Ozone National Ambient Air Quality Standard Health Exceedances on July 15, 2016

Exceedance Locations and Levels

On Friday, July 15, 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 15, 2016 in New Jersey was 80 ppb at the Colliers Mills 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 fourteen (14). By the 15th 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 non-attainment areas. From this group of stations in the other neighboring states, there were nine (9) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Friday, July 15, 2016 (See Table 1):

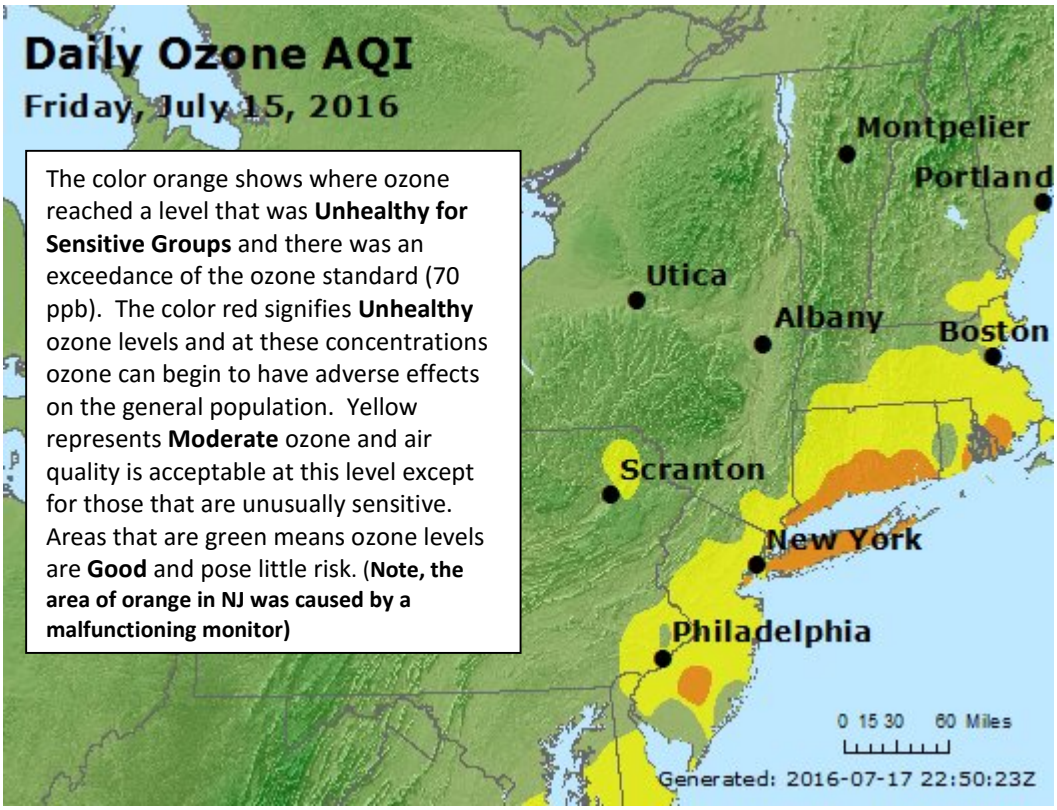
Table 1: Ozone NAAQS Exceedances at Other Monitoring Stations in New Jersey's Ozone Nonattainment Areas on July 15, 2016

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Greenwich	76
CT	Middletown	71
CT	Stratford	84
CT	Westport	75
NY	Babylon	76
NY	Holtsville	75
NY	Queens	75
NY	Riverhead	78
NY	Susan Wagner	71

The highest 1-hour average ozone concentration recorded was 98 ppb at the Madison-Beach Road station in Connecticut, which is below the 1-hour ozone NAAQS of 120 ppb.

Friday marks the 15th day in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in Connecticut, and the 12th 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 15, 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 90°F's, while winds were light and generally from the southwest. The region was under the influence of a Bermuda high pressure system while at the same time a cold front was approaching from the west. Abundant sunlight, warm temperatures, and light southwest winds, are all meteorological conditions commonly seen with an ozone exceedance.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2, 3, and 4 show the back trajectories at different wind heights for selected monitored exceedances on July 15, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event. Nine (9) 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	76
CT	Middletown	71
CT	Stratford	84
CT	Westport	75
NY	Babylon	76
NY	Holtsville	75
NY	Queens	75
NY	Riverhead	78
NY	Susan Wagner	71

The low level wind (Figure 2) traveled along the I-95 corridor from Virginia through New Jersey to six (6) of the monitors. Winds also traveled from the Ohio River Valley through Ohio, Pennsylvania, and the northern half of New Jersey, and the New York City metropolitan area to three (3) additional monitors. These winds picked up air contaminant emissions from cars, trucks, and industry on the way to the exceedance monitors.

