Ozone National Ambient Air Quality Standard Health Exceedances on July 21, 2022

Exceedance Locations and Levels

On Thursday, July 21, 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 7/21/2022

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	54
Bayonne	62
Brigantine	45
Camden Spruce St	56
Chester	63
Clarksboro	60
Colliers Mills	63
Columbia	52
Flemington	63
Leonia	54
Millville	57
Monmouth University	60
Newark Firehouse	66
Ramapo	56
Rider University	67
Rutgers University	68
Washington Crossing*	61
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 7/21/2022

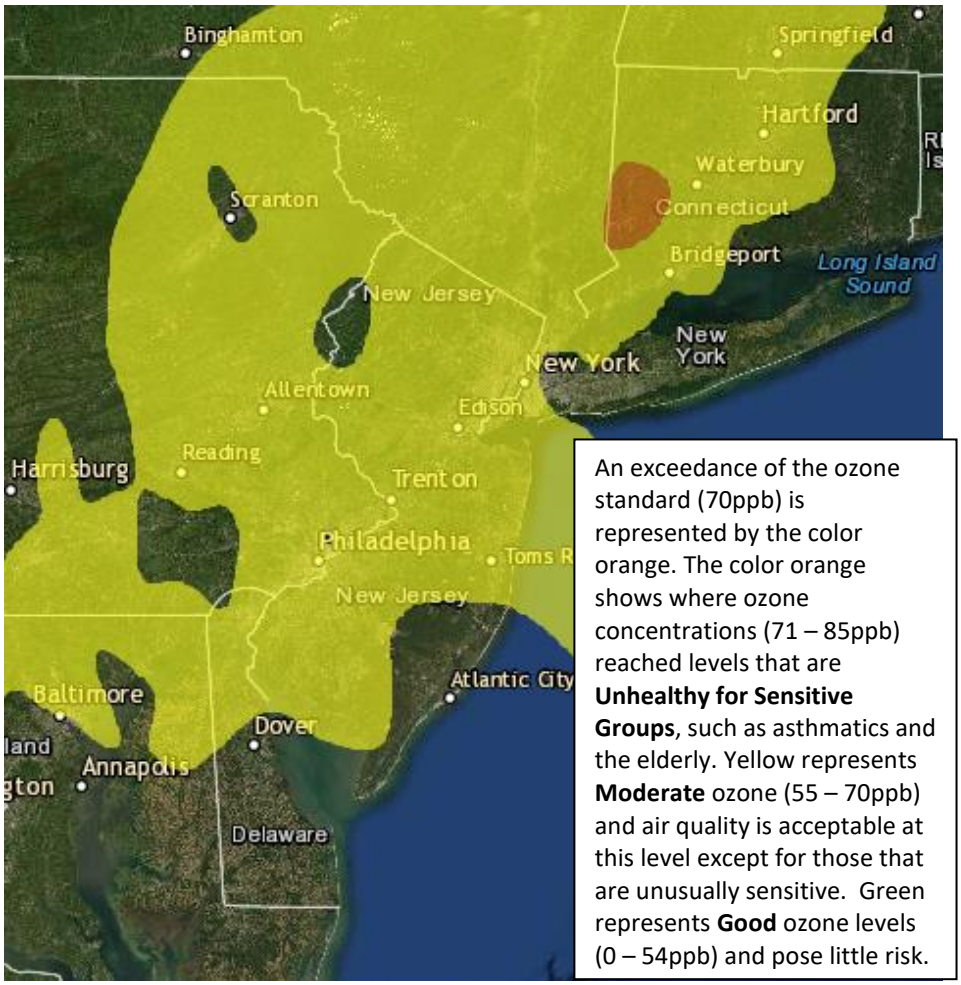
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	82
CT	Greenwich	67
CT	Madison-Beach Road	49
CT	Middletown-CVH-Shed	59
CT	New Haven	48
CT	Stratford	57
CT	Westport	60
DE	BCSP (New Castle Co.)	56
DE	BELLFNT2 (New Castle Co.)	60
DE	KILLENS (Kent Co.)	49
DE	LEWES (Sussex Co.)	47
DE	LUMS 2 (New Castle Co.)	61
DE	MLK (New Castle Co.)	58
DE	SEAFORD (Sussex Co.)	44
MD	Fair Hill	59
NY	Babylon	49
NY	Bronx - IS52	51
NY	CCNY	56
NY	Flax Pond	47
NY	Fresh Kills	65
NY	Holtsville	45
NY	Pfizer Lab	59
NY	Queens	52
NY	Riverhead	47
NY	Rockland Cty	62
NY	White Plains	63
PA	BRIS (Bucks Co.)	63
PA	CHES (Delaware Co.)	55
PA	NEWG (Chester Co.)	44
PA	NORR (Montgomery Co.)	60
PA	LAB (Philadelphia Co.)	52
PA	NEA (Philadelphia Co.)	66
PA	NEW (Philadelphia Co.)	65
	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 – July 21, 2022 NAAQS = 70 ppb
Connecticut	10
Delaware	0
Maryland	1
New Jersey	5
New York	4
Pennsylvania	2

