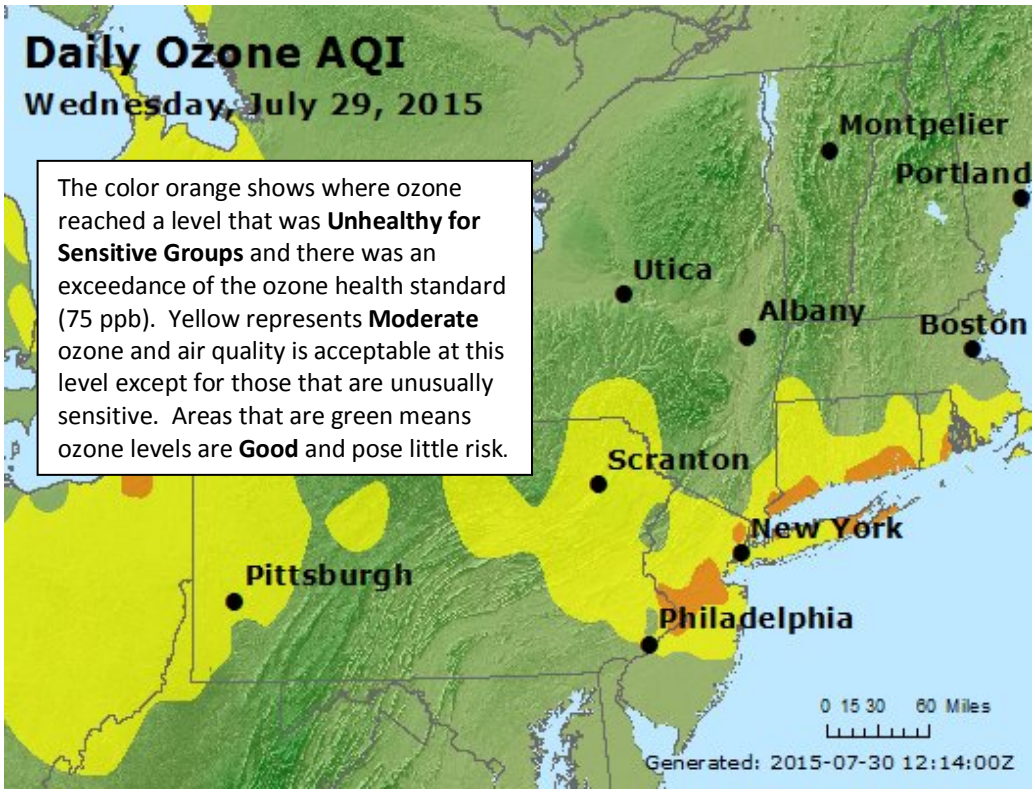
Ozone National Ambient Air Quality Health Standard Exceedances on July 29, 2015

Exceedances Locations and Levels

On Wednesday, July 29, 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: : Washington Crossing with a concentration of 81 ppb, Rutgers University with a concentration of 81 ppb, Leonia with a concentration of 79 ppb, and Rider University with a concentration of 78 ppb. The highest 1-hour average ozone concentration recorded was 104 ppb at Rutgers University, which is below the 1-hour NAAQS of 120 ppb. This is the tenth exceedance of the 8-hour ozone NAAQS in 2015 for New Jersey. By the 29th of July in 2014, there was a total of 2 days on which an ozone exceedance was measured in New Jersey, and there were 8 days by this same date in 2013.

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 were six (6) exceedances of the 8-hour ozone NAAQS recorded on Wednesday, July 29, 2015: Riverhead, NY; Bristol, PA; Greenwich, CT; Madison Beach Rd., CT; Stratford, CT; and Westport, CT. The highest 8-hour average ozone concentration recorded was 87 ppb at the Madison Beach Rd. station in CT. The highest 1-hour average ozone concentration recorded was 101 ppb, also at the Madison Beach Rd. station in CT.

Figure 1. Ozone Air Quality Index for July 29, 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 in the 90s^{o}F, while winds were stagnant in the morning hours and then shifted to the southwest for the remainder of the day, with an average wind speed of 5 mph. Skies were clear. Sufficient sunlight, combined with warmer temperatures, and very light southwest winds are all features commonly seen with an ozone episode.

Where Did the Air Pollution that Caused Ozone Come From?

