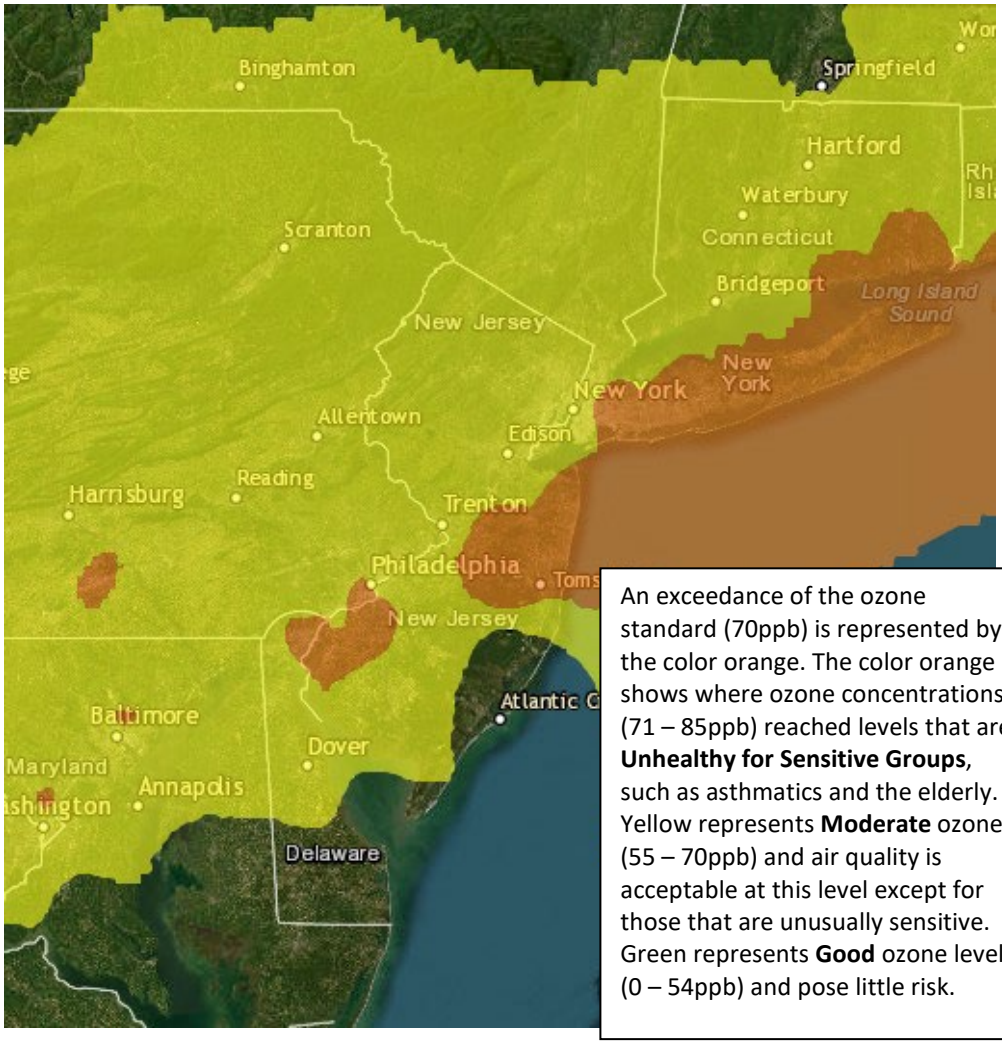
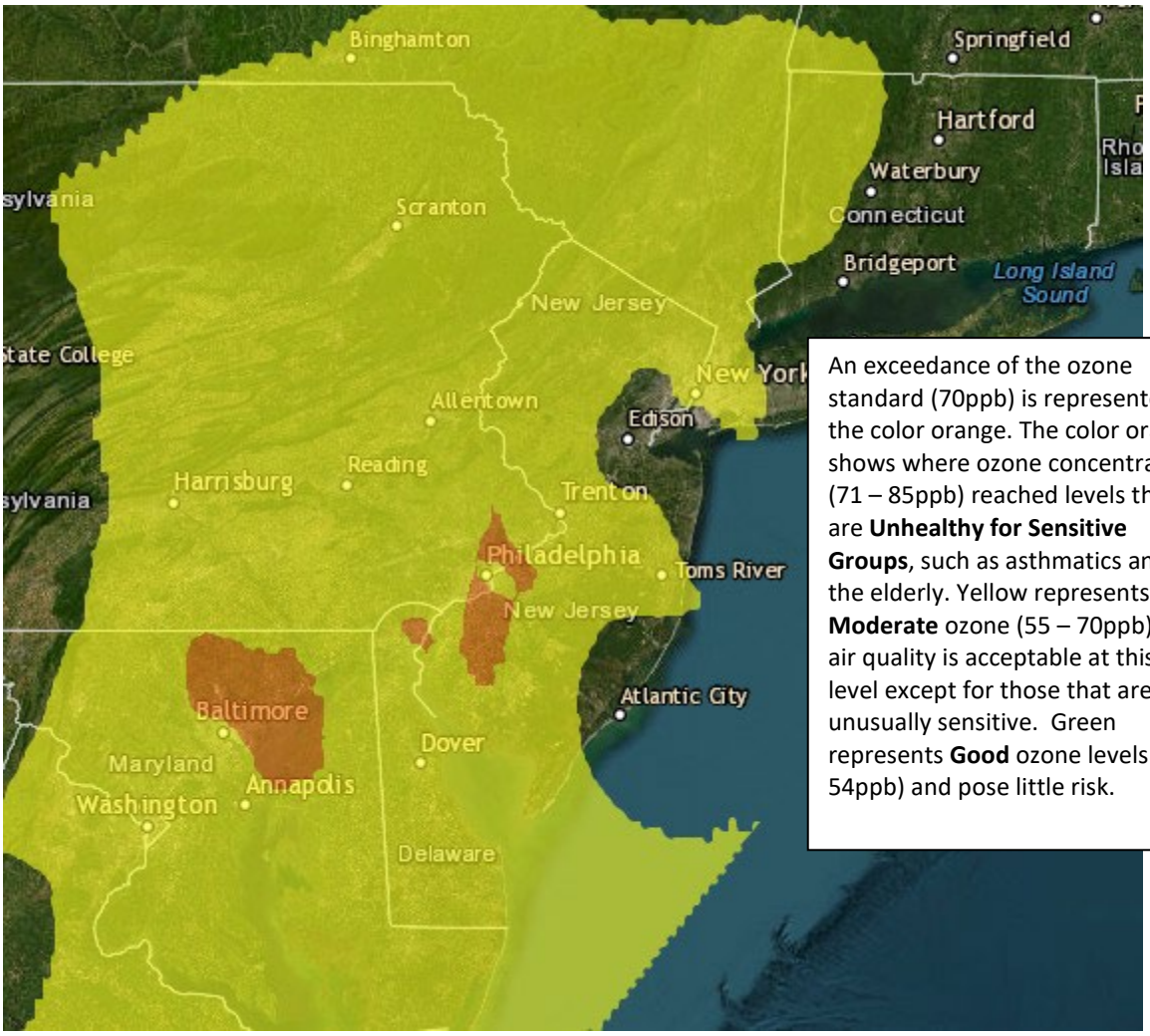


