

Ozone National Ambient Air Quality Standard Health Exceedances on August 11, 2016

Exceedance Locations and Levels

On Thursday, August 11, 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 August 11, 2016 was 59 ppb at the Rutgers University station. The highest 1-hour average ozone concentration recorded was 83 ppb, also at the Rutgers University 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-one (21). By the 11th of August in 2015, there were a total of ten (10) 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 five (5) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Thursday, August 11, 2016 (see Table 1):

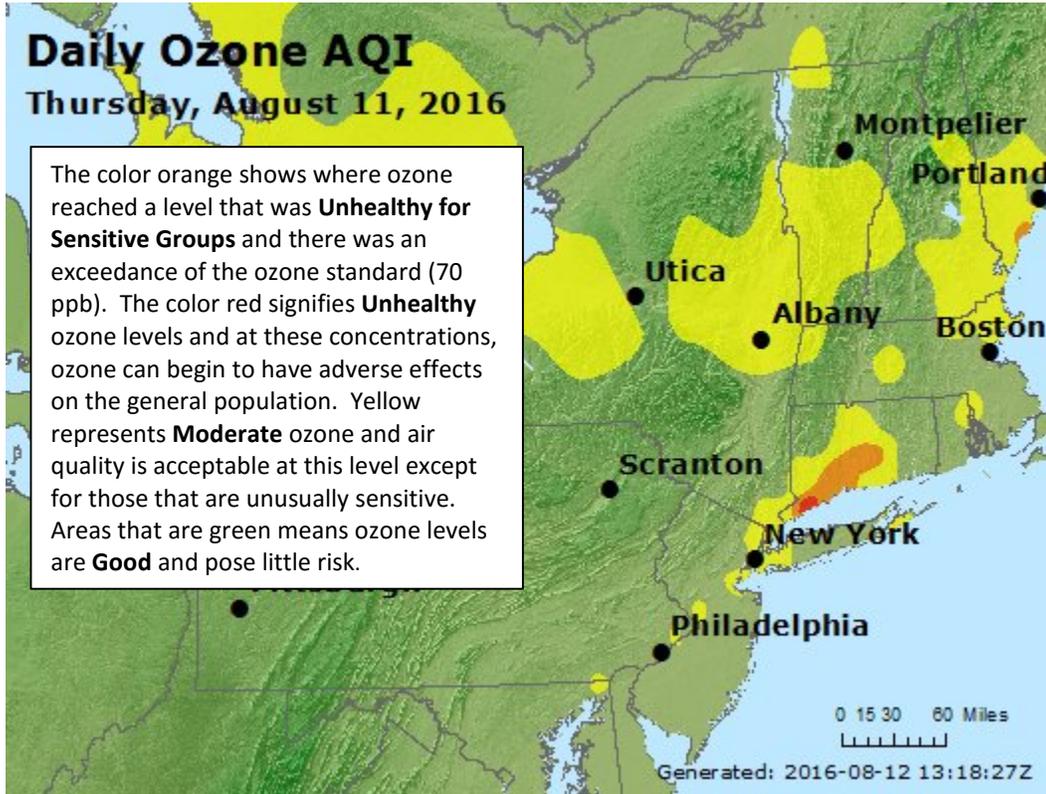
Table 1: Ozone NAAQS Exceedances at Other Monitoring Stations in New Jersey’s Ozone Nonattainment Areas on August 11, 2016

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Greenwich	76
CT	Middletown	75
CT	New Haven	72
CT	Stratford	82
CT	Westport	87

The highest 1-hour average ozone concentration recorded was 108 ppb at the Westport and Greenwich stations in Connecticut, which is below the 1-hour ozone NAAQS of 120 ppb.