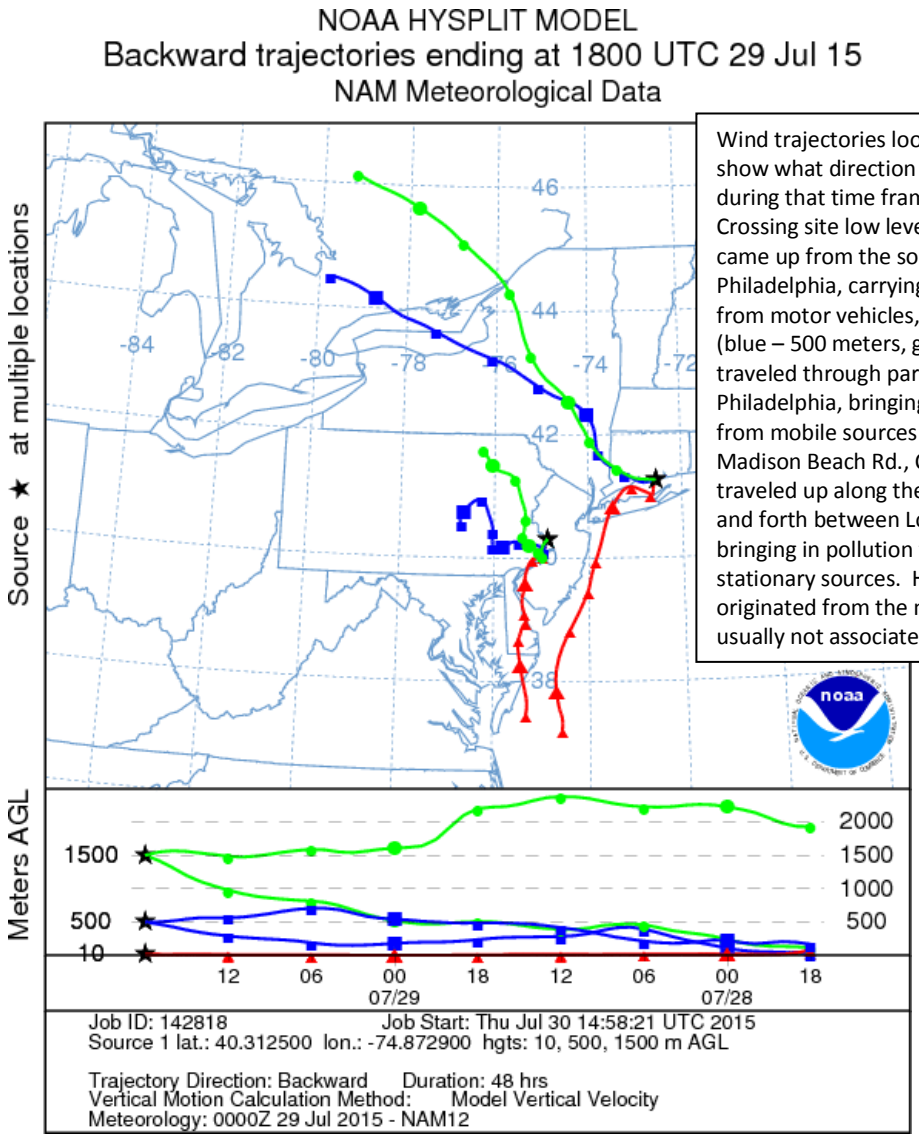
Figure 2 shows the back trajectories for selected monitored exceedances (Washington Crossing, NJ and Madison Beach Rd., CT) for July 29. These sites were selected because they were the highest recorded sites and are representative of the two clusters of sites that went over, one cluster in New Jersey's southern ozone nonattainment area and the other cluster in the northern ozone nonattainment area.

The Washington Crossing, NJ monitor is located in New Jersey's southern nonattainment area for ozone, which is comprised of selected counties from southern New Jersey, Pennsylvania, Maryland, and Delaware. Figure 2 shows where the winds came from during the 48 hours preceding the high ozone levels at that site. Low levels winds (red line – 10 meters) came up from the south through Maryland and Delaware and then crossed through Philadelphia, where there are significant air contaminant emissions from cars and trucks. Higher level winds (blue line – 500 meters, green line – 1500 meters) shifted around through parts of eastern PA and then also traveled through the Philadelphia metropolitan area before reaching Washington Crossing, bringing additional pollution from motor vehicles and power plants.

The Madison Beach Rd., CT monitor is located in New Jersey's northern nonattainment area for ozone, which is comprised of selected counties from northern New Jersey, New York, and Connecticut. Figure 2 shows that low level winds traveled up along the coast and wavered back and forth between Long Island and southern Connecticut, pulling in and congregating emissions from cars, trucks, and industry. Higher level winds originated out of the northwest, which is usually not associated with a high ozone day.

The combination of the winds discussed above allowed air pollution from a variety of mobile and stationary sources to be transported into New Jersey's northern and southern ozone nonattainment areas and cause exceedances of the health standard on July 29th.

Figure 2. 48-hour Back Trajectories for July 29, 2015



Wind trajectories look backwards 48 hours to show what direction the wind was blowing during that time frame. At the Washington Crossing site low level winds (red – 10 meters) came up from the south and traveled through Philadelphia, carrying with them emissions from motor vehicles, while higher level winds (blue – 500 meters, green 1500 meters) slowly traveled through parts of eastern PA and Philadelphia, bringing additional pollution from mobile sources and power plants. At the Madison Beach Rd., CT site low level winds traveled up along the coast and wavered back and forth between Long Island and CT, bringing in pollution from mobile and stationary sources. Higher level winds originated from the northwest, which is usually not associated with a high ozone day.

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.