Ozone National Ambient Air Quality Standard Health Exceedances on August 3, 2022

On Wednesday, August 3, 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 8/3/2022

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	52
Bayonne	54
Brigantine	49
Camden Spruce St	47
Chester	57
Clarksboro	60
Colliers Mills	64
Columbia	51
Flemington	53
Leonia	53
Millville	51
Monmouth University	44
Newark Firehouse	50
Ramapo	54
Rider University	51
Rutgers University	48
Washington Crossing*	50
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 was one (1) exceedance 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 8/3/2022

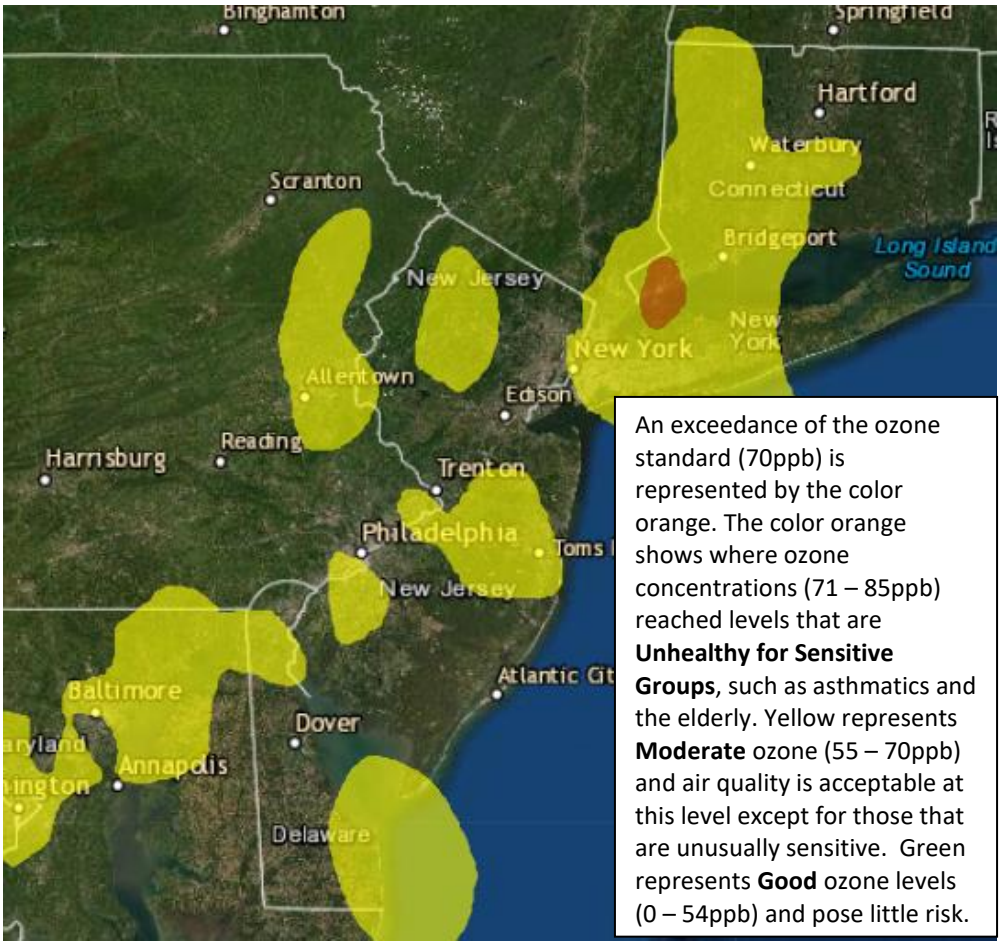
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	57
CT	Greenwich	74
CT	Madison-Beach Road	47
CT	Middletown-CVH-Shed	55
CT	New Haven	56
CT	Stratford	58
CT	Westport	69
DE	BCSP (New Castle Co.)	50
DE	BELLFNT2 (New Castle Co.)	50
DE	KILLENS (Kent Co.)	48
DE	LEWES (Sussex Co.)	56
DE	LUMS 2 (New Castle Co.)	58
DE	MLK (New Castle Co.)	53
DE	SEAFORD (Sussex Co.)	51
MD	Fair Hill	54
NY	Babylon	63
NY	Bronx - IS52	58
NY	CCNY	58
NY	Flax Pond	61
NY	Fresh Kills	51
NY	Holtsville	54
NY	Pfizer Lab	60
NY	Queens	63
NY	Riverhead	49
NY	Rockland Cty	42
NY	White Plains	56
PA	BRIS (Bucks Co.)	55
PA	CHES (Delaware Co.)	No Data
PA	NEWG (Chester Co.)	47
PA	NORR (Montgomery Co.)	No Data
PA	LAB (Philadelphia Co.)	48
PA	NEA (Philadelphia Co.)	54
PA	NEW (Philadelphia Co.)	50
	TOTAL EXCEEDANCES	1

