

Ozone National Ambient Air Quality Standard Health Exceedances on July 3, 2019

Exceedance Locations and Levels

On Wednesday, July 3, 2019, 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 7/3/2019

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	61
Bayonne	65
Brigantine	47
Camden Spruce St	54
Chester	44
Clarksboro	54
Colliers Mills	51
Columbia	37
Flemington	47
Leonia	62
Millville	60
Monmouth University	70
Newark Firehouse	58
Ramapo	53
Rider University	44
Rutgers University	51
Washington Crossing*	44
TOTAL EXCEEDANCES	0

*The Washington Crossing station is operated and maintained by EPA as part of the nationwide Clear Air Status and Trends Network (CASTNET).

From the out-of-state stations within New Jersey's ozone non-attainment 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 Non-Attainment Areas on 7/3/2019

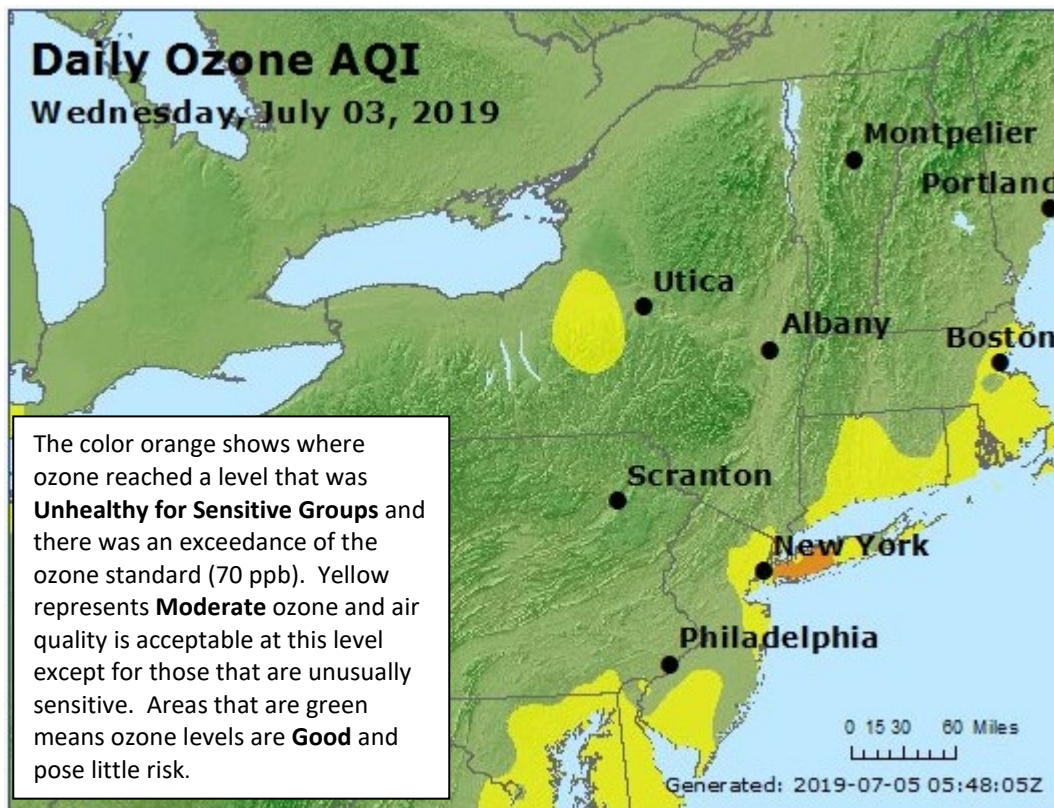
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	51
CT	Greenwich	49
CT	Madison-Beach Road	70
CT	Middletown-CVH-Shed	57
CT	New Haven	69
CT	Stratford	59
CT	Westport	58
DE	BCSP (New Castle Co.)	52
DE	BELLFNT2 (New Castle Co.)	55
DE	KILLENS (Kent Co.)	57
DE	LEWES (Sussex Co.)	57
DE	LUMS 2 (New Castle Co.)	55
DE	MLK (New Castle Co.)	52
DE	SEAFORD (Sussex Co.)	67
MD	Fair Hill	56
NY	Babylon	79
NY	Bronx - IS52	67
NY	CCNY	66
NY	Fresh Kills	63
NY	Holtsville	68
NY	Pfizer Lab	62
NY	Queens	76
NY	Riverhead	53
NY	Rockland Cty	53
NY	White Plains	53
PA	BRIS (Bucks Co.)	42
PA	CHES (Delaware Co.)	53
PA	NEWG (Chester Co.)	54
PA	NORR (Montgomery Co.)	48
PA	LAB (Philadelphia Co.)	No Data
PA	NEA (Philadelphia Co.)	52
PA	NEW (Philadelphia Co.)	47
	TOTAL EXCEEDANCES	2

The number of days in 2019 on which exceedances of the ozone NAAQS were recorded for all the states within New Jersey's ozone non-attainment areas is summarized in Table 3.

