Ozone National Ambient Air Quality Standard Health Exceedances on July 17, 2016

Exceedance Locations and Levels

On Sunday, July 17, 2016, there were no exceedances in New Jersey of the new 8-hour average ozone NAAQS of 70 ppb that became effective in December 2015. The highest 1-hour average ozone concentration recorded on July 17, 2016 in New Jersey was 75 ppb at the Leonia station, which is below the 1-hour ozone NAAQS of 120 ppb.

The number of days in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in New Jersey remains at fifteen (15). By the 17th of July in 2015, there were a total of seven (7) 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 other neighboring states, there were seven (7) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Sunday, July 17, 2016 (see Table 1):

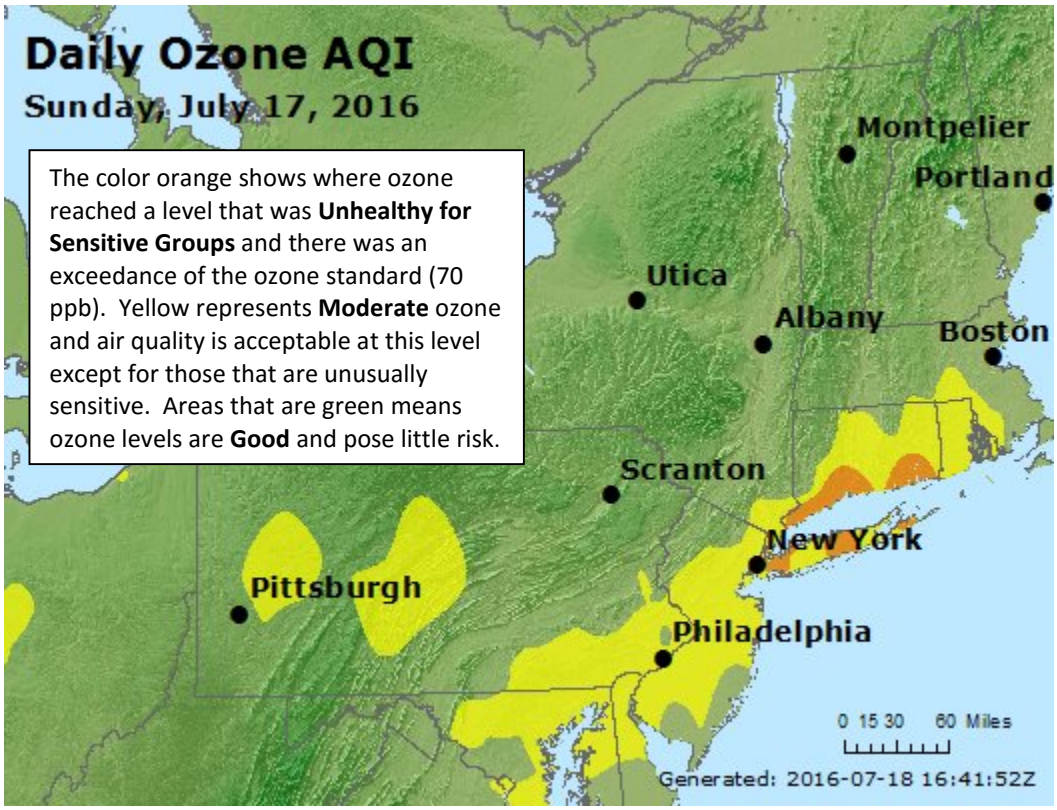
Table 1: Ozone NAAQS Exceedances at Other Monitoring Stations in New Jersey's Ozone Nonattainment Areas on July 17, 2016

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Greenwich	77
CT	New Haven	71
CT	Stratford	79
CT	Westport	76
NY	Holtsville	71
NY	IS52	71
NY	Queens	71

The highest 1-hour average ozone concentration recorded was 97 ppb at the Greenwich station in Connecticut, which is below the 1-hour ozone NAAQS of 120 ppb.

Sunday marks the 16th day in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in Connecticut and the 13th day for New York. The number of days for Pennsylvania remains at eight (8), five (5) days for Delaware, and four (4) days for Maryland.

