Ozone National Ambient Air Quality Standard Health Exceedances on July 28, 2022

Exceedance Locations and Levels

On Thursday, July 28, 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 7/28/2022

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	53
Bayonne	56
Brigantine	45
Camden Spruce St	57
Chester	53
Clarksboro	62
Colliers Mills	61
Columbia	49
Flemington	52
Leonia	61
Millville	52
Monmouth University	44
Newark Firehouse	51
Ramapo	50
Rider University	58
Rutgers University	59
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 were two (2) 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 7/28/2022

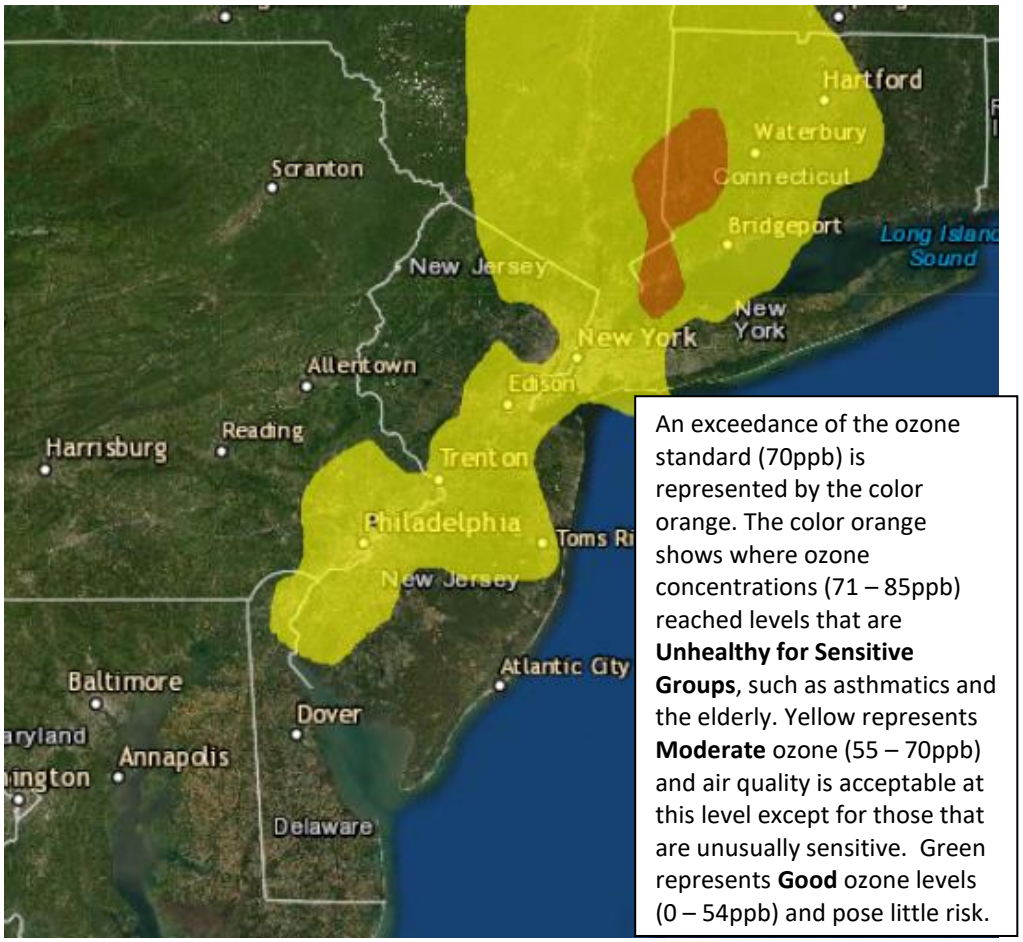
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	75
CT	Greenwich	75
CT	Madison-Beach Road	53
CT	Middletown-CVH-Shed	56
CT	New Haven	56
CT	Stratford	66
CT	Westport	65
DE	BCSP (New Castle Co.)	53
DE	BELLFNT2 (New Castle Co.)	56
DE	KILLENS (Kent Co.)	42
DE	LEWES (Sussex Co.)	42
DE	LUMS 2 (New Castle Co.)	54
DE	MLK (New Castle Co.)	56
DE	SEAFORD (Sussex Co.)	41
MD	Fair Hill	52
NY	Babylon	53
NY	Bronx - IS52	54
NY	CCNY	57
NY	Flax Pond	55
NY	Fresh Kills	58
NY	Holtsville	50
NY	Pfizer Lab	58
NY	Queens	58
NY	Riverhead	49
NY	Rockland Cty	57
NY	White Plains	67
PA	BRIS (Bucks Co.)	59
PA	CHES (Delaware Co.)	No Data
PA	NEWG (Chester Co.)	44
PA	NORR (Montgomery Co.)	No Data
PA	LAB (Philadelphia Co.)	52
PA	NEA (Philadelphia Co.)	59
PA	NEW (Philadelphia Co.)	64
	TOTAL EXCEEDANCES	2

