Ozone National Ambient Air Quality Standard Health Exceedances on June 23, 2016

Exceedance Locations and Levels

On Thursday, June 23, 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 was just shy of exceeding the standard: 70 ppb at the Rutgers University station.

The highest 1-hour average ozone concentration recorded on June 23, 2016 in New Jersey was 82 ppb at the Colliers Mills 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 ten (10). By the 23rd of June in 2015, there were a total of five (5) days on which ozone exceedances were measured in New Jersey (based on the former 75 ppb NAAQS of 2008), and there was one (1) day 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 other neighboring states, there were three (3) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Thursday, June 23, 2016 (See Table 1):

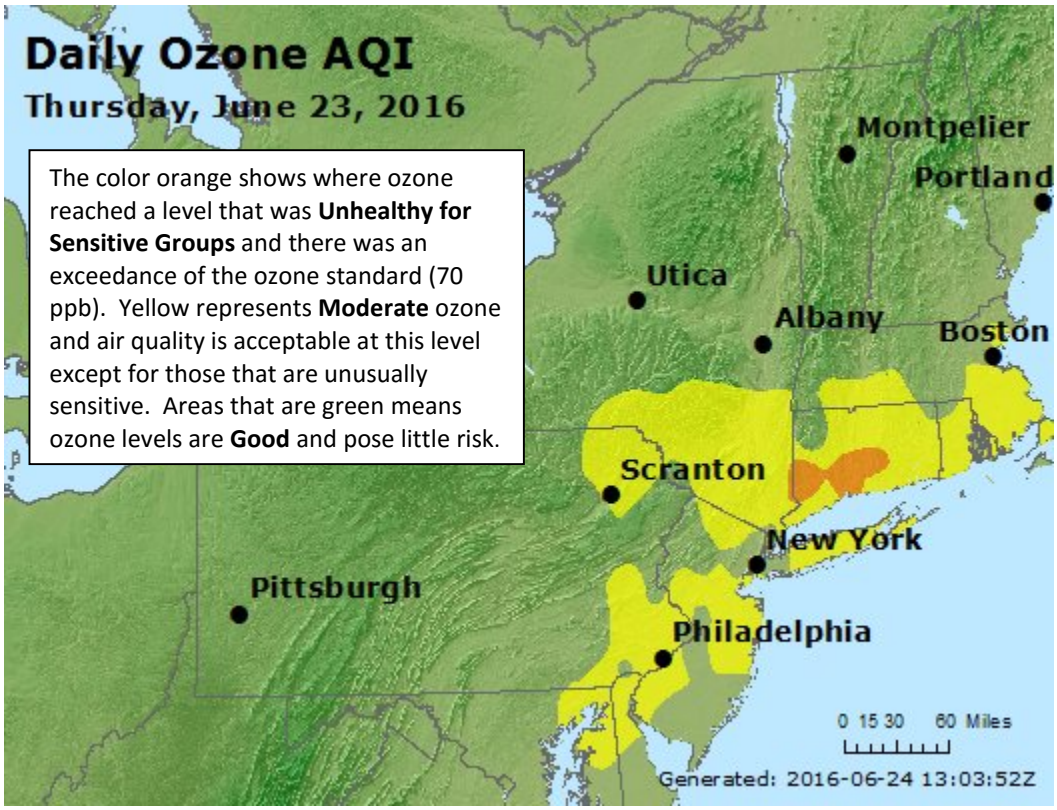
Table 1: Ozone NAAQS Exceedances at Other Monitoring Stations in New Jersey's Ozone Nonattainment Areas on June 23, 2016

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	78
CT	Middletown	73
CT	New Haven	75

The highest 1-hour average ozone concentration recorded was 86 ppb at the Danbury station in Connecticut, which is below the 1-hour ozone NAAQS of 120 ppb.

Thursday marks the eleventh (11) 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 for New York remains at nine (9), six (6) days for Pennsylvania, and four (4) days for Delaware and Maryland.

