Ozone National Ambient Air Quality Standard Health Exceedances on July 29, 2023

Exceedance Locations and Levels

On Saturday, July 29, 2023, 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 7/29/2023

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	48
Bayonne	48
Brigantine	42
Camden Spruce St	57
Chester	47
Clarksboro	57
Colliers Mills	59
Columbia	35
Flemington	49
Leonia	48
Millville	46
Monmouth University	58
Ramapo	37
Rider University	52
Rutgers University	52
Washington Crossing*	47
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 six (6) 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 7/29/2023

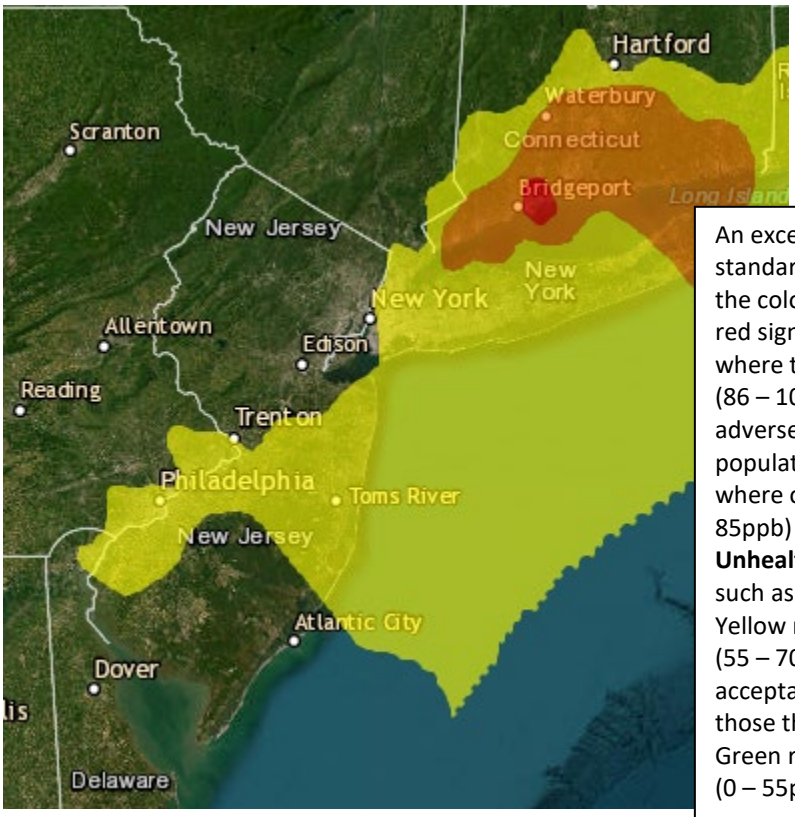
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	55
CT	Greenwich	71
CT	Madison-Beach Road	81
CT	Middletown-CVH-Shed	80
CT	New Haven	82
CT	Stratford	86
CT	Westport	79
DE	BCSP (New Castle Co.)	48
DE	BELLFNT2 (New Castle Co.)	55
DE	KILLENS (Kent Co.)	43
DE	LEWES (Sussex Co.)	45
DE	LUMS 2 (New Castle Co.)	50
DE	MLK (New Castle Co.)	55
DE	SEAFORD (Sussex Co.)	46
MD	Fair Hill	51
NY	Babylon	64
NY	Bronx - IS52	58
NY	CCNY	55
NY	Flax Pond	69
NY	Fresh Kills	50
NY	Holtsville	60
NY	Pfizer Lab	57
NY	Queens	65
NY	Riverhead	62
NY	Rockland Cty	46
NY	White Plains	53
PA	BRIS (Bucks Co.)	61
PA	CHES (Delaware Co.)	58
PA	NEWG (Chester Co.)	44
PA	NORR (Montgomery Co.)	51
PA	LAB (Philadelphia Co.)	49
PA	NEA (Philadelphia Co.)	57
PA	NEW (Philadelphia Co.)	58
	TOTAL EXCEEDANCES	6

The number of days in 2023 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 2023

STATE	# of Days NAAQS was Exceeded January 1 – July 29, 2023 NAAQS = 70 ppb
Connecticut	17
Delaware	4
Maryland	3
New Jersey	14
New York	14
Pennsylvania	10

Figure 1. Ozone Air Quality Index for July 29, 2023



An exceedance of the ozone standard (70ppb) is represented by the colors red and orange. The color red signifies **Unhealthy** ozone levels where the concentrations of ozone (86 – 105ppb) can begin to have adverse effects on the general population. 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 – 55ppb) and pose little risk.