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 28, 2022 NAAQS = 70 ppb
Connecticut	14
Delaware	0
Maryland	1
New Jersey	8
New York	6
Pennsylvania	3

Figure 1. Ozone Air Quality Index for July 28, 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

On Thursday July 28th, the region was situated between a cold front to the west and a warm front pulling away to the east. The warm front had moved through the area the night before, allowing for temperatures and humidity to soar into the mid-80s to mid-90s. Winds in the southern portions of the nonattainment area were mainly out of the southwest during the day, while in northern portions winds were mainly out of the south. Much of the region also experienced extensive cloud cover, which was able to suppress ozone formation for most of the nonattainment area. However, locations along the Connecticut coastline experienced numerous breaks in clouds, where mostly sunny skies were observed throughout much of the day. Hot temperatures combined with sunshine and light southerly winds, which transported ozone precursors from Long Island Sound, created a conducive environment for ozone formation. These favorable conditions combined with transport from upwind locations led to the isolated ozone exceedances in Greenwich and Danbury Connecticut.

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	75
CT	Greenwich	75

Figure 2. 48-hour Back Trajectories for July 28, 2022 at 10 meters

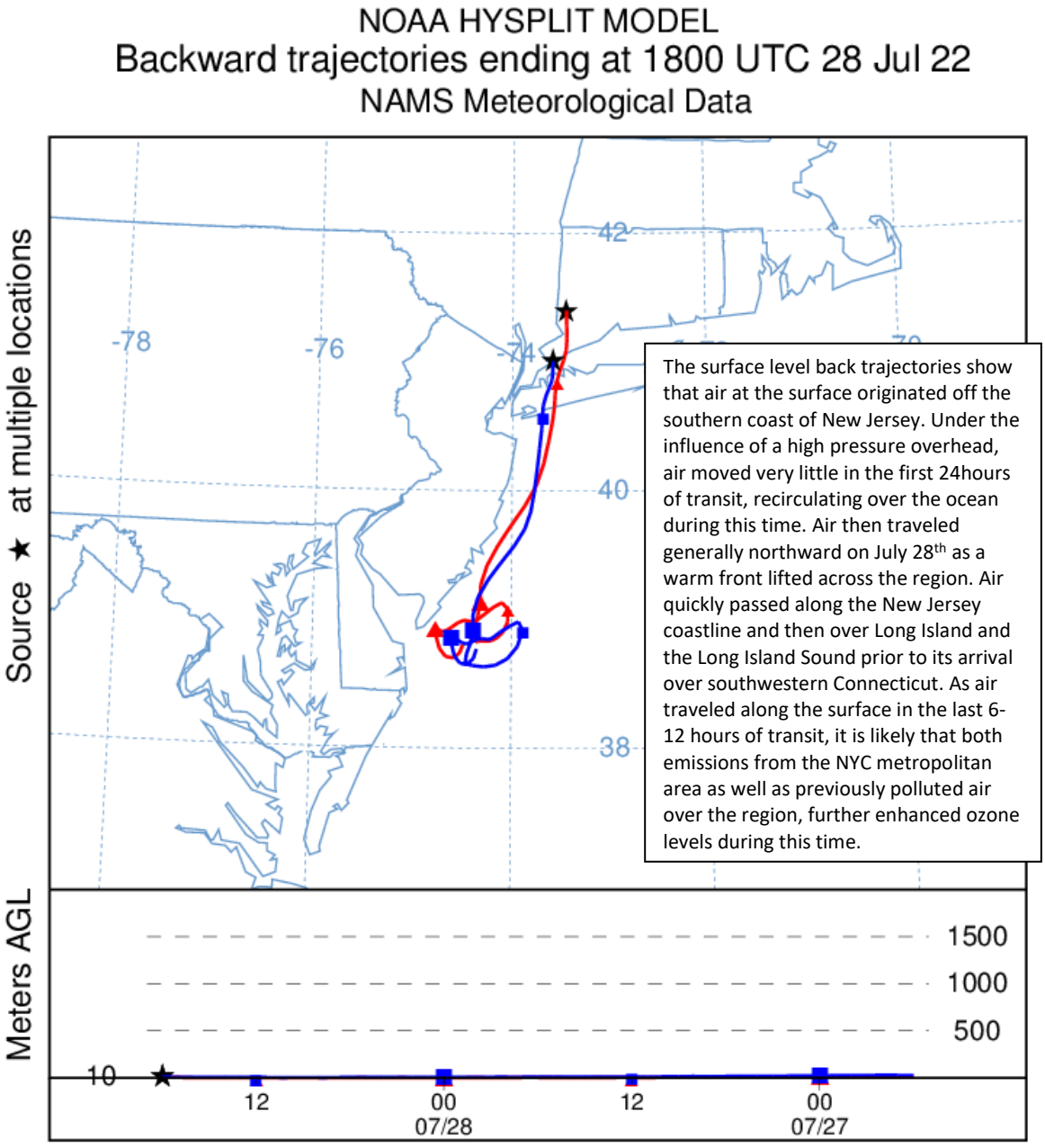


Figure 3. 48-hour Back Trajectories for July 28, 2022 at 500 meters

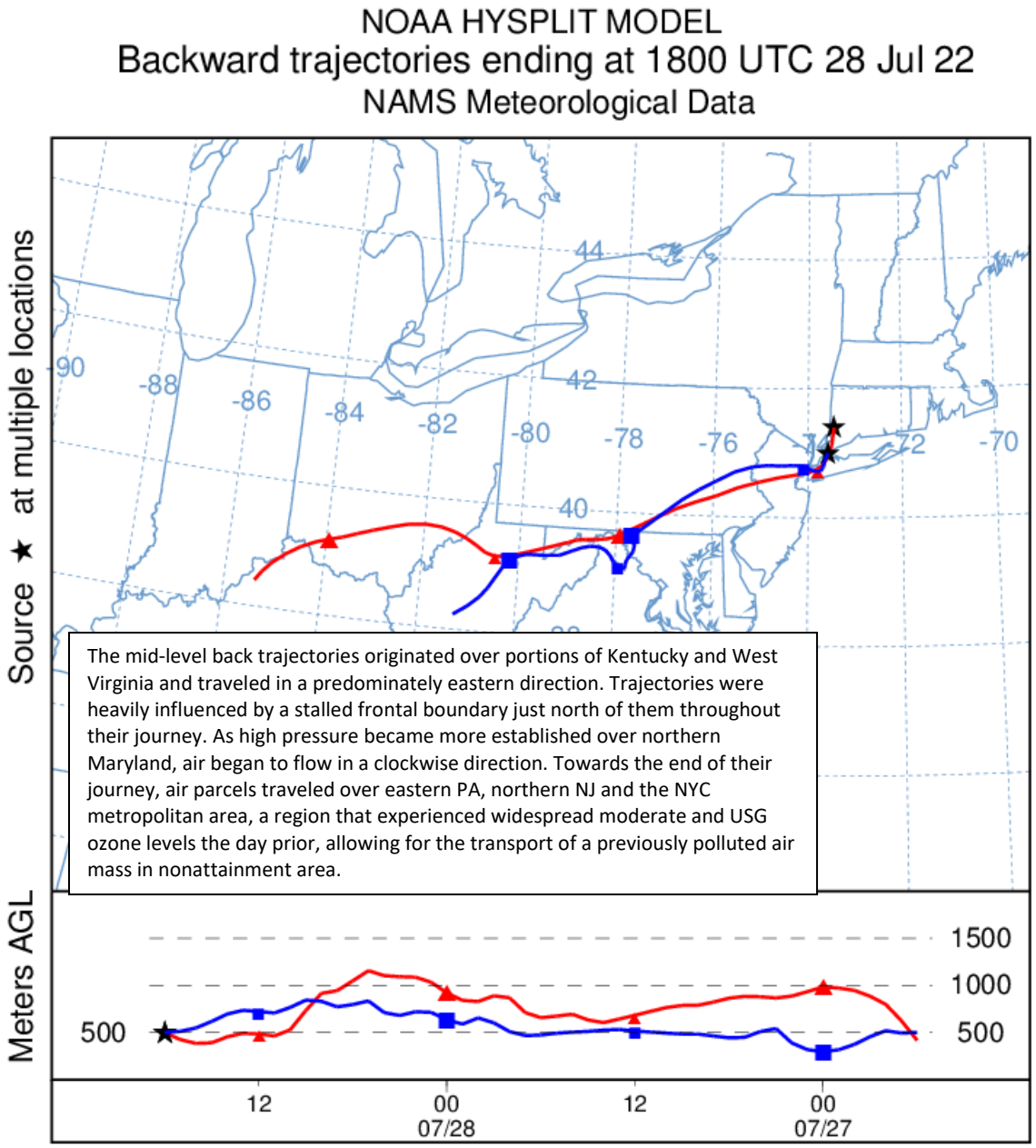


Figure 4. 48-hour Back Trajectories for July 28, 2022 at 1500 meters

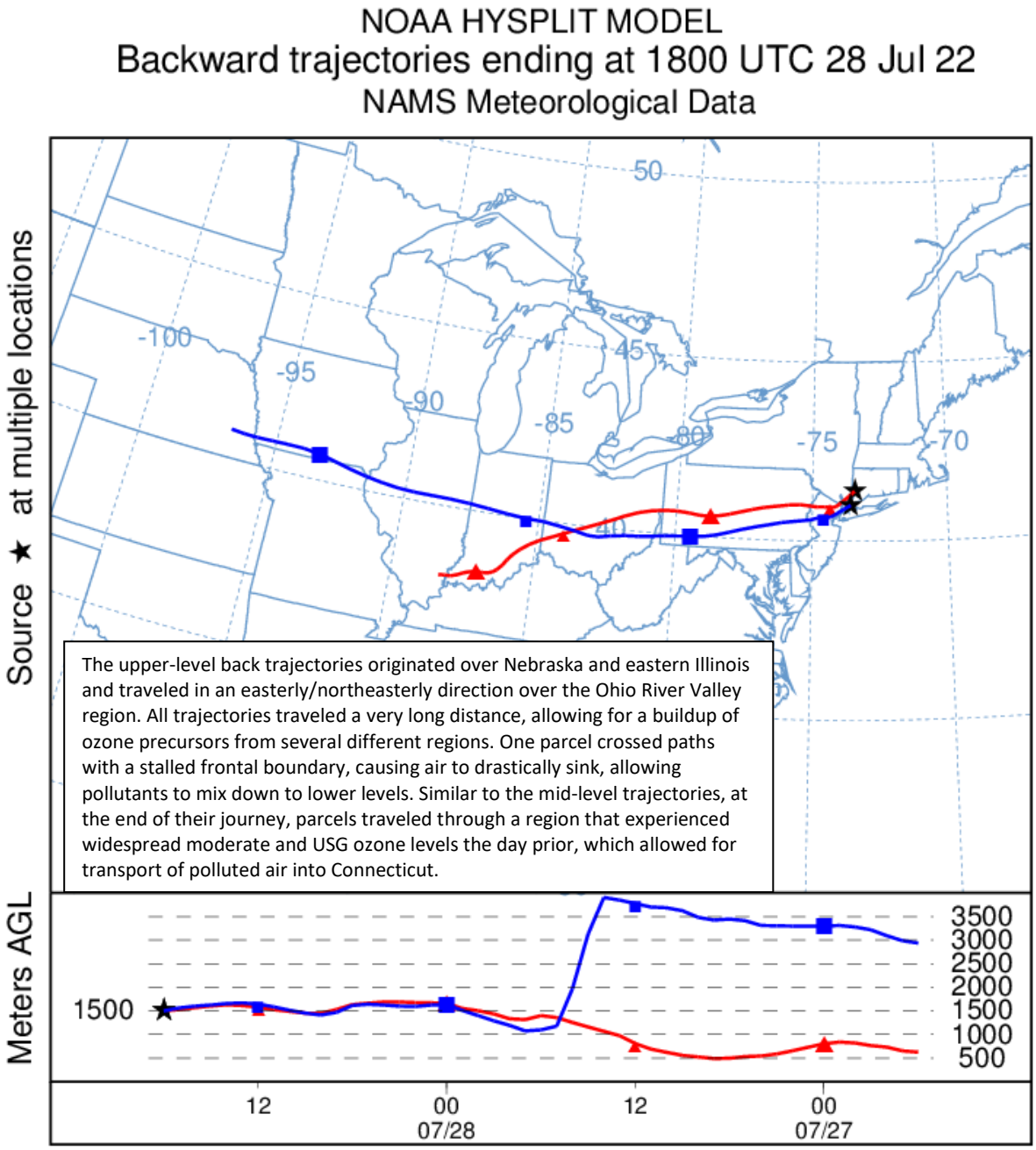
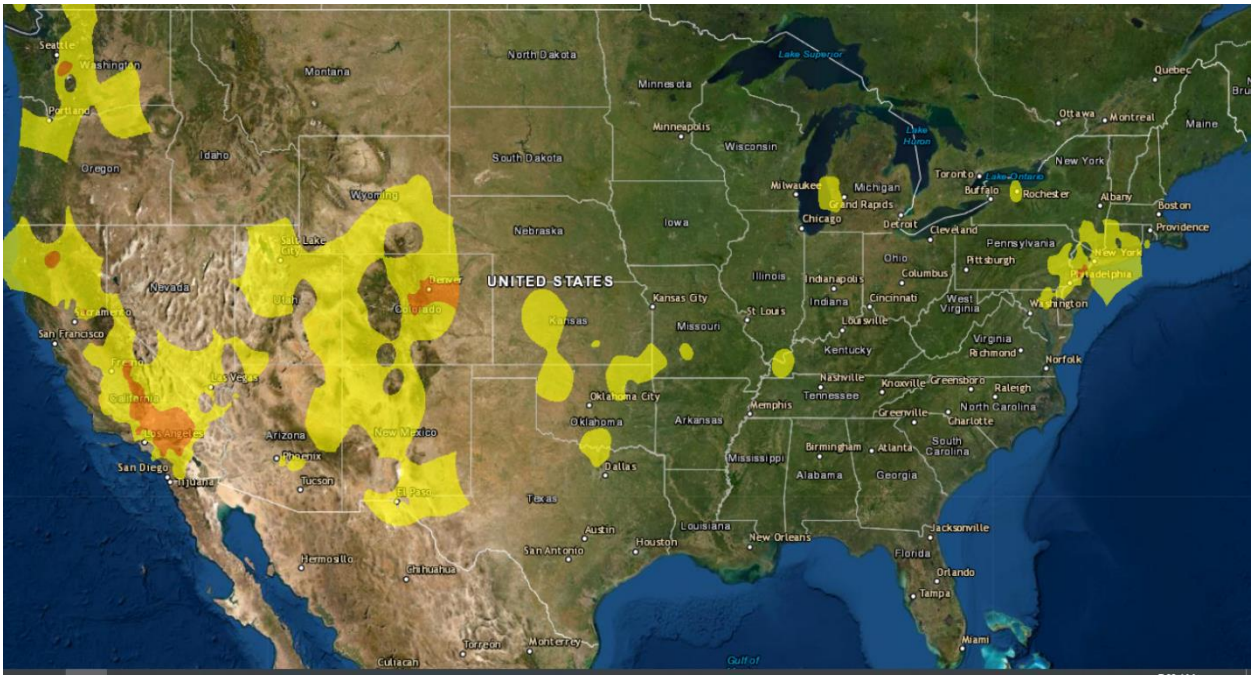


Figure 5. Air Quality Index for the United States on July 27, 2022



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 .