Ozone National Ambient Air Quality Standard Health Exceedance on May 12, 2016

Exceedance Locations and Levels

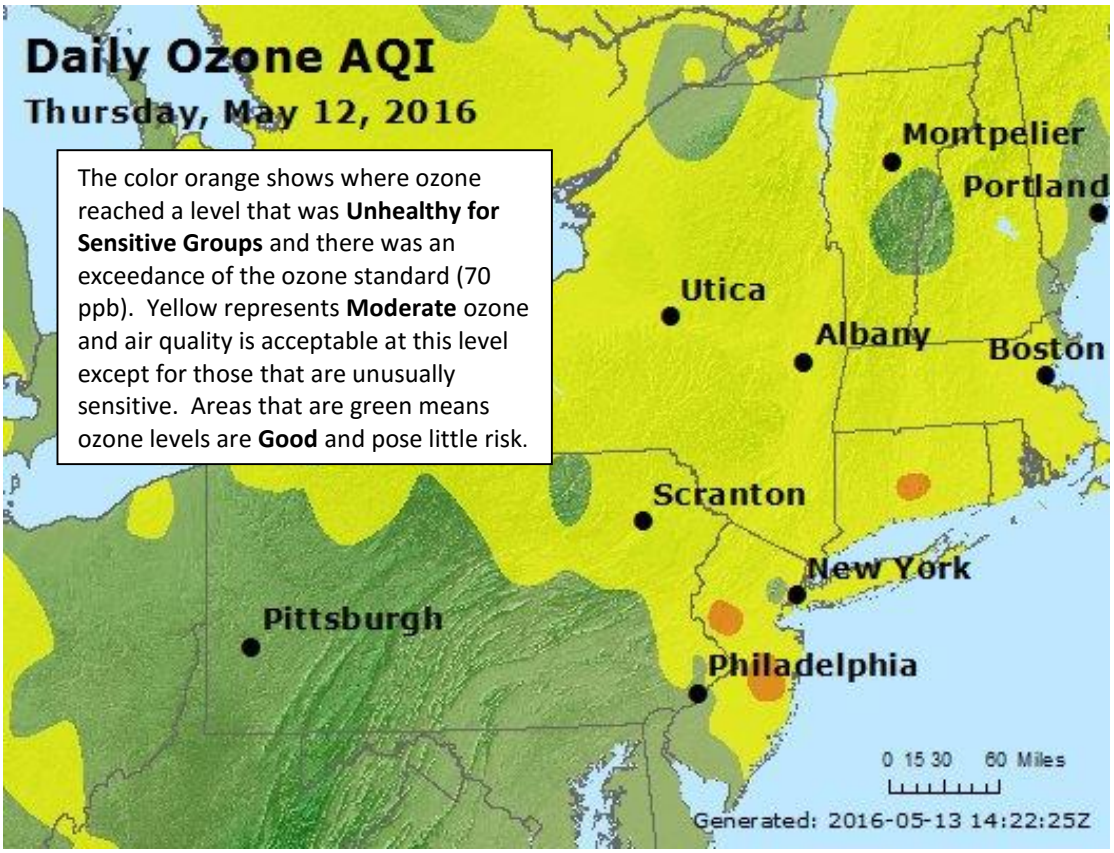
On Thursday, May 12, 2016, one (1) exceedance of the new 8-hour average ozone NAAQS of 70 ppb was recorded in New Jersey: Colliers Mills station with a concentration of 72 ppb. The highest 1-hour average ozone concentration recorded on May 12, 2016 in New Jersey was 79 ppb at the Flemington station, which is below the 1-hour ozone NAAQS of 120 ppb.

Thursday marks the first day in 2016 on which an exceedance of the new 8-hour ozone NAAQS of 70 ppb was recorded in New Jersey. By the 12th of May in 2015, there were a total of 2 days on which ozone exceedances were measured in New Jersey (based on the old 8-hour ozone NAAQS of 75 ppb), and there were zero 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 other neighboring states, there was one (1) exceedance of the new 8-hour ozone NAAQS of 70 ppb recorded on Thursday, May 12, 2016 in Connecticut: Middletown station with a concentration of 71 ppb. The highest 1-hour average ozone concentration recorded was 80 ppb at Greenwich, CT, which is below the 1-hour ozone NAAQS of 120 ppb.

Thursday marks the 2nd day in 2016 on which an exceedance of the new 8-hour ozone NAAQS of 70 ppb was recorded in Connecticut. Pennsylvania, New York, Maryland, Delaware have not yet measured an exceedance of the new 8-hour ozone NAAQS of 70 ppb in 2016. Figure 1 geographically illustrates where the ozone exceedances occurred on May 12, 2016. Disregard the high ozone shown over Hunterdon County, NJ. This map was generated by EPA using data that had yet to be validated. Upon review of the monitoring data it was discovered that there was ***not*** an ozone exceedance at the Flemington monitor in Hunterdon County on May 12, 2016.

