Ozone National Ambient Air Quality Standard Health Exceedances on August 2, 2022

On Tuesday, August 2, 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 8/2/2022

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	52
Bayonne	52
Brigantine	46
Camden Spruce St	47
Chester	49
Clarksboro	56
Colliers Mills	61
Columbia	41
Flemington	52
Leonia	51
Millville	49
Monmouth University	57
Newark Firehouse	55
Ramapo	39
Rider University	52
Rutgers University	52
Washington Crossing*	46
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 seven (7) 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 8/2/2022

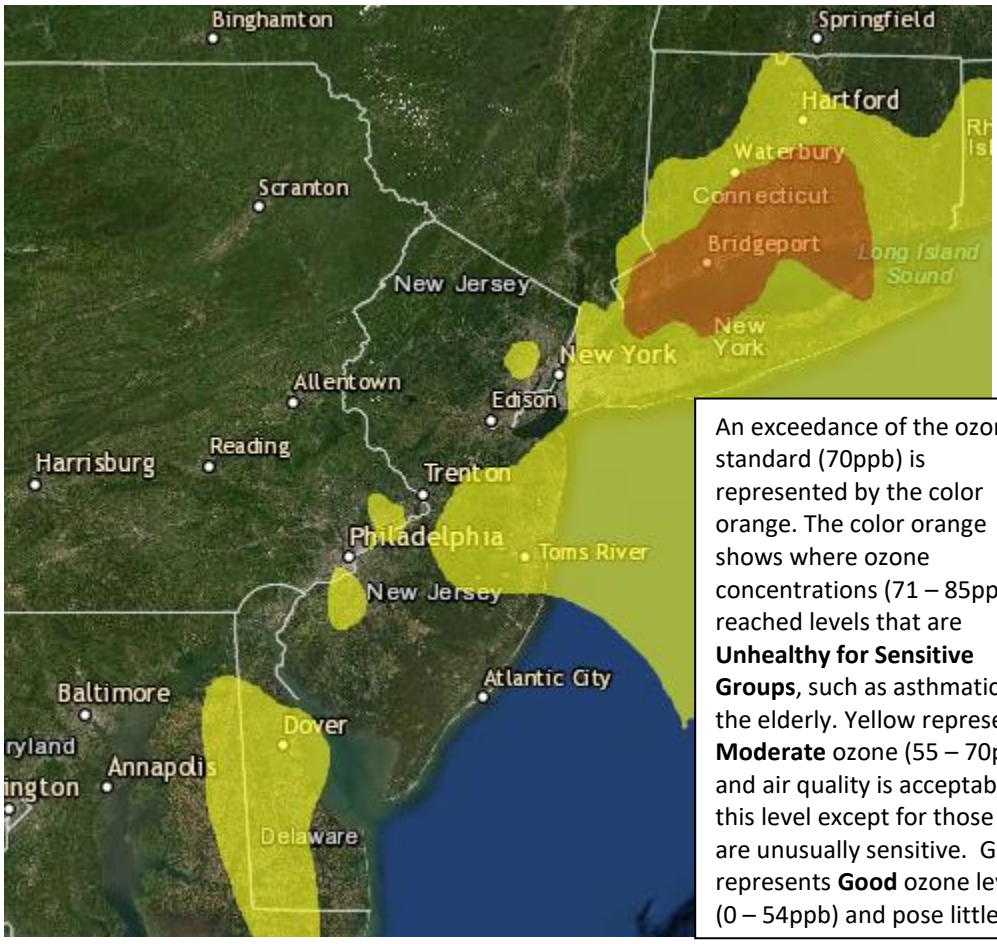
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	55
CT	Greenwich	77
CT	Madison-Beach Road	76
CT	Middletown-CVH-Shed	73
CT	New Haven	71
CT	Stratford	82
CT	Westport	80
DE	BCSP (New Castle Co.)	53
DE	BELLFNT2 (New Castle Co.)	53
DE	KILLENS (Kent Co.)	56
DE	LEWES (Sussex Co.)	52
DE	LUMS 2 (New Castle Co.)	50
DE	MLK (New Castle Co.)	49
DE	SEAFORD (Sussex Co.)	55
MD	Fair Hill	51
NY	Babylon	64
NY	Bronx - IS52	56
NY	CCNY	53
NY	Flax Pond	76
NY	Fresh Kills	51
NY	Holtsville	61
NY	Pfizer Lab	56
NY	Queens	63
NY	Riverhead	63
NY	Rockland Cty	43
NY	White Plains	52
PA	BRIS (Bucks Co.)	54
PA	CHES (Delaware Co.)	50
PA	NEWG (Chester Co.)	46
PA	NORR (Montgomery Co.)	54
PA	LAB (Philadelphia Co.)	50
PA	NEA (Philadelphia Co.)	55
PA	NEW (Philadelphia Co.)	55
	TOTAL EXCEEDANCES	7