Figure 1. Ozone Air Quality Index for July 17, 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 New York City and the Long Island Sound showed temperatures reached into the high 80°F's, while skies were mostly sunny. A stationary front was draped across New Jersey and southern New England resulting in southwest winds just before the stalled boundary. A low pressure surface trough was also in place from coastal North Carolina all the way up through to the Long Island Sound, which provided a mechanism that enabled polluted air aloft to mix down to the surface. This weather feature, in combination with adequate sunlight, southwest winds, and warm temperatures, 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 July 17, 2016. The figures illustrates where the winds came from during the 48 hours preceding the high ozone event. Four (4) monitoring stations were chosen to run back trajectories, based on the 8-hour ozone concentrations recorded and their location. The selected sites and the maximum 8-hr ozone levels recorded are listed in Table 2 below.

Table 2. 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	77
CT	Stratford	79
NY	Queens	71
NY	Holtsville	71

The low level winds (10 meter) shown in Figure 2 traveled northeast across Delaware, New Jersey, and New York City, picking up air contaminant emissions from cars, trucks, and industry that later mixed with local emissions by the exceedance monitors in New York City and the Long Island Sound area. The mid-level winds (500 meter) traveled across portions of Maryland, Pennsylvania, New York, and northern New Jersey, bringing additional emissions from motor vehicles and industry to the exceedance monitors. The higher level winds (1500 meter) came across the Ohio River Valley, Pennsylvania, and northern New Jersey, picking up emissions from power plants and large industrial sources, and transporting them to New York City and the Long Island Sound area. The combination of these winds caused air pollution from a variety of mobile and stationary sources to be transported into the areas of coastal Connecticut and New York that experienced high ozone on July 17. 2016.