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 3, 2022 NAAQS = 70 ppb
Connecticut	16
Delaware	0
Maryland	1
New Jersey	8
New York	7
Pennsylvania	3

Figure 1. Ozone Air Quality Index for August 3, 2022



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

A prolonged period of high temperatures and regionally elevated ozone levels continued to impact the region on Wednesday August 3, 2022, due to the influence of high pressure. The day began with winds out of the north as a result of a brief, weak cold front moving through the region. This caused areas of patchy clouds throughout the nonattainment area, ultimately suppressing ozone in these regions. In the early afternoon, high pressure began building back into the region, bringing with it a south/southwesterly flow. As the day progressed, winds remained out of the southwest inland with southerly winds along the coast, allowing for a convergence of air masses on interior portions of Connecticut. This paired with a previously polluted air mass and the transport of regional emissions allowed for the isolated ozone exceedance in Greenwich, CT.

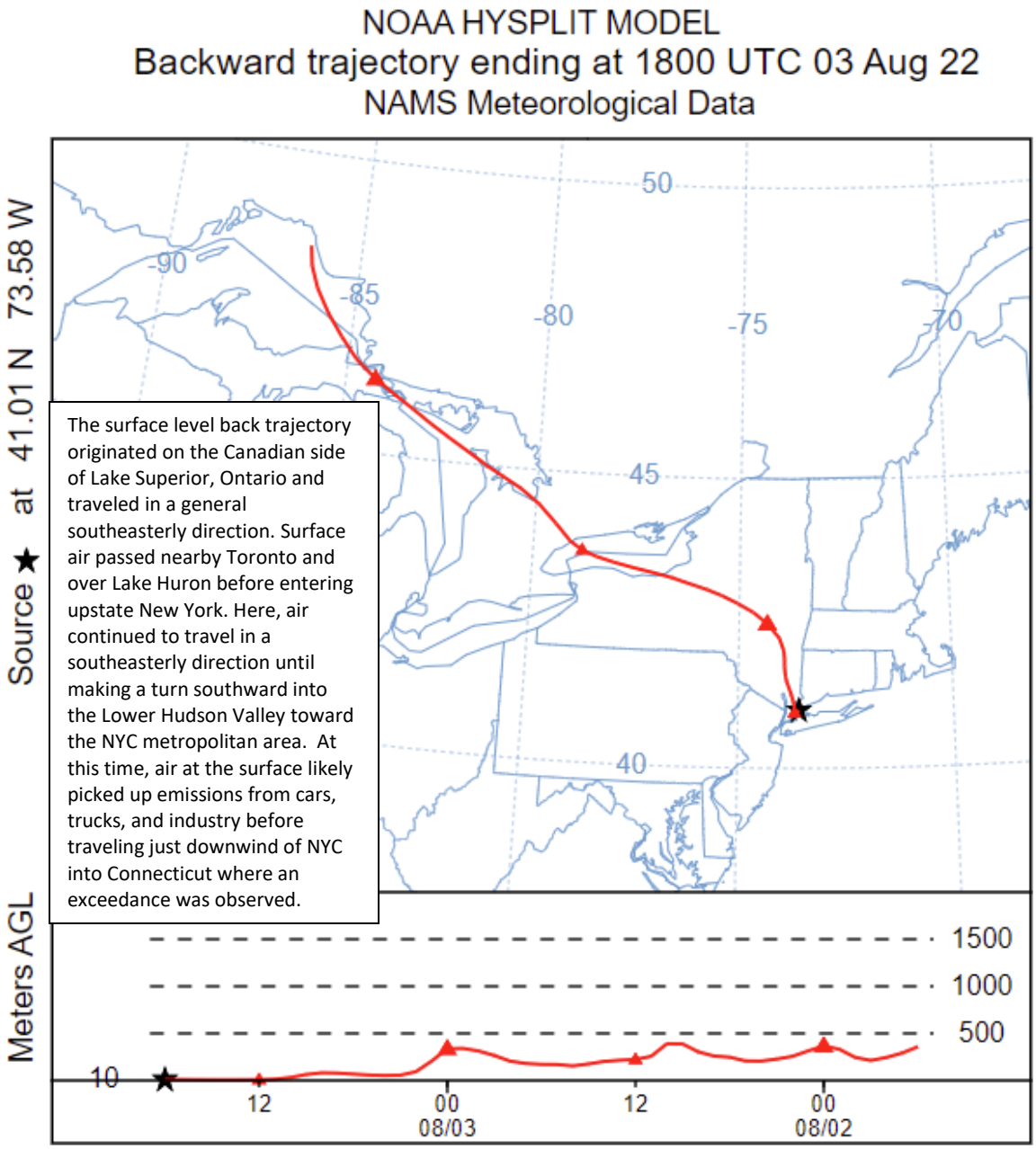
Where Did the Air Pollution that Caused Ozone Come From?

