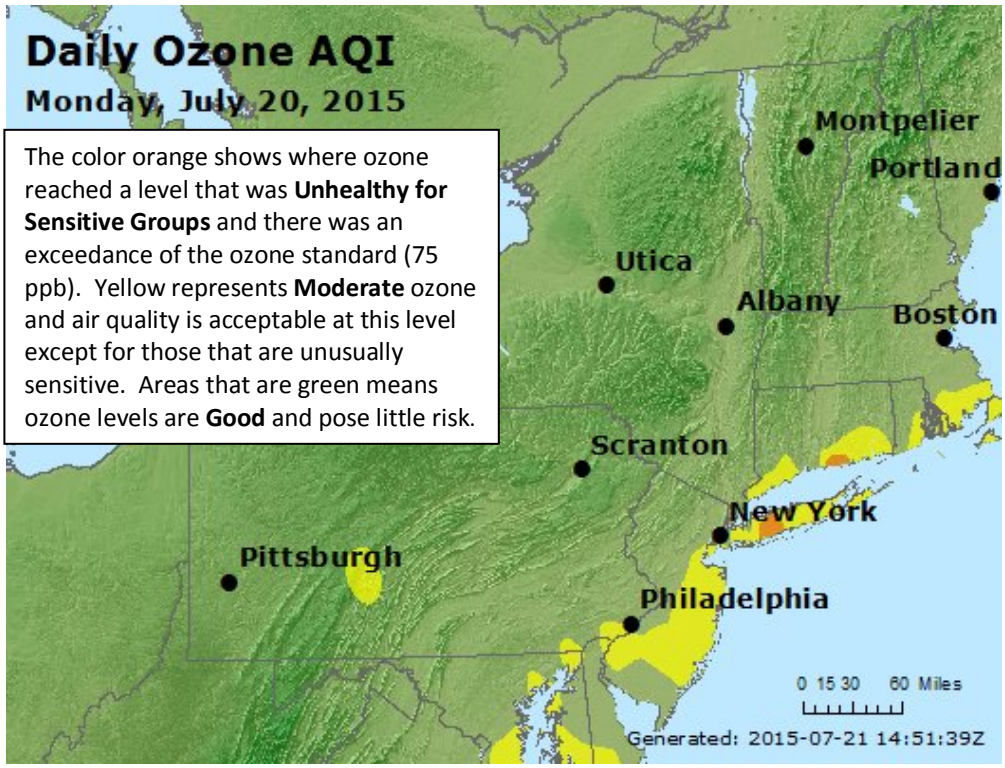
Ozone National Ambient Air Quality Standard Health Exceedance on July 20, 2015

Exceedances Locations and Levels

On Monday, July 20, 2015, an exceedance of the 8-hour average 75 ppb NAAQS for ozone was recorded at two (2) stations: Babylon, NY with a concentration of 78 ppb and Madison, CT with a concentration of 77 ppb. The highest 1-hour average ozone concentration recorded on July 20, 2015 was 98 ppb at Madison, which is below the 1-hour NAAQS of 120 ppb. The Babylon and Madison sites were the only ozone exceedances in the 5 states that make up the Air Quality Control Region that includes New Jersey. The highest 8-hour average ozone concentration recorded in New Jersey was 68 ppb at the Ancora and Colliers Mills monitoring stations. The highest 1-hour average ozone concentration recorded in New Jersey was 76 ppb at the Colliers Mills station. Figure 1 shows the ozone AQI across the region for July 20, 2015.

Figure 1. Ozone Air Quality Index for July 20, 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

