

Ozone National Ambient Air Quality Standard Health Exceedances on May 26, 2018

Exceedance Locations and Levels

On Saturday, May 26, 2018, 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. Maximum 8-Hour Average Ozone Concentrations in New Jersey on May 26, 2018

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	47
Bayonne	58
Brigantine	31
Camden Spruce St	61
Chester	66
Clarksboro	59
Colliers Mills	61
Columbia	62
Flemington	54
Leonia	65
Millville	43
Monmouth University	46
Newark Firehouse	60
Ramapo	64
Rider University	60
Rutgers University	50
Washington Crossing*	No Data

*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 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 Non-Attainment Areas on May 26, 2018

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	68
CT	Greenwich	77
CT	Madison-Beach Road	80
CT	Middletown-CVH-Shed	70

CT	New Haven	82
CT	Stratford	83
CT	Westport	84
DE	BCSP (New Castle Co.)	46
DE	BELLFNT2 (New Castle Co.)	58
DE	KILLENS (Kent Co.)	44
DE	LEWES (Sussex Co.)	41
DE	LUMS 2 (New Castle Co.)	57
DE	MLK (New Castle Co.)	59
DE	SEAFORD (Sussex Co.)	41
MD	Fair Hill	60
NY	Babylon	64
NY	Bronx - IS52	65
NY	CCNY	62
NY	Holtsville	59
NY	Pfizer Lab	64
NY	Queens	67
NY	Riverhead	75
NY	Rockland Cty	64
NY	White Plains	65
NY	Susan Wagner	No Data
PA	BRIS (Bucks Co.)	68
PA	CHES (Delaware Co.)	52
PA	NEWG (Chester Co.)	52
PA	NORR (Montgomery Co.)	61
PA	LAB (Philadelphia Co.)	No Data
PA	NEA (Philadelphia Co.)	67
PA	NEW (Philadelphia Co.)	59

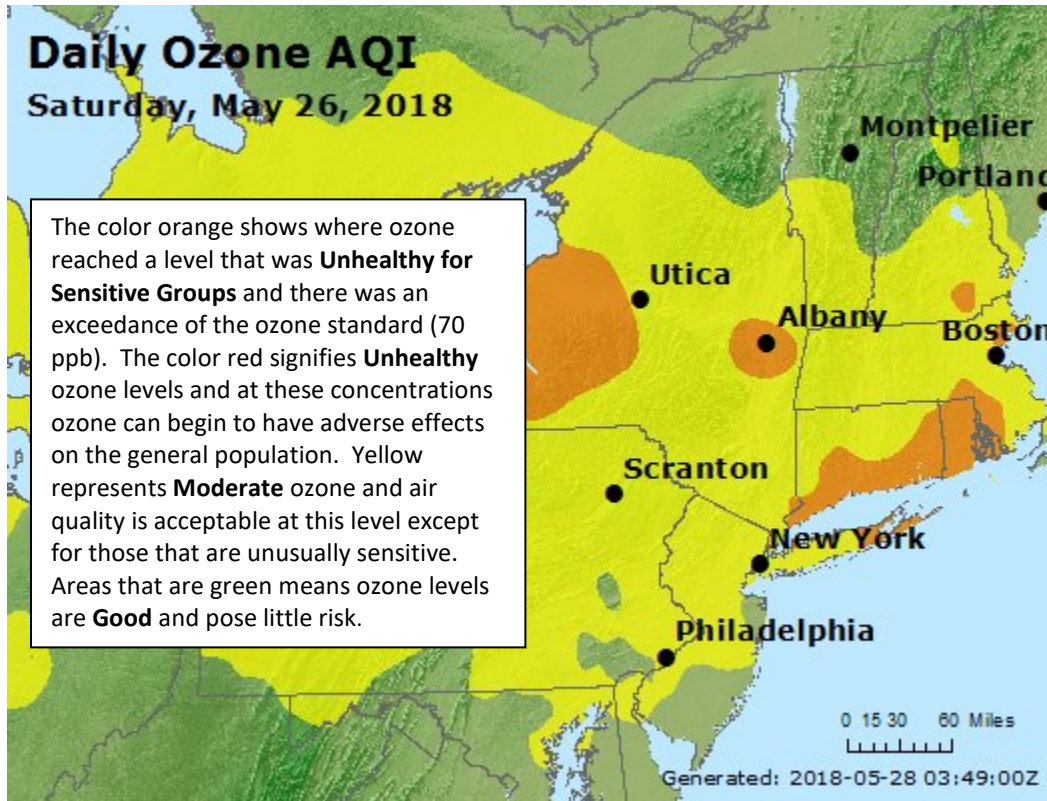
The number of days in 2018 on which exceedances of the ozone NAAQS were recorded for all the states is summarized in Table 3. Figure 1 shows graphically the region’s ozone concentrations on May 26, 2018.