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 – August 2, 2022 NAAQS = 70 ppb
Connecticut	15
Delaware	0
Maryland	1
New Jersey	8
New York	7
Pennsylvania	3

Figure 1. Ozone Air Quality Index for August 2, 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

On Tuesday, August 2nd, the region was under the influence of high pressure with hot temperatures and sunny skies observed. Meanwhile, a low pressure situated to the north began to push east and pull down a cold front toward the region. Light southwest to west winds persisted throughout the nonattainment area, with temperatures ranging from the mid-80s to mid-90s. These conditions, along with abundant sunshine, allowed ozone levels to begin to rise across the area. Additionally, the southwesterly flow along Long Island and the Connecticut coastline caused pollutants from the NYC Metropolitan area and Long Island Sound to move into Connecticut and further enhanced ozone formation in this area. As the afternoon progressed, a surface trough also developed along the New Jersey coast and into Long Island and central Connecticut. This trough caused vertical mixing in the atmosphere, allowing for any ozone precursors aloft to mix down to the surface. Favorable wind direction, as well as favorable meteorological conditions and vertical mixing in the atmosphere, led to the exceedances on Long Island and the Connecticut coastline.

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	77
CT	Westport	80
CT	Madison-Beach Road	76
CT	New Haven	71
CT	Stratford	82
CT	Middletown	73
NY	Flax Pond	76

