

Ozone National Ambient Air Quality Standard Health Exceedances on September 22, 2016

Exceedance Locations and Levels

On Thursday, September 22, 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 8-hour average ozone concentration recorded in New Jersey on September 22, 2016 was 60 ppb at the Camden Spruce Street station.

The highest 1-hour average ozone concentration recorded on September 22, 2016, in New Jersey was 68 ppb at both the Camden Spruce Street and Columbia monitors, 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 twenty-four (24). By the 22nd of September in 2015, there were a total of twenty (20) 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 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 five (5) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Thursday, September 22, 2016 (see Table 1):

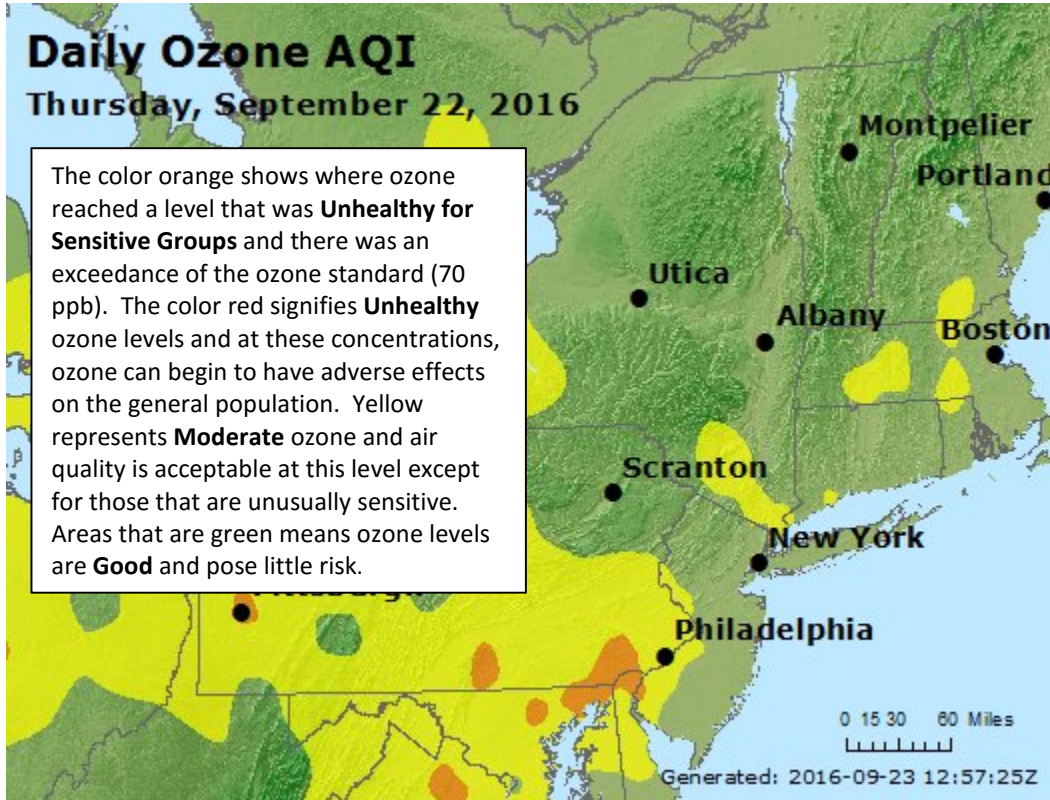
Table 1: Ozone NAAQS Exceedances at Other Monitoring Stations in New Jersey’s Ozone Nonattainment Areas on September 22, 2016

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
DE	BCSP (New Castle Co.)	78
DE	BELLFNT2 (New Castle Co.)	71
DE	MLK (New Castle Co.)	71
MD	Fair Hill	76
PA	NEWG (Chester Co.)	83

The highest 1-hour average ozone concentration recorded was 95 ppb at the NEWG station in Chester county, Pennsylvania, which is below the 1-hour ozone NAAQS of 120 ppb.

Thursday marks the 10th day in 2016 on which an exceedance of the new 8-hour ozone NAAQS of 70 ppb was recorded in Delaware, the 13th day for Pennsylvania, and the 8th day for Maryland. The number of days remains at twenty-six (26) for Connecticut and eighteen (18) for New York.