Figure 1. Ozone Air Quality Index for June 23, 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 Connecticut showed temperatures reached the high 70°F's to mid 80°F's, while winds were light and from the south/southeast. Skies were partly sunny. A high pressure system was centered over southeastern Canada while a stationary front was draped across northern New Jersey and Long Island. The clockwise flow of air around the high and the positioning of the stationary front set up a mechanism for winds to recirculate over Connecticut. This feature, along with adequate sunlight, and warm temperatures, are all meteorological conditions known to contribute to the formation of ground level ozone.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2, 3, and 4 show the back trajectories at different wind heights for selected monitored exceedances on June 23, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event. The three (3) exceedances in Connecticut were all in very close proximity to one another so only two of the three sites were chosen to run back trajectories. The selected sites 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	Danbury	78
CT	Middletown	73

The back trajectories for the low level (10 meter) and mid-level (500 meter) winds (Figures 2 and 3) illustrate similar transport pathways. Winds originated over the Great Lakes and traveled southeast through New York before recirculating over Connecticut and Long Island. Recirculating winds allowed polluted air picked up from the previous day to mix with local emissions generated by cars, trucks, and industry in Connecticut.

The 1500 meter wind (Figure 4) came across the Ohio River Valley and Pennsylvania on the way to Connecticut, where there are many large industrial sources and coal fired power plants. The higher level wind, in combination with low and mid-level recirculating winds, caused air pollution from a variety of mobile and stationary sources to accumulate and be transported into the areas of Connecticut that experienced high ozone on June 23, 2016.