Figure 2. Ozone Air Quality Index for Saturday, May 25, 2024



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 Friday, May 24th and Saturday, May 25th, multiple ozone exceedances occurred throughout the nonattainment area. Beginning on Thursday May 23rd, a cold front began to slowly descend from the northwest, with high pressure set up over most of the region. On Friday morning, the front had approached the region and stalled along the I-95 corridor and eventually weakened. By early Friday afternoon, winds began to converge along the I-95 corridor in New Jersey, and along the coastlines in New England and Long Island. Winds remained mostly calm throughout the nonattainment area, with light northwesterly winds also observed in areas north of the frontal boundary and light southwesterly winds to the south of the boundary. These favorable conditions, along with ample sunshine throughout the day, allowed ozone levels to increase into the Unhealthy for Sensitive Groups (USG) category along

the I-95 corridor in New Jersey, Pennsylvania, and Delaware, and along coastal locations in Long Island and Connecticut.

Going into Saturday, May 25th, another cold front moved through the region and again stalled along the I-95 corridor. Plentiful sunshine and hot temperatures were observed throughout the nonattainment area. By late morning, the front had begun to move back northward, which recirculated the air from the previous day over Delaware and southern New Jersey. This recirculation along with conditions conducive to ozone formation caused ozone levels to rise into the USG category in Delaware, southern New Jersey, and Philadelphia.