Figure 1. Ozone Air Quality Index for May 12, 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

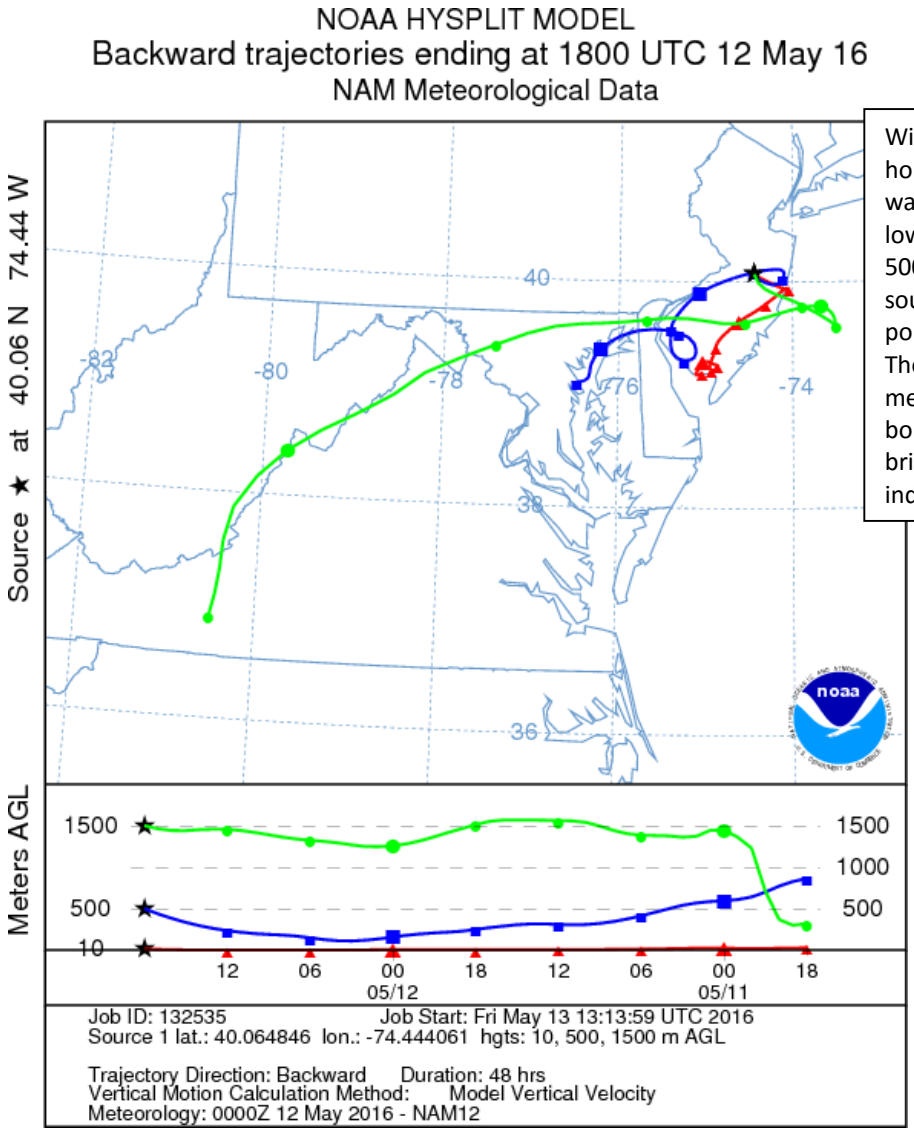
Meteorological data from across the region show temperatures reached to around 80°F while winds were light and variable with a weak high pressure system located over the northeastern United States. Skies were mostly sunny during the day. Sufficient sunlight, combined with warm temperatures and light winds, are features commonly seen with an ozone exceedance.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2 and 3 show the back trajectories for the monitored exceedances on May 12. Figure 2 illustrates where the winds came from during the 48 hours preceding the high ozone recorded at the Colliers Mill, New Jersey air monitoring site. It is evident that the surface (red – 10 meter) and midlevel (blue – 500 meter) winds were very light in that they only managed to travel through southern New Jersey during the 48 hour period preceding the ozone exceedance at Colliers Mills. This indicates that local emissions from cars, trucks, and industry were big contributors to the higher ozone on May 12. Additional pollution from industry and power plants came in with the higher level wind (green line) which originated along the Virginia - West Virginia border and traveled through Baltimore and southern New Jersey on the way to Colliers Mills. The combination of these winds caused air pollution from mobile

sources, industry, and power plants to be transported into the area of central New Jersey that experienced high ozone on May 12.