Thursday marks the 20th 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 11, 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 mid 90°F's, while winds were light and from the southwest with a high pressure system over the Atlantic Ocean. Skies were mostly sunny over Connecticut. States to the south and west had more extensive cloud cover, as well as showers and thunderstorms in the afternoon, which kept ozone levels from building up. The adequate sunlight in Connecticut, in combination with light 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 August 11, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event. Three monitoring (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)
CT	Westport	87
CT	Stratford	82
CT	Greenwich	76

The low level wind (Figure 2) traveled up the I-95 corridor and through the major metropolitan areas of Baltimore, Philadelphia, and New York City where it picked up emissions from cars, trucks, and industry on the way to the exceedance monitors in Connecticut. The mid-level wind (Figure 3) originated over the Smoky Mountains and traveled across Pennsylvania, northern New Jersey, and New York City, bringing additional emissions from cars, trucks, and industry to Connecticut. The higher level wind came across the Ohio River Valley, Pennsylvania, and the New York City metropolitan area, where there are many large industrial sources and power plants. The higher level wind, in combination with the low and mid-level winds, caused air pollution from a variety of mobile and stationary sources to be transported in the areas of Connecticut that experienced high ozone on August 11, 2016.

Figure 2. 48-hour Back Trajectories for August 11, 2016 at 10 meters

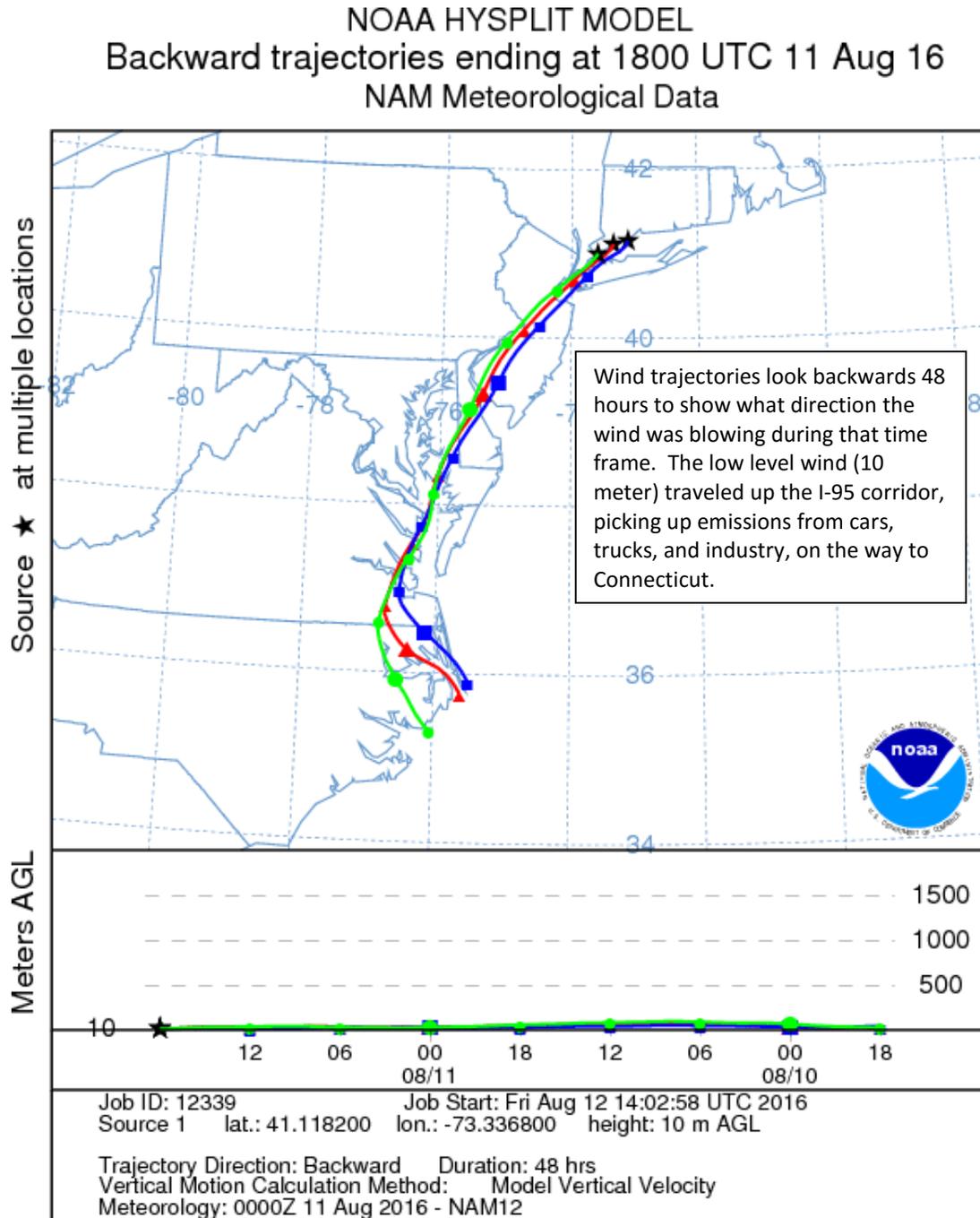


Figure 3. 48-hour Back Trajectories for August 11, 2016 at 500 meters

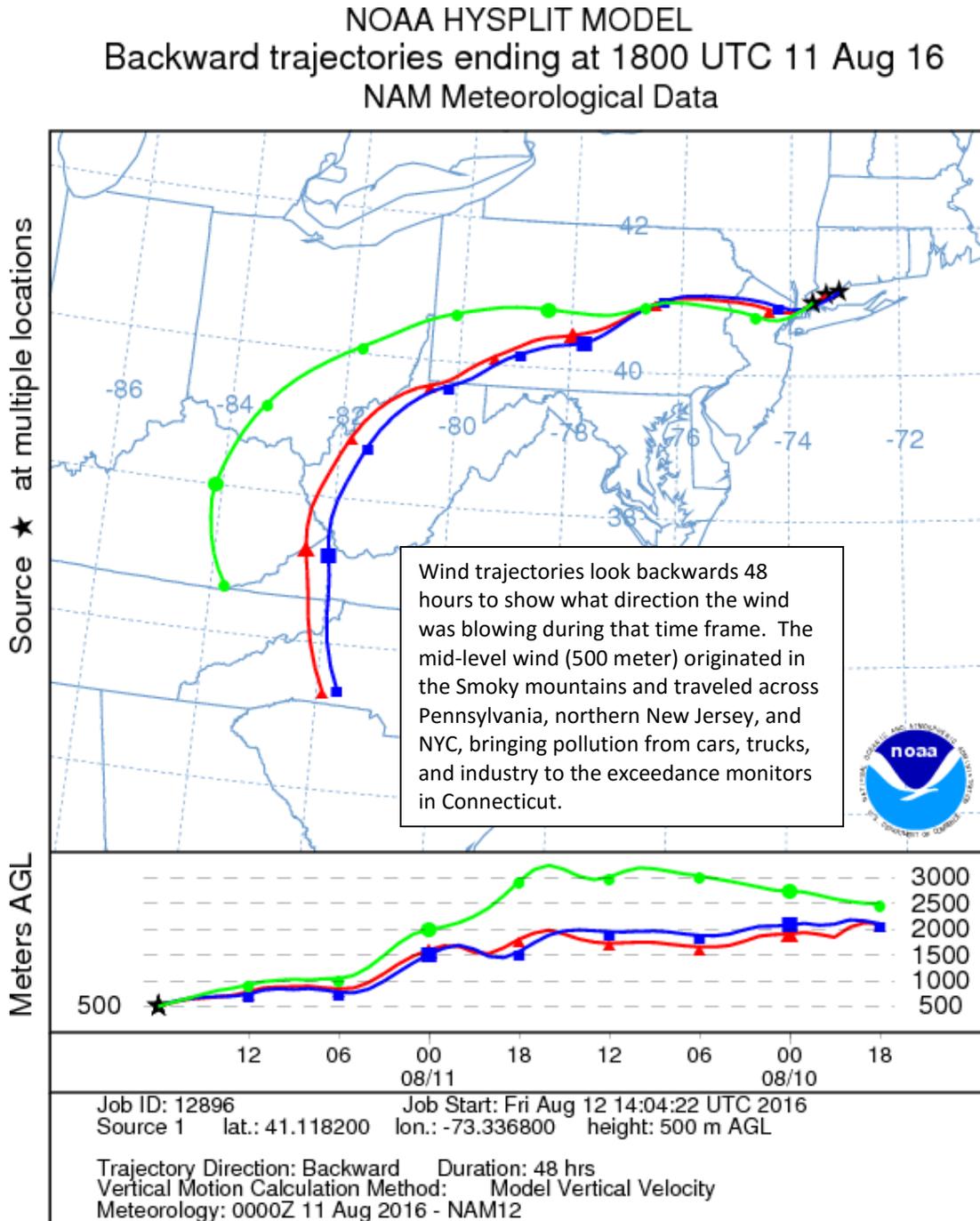
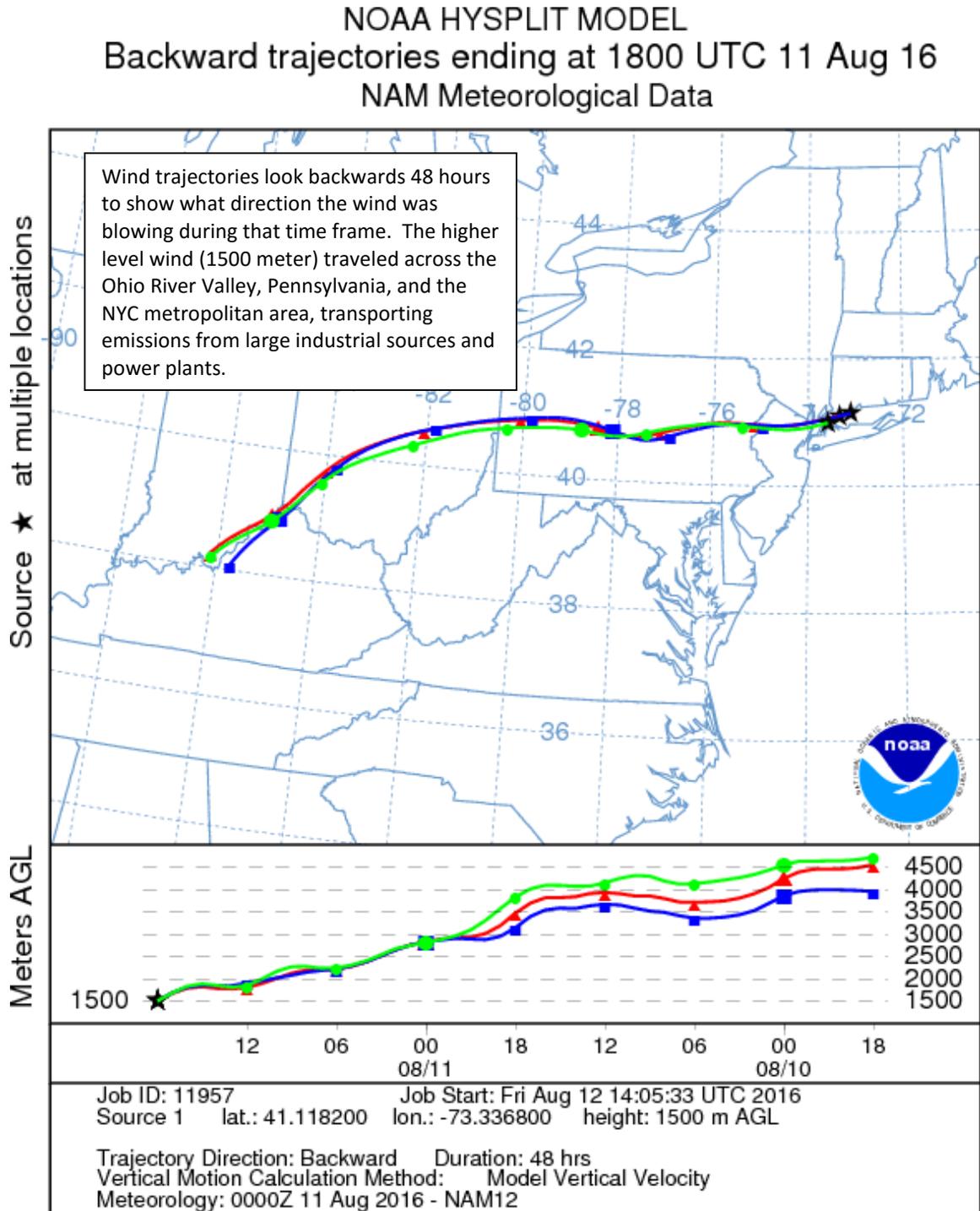


Figure 4. 48-hour Back Trajectories for August 11, 2016 at 1500 meters



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.