Ozone National Ambient Air Quality Standard Health Exceedances on August 27, 2016

Exceedance Locations and Levels

On Saturday, August 27, 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-hr average ozone concentration recorded was 66 ppb at the Chester station. The highest 1-hour average ozone concentration recorded on August 27, 2016, in New Jersey was 81 ppb, also at the Chester 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 twenty-two (22). By the 27th 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 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 neighboring states, there were three (3) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Saturday, August 27, 2016 (see Table 1):

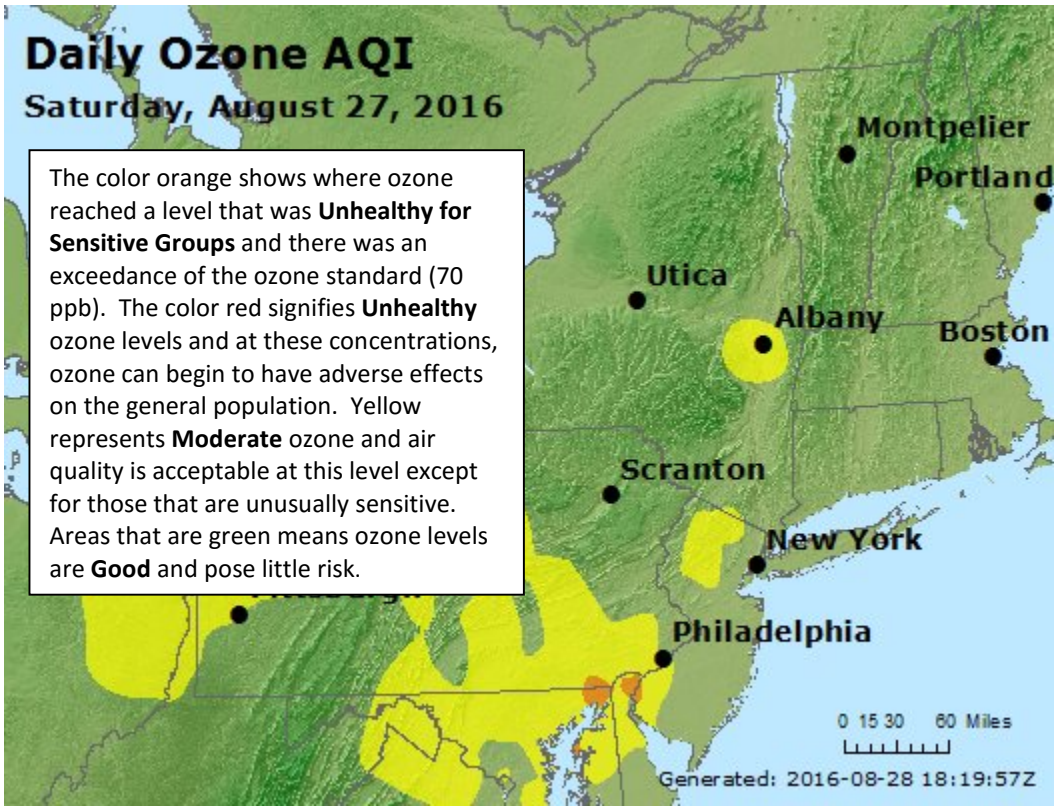
Table 1: Ozone NAAQS Exceedances at other Monitoring Stations in New Jersey's Ozone Nonattainment Areas on August 27, 2016

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
DE	BELLFNT2 (New Castle Co.)	71
DE	MLK (New Castle Co.)	73
MD	Fair Hill	75

The highest 1-hour average ozone concentration recorded was 88 ppb at the Fair Hill station in Maryland, which is below the 1-hour ozone NAAQS of 120 ppb.

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

Figure 1. Ozone Air Quality Index for August 27, 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 Mid-Atlantic showed temperatures reached into the low 90°Fs, while skies were mostly sunny. Winds were light and from the northeast with a high pressure system positioned north of the area. Although northeast winds are not usually associated with high ozone days, light winds, warm temperatures and abundant sunshine are and that was enough to cause the ozone exceedances in Delaware and Maryland on August 27, 2016.

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 27, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event.