Table 3: Number of Days Ozone NAAQS was Exceeded in NJ’s Non-Attainment Areas in 2018

STATE	# of Days NAAQS was Exceeded January 1 – May 26, 2018 NAAQS = 70 ppb
Connecticut	4
Delaware	2
Maryland	2
New Jersey	3

New York	3
Pennsylvania	3

Figure 1. Ozone Air Quality Index for May 26, 2018



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

High pressure was centered well offshore of the Mid-Atlantic coast on Saturday May 26th while a surface trough set-up to the west of New Jersey providing southwesterly surface winds to the region. The position of high pressure off the coast allowed for west-southwesterly winds aloft to transport air from the Mid-West into the Northeast. This pattern continued to deliver warm, unsettled, and increasingly moist air into New Jersey. As a result, scattered thunderstorms and clouds developed ahead of the surface trough helping to limit ozone formation locally in New Jersey.

The day prior to the exceedances on the 26th, there was widespread moderate, scattered USG, and isolated locations of unhealthy air quality to the west and south of the exceedance locations in

Connecticut and New York. As the high pressure remained stalled off the coast, polluted air from the day before was funneled northeastward at the surface picking up emissions from cars, trucks, and industry along the way. The exceedances occurring exclusively in New York and Connecticut is likely due to the sunshine that the northern portion of the nonattainment area saw on Saturday May 26th.

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 exceedance on May 26, 2018. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event. Six (6) monitoring stations with an 8-hr ozone exceedance were used to run back trajectories. The selected sites and the maximum 8-hr ozone level recorded are listed in Table 4 below:

Table 4. Monitoring Stations with 8-hr Ozone Exceedances that Were Selected to Run 48-hr Back Trajectories

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Greenwich	77
CT	Madison Beach	80
CT	New Haven	82
CT	Stratford	83
CT	Westport	84
NY	Riverhead	75

The surface level back trajectory (Figure 2) associated with the May 26th exceedance originated in the Mid-Atlantic, off the coast of Virginia. Air impacting western Connecticut traveled through the Chesapeake Bay region, just east of the Philadelphia metropolitan area, through central New Jersey, and through the NYC metropolitan area through arrival. Meanwhile, air impacting central Connecticut and eastern Long Island traveled along the Virginia, Delaware, and New Jersey coastline then near/over the Long Island Sound through arrival. Air in all scenarios remained at the surface for the entire duration of its path collecting emissions from cars, trucks, and industry along the way. Mid- and upper-level back trajectories (Figure 3 & 4), followed very similar paths. Originating in Kentucky/West Virginia, air traveled northeastward through the Ohio River Valley, Pennsylvania, and the NYC/Northern New Jersey metropolitan area through arrival. Air traveled along the periphery of the abovementioned large high pressure system and was vertically mixed in the presence of an unsettled atmosphere. Figure 5 shows ozone air quality index values recorded on May 25th.