Source: www.airnow.gov

For ozone terminology definitions see NJDEP Air Quality Planning's Glossary and Acronyms webpage: https://www.nj.gov/dep/airmon/glossary.html

Weather

On Saturday, July 29th Bermuda high pressure remained anchored off the eastern seaboard allowing southwesterly winds to provide excessive heat and humidity to the region. Saturday marked the third and final day of excessive heat and humidity, which allowed the region to experience an increasing trend in ozone exceedances during this period leading to this high ozone exceedance event. During the daytime hours, temperatures soared into the low 90s with high humidity and clear skies allowing ozone concentrations along the Connecticut coastline to spike under these conditions as early as 11am. In addition, southwesterly winds likely allowed for the transport of emissions from the New York City metropolitan center and Long Island downwind into Connecticut on this day allowing ozone concentrations to become further exacerbated. As the day progressed, skies turned cloudier in the late afternoon as a cold front approached the region triggering showers and thunderstorms along this boundary. As the storms rolled in, ozone production was immediately shut down in locations that received storms while locations that did not receive as much rainfall continued to experience elevated ozone concentrations into the early evening.

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	Stratford	86
CT	New Haven	82
CT	Madison	81
CT	Middletown	80
CT	Westport	79
CT	Greenwich	71

Figure 2. 48-hour Back Trajectories for July 29, 2023 at 10 meters

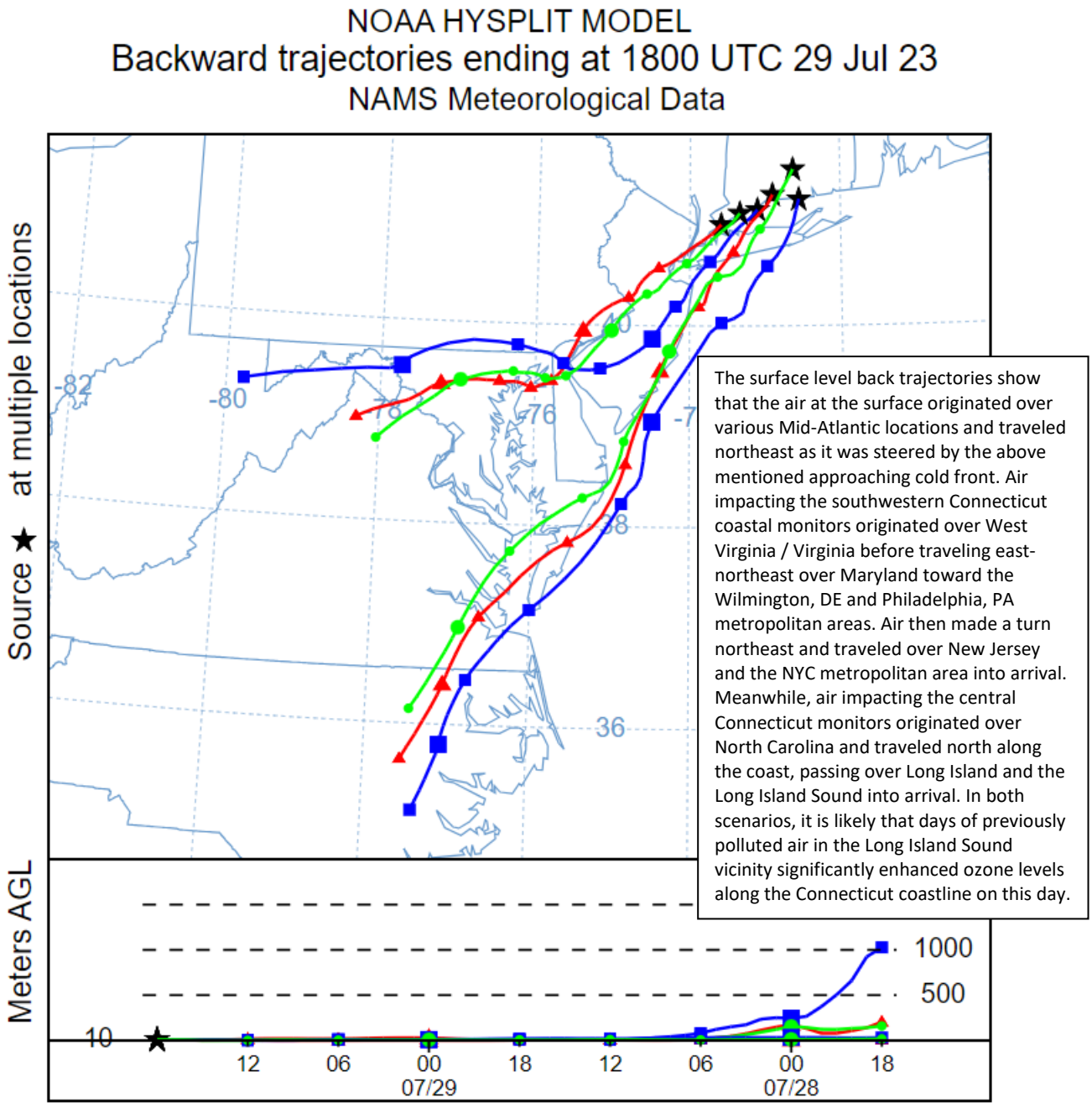


Figure 3. 48-hour Back Trajectories for July 29, 2023 at 500 meters

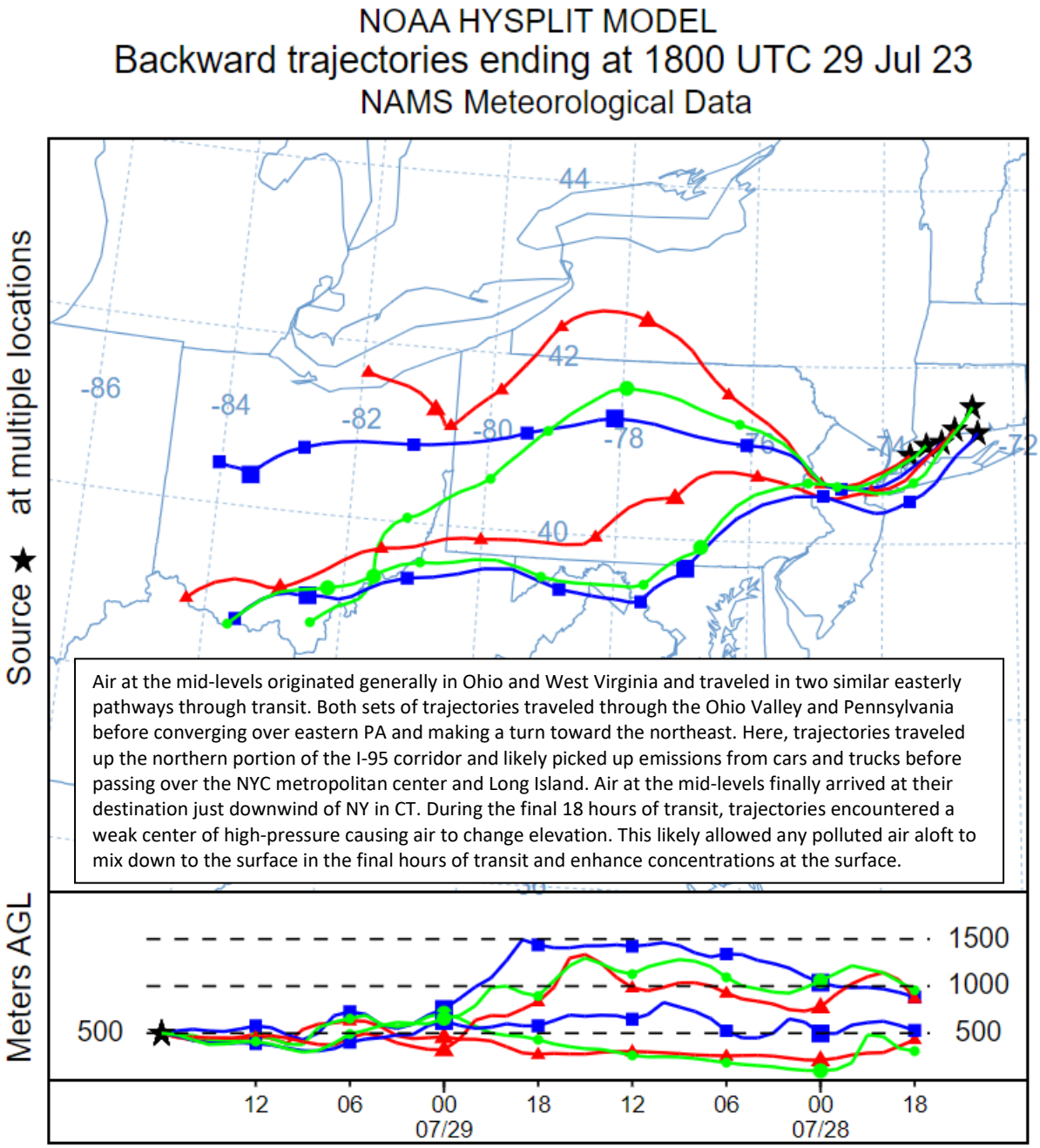


Figure 4. 48-hour Back Trajectories for July 29, 2023 at 1500 meters

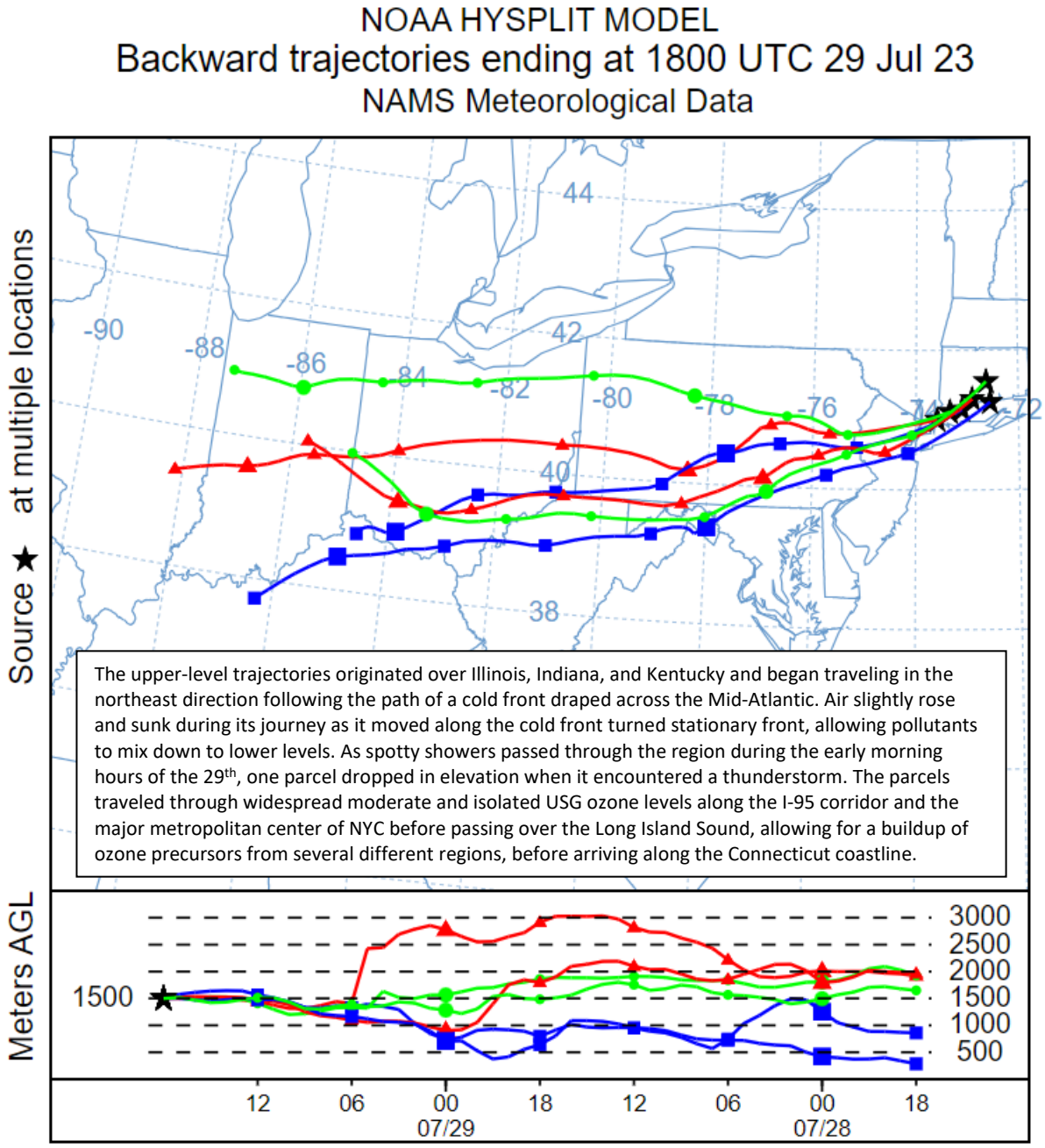
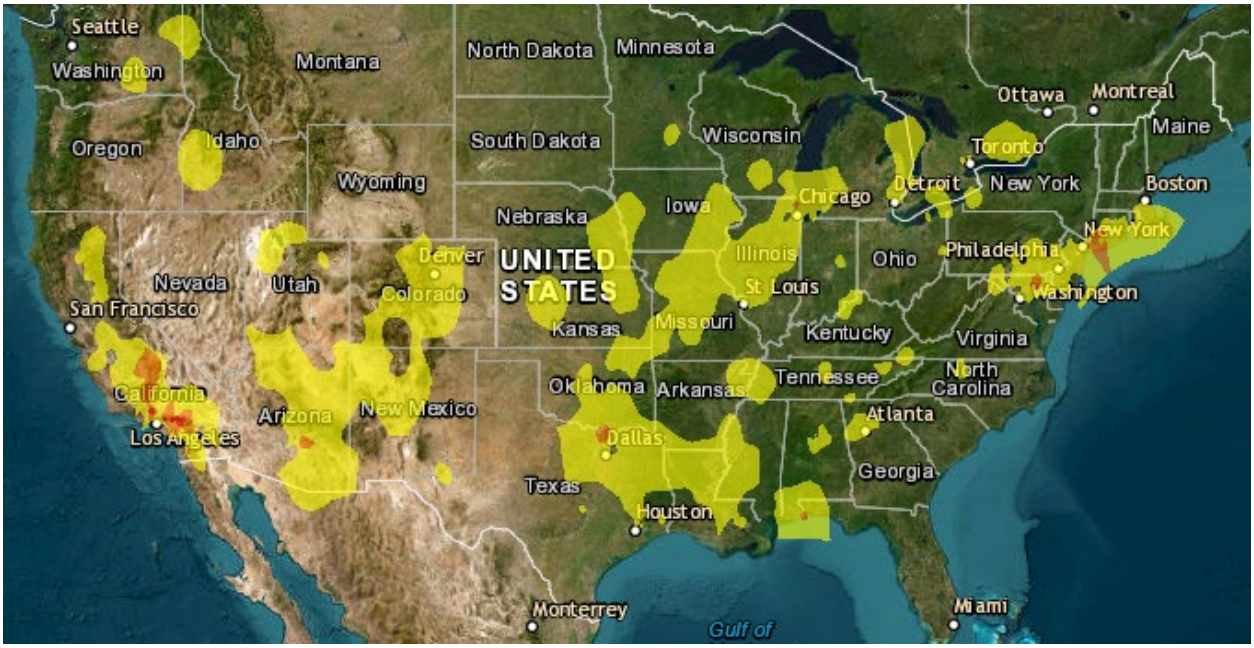


Figure 5. Air Quality Index for the United States on July 28, 2023



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 .