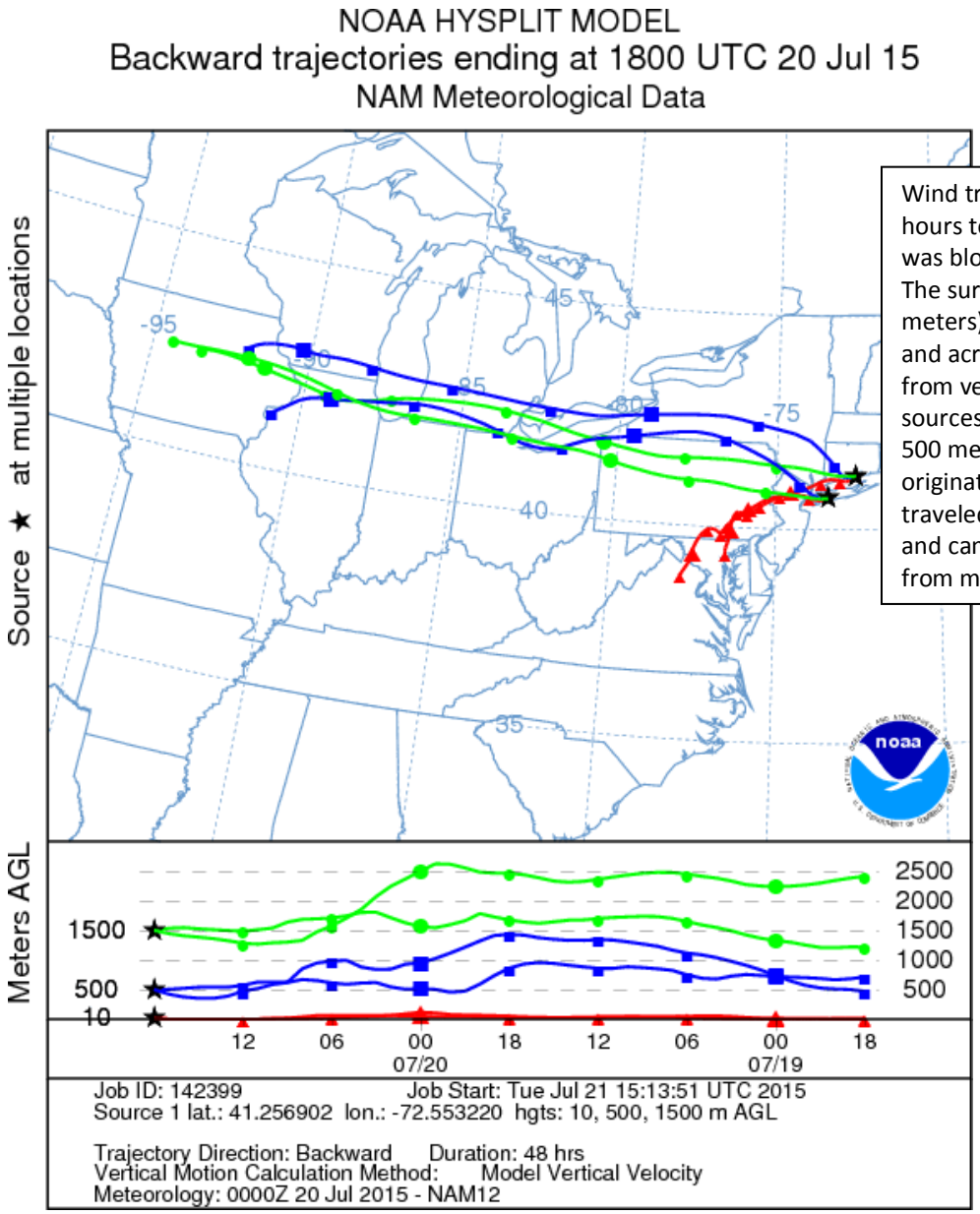
Weather

Meteorological data from Republic Airport in Babylon, NY shows temperatures reached 93^{o} F and winds were from the southwest/west. Skies were mostly sunny. Sufficient sunlight, combined with warmer temperatures and a southwest wind component are features commonly seen with an ozone exceedance. Winds over New Jersey were primarily from the west, rather than the southwest, and cloud cover increased over the course of the day with a weakening front approaching, which likely explains why there were no exceedances in the Garden State.

Where Did the Air Pollution that Caused Ozone Come From?

Figure 2 shows the back trajectories for the monitored exceedances for July 20. Figure 2 shows that surface level wind (red lines) traveled up along the I-95 corridor and over the NYC metropolitan area, where there are significant amounts of air contaminant emissions from cars, trucks and industry. Higher level winds (blue and green lines) came from the west/northwest along the United States – Canadian border, crossed through central PA and NY, and then traveled over NYC, bringing additional pollution from urban sources and distant power plants. The combination of these winds caused air pollution from a variety of mobile and stationary sources to be transported into the areas of southern CT and Long Island, NY that experienced high ozone on July 20.

Figure 2. 48-hour Back Trajectories for July 20, 2015



Wind trajectories look backwards 48 hours to show what direction the wind was blowing during that time frame. The surface layer wind (red – 10 meters) traveled up the I-95 corridor and across NYC, picking up pollution from vehicles and smaller emission sources. The higher level winds (blue – 500 meters, green – 1500 meters) originated from the west/northwest, traveled through central PA and NY, and came across NYC carrying pollution from mobile and stationary sources.

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.