The low level wind (Figure 2) traveled down through New York, Pennsylvania, and New Jersey and then shifted southwest, picking up emissions from cars, trucks, and industry along the I-95 corridor and the metropolitan areas of Philadelphia and Wilmington. The back trajectory for the mid-level wind (Figure3) followed a similar transport pathway, except positioned further to the east, causing it to also pass through the New York City metropolitan area, where there is a high volume of motor vehicles and industrial sources of ozone precursor emissions.

The higher level wind in Figure 4 originated over the Great Lakes and traveled down through New York, eastern Pennsylvania, and inland New Jersey, bringing additional emissions from large industrial sources and power plants along the Delaware River. 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 Delaware and Maryland that experience high ozone on August 27, 2016.

Figure 2. 48-hour Back Trajectories for August 27, 2016 at 10 meters

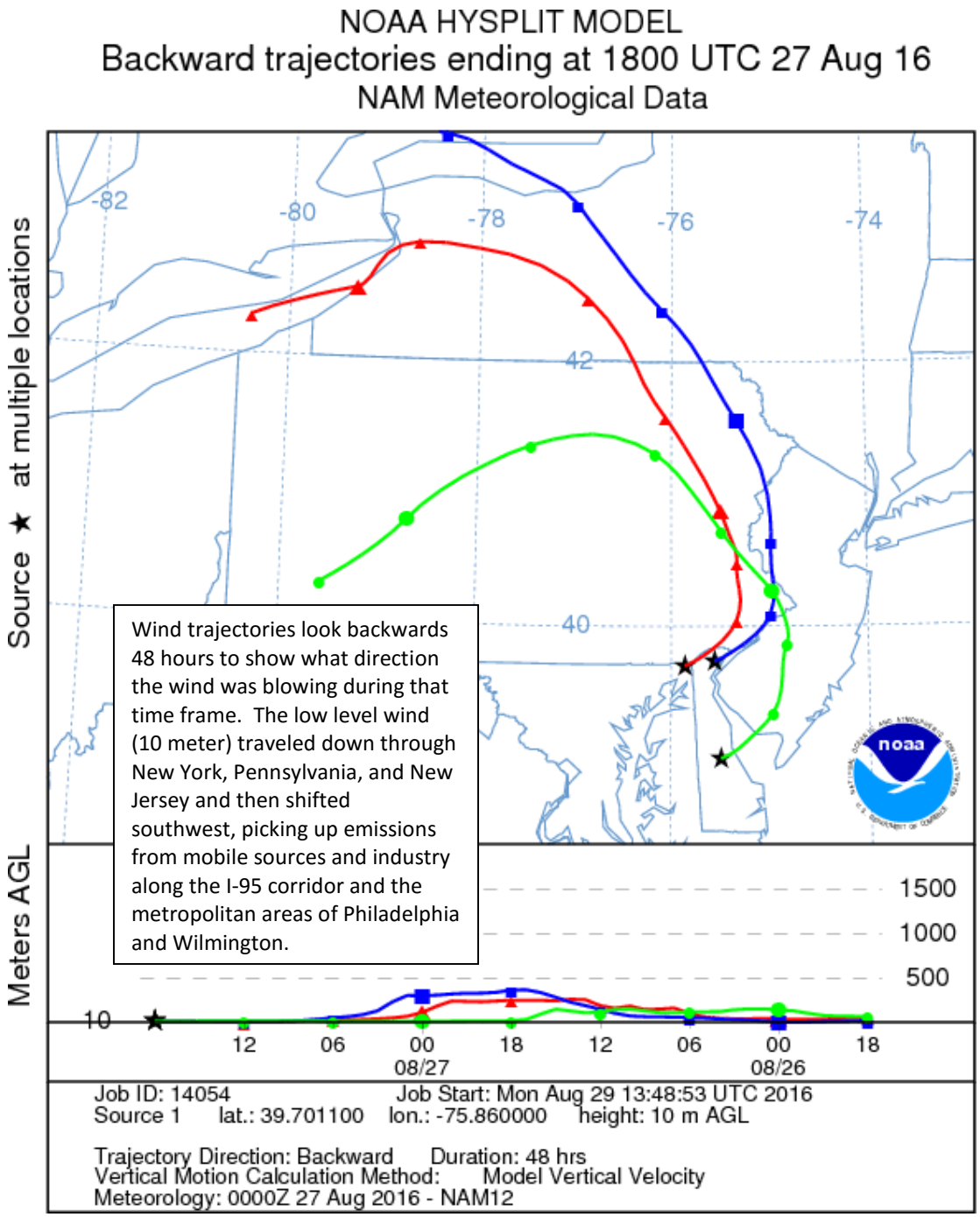


Figure 3. 48-hour Back Trajectories for August 27, 2016 at 500 meters

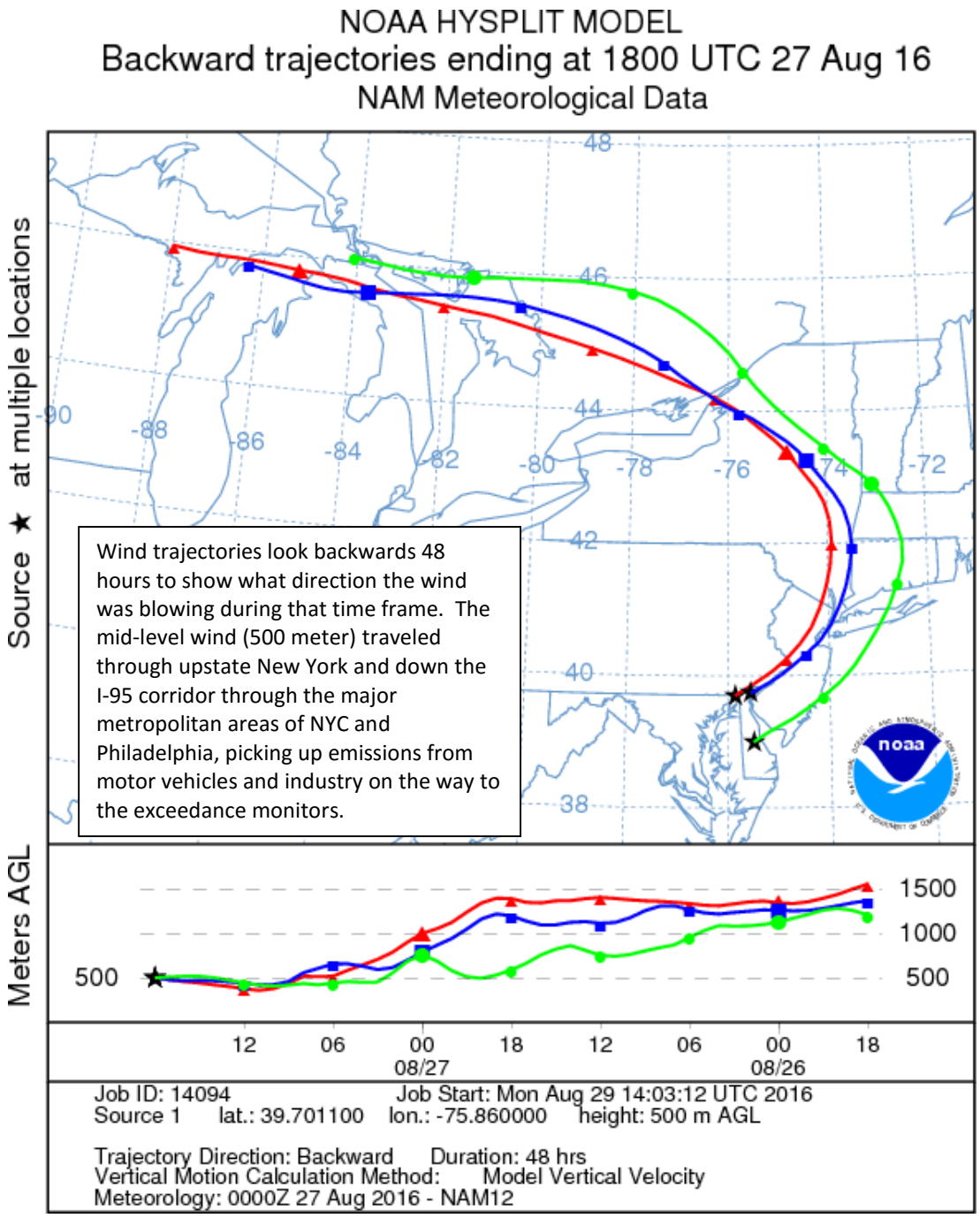
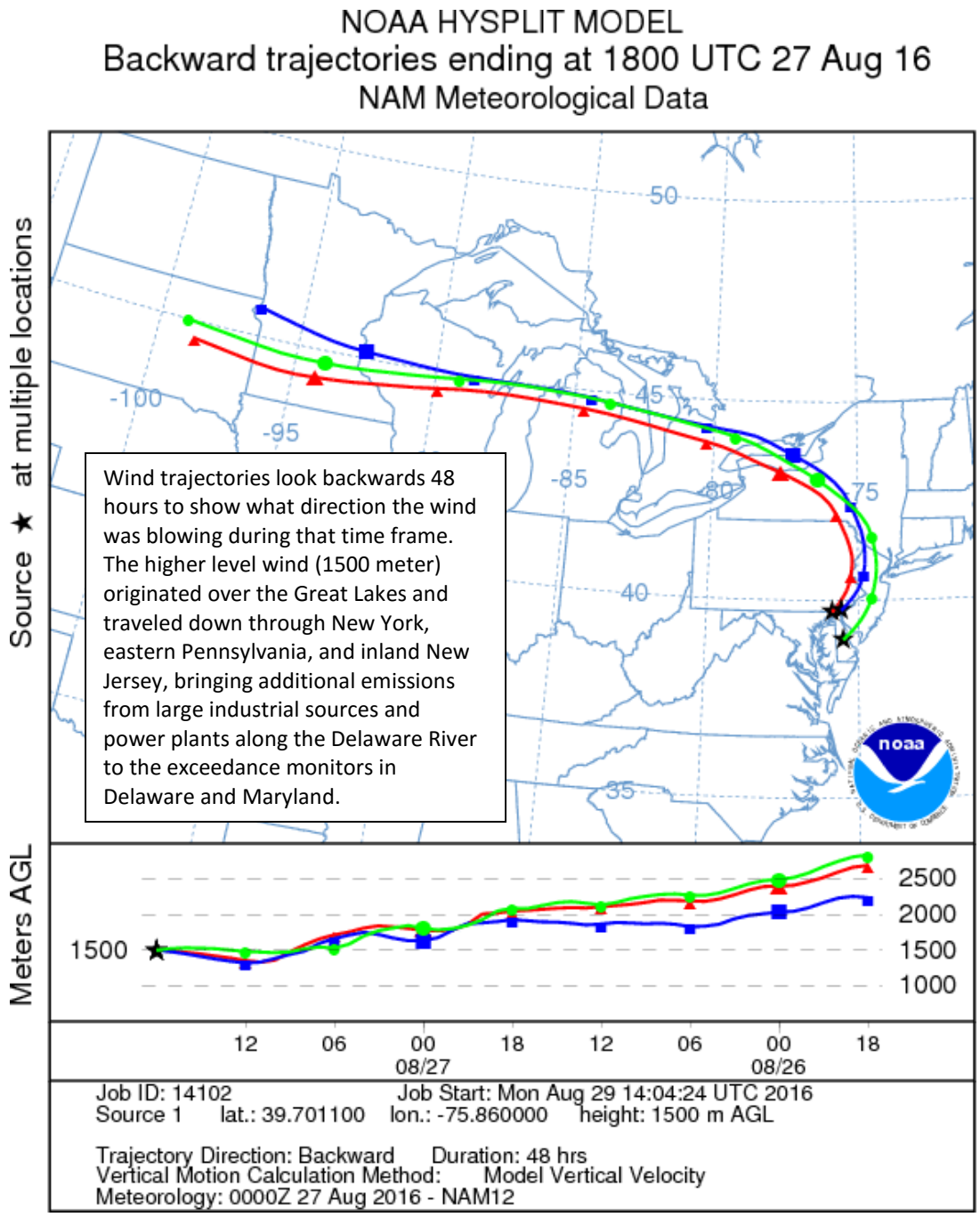


Figure 4. 48-hour Back Trajectories for August 27, 2016 at 1500 meters



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.