Figure 1. Ozone Air Quality Index for September 22, 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°F's, while winds were light and from the east/northeast. Although winds coming from this direction are not usually associated with high ozone days, light winds often are. Skies were sunny with a high pressure system situated just north of the area. Sunny skies, in combination with warm temperatures and light winds, 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 September 22, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event. Three (3) 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 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)
DE	BCSP (New Castle Co.)	78
MD	Fair Hill	76
PA	NEWG (Chester Co.)	83

The low level wind (Figure 2) originated over New York and then traveled southwest down through portions of New Jersey and Pennsylvania along the Delaware River, including Philadelphia, picking up air contaminant emissions from motor vehicles and industry and transporting them to the exceedance monitors.

The back trajectories for the mid-level (Figure 3) and higher level (Figure 4) winds illustrate similar transport pathways. Winds traveled southeast through portions of central New York and southern New England, before shifting west over the Atlantic Ocean and through southern New Jersey and the Philadelphia metropolitan area. Back trajectories that originate from the north or pass through the Atlantic Ocean are not usually associated with high ozone days. However, local pollution from mobile and stationary sources picked up in the Philadelphia metropolitan area likely contributed to the high ozone experienced in Delaware, Maryland and southern Pennsylvania on September 22, 2016.

Figure 2. 48-hour Back Trajectories for September 22, 2016 at 10 meters

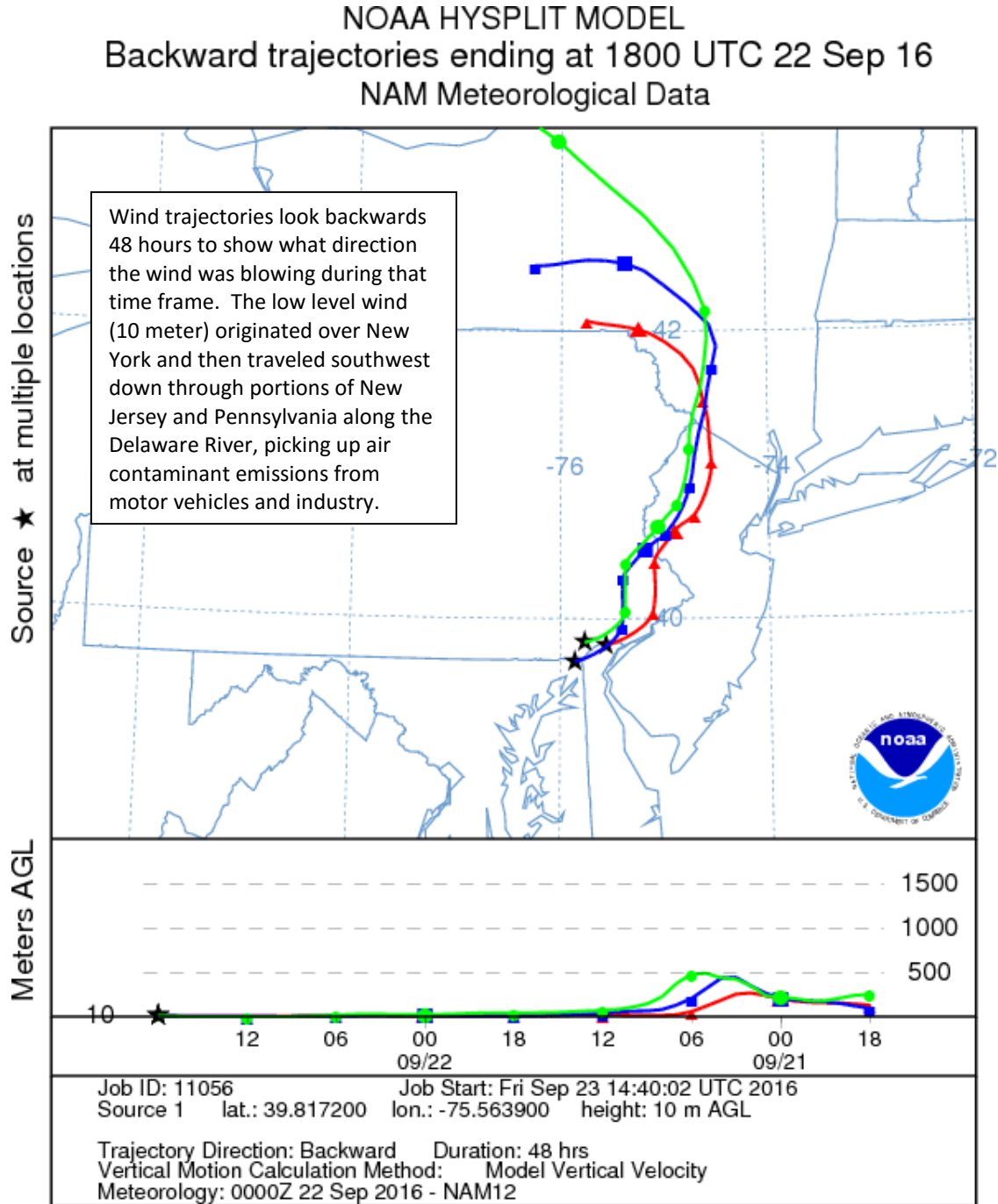


Figure 3. 48-hour Back Trajectories for September 22, 2016 at 500 meters

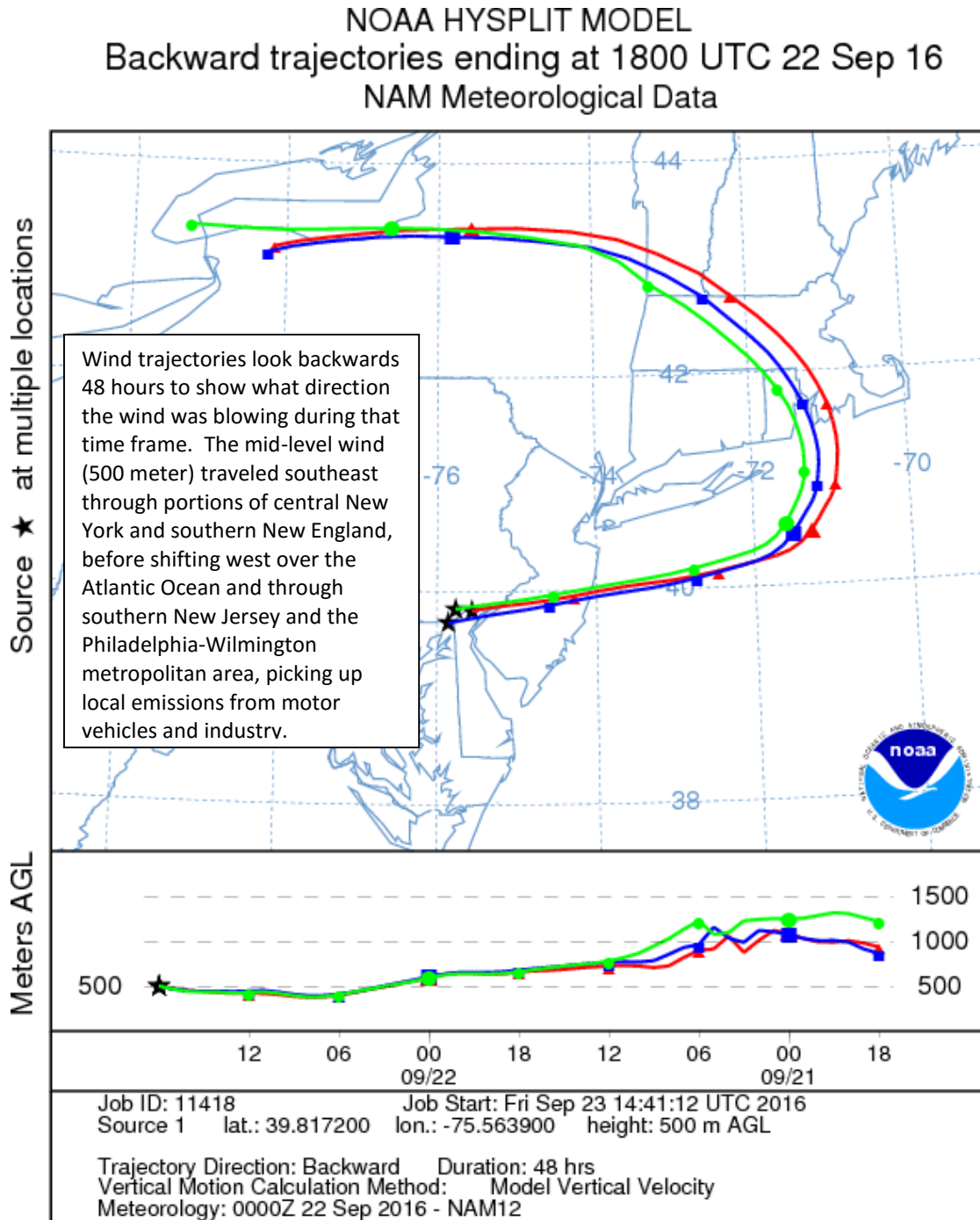
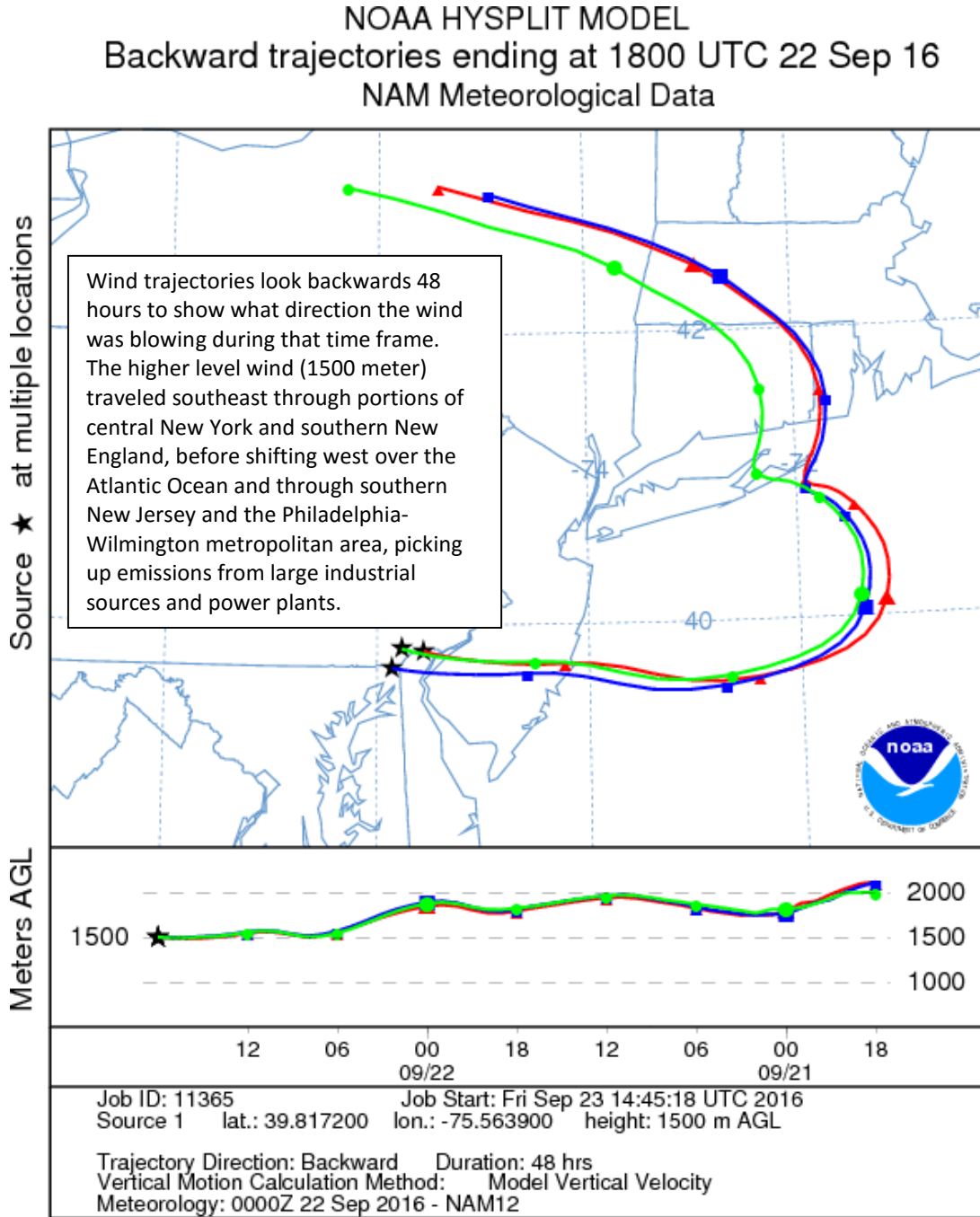


Figure 4. 48-hour Back Trajectories for September 22, 2016 at 1500 meters



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.