Table 3. Number of Days Ozone NAAQS was Exceeded in NJ's Non-Attainment Areas in 2019

STATE	# of Days NAAQS was Exceeded January 1 – July 3, 2019 NAAQS = 70 ppb
Connecticut	5
Delaware	3
Maryland	2
New Jersey	5
New York	5
Pennsylvania	2

Figure 1. Ozone Air Quality Index for July 3, 2019



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 broad area of high pressure to the south created mostly sunny skies and warm temperatures which were favorable meteorological conditions for ground-level ozone production. This resulted in two exceedances in Queens and Long Island, New York.

Early on Wednesday, July 2, high pressure centered over the Mid-Atlantic region generated a northwesterly wind for the area. As morning progressed, a surface trough developed over Connecticut, Long Island, and New Jersey that was attached to weak low pressure over New England. As this trough slowly moved west and the high pressure shifted further south, the winds shifted out of the south in the afternoon and allowed mixing of polluted air at the surface. The transport of previously polluted air, the mixing from the surface trough, and favorable meteorological conditions, caused ozone to reach the unhealthy for sensitive groups (USG) category.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2, 3, and 4 show the back trajectories starting at different wind heights for the monitored exceedances on July 3, 2019. The figures illustrate where the air came from during the 48 hours preceding the 8-hour ozone standard exceedances. Two (2) monitoring stations with 8-hr ozone exceedances were used to run back trajectories. The selected sites and the maximum 8-hr ozone levels recorded are listed in Table 4 below.

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	Babylon	79
NY	Queens	76

Surface winds originated from Ohio and Pennsylvania and traveled eastward through the Lower Hudson Valley and New York City areas before recirculating back onto New York City and Long Island (Figure 2). High pressure to the south caused a southerly flow late in the day which picked up emissions from cars, trucks, buses, local industry and power plants before it recirculated. At the upper levels, Figures 3 and 4 show air originated from Pennsylvania and the Eastern Great Lakes region, some of which may have been already polluted.

Figure 5 shows the air quality from July 2nd, the day prior to the exceedances observed in Long Island and New York City. As shown on the AQI map, the Ohio River Valley region and Pennsylvania experienced moderate air quality with isolated areas of USG. The HYSPLIT back trajectories show that the polluted air traveled into New York City and Long Island.