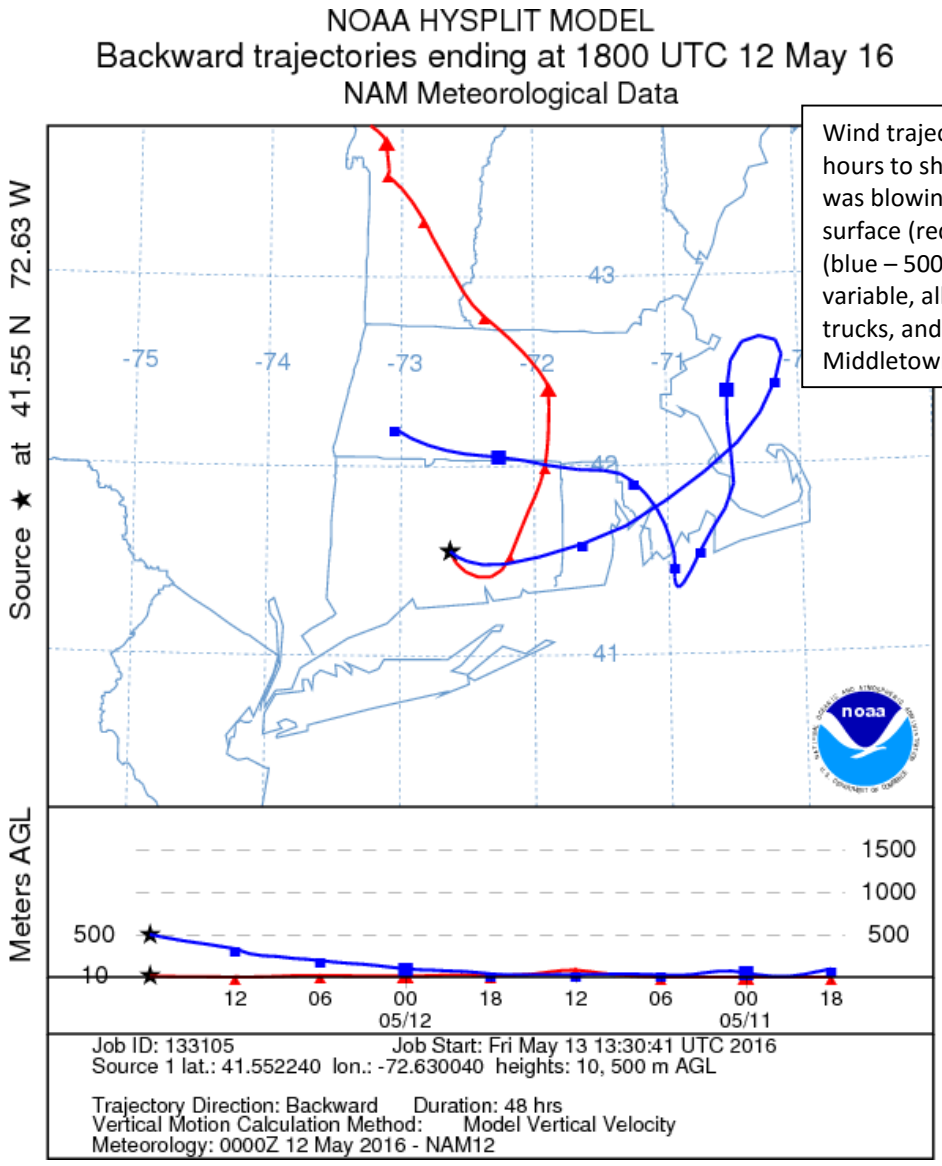
Figure 2. Colliers Mills, NJ 48-hour Back Trajectories for May 12, 2016



Wind trajectories look backwards 48 hours to show what direction the wind was blowing during that time frame. The lower level winds (red – 10 meter, blue 500 meter) traveled slowly through southern NJ, where they picked up local pollution from cars, trucks, and industry. The higher level wind (green – 1500 meter) traveled across the VA/WV border, Baltimore, and southern NJ, bringing additional pollution from industry and power plants.

Figure 3 shows where the winds came from during the 48 hours preceding the high ozone levels recorded at the Middletown, Connecticut air monitoring site. Winds at both the 10 meter (red line) and 500 meter (blue line) heights were light and variable, which allowed local emissions from cars, trucks, and industry to accumulate and cause the high ozone levels experienced at the Middletown, Connecticut station on May 12.

Figure 3. Middletown, CT 48-hour Back Trajectories for May 12, 2016



Wind trajectories look backwards 48 hours to show what direction the wind was blowing during that time frame. The surface (red – 10 meter) and midlevel (blue – 500 meter) winds were light and variable, allowing pollution from cars, trucks, and industry to accumulate in Middletown, CT.

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.