Ozone National Ambient Air Quality Standard Health Exceedances on July 13, 2022

Exceedance Locations and Levels

On Wednesday, July 13, 2022, there were no 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 7/13/2022

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	60
Bayonne	62
Brigantine	60
Camden Spruce St	57
Chester	59
Clarksboro	68
Colliers Mills	63
Columbia	50
Flemington	59
Leonia	62
Millville	58
Monmouth University	62
Newark Firehouse	57
Ramapo	52
Rider University	59
Rutgers University	55
Washington Crossing*	55
TOTAL EXCEEDANCES	0

*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 three (3) 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 7/13/2022

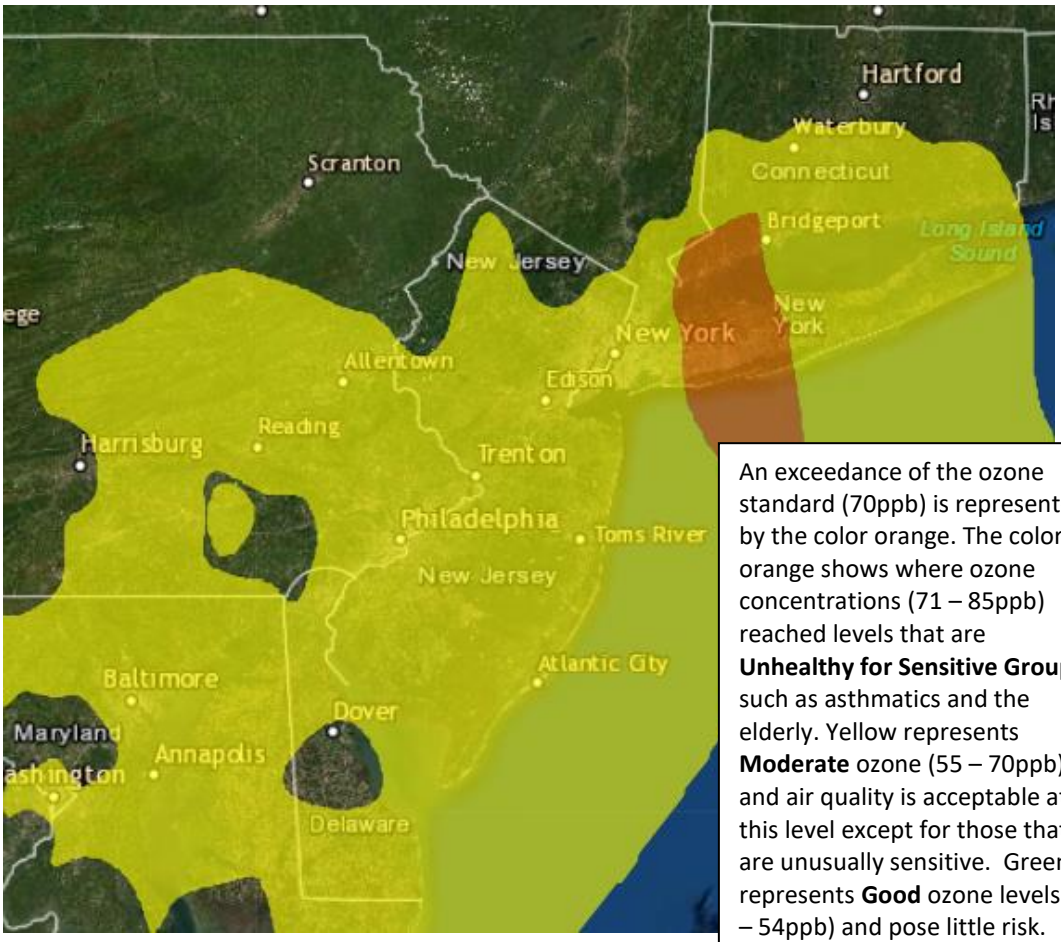
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	65
CT	Greenwich	76
CT	Madison-Beach Road	62
CT	Middletown-CVH-Shed	59
CT	New Haven	66
CT	Stratford	69
CT	Westport	73
DE	BCSP (New Castle Co.)	55
DE	BELLFNT2 (New Castle Co.)	57
DE	KILLENS (Kent Co.)	53
DE	LEWES (Sussex Co.)	54
DE	LUMS 2 (New Castle Co.)	58
DE	MLK (New Castle Co.)	57
DE	SEAFORD (Sussex Co.)	57
MD	Fair Hill	55
NY	Babylon	74
NY	Bronx - IS52	64
NY	CCNY	63
NY	Flax Pond	70
NY	Fresh Kills	59
NY	Holtsville	70
NY	Pfizer Lab	65
NY	Queens	70
NY	Riverhead	61
NY	Rockland Cty	48
NY	White Plains	61
PA	BRIS (Bucks Co.)	64
PA	CHES (Delaware Co.)	58
PA	NEWG (Chester Co.)	47
PA	NORR (Montgomery Co.)	60
PA	LAB (Philadelphia Co.)	56
PA	NEA (Philadelphia Co.)	64
PA	NEW (Philadelphia Co.)	62
	TOTAL EXCEEDANCES	3