Figure 2. 48-hour Back Trajectories for July 3, 2019 at 10 meters

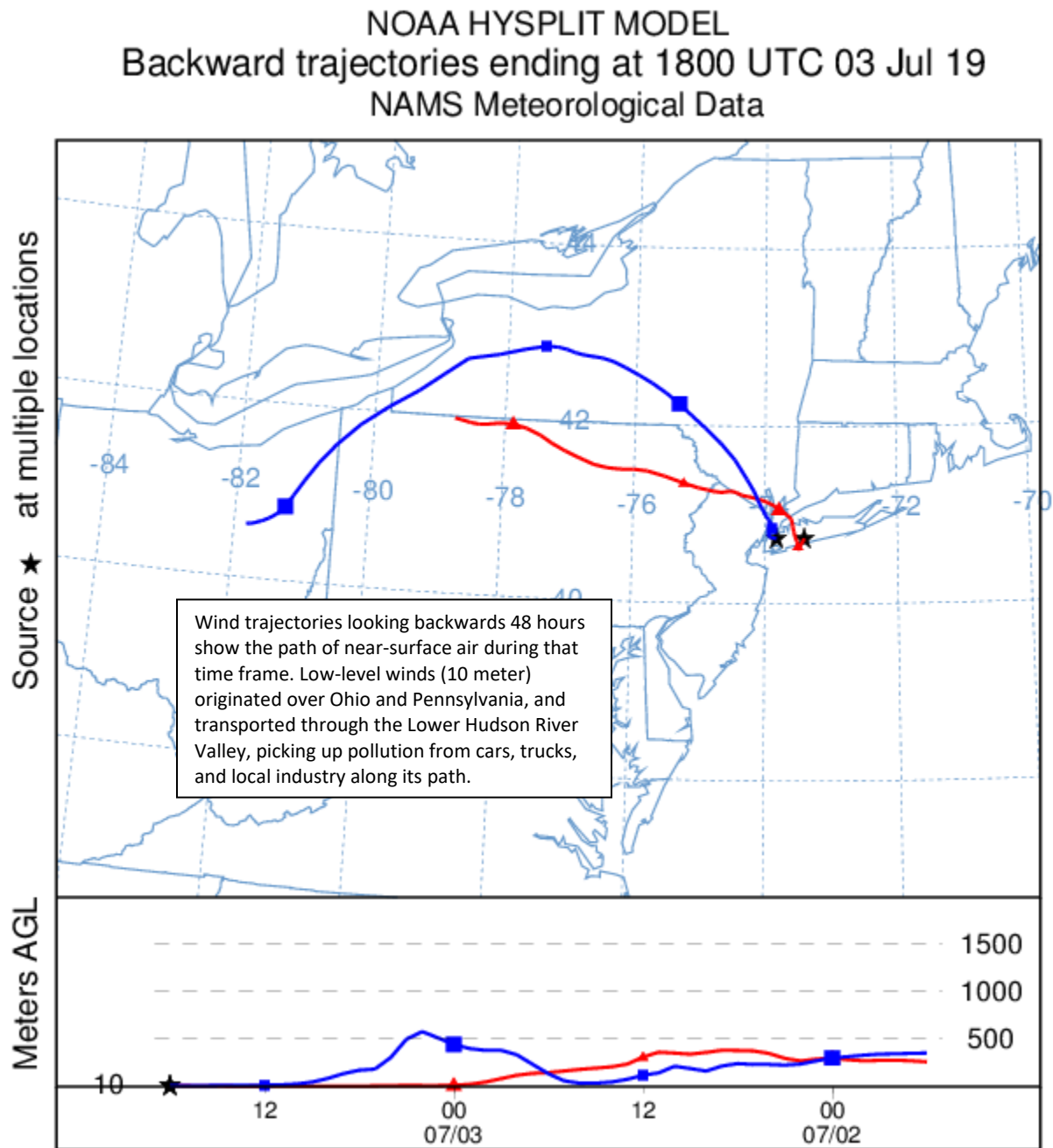


Figure 3. 48-hour Back Trajectories for July 3, 2019 at 500 meters

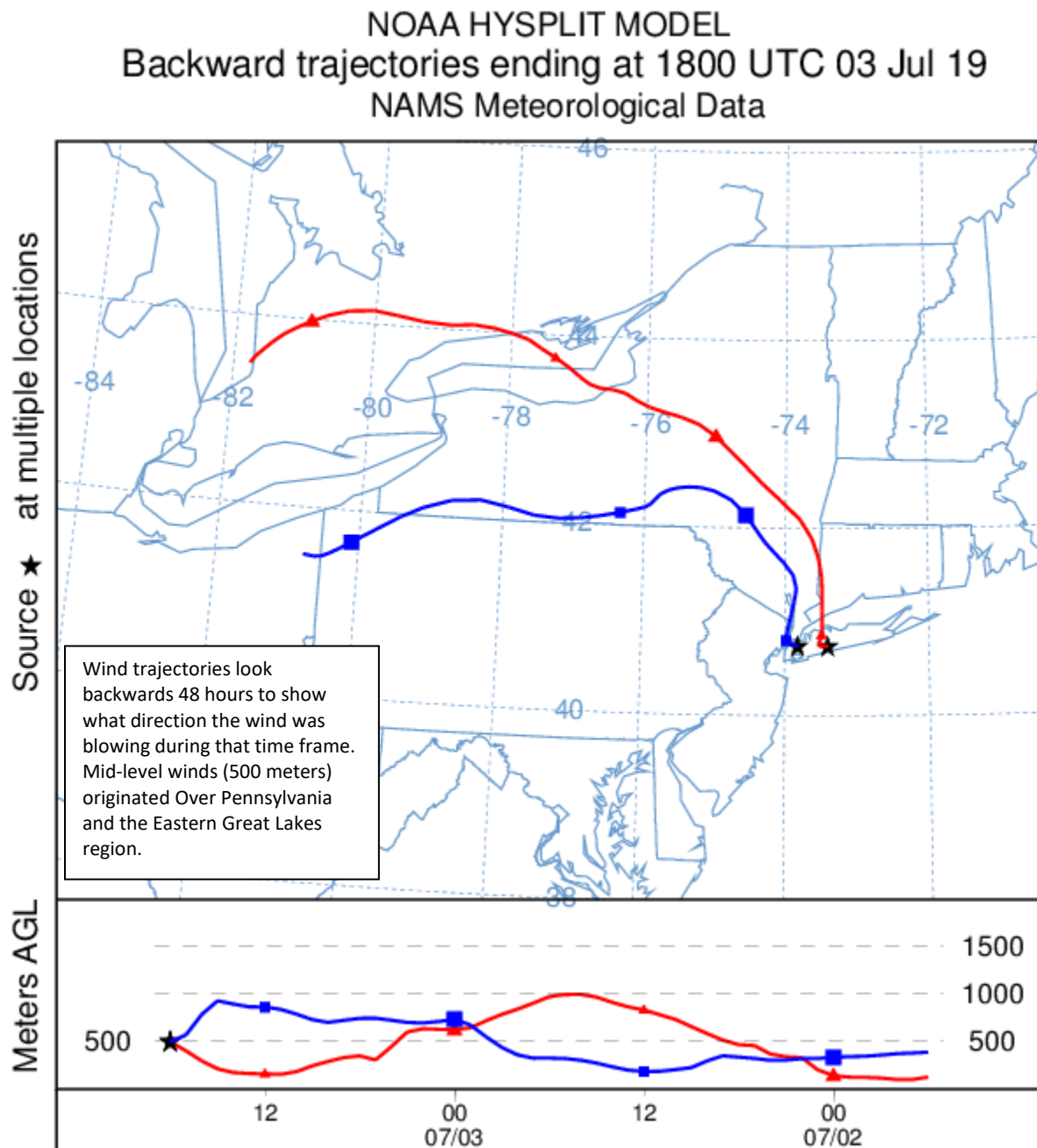


Figure 4. 48-hour Back Trajectories for July 3, 2019 at 1500 meters

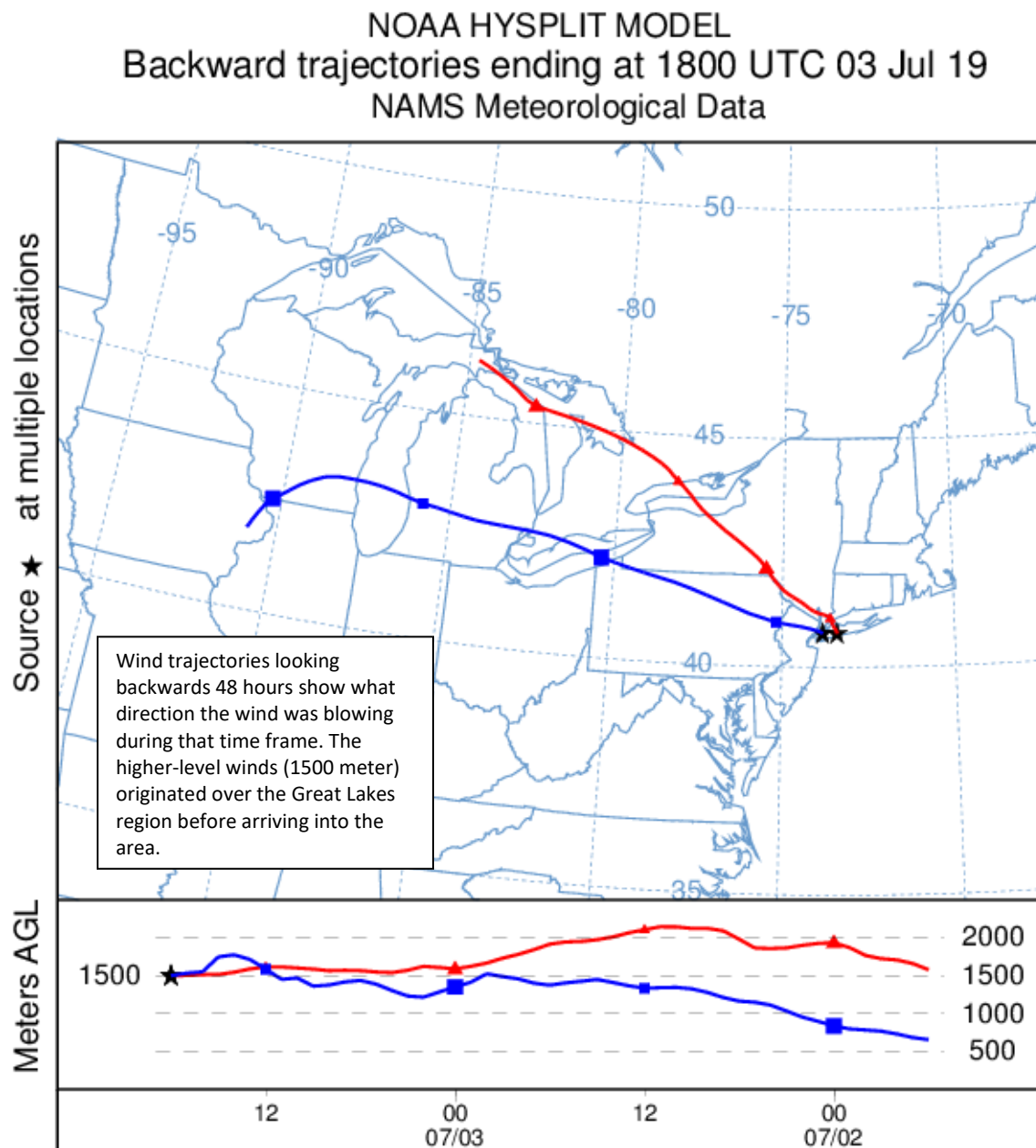
