Ozone National Ambient Air Quality Standard Health Exceedances on August 11, 2022

On Thursday, August 11, 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 8/11/2022

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	57
Bayonne	58
Brigantine	39
Camden Spruce St	55
Chester	48
Clarksboro	62
Colliers Mills	52
Columbia	42
Flemington	51
Leonia	50
Millville	56
Monmouth University	64
Newark Firehouse	50
Ramapo	45
Rider University	52
Rutgers University	53
Washington Crossing*	48
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 8/11/2022

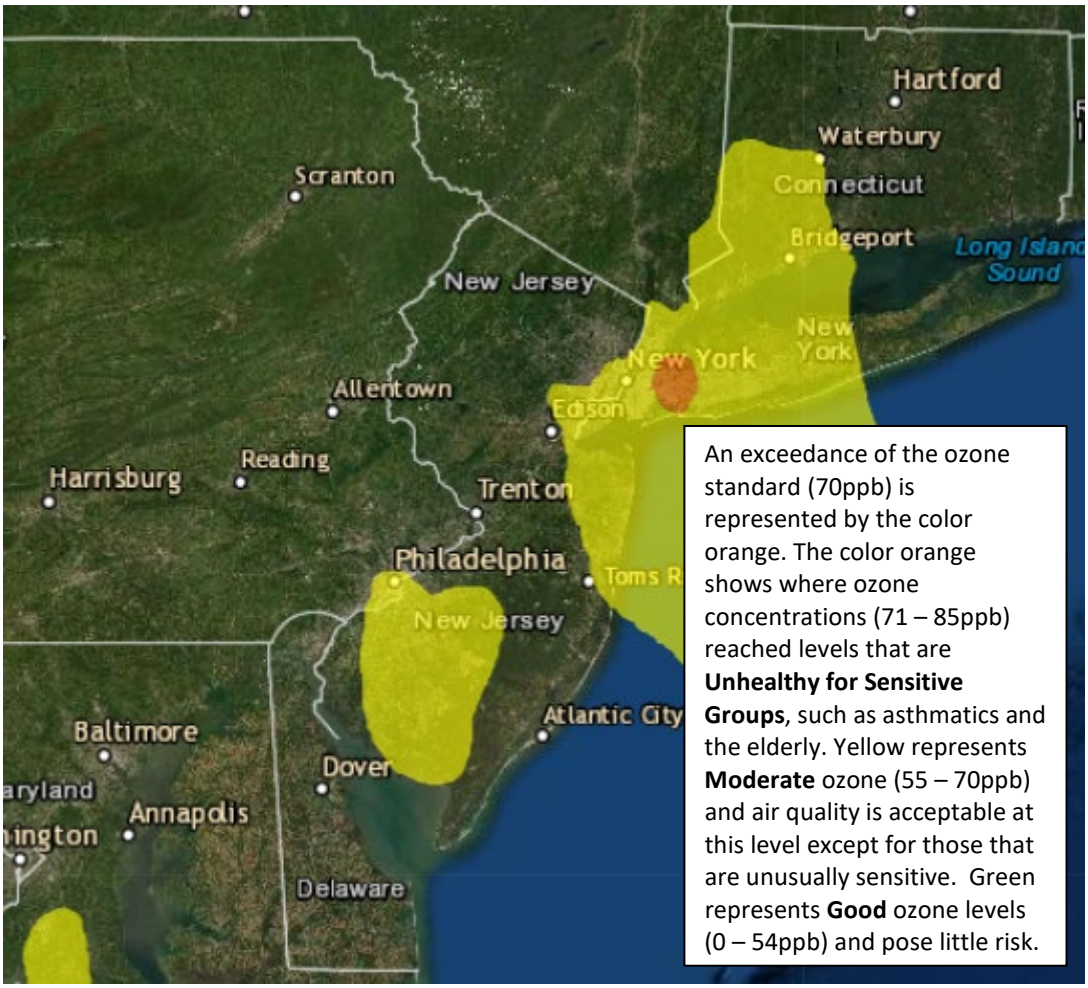
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	56
CT	Greenwich	70
CT	Madison-Beach Road	43
CT	Middletown-CVH-Shed	51
CT	New Haven	53
CT	Stratford	63
CT	Westport	66
DE	BCSP (New Castle Co.)	49
DE	BELLFNT2 (New Castle Co.)	52
DE	KILLENS (Kent Co.)	42
DE	LEWES (Sussex Co.)	42
DE	LUMS 2 (New Castle Co.)	50
DE	MLK (New Castle Co.)	52
DE	SEAFORD (Sussex Co.)	49
MD	Fair Hill	52
NY	Babylon	68
NY	Bronx - IS52	57
NY	CCNY	55
NY	Flax Pond	62
NY	Fresh Kills	61
NY	Holtsville	57
NY	Pfizer Lab	56
NY	Queens	74
NY	Riverhead	45
NY	Rockland Cty	48
NY	White Plains	52
PA	BRIS (Bucks Co.)	53
PA	CHES (Delaware Co.)	51
PA	NEWG (Chester Co.)	50
PA	NORR (Montgomery Co.)	51
PA	LAB (Philadelphia Co.)	50
PA	NEA (Philadelphia Co.)	No Data
PA	NEW (Philadelphia Co.)	No Data
	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 11, 2022 NAAQS = 70 ppb
Connecticut	20
Delaware	0
Maryland	1
New Jersey	8
New York	9
Pennsylvania	3