The number of days in 2022 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 2022

STATE	# of Days NAAQS was Exceeded January 1 – July 13, 2022 NAAQS = 70 ppb
Connecticut	8
Delaware	0
Maryland	1
New Jersey	3
New York	3
Pennsylvania	1

Figure 1. Ozone Air Quality Index for July 13, 2022



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 – 54ppb) and pose little risk.

Source: www.airnow.gov

For ozone terminology definitions see NJDEP Air Quality Planning's Glossary and Acronyms webpage: http://nj.gov/dep/baqp/glossary.html

Weather

In the days leading up to the exceedance on July 13th, a cold front cleared the mid-Atlantic region and moved offshore. In the late afternoon hours, the front meandered along the New Jersey coastline and eventually stalled over central New Jersey, New York City, and Connecticut directly over the exceedance monitors. Behind the front, an area of high pressure from the Great Lakes moved in behind it, filtering in widespread sunshine and temperatures reaching the upper 80s. While the general wind flow for the region was from the northwest, as the frontal boundary stalled over the region, locations surrounding the exceedance monitors experienced variable winds allowing a sea breeze to develop in the later afternoon. As a result, polluted air from the New York City metropolitan center was transported just southeast of the city and may have then blown back onshore in Long Island and coastal Connecticut as the sea breeze developed. Under favorable meteorological conditions for ozone production, these factors enhanced rising ozone levels leading to three exceedances in the northern 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	76
CT	Westport	73
NY	Babylon	74