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	74

Figure 2. 48-hour Back Trajectories for August 3, 2022 at 10 meters



The surface level back trajectory originated on the Canadian side of Lake Superior, Ontario and traveled in a general southeasterly direction. Surface air passed nearby Toronto and over Lake Huron before entering upstate New York. Here, air continued to travel in a southeasterly direction until making a turn southward into the Lower Hudson Valley toward the NYC metropolitan area. At this time, air at the surface likely picked up emissions from cars, trucks, and industry before traveling just downwind of NYC into Connecticut where an exceedance was observed.

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

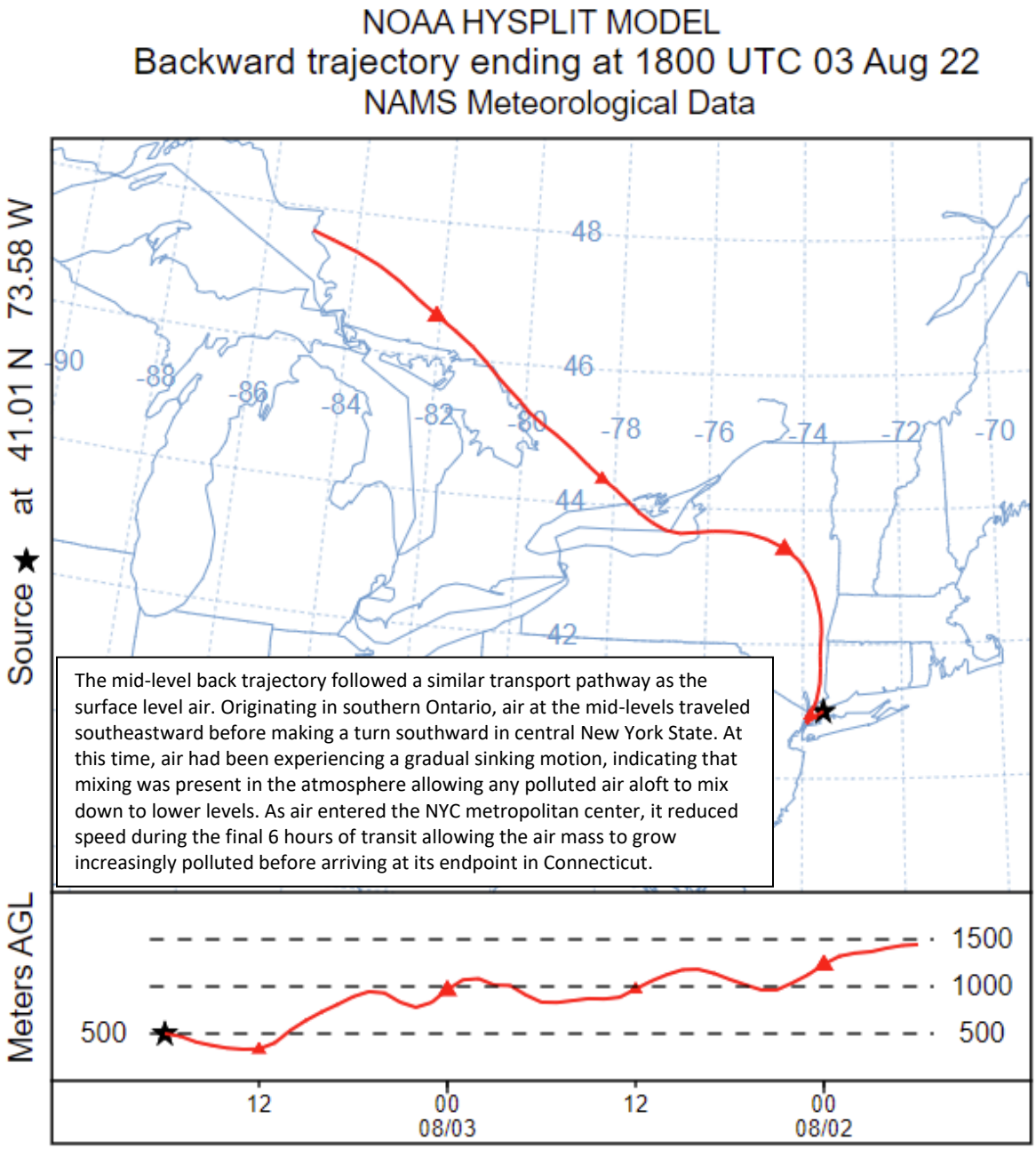


Figure 4. 48-hour Back Trajectories for August 3, 2022 at 1500 meters

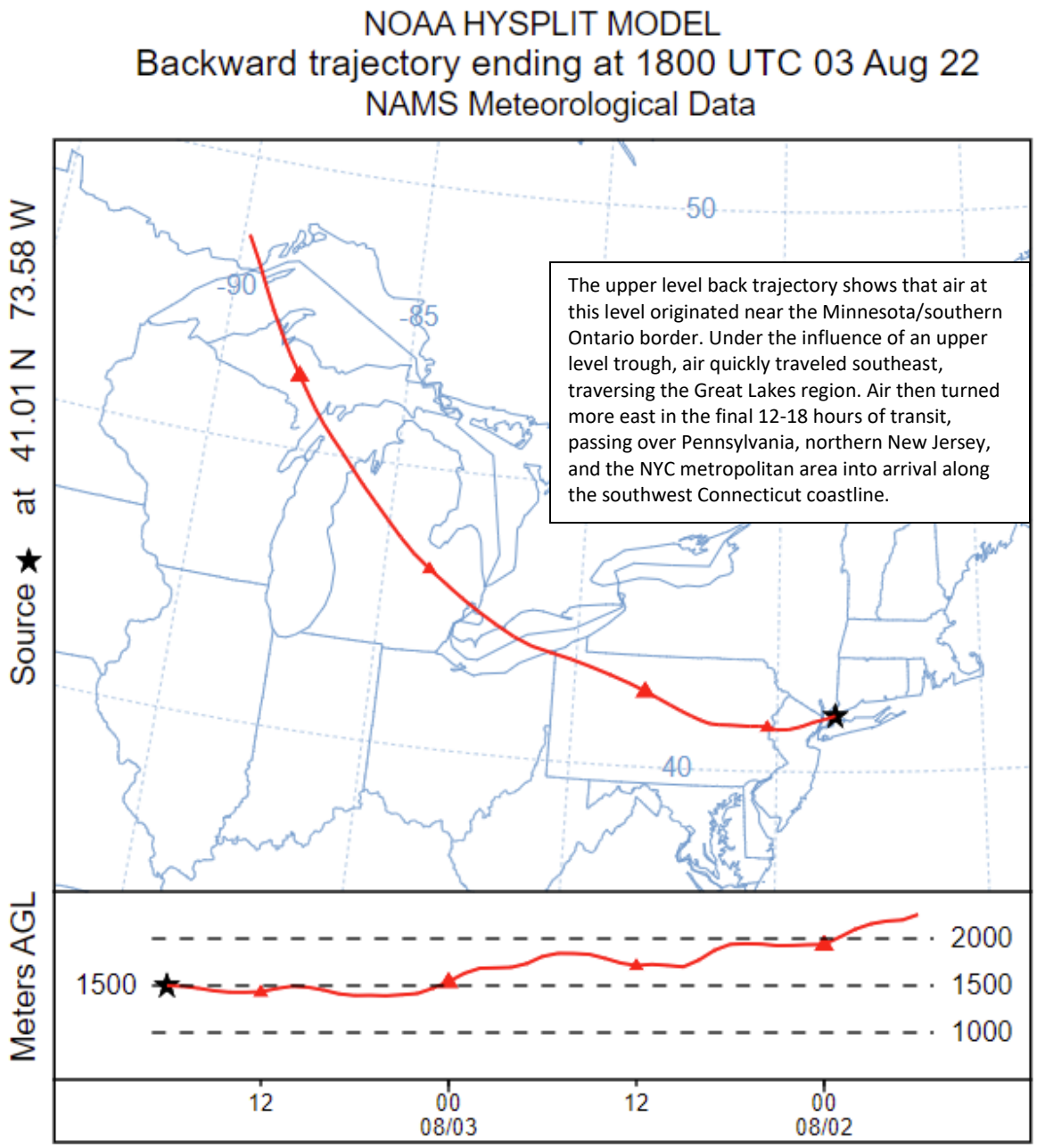
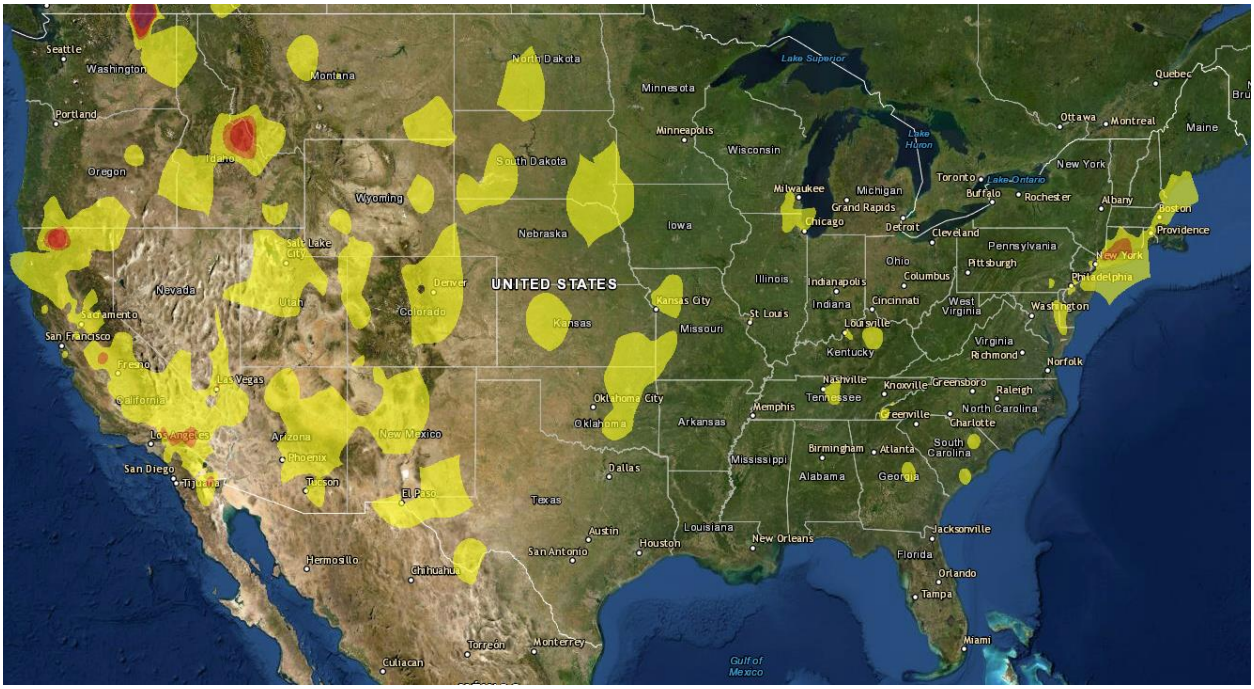


Figure 5. Air Quality Index for the United States on August 2, 2022



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 .