Ozone National Ambient Air Quality Standard Health Exceedances on August 24, 2016

Exceedance Locations and Levels

On Wednesday, August 24, 2016, there were three (3) exceedances in New Jersey of the new 8-hour average ozone NAAQS of 70 ppb that became effective in December 2015 (see Table 1):

Table 1: Ozone NAAQS Exceedance in New Jersey on August 24, 2016

STATION	Daily Maximum 8-Hr Average (ppb)
Leonia	72
Rider University	76
Rutgers University	75

The highest 1-hour average ozone concentration recorded on August 24, 2016, in New Jersey was 94 ppb at the Rider University station, which is below the 1-hour ozone NAAQS of 120 ppb.

Wednesday marks the 22nd day in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in New Jersey. By the 24th of August in 2015, there were a total of thirteen (13) days on which ozone exceedances were measured in New Jersey (based on the former 75 ppb NAAQS of 2008), and there were two (2) days by this same date in 2014.

There is a group of monitoring stations in designated counties of five (5) states, New York, Connecticut, Pennsylvania, Delaware and Maryland, that are included in New Jersey's ozone nonattainment areas. From this group of stations in the neighboring states, there were four (4) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Wednesday, August 24, 2016 (see Table 2):

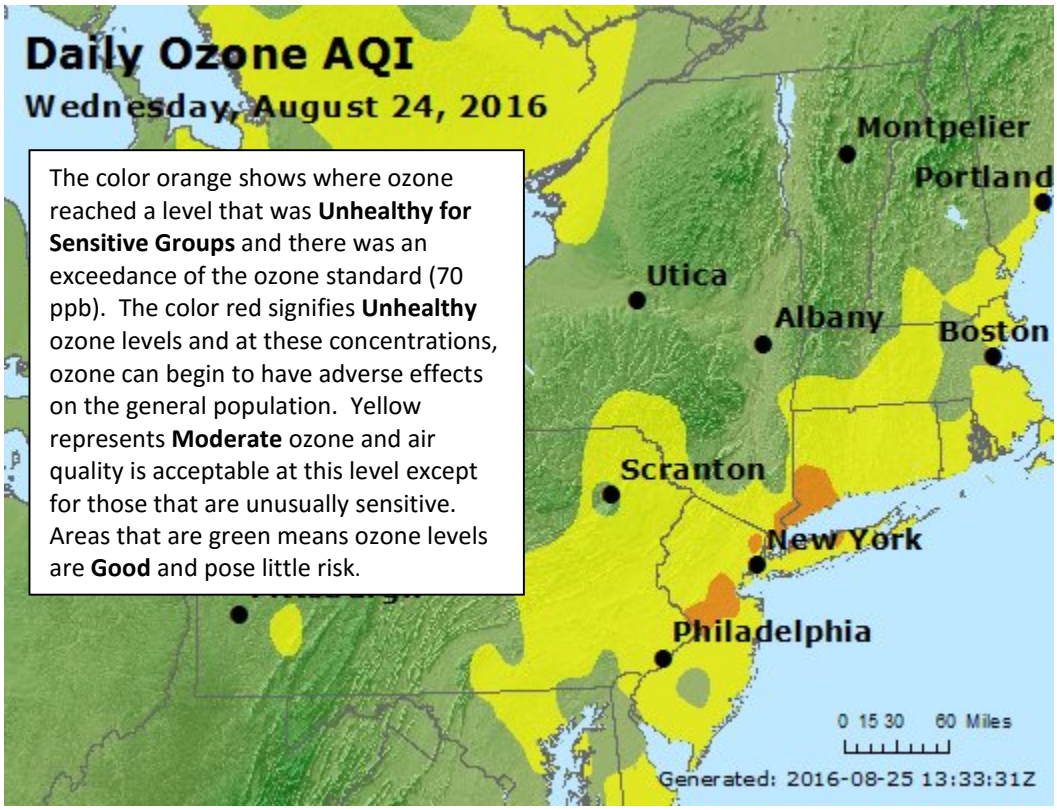
Table 2: Ozone NAAQS Exceedances at Other Monitoring Stations in New Jersey's Ozone Nonattainment Areas on August 24, 2016

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	71
CT	Greenwich	81
CT	Stratford	76
CT	Westport	79

The highest 1-hour average ozone concentration recorded was 101 ppb at the Danbury station in Connecticut, which is below the 1-hour ozone NAAQS of 120 ppb.