Figure 2. 48-hour Back Trajectories for July 13, 2022 at 10 meters

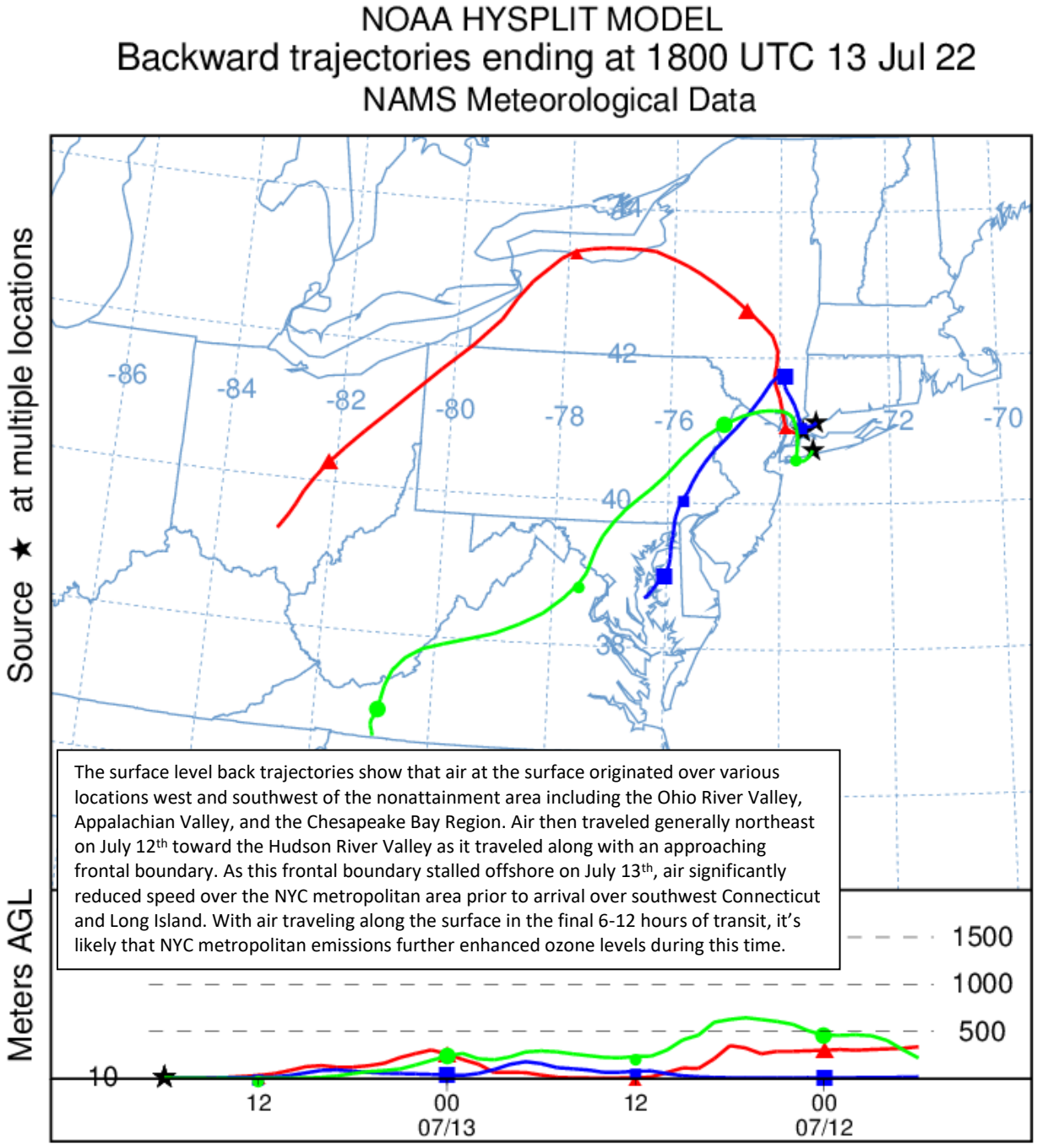


Figure 3. 48-hour Back Trajectories for July 13, 2022 at 500 meters