Figure 2. 48-hour Back Trajectories for May 26, 2018 at 10 meters

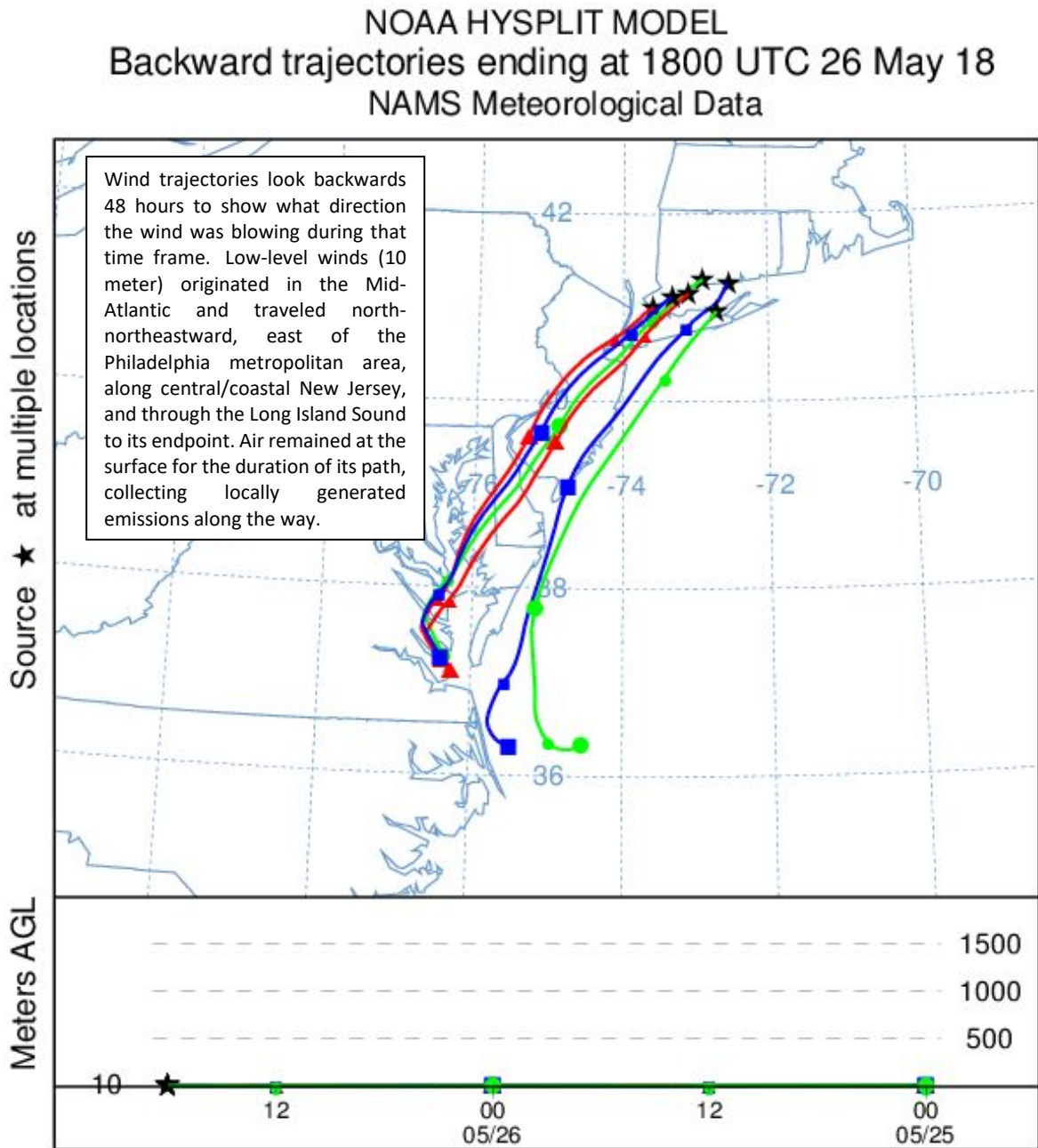


Figure 3. 48-hour Back Trajectories for May 26, 2018 at 500 meters

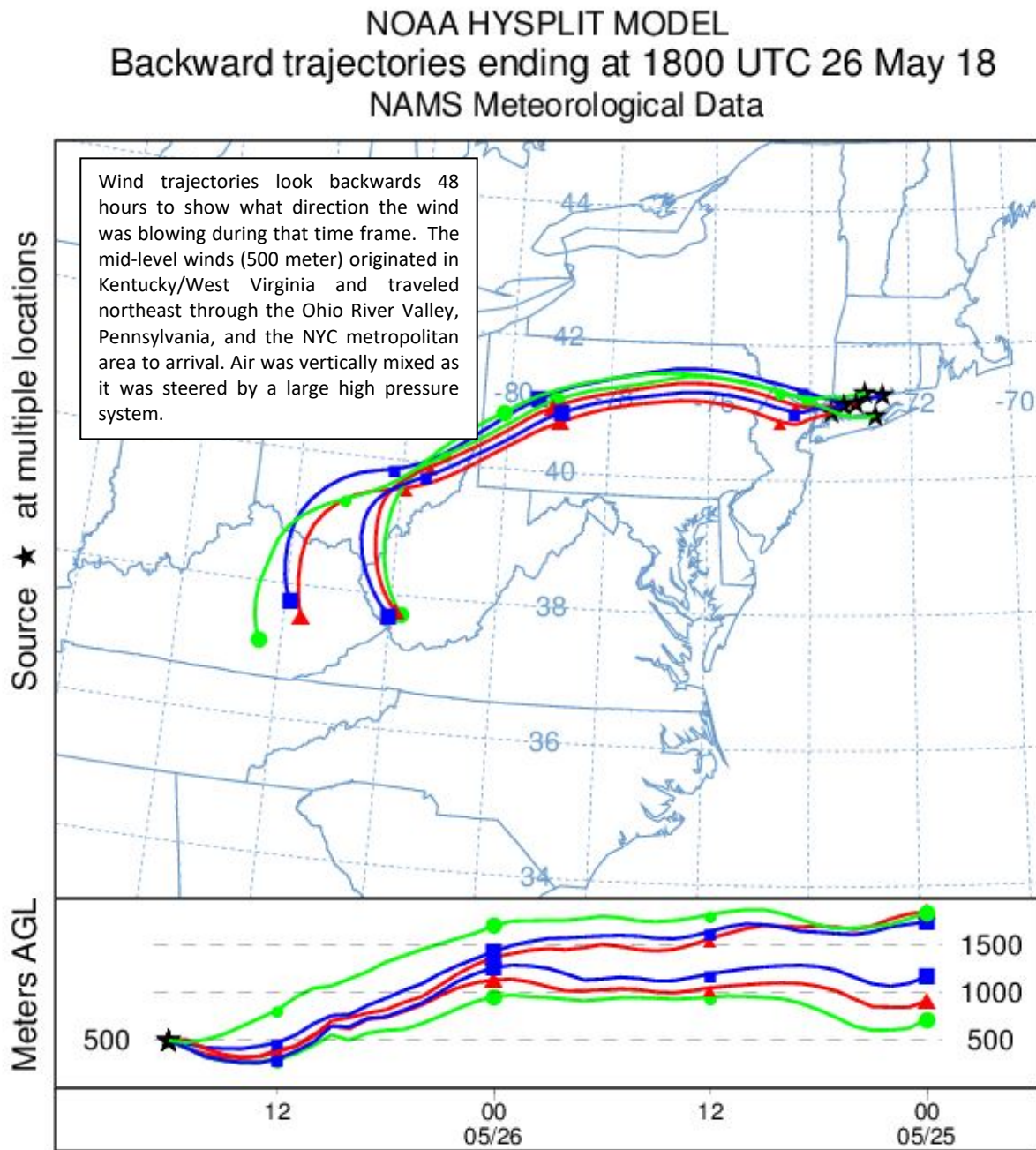