Figure 2. 48-hour Back Trajectories for July 17, 2016 at 10 meters

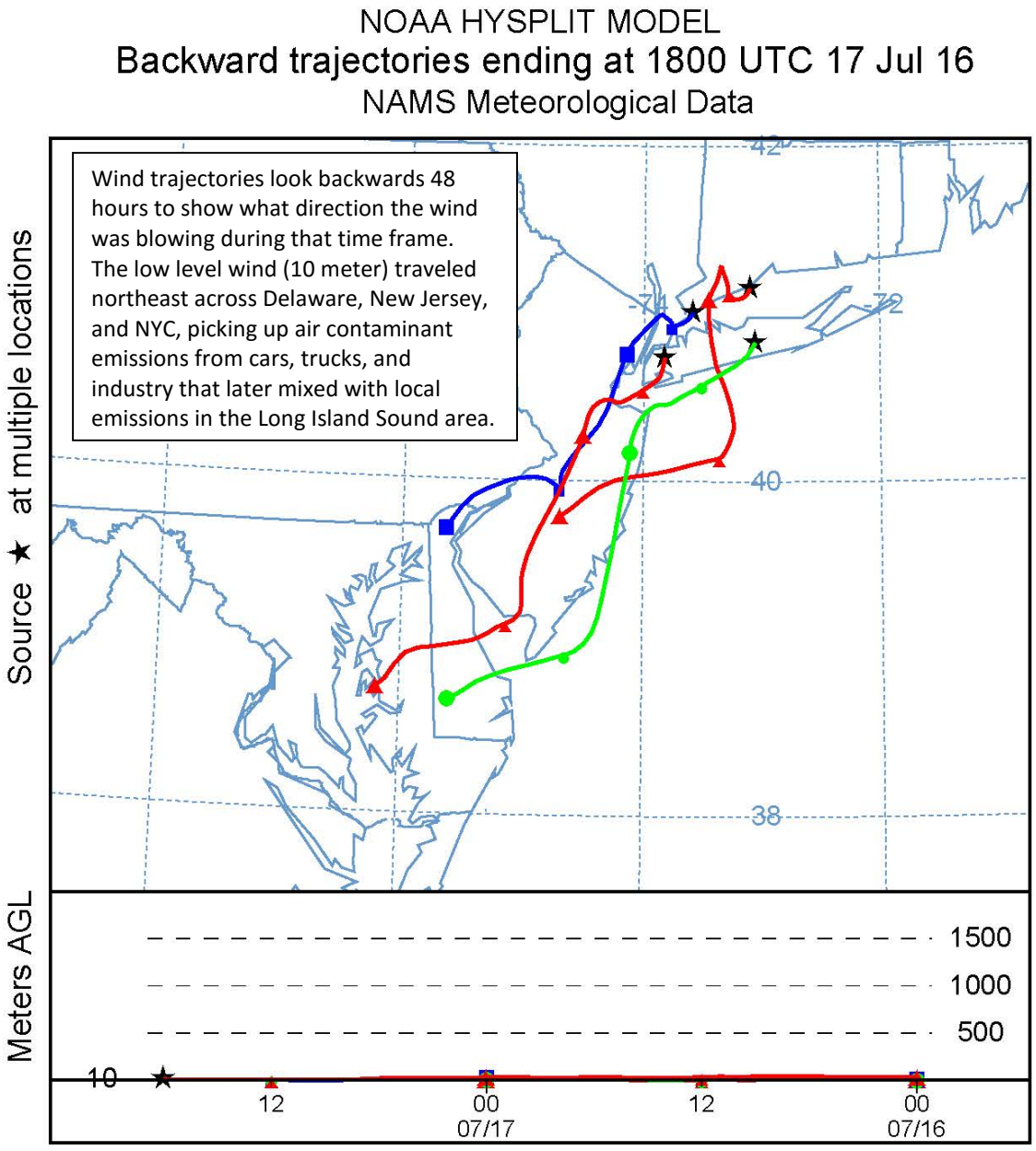


Figure 3. 48-hour Back Trajectories for July 17, 2016 at 500 meters