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)
CT	5/24	Madison – Beach Road	72
DE	5/24, 5/25	MLK (New Castle Co.)	78, 73
DE	5/24	BELLFNT2 (New Castle Co.)	78
NJ	5/24, 5/25	Clarksboro	79, 75
NJ	5/24	Monmouth University	76
NJ	5/24	Colliers Mills	75
NY	5/24	Babylon	80
NY	5/24	Holtsville	76
PA	5/25	NEW (Philadelphia Co.)	74

Figure 3. 72-hour Back Trajectories for May 25, 2024 at 10 meters

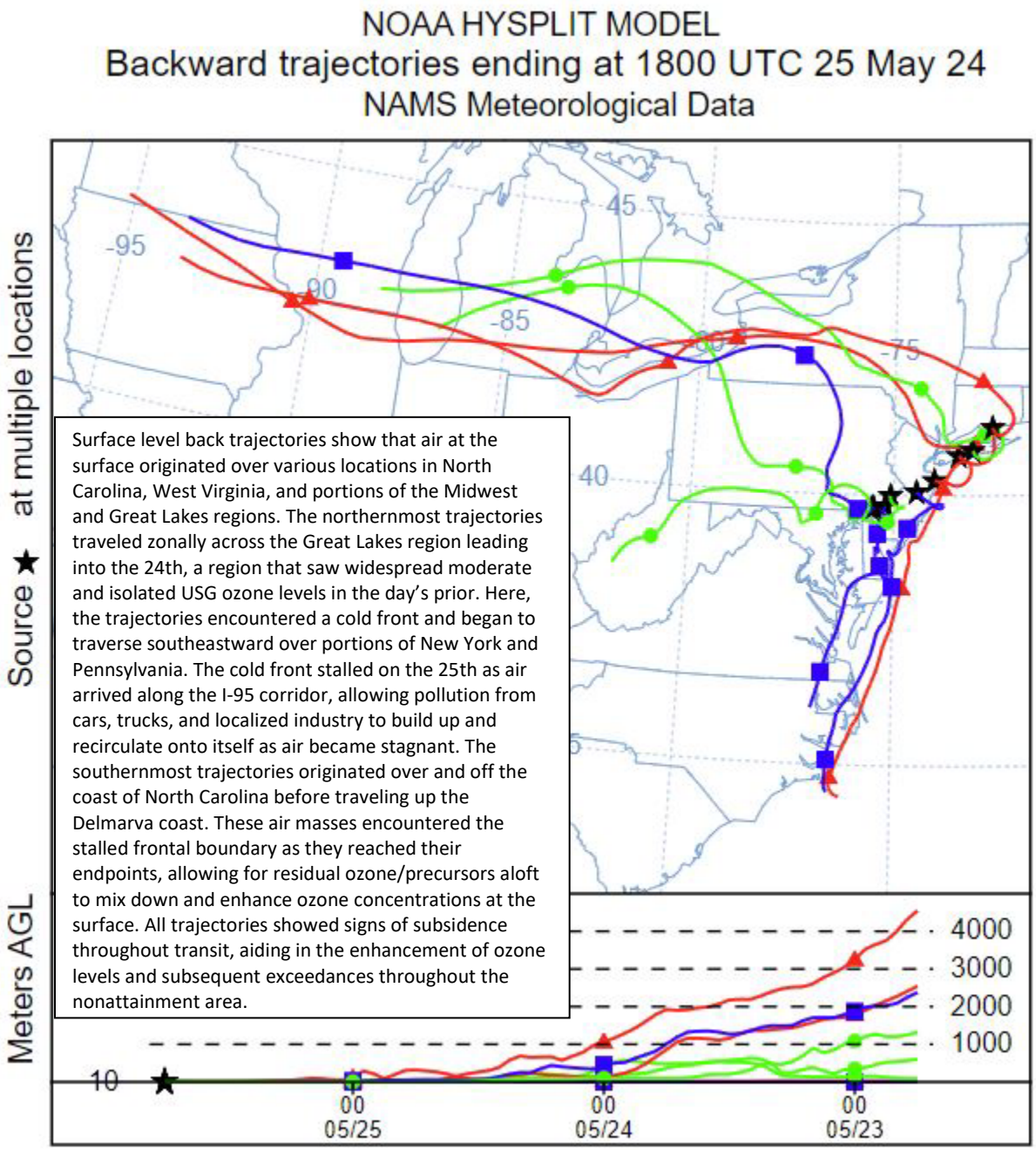