Figure 1. Ozone Air Quality Index for July 21, 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

Broad high pressure over the eastern United States continued to impact the region on Thursday July 21, 2022. This resulted in a prolonged period of high temperatures and poor air quality in the days leading up to the exceedance event. South/southwesterly winds were in place across much of the nonattainment zone early on the 21st, with a surface trough developing by late morning along the I-95 corridor and interior Connecticut. A weak cold front also approached from the west, fueling scattered severe thunderstorms across the NYC metropolitan area, ultimately suppressing ozone in these regions. 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 deteriorated air mass and the transport of regional emissions allowed for the isolated ozone exceedance in Danbury, 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	Danbury	82

Figure 2. 48-hour Back Trajectories for July 21, 2022 at 10 meters

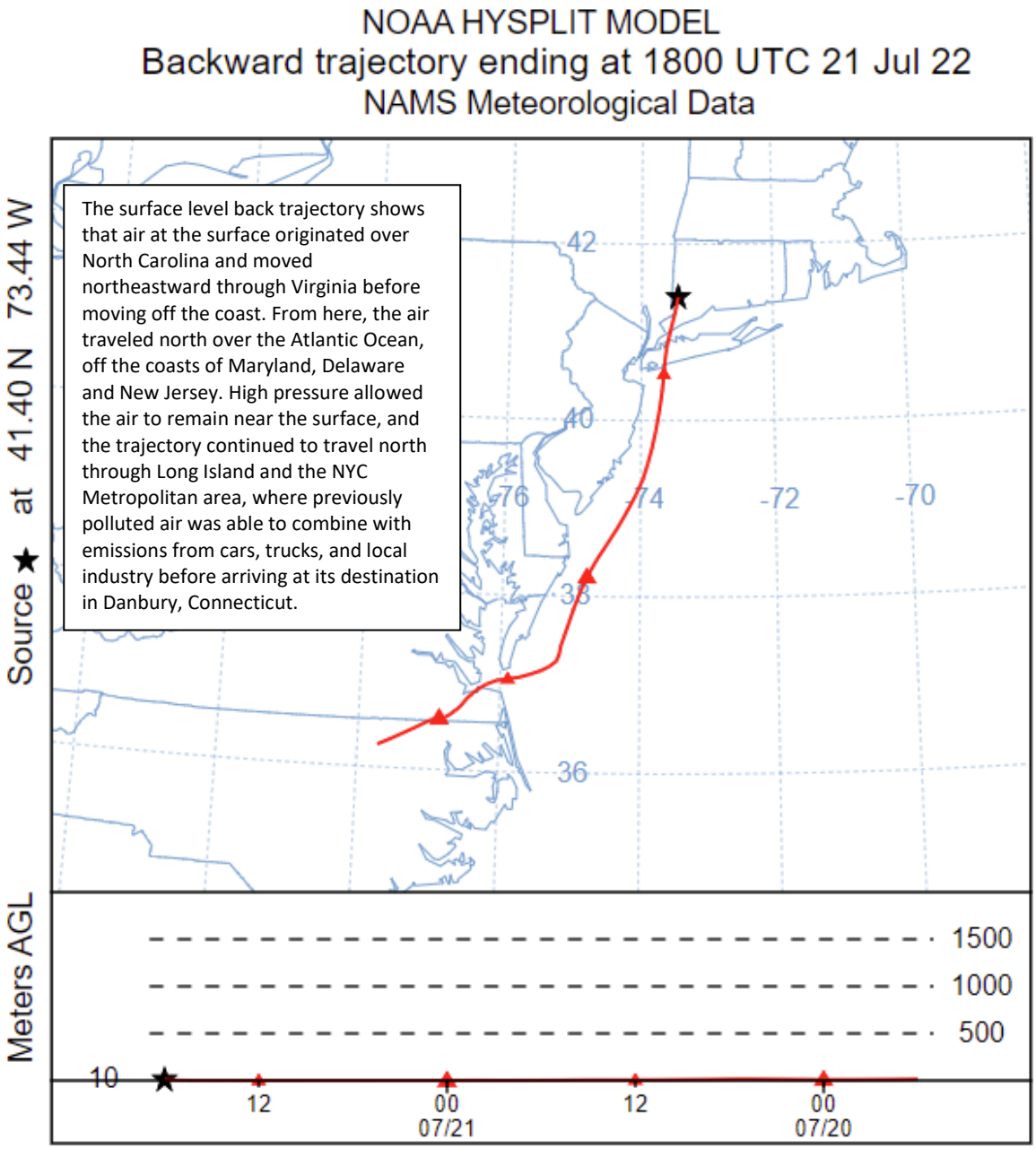