The back trajectory maps for the 500 meter (Figure 3) and 1500 meter (Figure 4) winds illustrate similar transport pathways. Winds traveling to the exceedance monitors originated in the Midwest and traveled through Ohio, Pennsylvania, New Jersey, and New York. Winds picked up pollution from motor vehicles, industry, and power plants, which later mixed with local emissions generated near the exceedance monitors. These winds, in combination with the low level wind, caused air pollution from a variety of mobile and stationary sources to be transported in the areas of New York, and Connecticut that experienced high ozone on July 15, 2016.

Figure 2. 48-hour Back Trajectories for July 15, 2016 at 10 meters

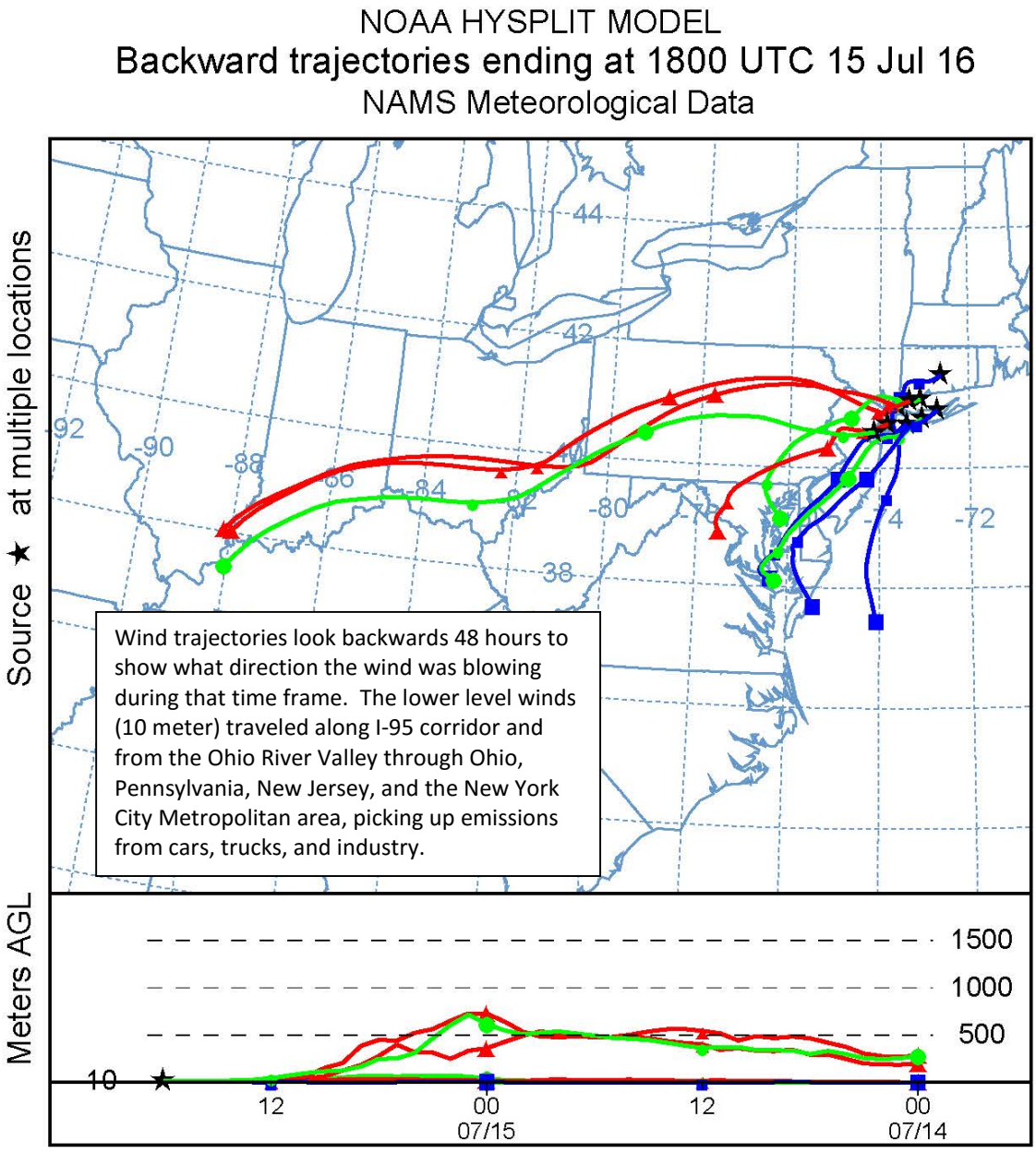


Figure 3. 48-hour Back Trajectories for July 15, 2016 at 500 meters

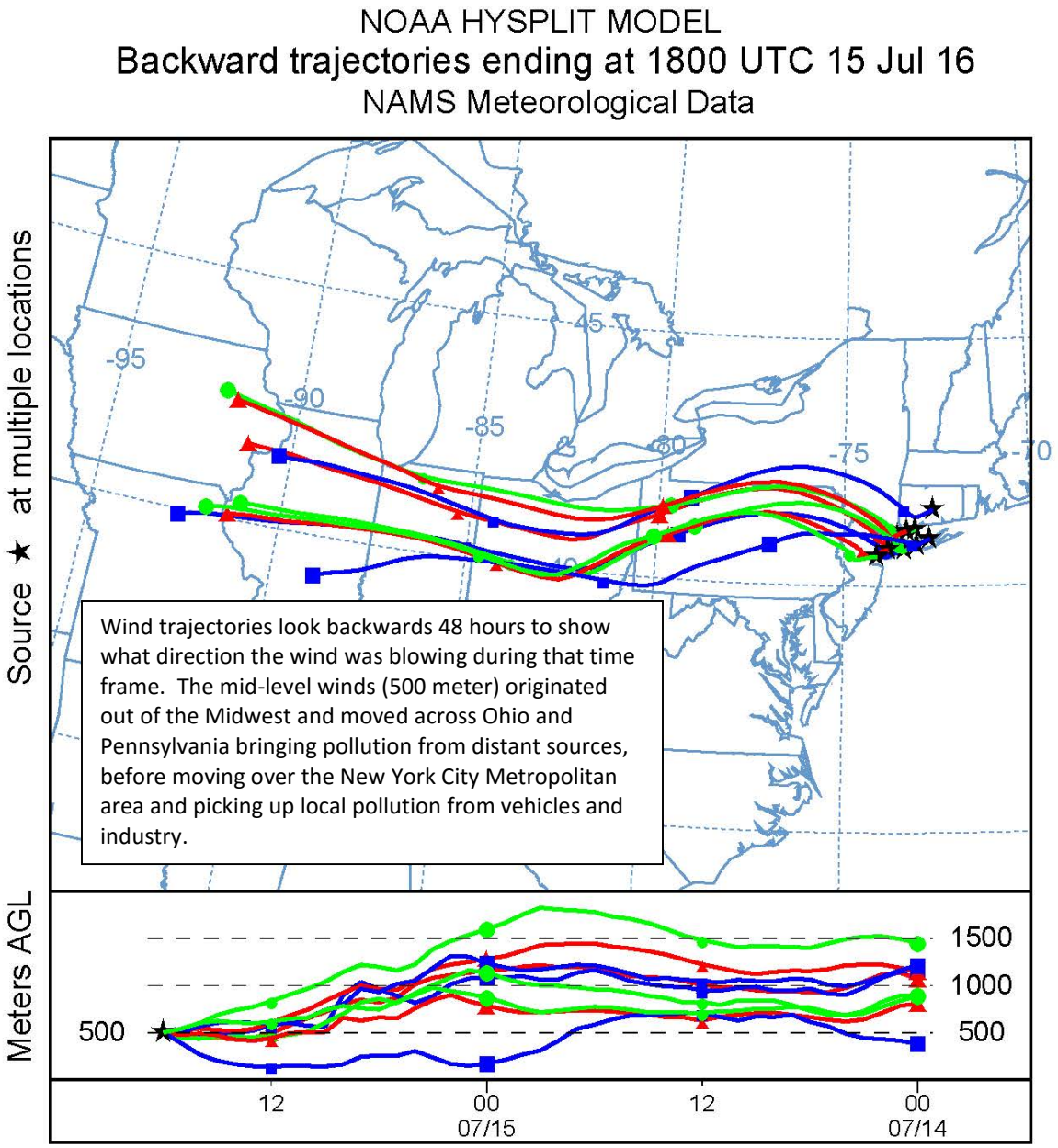
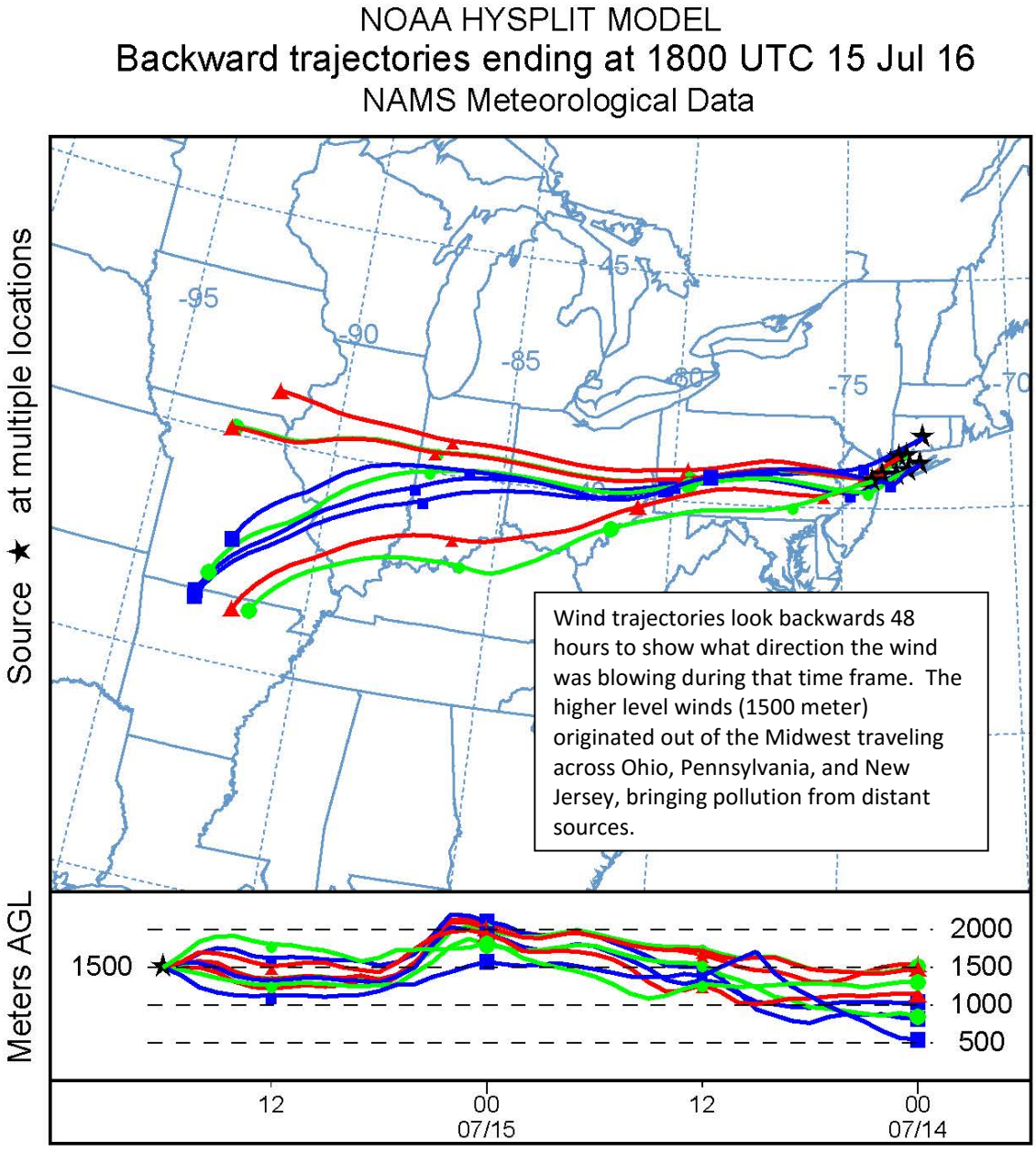


Figure 4. 48-hour Back Trajectories for July 15, 2016 at 1500 meters



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.