

Ozone National Ambient Air Quality Health Standard Exceedances on September 3, 2015

Exceedances Locations and Levels

On Thursday, September 3, 2015, exceedances of the 8-hour average National Ambient Air Quality Standard (NAAQS) for ozone (75 ppb) were recorded at four (4) New Jersey stations: Colliers Mills station with a concentration of 90 ppb, Bayonne station with a concentration of 82 ppb, Monmouth University station with a concentration of 79 ppb and Rutgers University station with a concentration of 78 ppb. The highest 1-hour average ozone concentration recorded on September 3, 2015 in New Jersey was 100 ppb at the Colliers Mills station, which is below the 1-hour NAAQS of 120 ppb. This is the sixteenth (16th) day there was an exceedance of the 8-hour ozone NAAQS in 2015 for New Jersey. By this time in 2014, there were 3 days on which an ozone exceedance was measured in New Jersey, and there were 9 days in 2013.

There is a group of monitoring stations in designated counties of 5 states, New York, Connecticut, Pennsylvania, Delaware, and Maryland, which are included in New Jersey's ozone non-attainment areas. From this group of stations in the other neighboring states, there were two (2) exceedances of the 8-hour ozone NAAQS recorded on Thursday, September 3, 2015: Susan Wagner station in Staten Island, NY with a concentration of 81 ppb and Babylon station in Long Island, NY with a concentration 76 ppb. The highest 1-hour average ozone concentration recorded was 87 ppb at the Susan Wagner station in New York, which is below the 1-hour NAAQS of 120 ppb.

Figure 1. Ozone Air Quality Index for September 3, 2015



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 ranged from the low to mid 90s° F with stagnating conditions. Winds were light and variable throughout the day with a hot and humid air mass in place. Skies were mostly sunny. Sufficient sunlight, combined with warmer temperatures and light variable winds are all features commonly seen with an ozone episode.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2 and 3 show the back trajectories for 3 selected monitored exceedances (Colliers Mills, NJ; Bayonne, NJ; and Babylon, NY) for September 3. These sites were selected because they were representative of the three regions (central coast New Jersey, New York City metropolitan area, and Long Island, NY) where ozone exceedances occurred. Figure 2 shows where the low level winds (10 meters) came from during the 48 hours preceding the high ozone levels at monitor locations. Winds approaching central New Jersey and the New York City metropolitan area originated in western New York and then traveled through the lower Hudson Valley, northeast Pennsylvania and northern New Jersey, where there are air contaminant emissions from motor vehicles, industry, and power plants. Winds approaching the Long Island, NY monitor recirculated around the New York City metropolitan area, bringing with them pollution from mobile sources and industry that was picked up the previous day, plus local emissions from cars, trucks, and industry released the day of the exceedances.

Figure 3 illustrates that higher level winds (500 meters) originated over southeastern Ontario and traveled down through upstate New York, the lower Hudson Valley, and northern New Jersey before reaching the 3 selected monitoring sites, bringing with them pollution from motor vehicles, industry, and power plants. The combination of the 10 meter and 500 meter winds caused air pollution from a variety of mobile and stationary sources to be transported into the regions of coastal New Jersey, the New York City metropolitan area, and Long Island New York that experienced high ozone on September 3, 2015.

The ozone exceedances on September 3, 2015 were part of a multi-day ozone event that was being driven by a hot and stagnant air mass over the area. Thursday, September 3 marks the third and final day of that event. Air quality conditions will improve Friday due to a weak cold front that is set to push through and bring a cleaner and cooler air mass to the area.