Figure 3. 48-hour Back Trajectories for July 21, 2022 at 500 meters

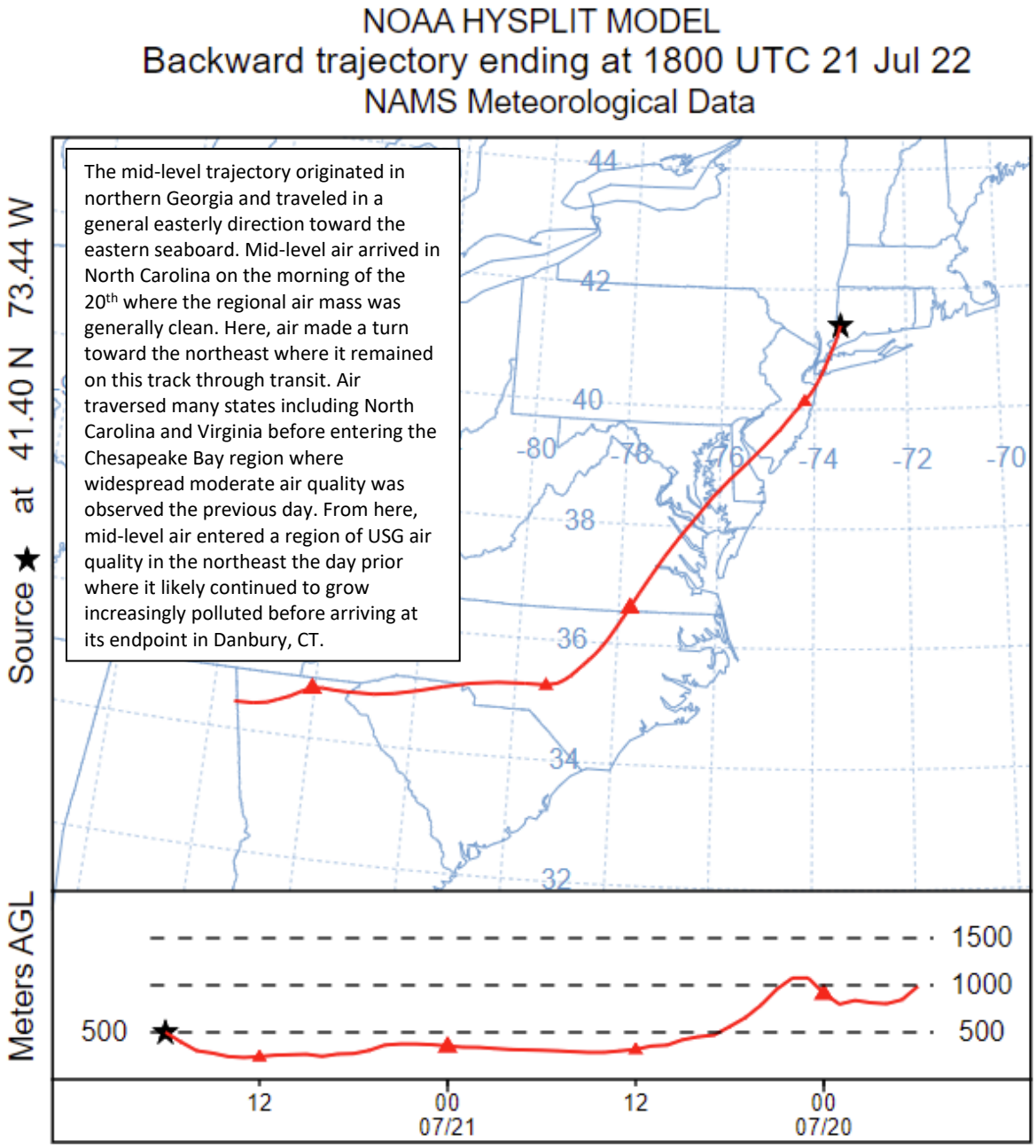


Figure 4. 48-hour Back Trajectories for July 21, 2022 at 1500 meters

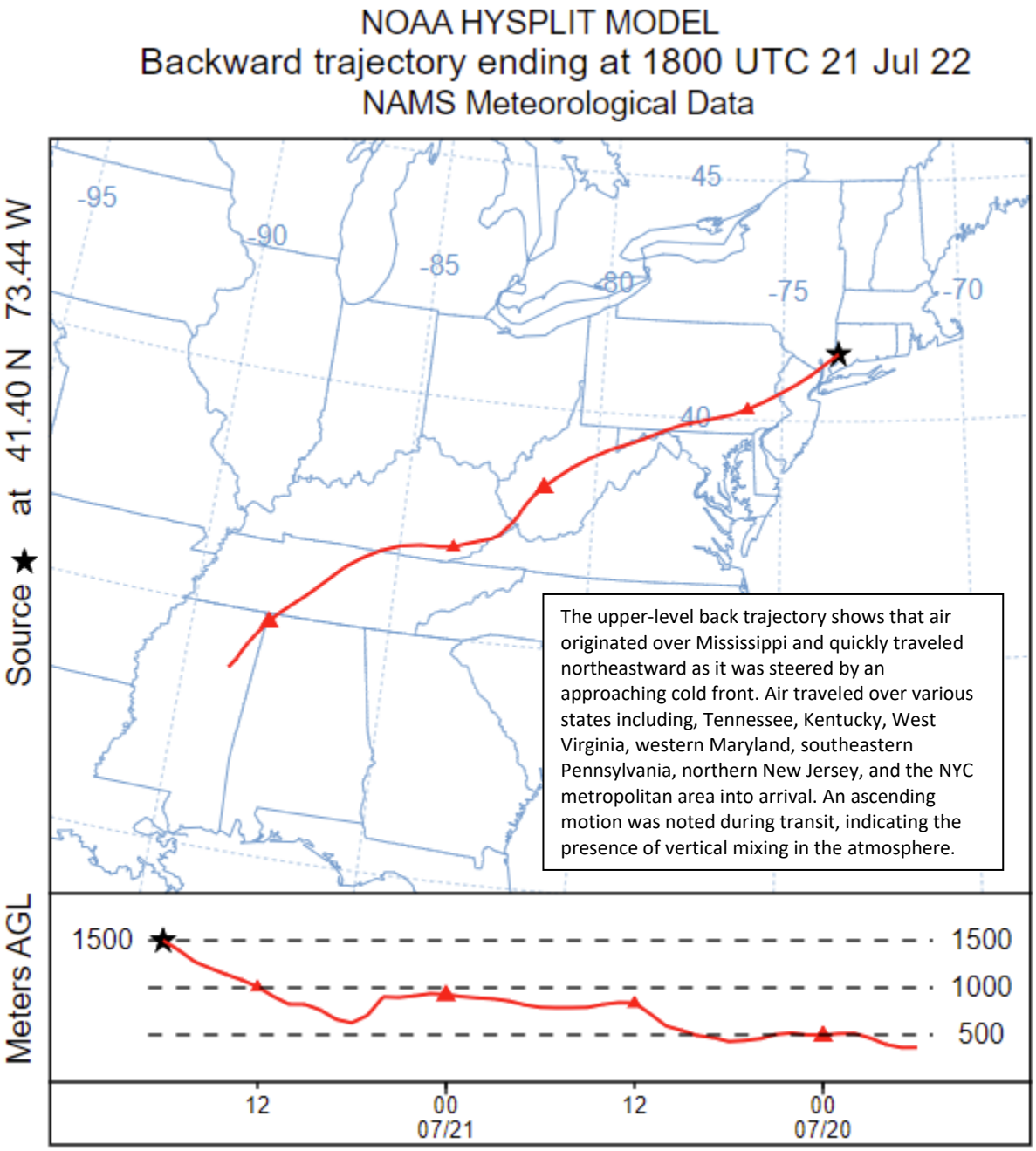
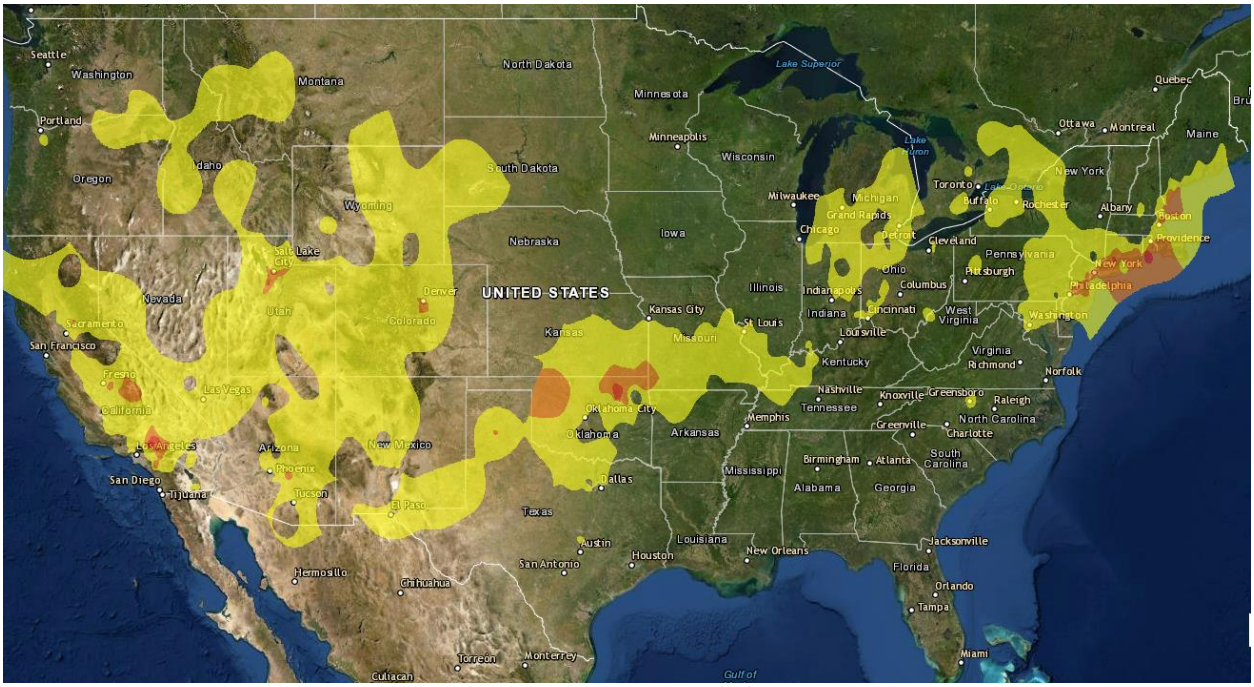


Figure 5. Air Quality Index for the United States on July 20, 2022



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 .