Figure 2. 48-hour Back Trajectories for Jun 23, 2016 at 10 meters

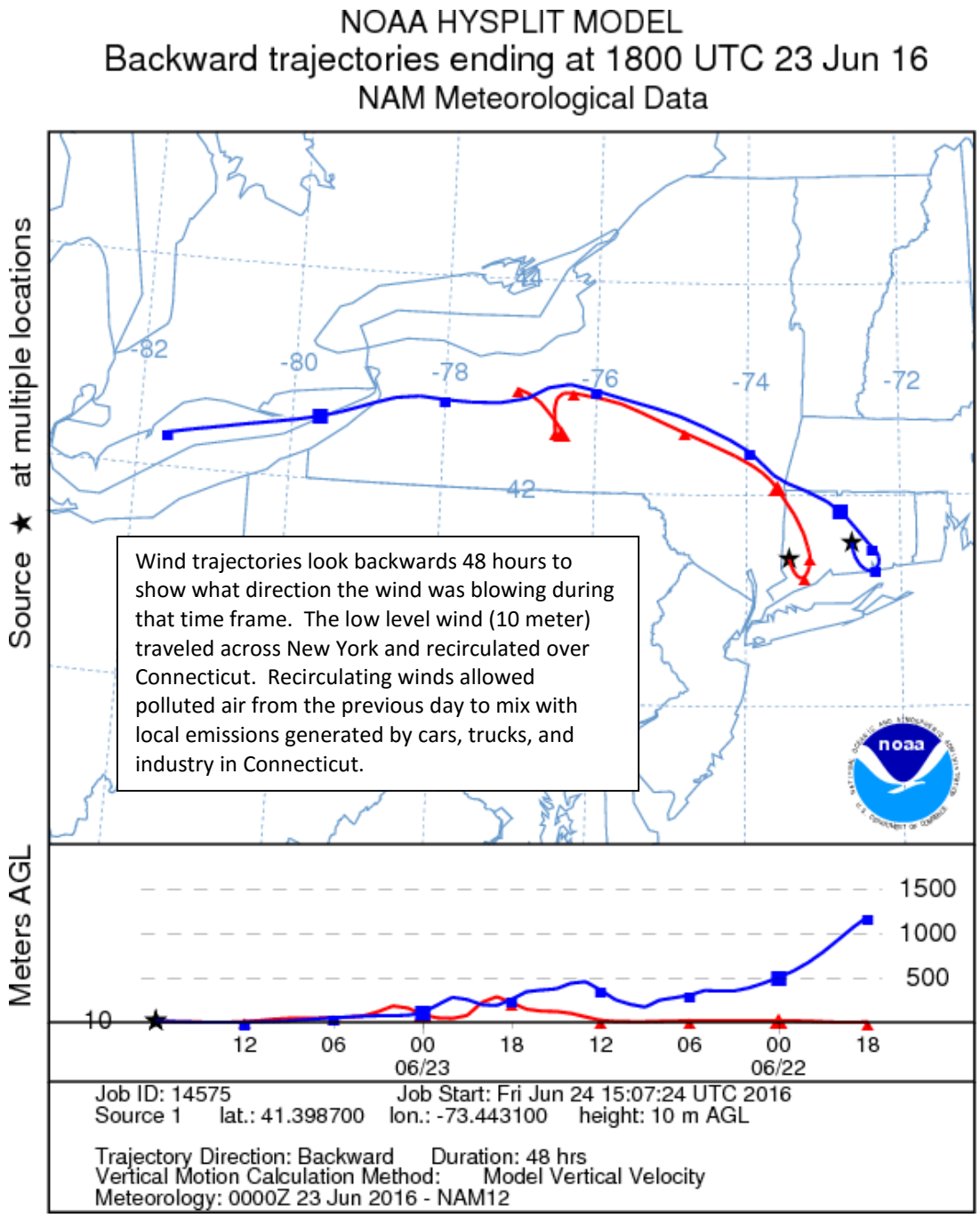


Figure 3. 48-hour Back Trajectories for June 23, 2016 at 500 meters