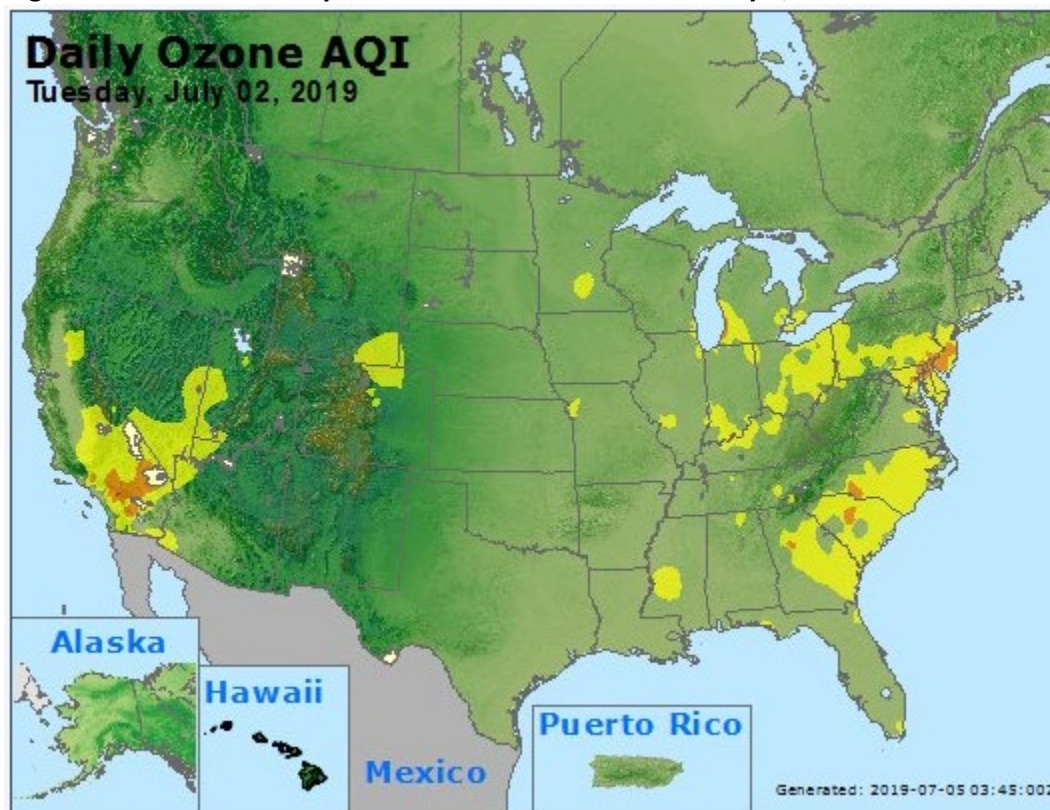


Figure 5. Ozone Air Quality Index for the United States on July 2, 2019



Source: www.airnow.gov

How is Ozone Created?

Ground-level ozone is an air pollutant known to cause a number of health effects and negatively impact air quality and the environment in New Jersey. Ozone is formed when oxides of nitrogen (NO_x) 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

The "What's Your Air Quality Today?" page at <http://www.nj.gov/dep/cleanairnj/> tells you how to sign up to receive notifications and find out when your local air has reached unhealthy ozone levels.