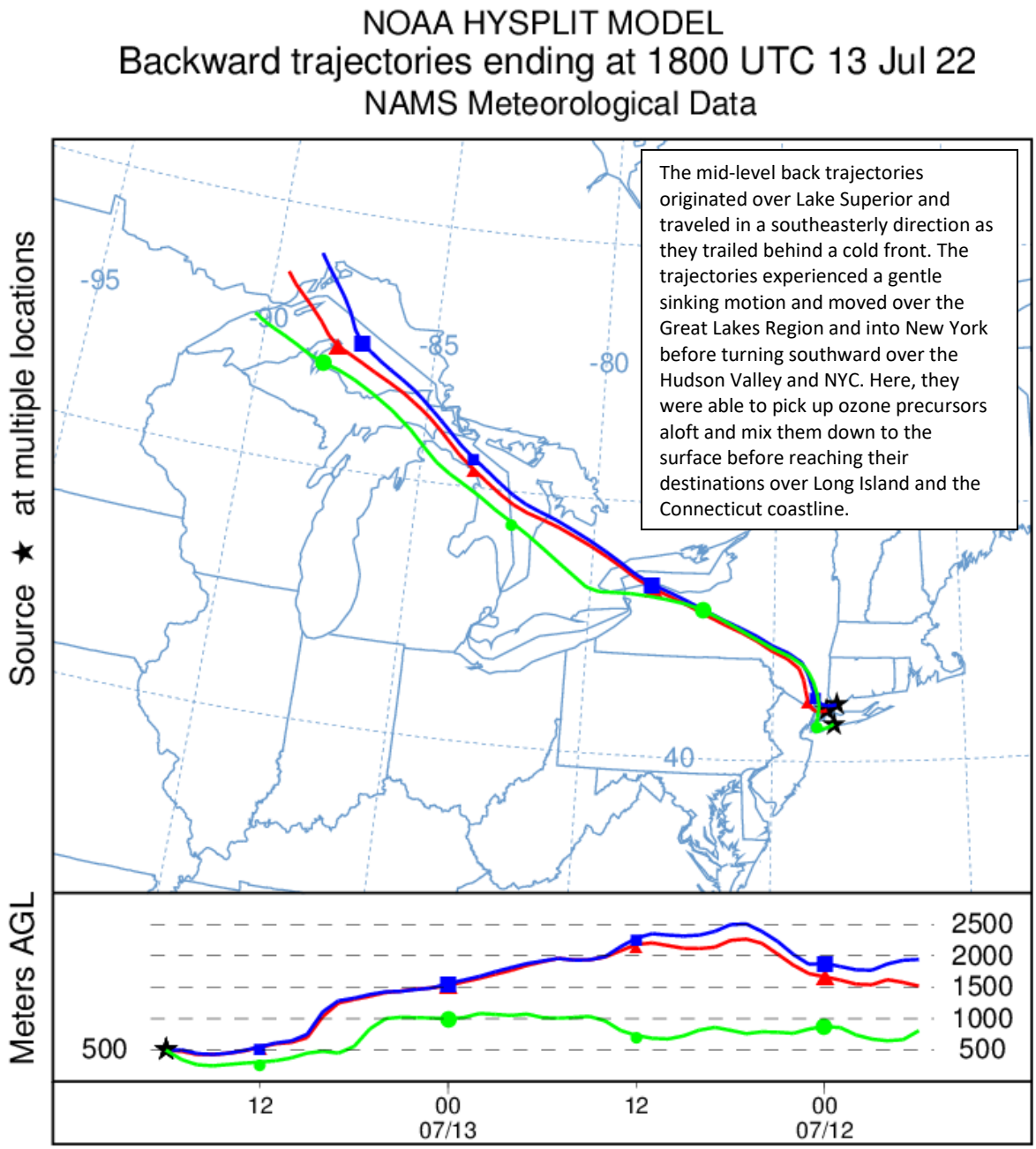


Figure 4. 48-hour Back Trajectories for July 13, 2022 at 1500 meters

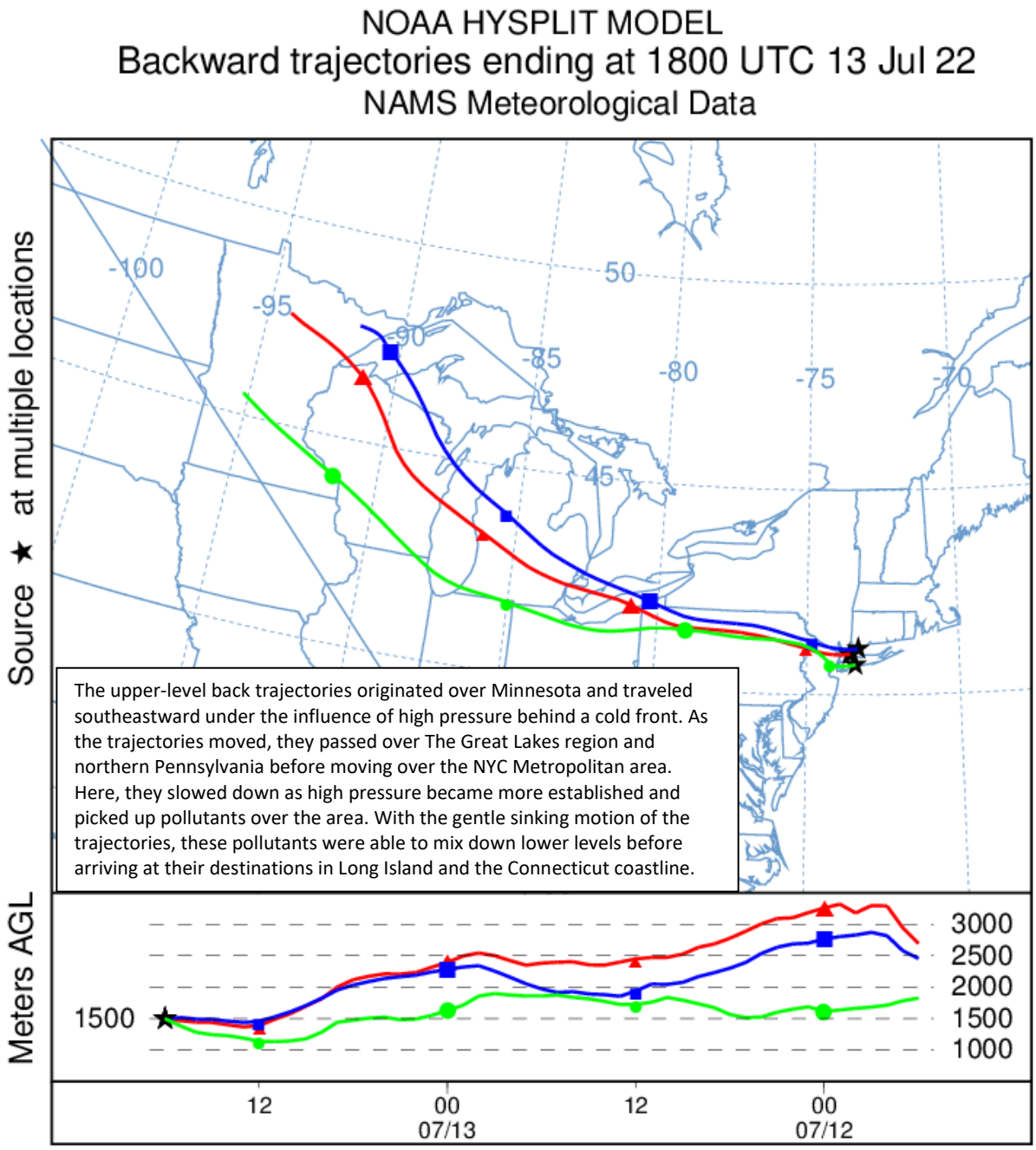