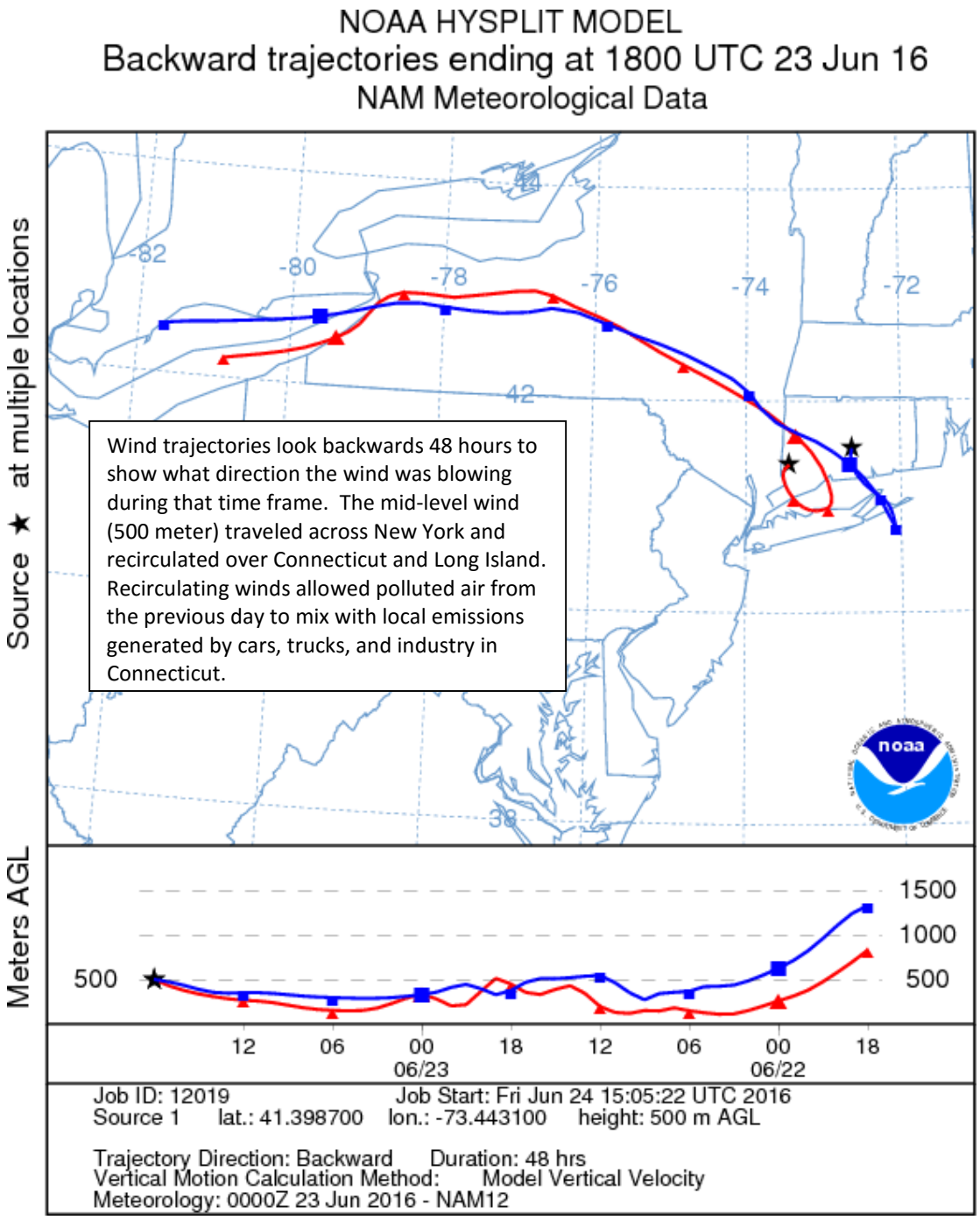
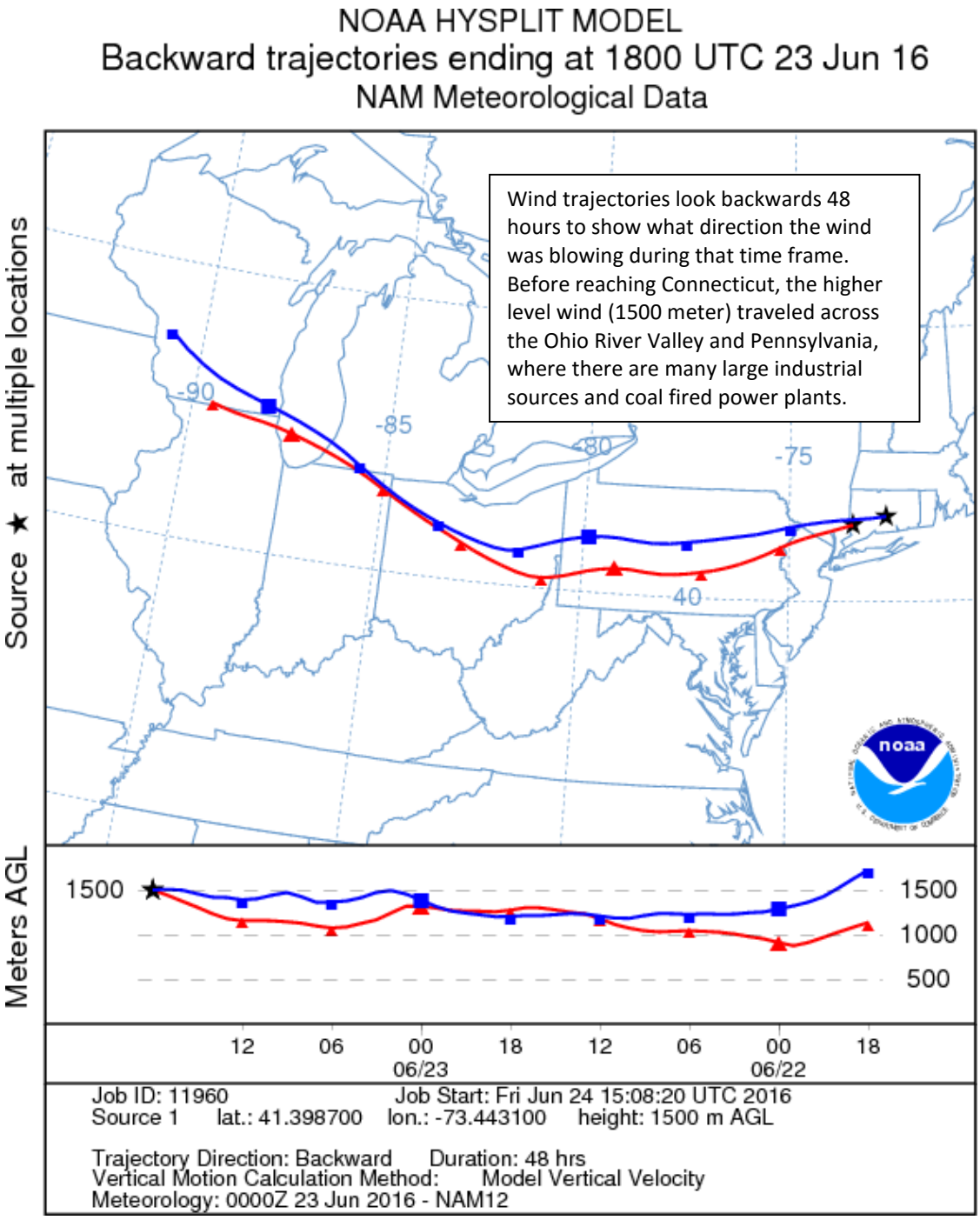


Figure 4. 48-hour Back Trajectories for June 23, 2016 at 1500 meters



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.