Figure 2. 48-hour Back Trajectories for Low Level Winds (10 meters)
 NOAA HYSPLIT MODEL
 Backward trajectories ending at 1800 UTC 03 Sep 15
 NAM Meteorological Data

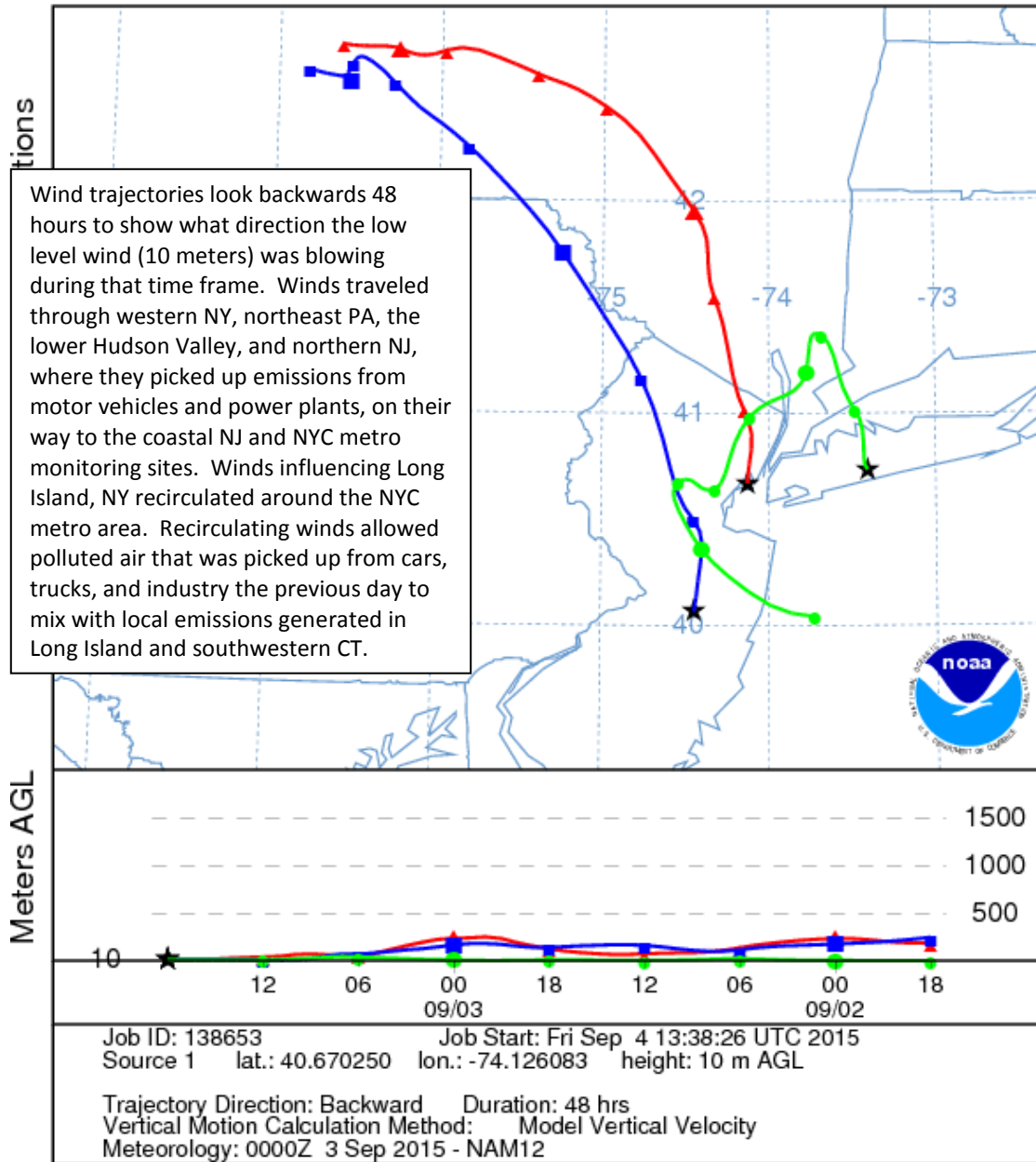
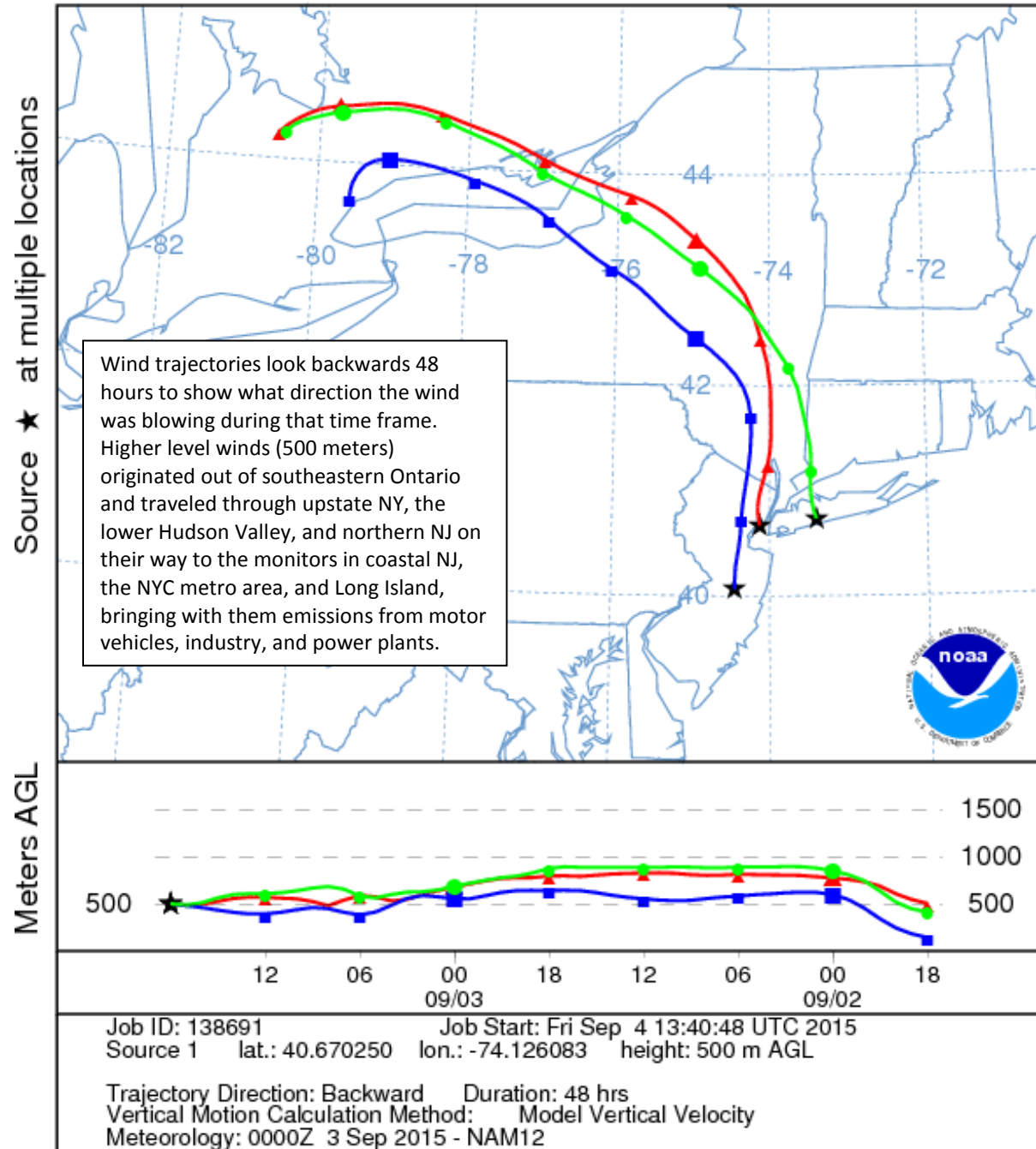


Figure 3. 48-hour Back Trajectories for Higher Level Winds (500 meters)
NOAA HYSPLIT MODEL
 Backward trajectories ending at 1800 UTC 03 Sep 15
 NAM Meteorological Data



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.