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

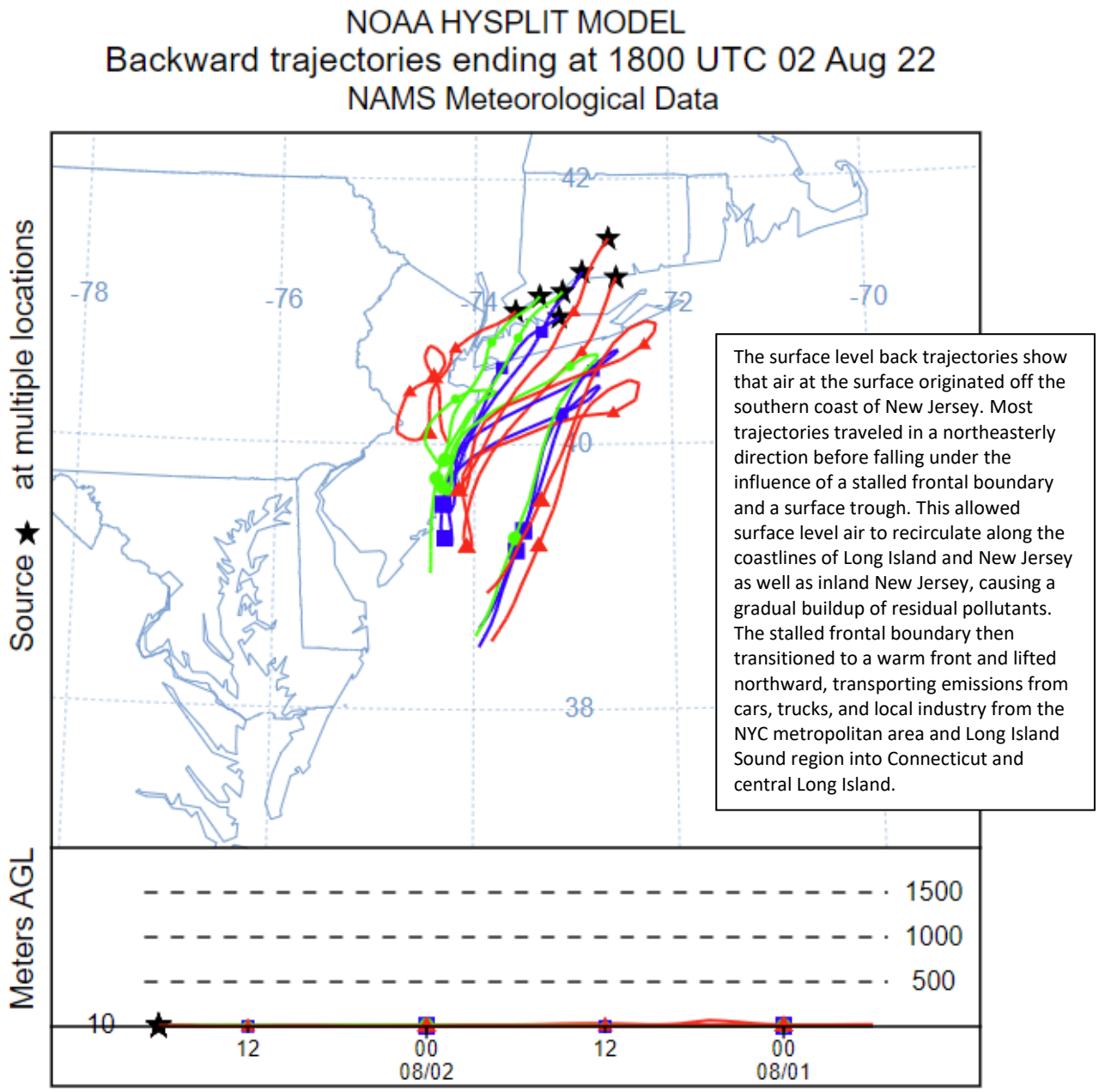


Figure 3. 48-hour Back Trajectories for August 2, 2022 at 500 meters