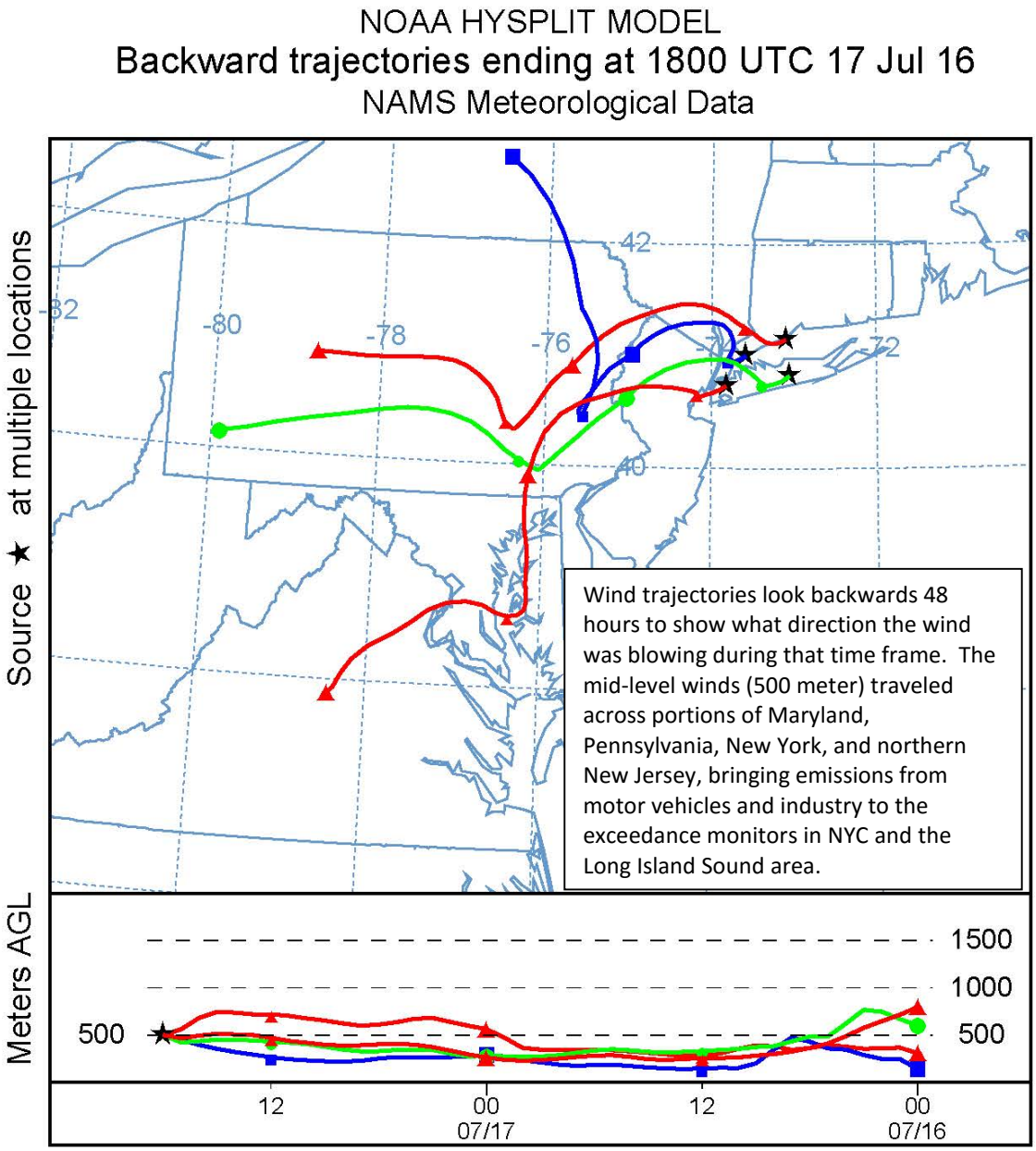
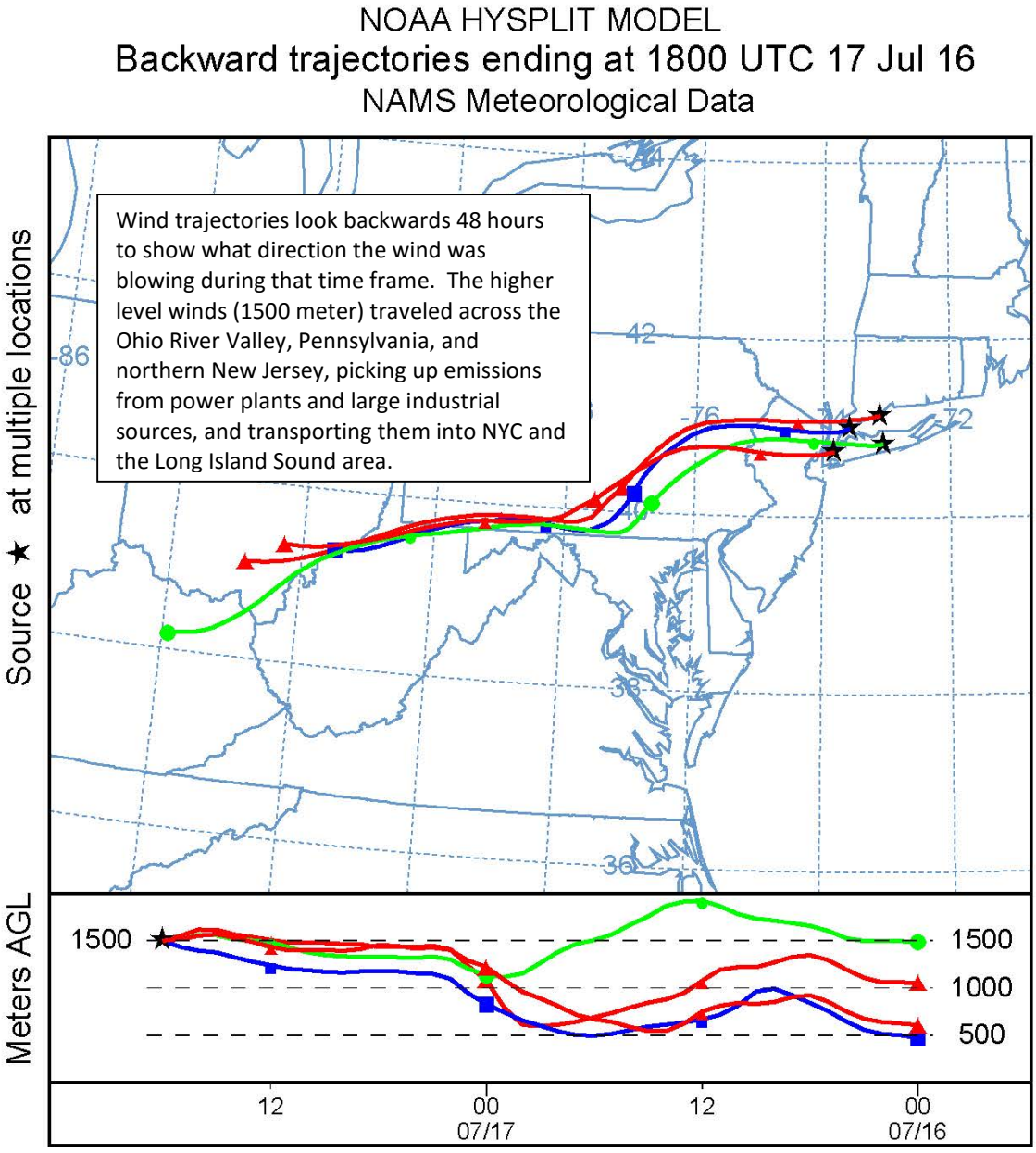


Figure 4. 48-hour Back Trajectories for July 17, 2016 at 1500 meters



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.