Figure 4. 72-hour Back Trajectories for May 25, 2024 at 500 meters

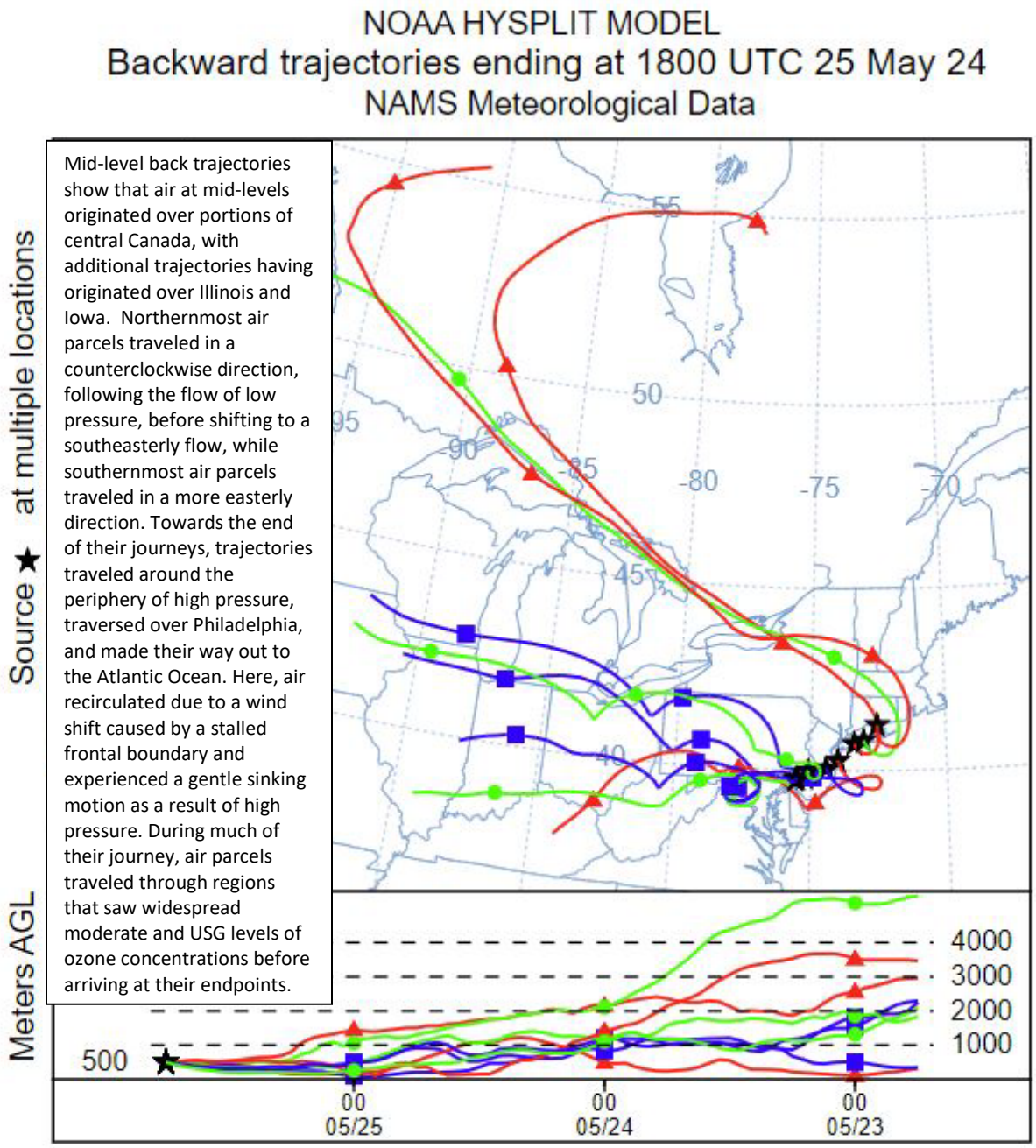


Figure 5. 72-hour Back Trajectories for May 25, 2024 at 1500 meters

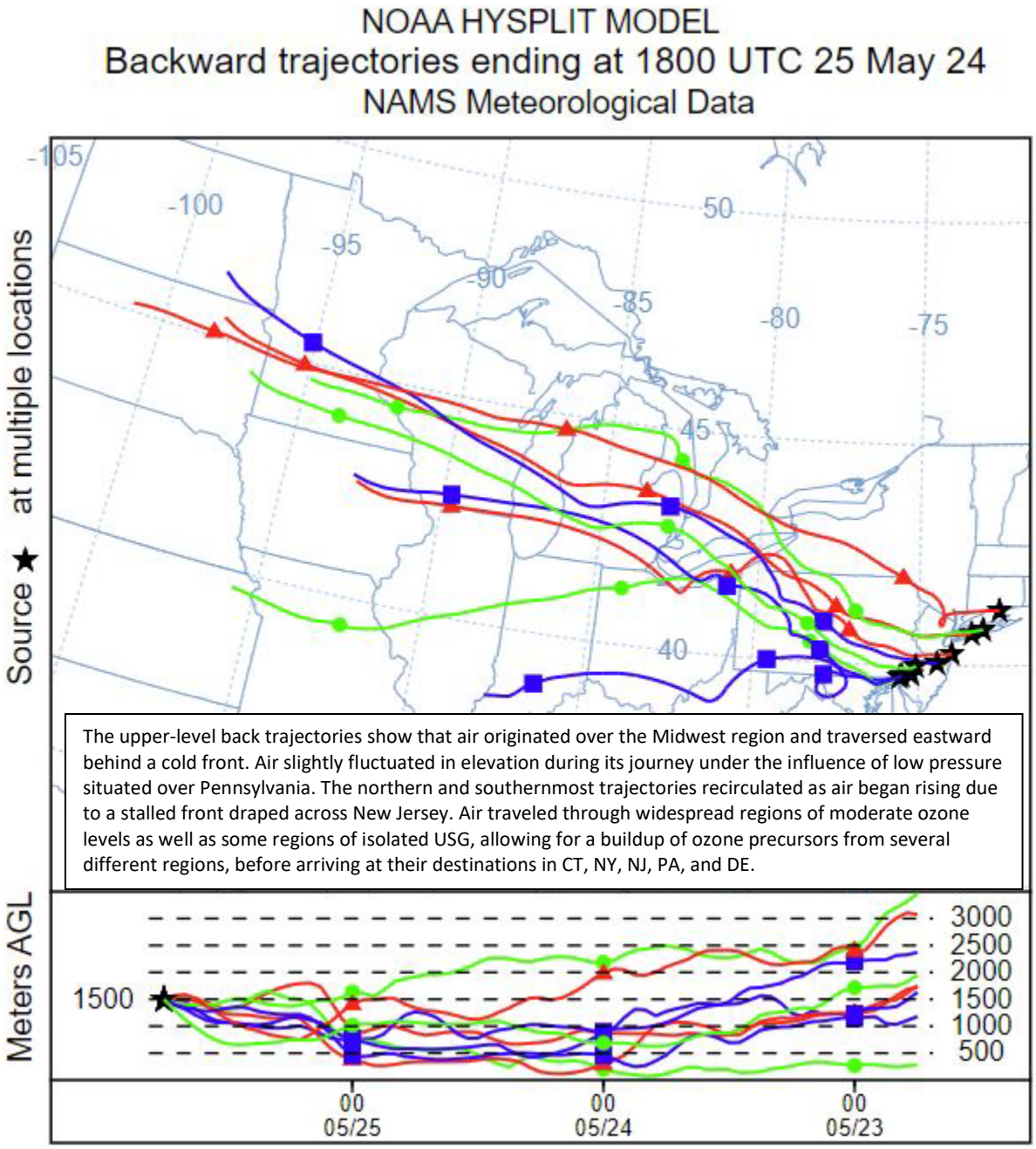


Figure 6. Air Quality Index for the United States on May 23, 2024