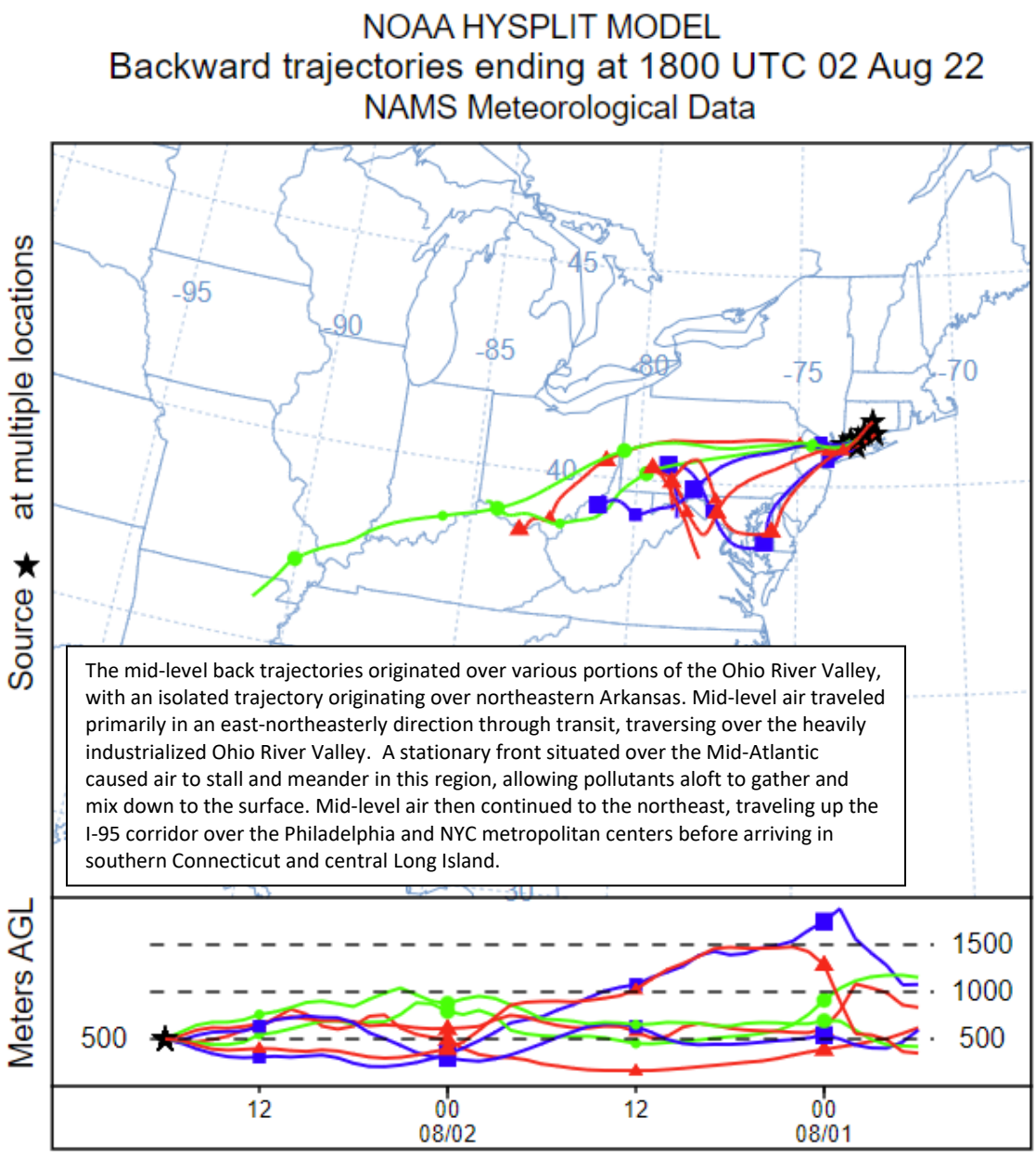


Figure 4. 48-hour Back Trajectories for August 2, 2022 at 1500 meters

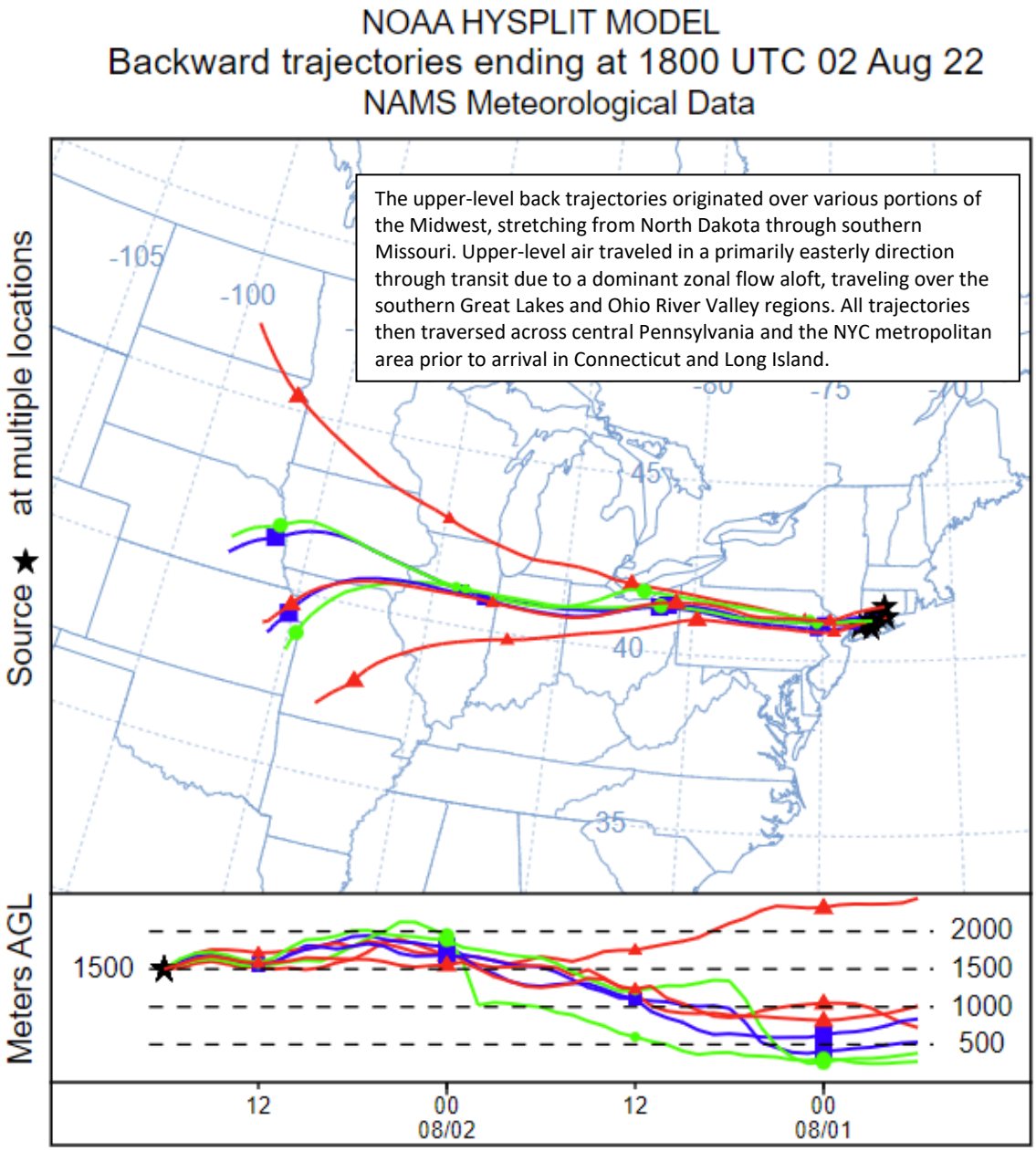