Figure 4. 48-hour Back Trajectories for May 26, 2018 at 1500 meters

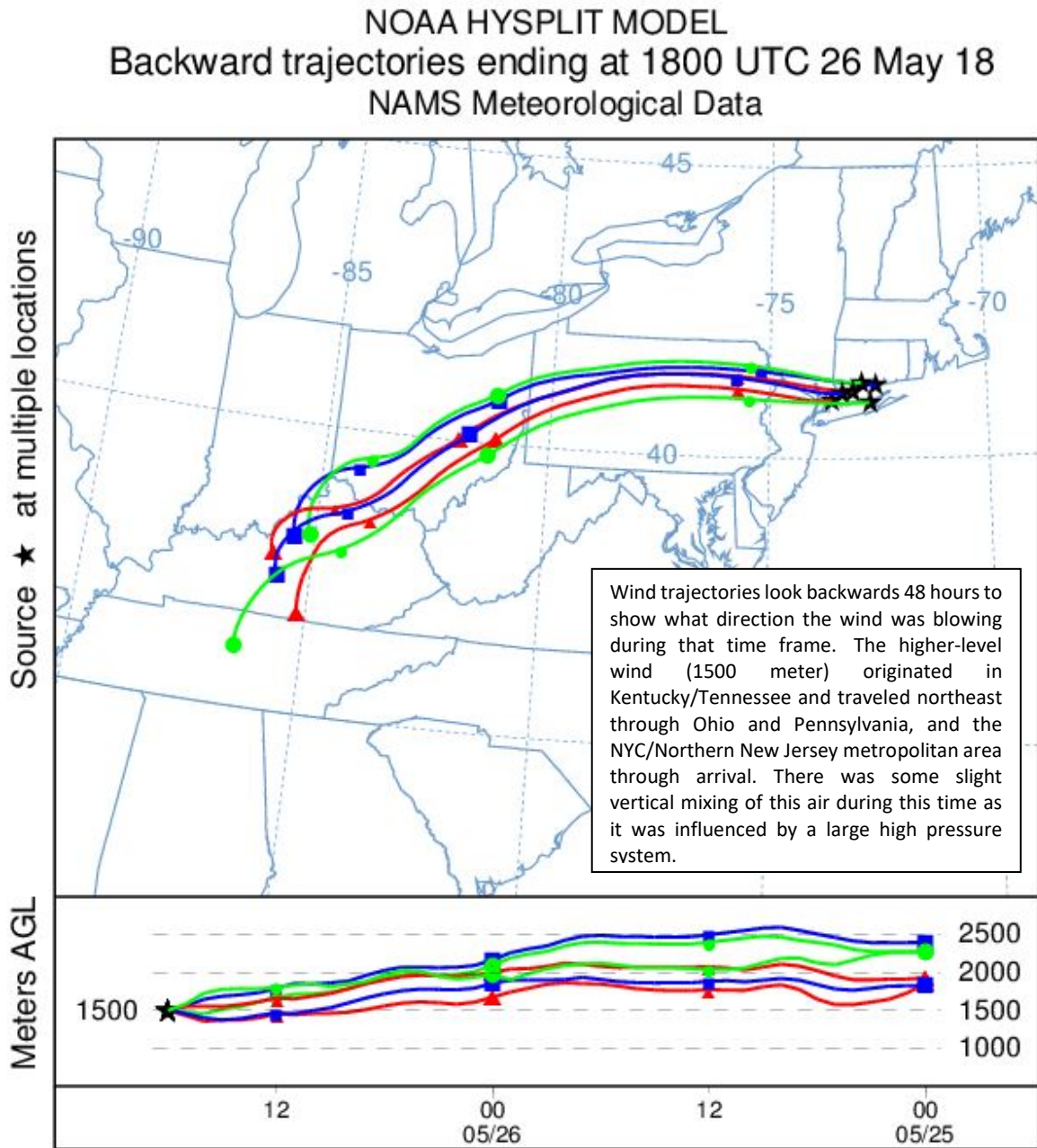
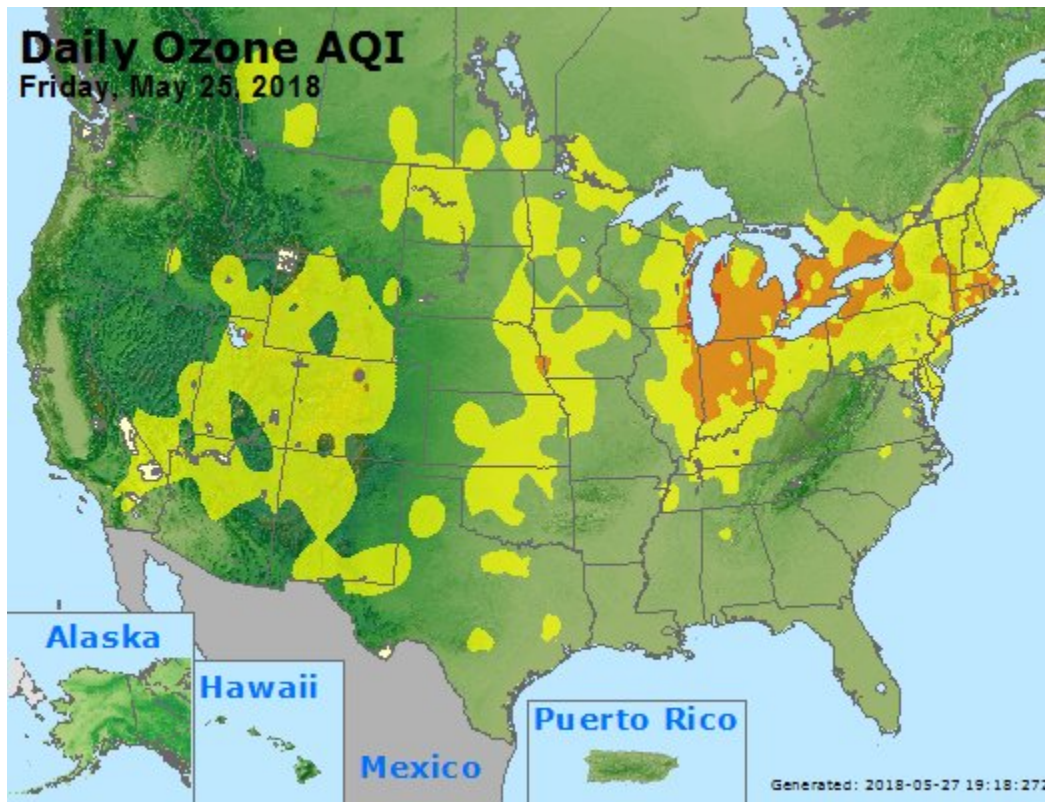


Figure 5. Ozone Air Quality Index for the United States on May 25, 2018



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 (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

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.