Wednesday marks the 23rd day in 2016 on which an exceedance of the new 8-hour ozone NAAQS of 70 ppb was recorded in Connecticut. The number of days remains at eighteen (18) for New York, ten (10) for Pennsylvania, seven (7) for Delaware, and six (6) for Maryland.

Figure 1. Ozone Air Quality Index for August 24, 2016



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

Meteorological data from across the region showed temperatures reached into the high 80°Fs, while skies were mostly sunny. Winds were from the southwest with a high pressure system centered just of the coast of southern New England. Southwest winds, along with warm temperatures and abundant sunshine, are all meteorological conditions commonly seen on high ozone days.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2, 3, and 4 show the back trajectories at different wind heights for the monitored exceedances on August 24, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event. Six (6) monitoring stations were chosen to run back trajectories, based on the 8-hour ozone concentrations recorded and their location. The selected sites for running back trajectories and the maximum 8-hr ozone levels recorded are listed in Table 3 below.

Table 3. Monitoring Stations with 8-hr Ozone Exceedances that Were Selected to Run 48-hr Back Trajectories

Agency	Site Name	Maximum 8-hr Ozone Conc. (ppb)
CT	Greenwich	81
CT	Westport	79
CT	Danbury	71
NJ	Rider University	76
NJ	Rutgers Universitty	75
NJ	Leonia	72

The low level wind (Figure 2) traveled down through eastern Pennsylvania and then shifted northeast through the Philadelphia and New York City metropolitan areas, where there are air contaminant emissions from cars, trucks industry. After passing through these areas, winds continued to move up the I-95 corridor, transporting pollution to the exceedance monitors in New Jersey and Connecticut.

The mid-level wind (Figure 3) had two different transport paths. The wind traveling to the two northern most sites moved across northern Pennsylvania and the New York City metropolitan area into Connecticut, bringing emissions from motor vehicles and industry. The wind traveling to the remaining four (4) sites recirculated around the Philadelphia metropolitan area and then traveled up along the I-95 corridor. Recirculating winds allowed pollution that was picked up the prior day in the Philadelphia region to accumulate and later mix with local emissions along the I-95 corridor and by the exceedance monitors.

The higher level wind (Figure 4) originated in Canada and traveled southeast through portions of New York, Pennsylvania, northern New Jersey, and New York City, bringing additional emissions from large industrial sources and power plants. The higher level winds, in combination with the low and mid-level winds, allowed air pollution from a variety of mobile and stationary sources to be transported into the areas of New Jersey and Connecticut that experience high ozone of August 24, 2016.