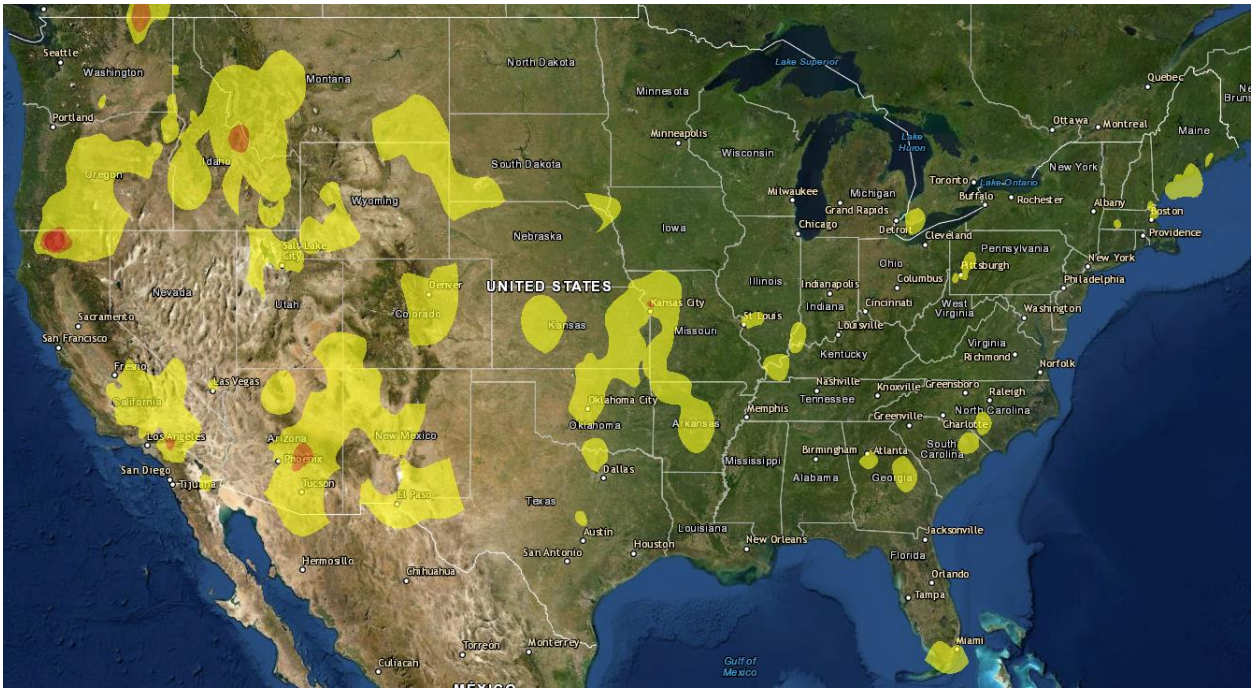


Figure 5. Air Quality Index for the United States on August 1, 2022



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 .