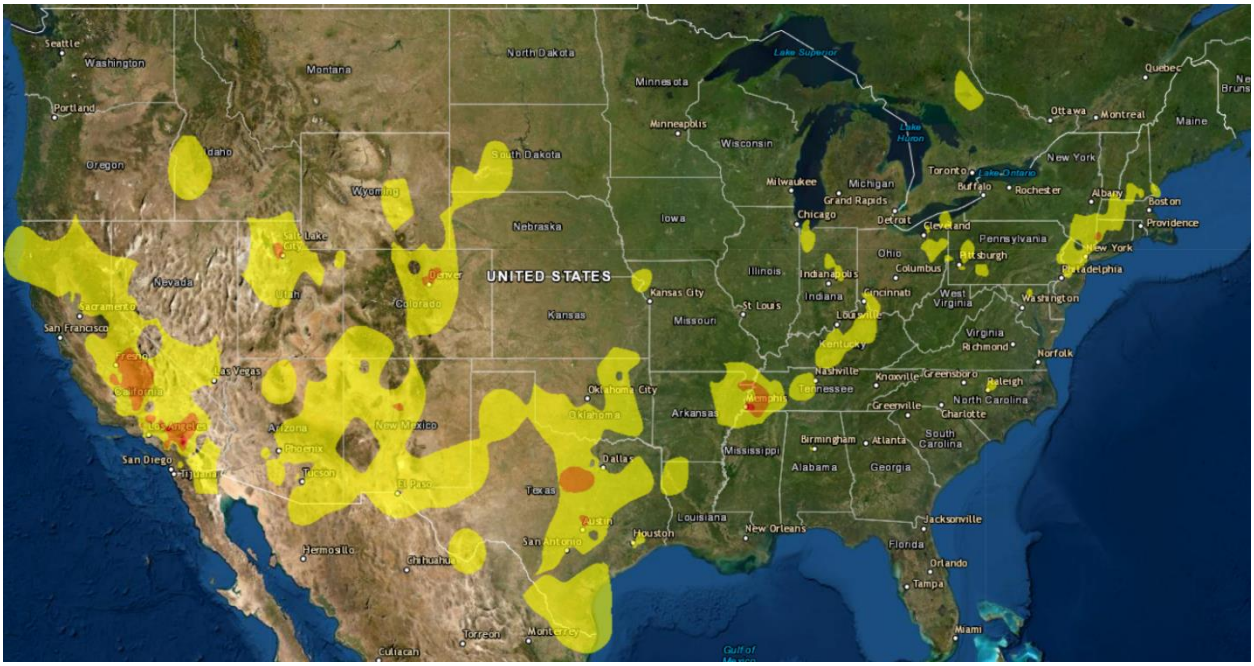


Figure 5. Air Quality Index for the United States on July 12, 2022



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 .