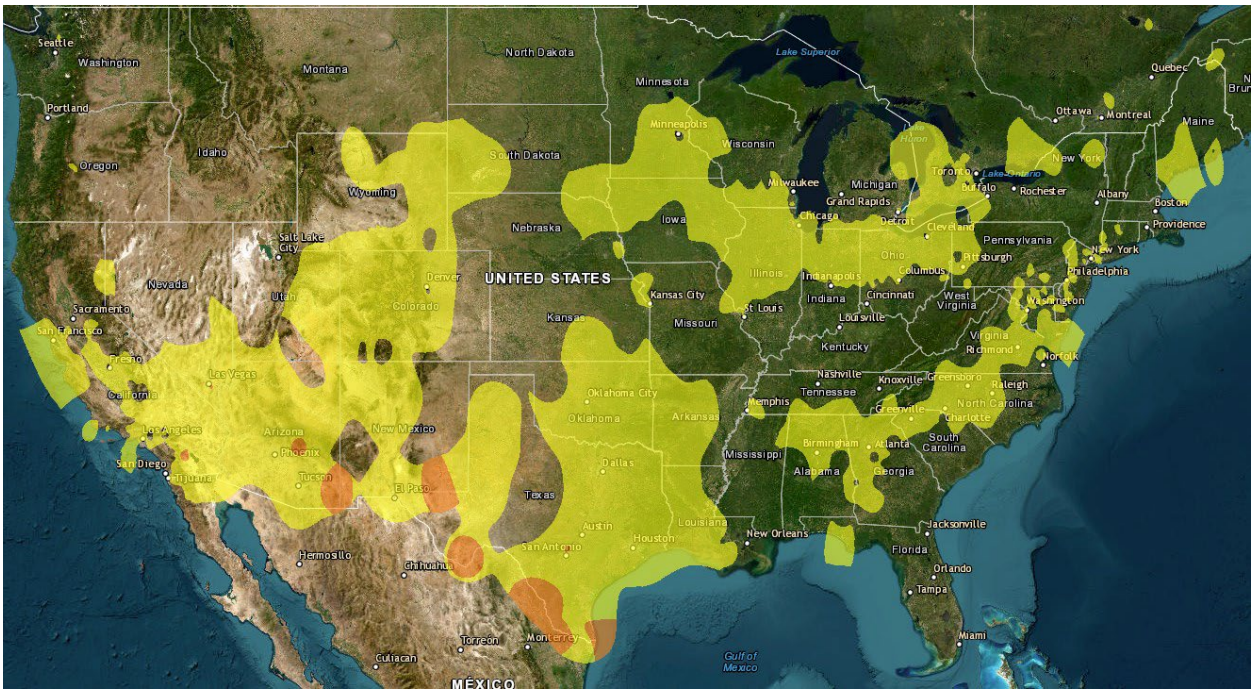
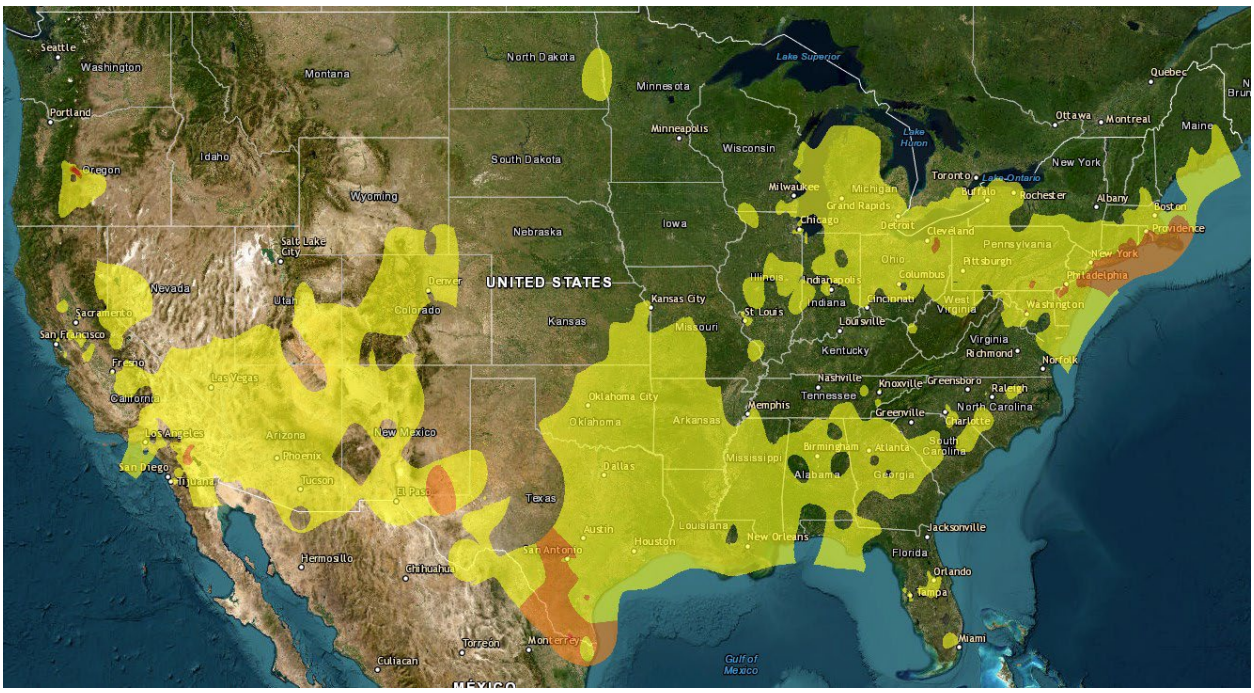


Figure 7. Air Quality Index for the United States on May 24, 2024



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/ .