Figure 1. Ozone Air Quality Index for August 11, 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

Multiple frontal boundaries were in place throughout the nonattainment area on Thursday August 11, 2022, causing a recirculation of air masses that resulted in an isolated ozone exceedance in Queens, NY. Early on Thursday morning, a stalled frontal boundary and associated low pressure system draped across southern New Jersey had produced widespread cloud cover and showers/thunderstorms across the region. As the morning progressed, cloud cover began to ease as the front pushed further offshore and by mid-morning, mostly sunny skies were in place. Temperatures quickly rose into the upper 80's to low 90s around the New York City metropolitan area, along with highly variable wind directions. Surface winds tended primarily out of the northeast throughout the morning before shifting briefly out of the northwest by mid-afternoon, and eventually shifting out of the south by late afternoon as a sea breeze front developed. Additionally, a cold front from the Great Lakes region began to push southeast late in the day, sandwiching the region between two frontal boundaries. This synoptic setup allowed for a recirculation of surface air around the NYC metropolitan area, causing a gradual buildup of localized emissions. Paired with mostly sunny skies and warm temperatures, ozone was able to reach the USG category in Queens, NY.

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 Station with an 8-hr Ozone Exceedance that was selected to Run 48-hr Back Trajectories

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
NY	Queens	74

Figure 2. 48-hour Back Trajectories for August 11, 2022 at 10 meters

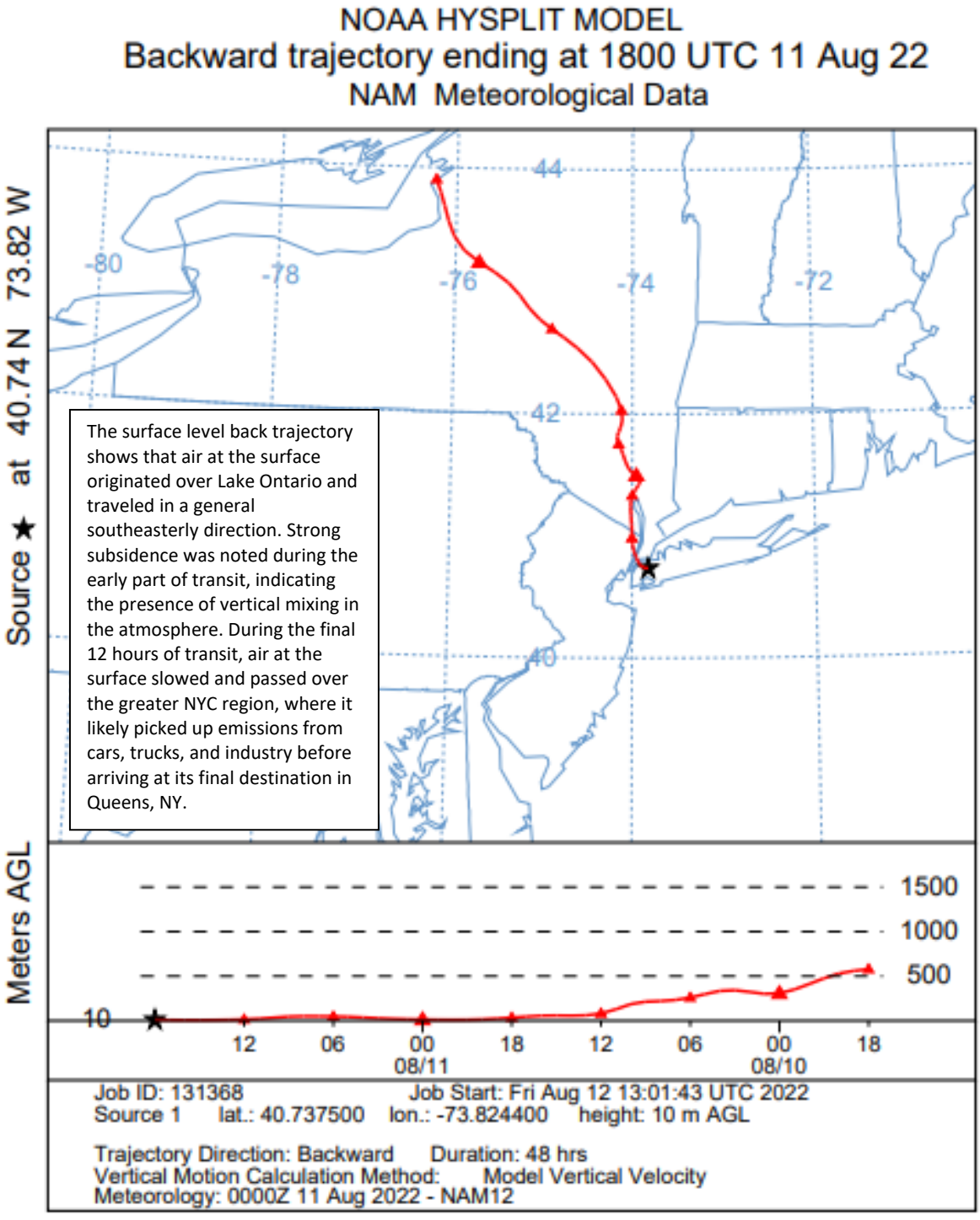


Figure 3. 48-hour Back Trajectories for August 11, 2022 at 500 meters

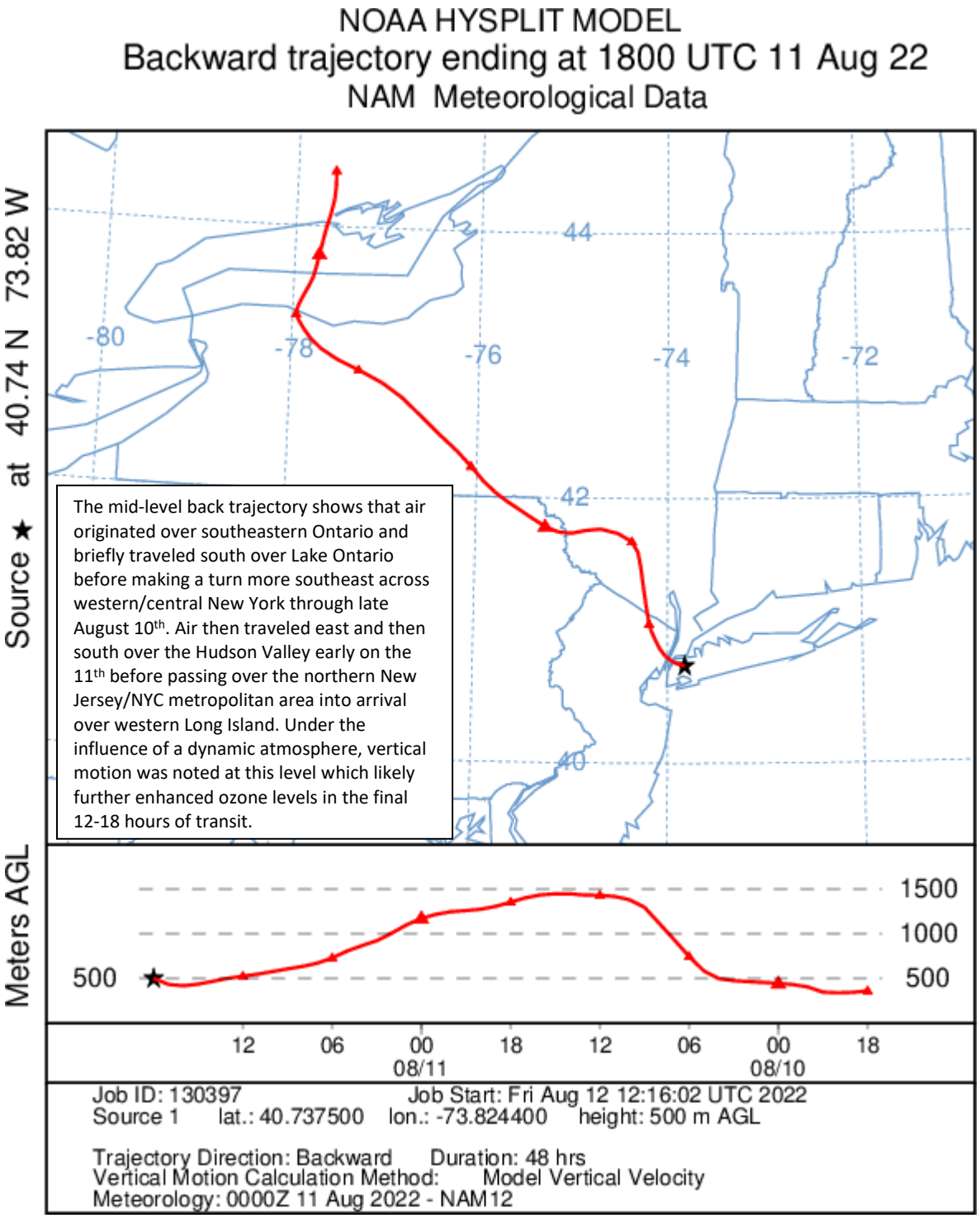


Figure 4. 48-hour Back Trajectories for August 11, 2022 at 1500 meters

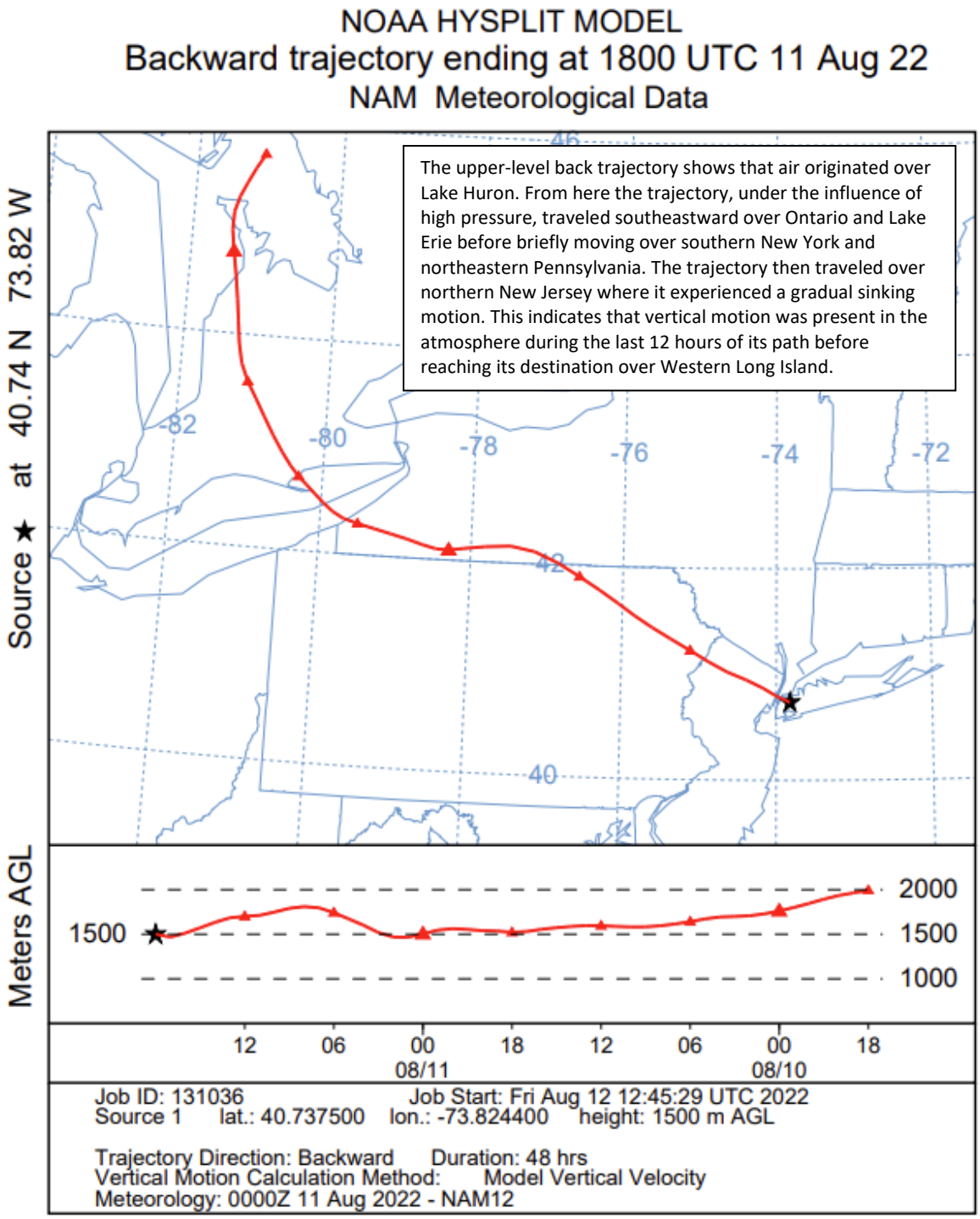
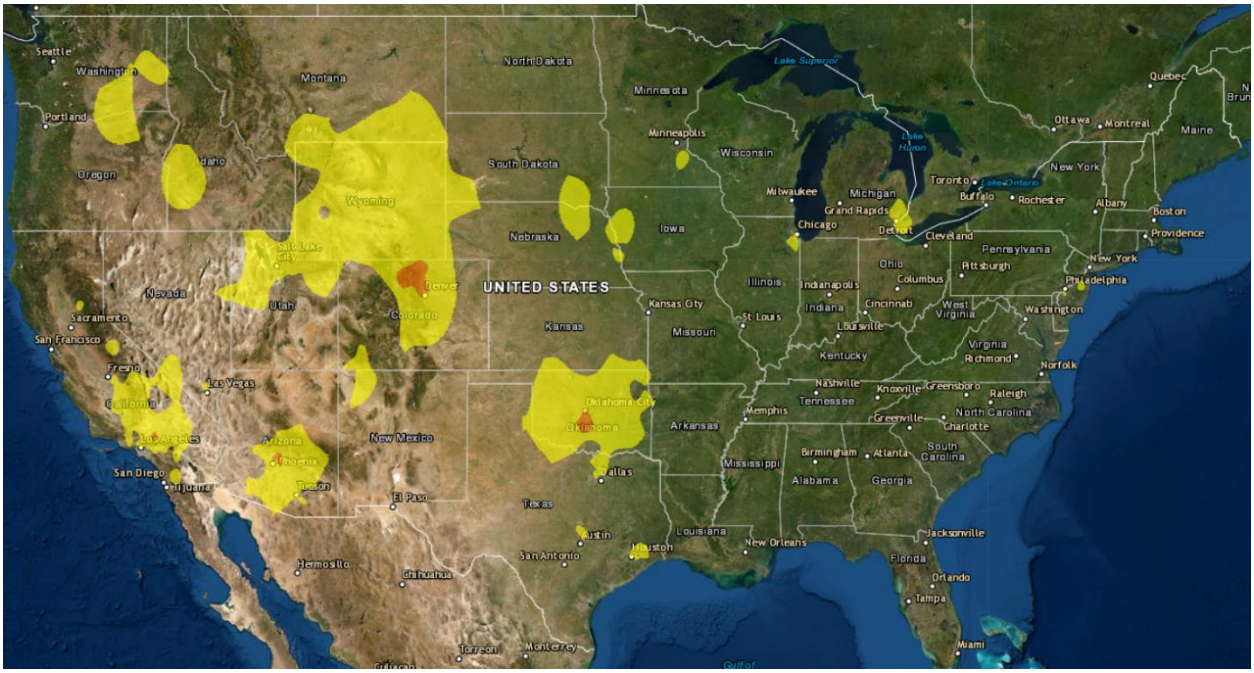


Figure 5. Air Quality Index for the United States on August 10, 2022



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 .