Figure 2. 48-hour Back Trajectories for August 24, 2016 at 10 meters

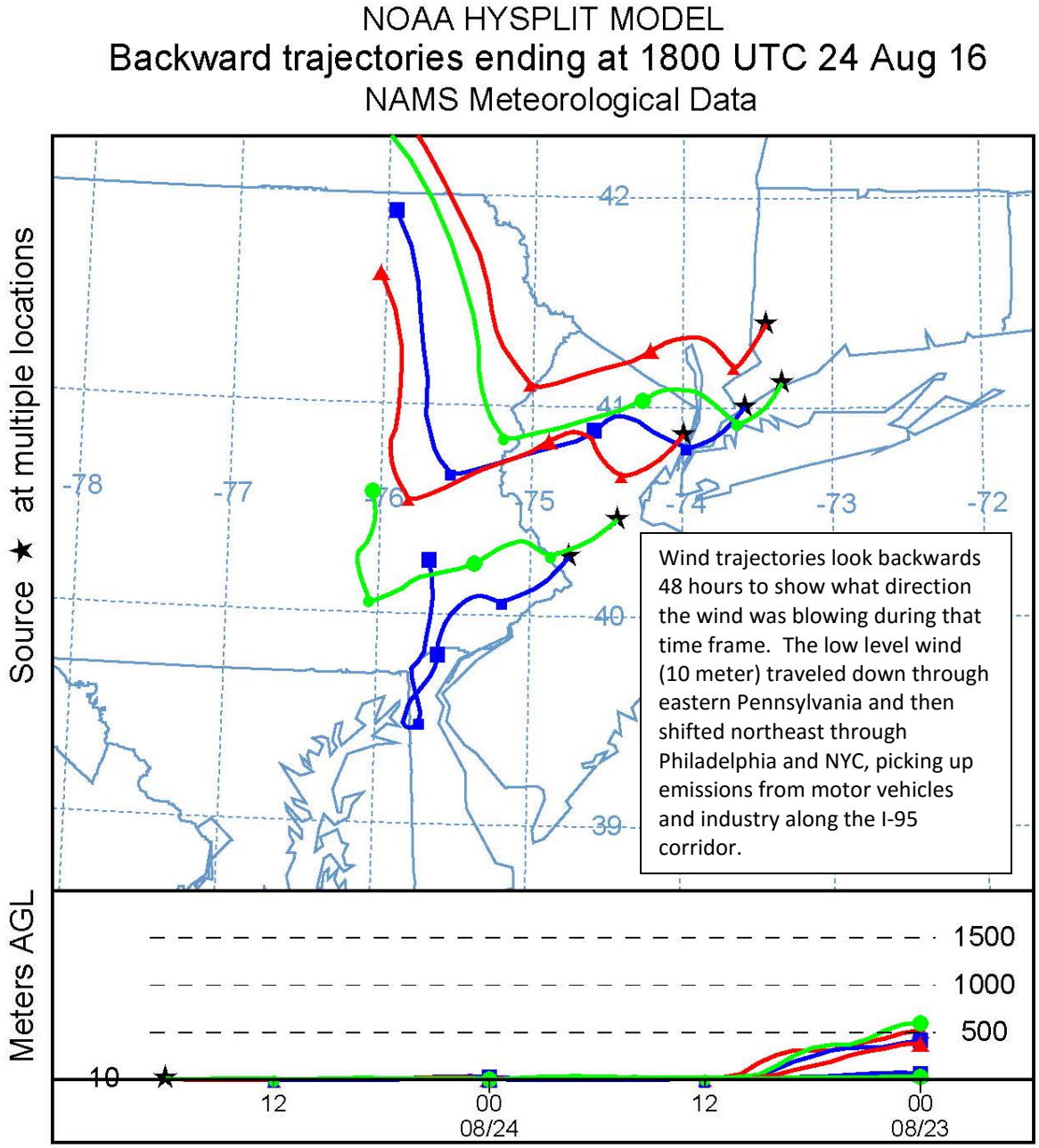


Figure 3. 48-hour Back Trajectories for August 24, 2016 at 500 meters

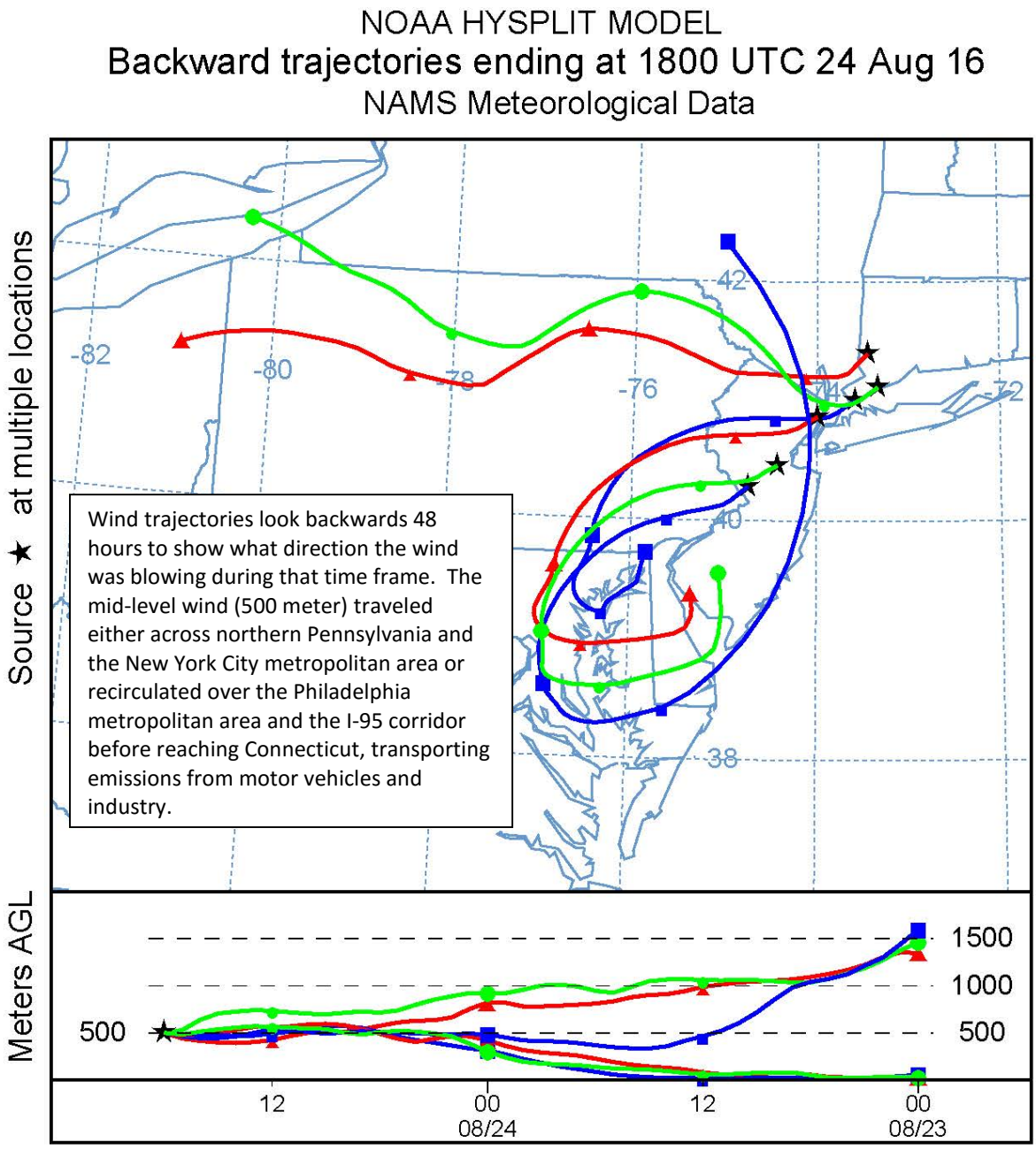
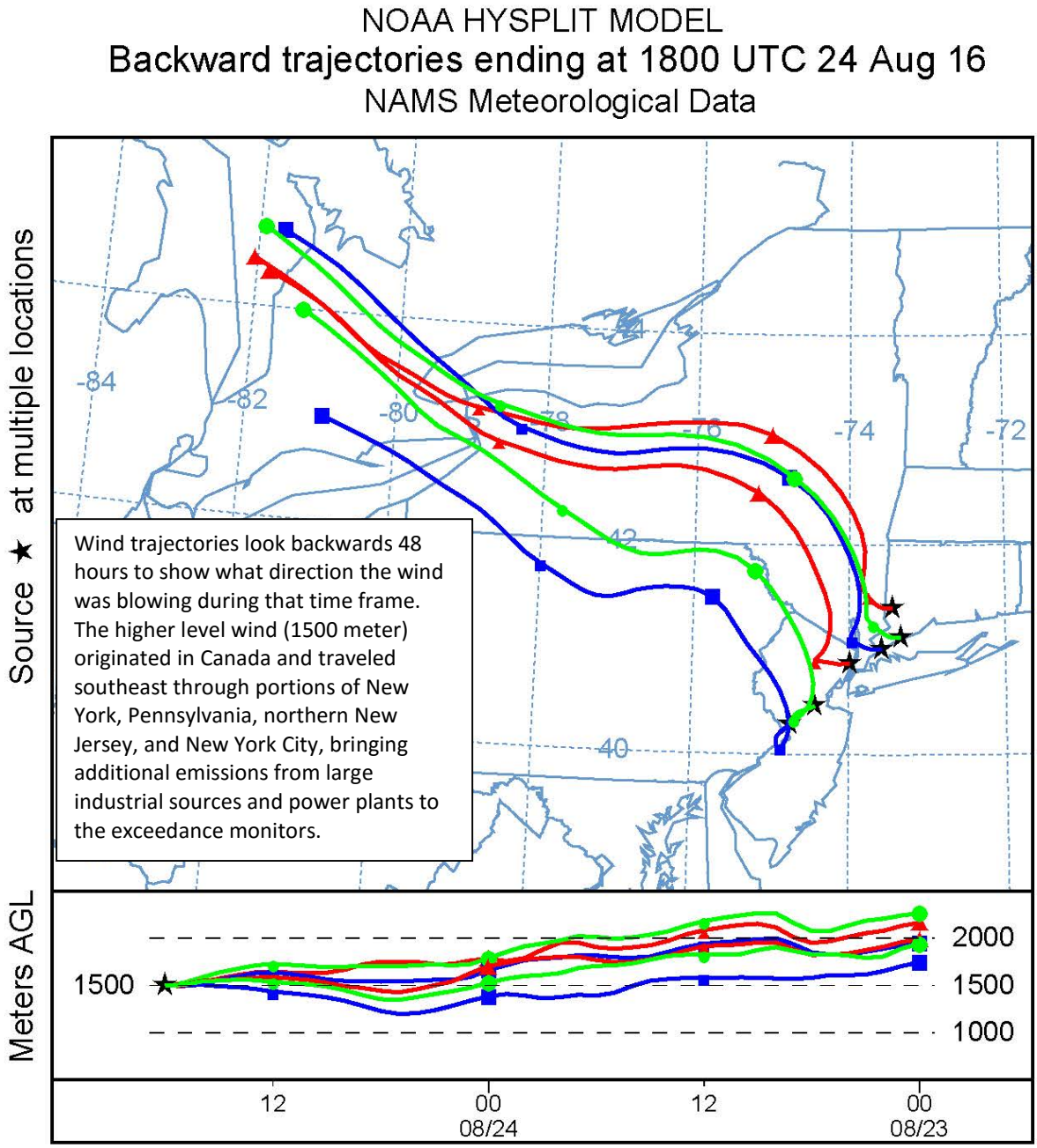


Figure 4. 48-hour Back Trajectories for August 24, 2016 at 1500 meters



How is Smog Created?

Ground-level ozone, also known as smog, is an air pollutant known to cause a number of health effects and negatively impact air quality and the environment in the state of New Jersey. Smog is formed when oxides of nitrogen (NOx) and volatile organic compounds (VOCs) react in the presence of sunlight. Smog can irritate any set of lungs, but those with lung-related deficiencies 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.