Preliminary Evaluation 1:30pm 6/12/2015

Ozone National Ambient Air Quality Health Standard Exceedances on June 11, 2015

Exceedances Locations and Levels

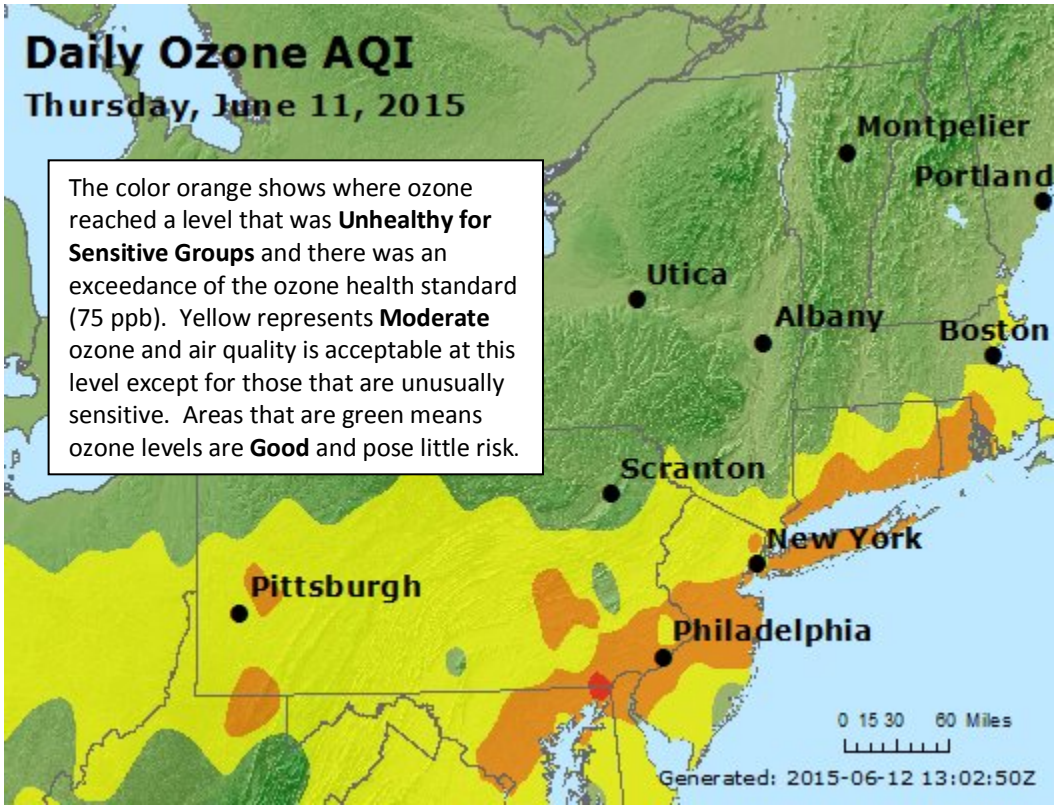
On Thursday, June 11, 2015, exceedances of the 8-hour average National Ambient Air Quality Standard (NAAQS) for ozone (75 ppb) were recorded at seven (7) New Jersey stations: Bayonne, Camden Spruce Street, Clarksboro, Colliers Mills, Leonia, Monmouth University and Rider University. The highest 8-hour average was recorded at Camden Spruce Street with a concentration of 90 ppb. The highest 1-hour average ozone concentration recorded yesterday was 102 ppb (also at Camden Spruce Street), which is below the 1-hour NAAQS of 120 ppb. This is the second exceedance of the 8-hour ozone NAAQS in 2015 for New Jersey. In June 2014, there was 1 day on which an ozone exceedance was measured in New Jersey, and there were 2 days in 2013.

Elsewhere in the region, there were 12 exceedances of the 8-hour ozone NAAQS recorded at monitoring stations in designated counties of New York, Connecticut, Pennsylvania, Delaware and Maryland that are included in New Jersey's ozone non-attainment areas. The highest 8-hour average ozone concentration recorded was 100 ppb at the Fair Hill station in Maryland. The highest 1-hour average ozone concentration recorded was 118 ppb also at Fair Hill (See table below). Figure 1 shows the ozone AQI across the region for June 11.

List of Monitoring Sites in Region that Exceeded the Health Standard

State	Site Name	6/11/2015, Maximum 8-hour O3 Concentration, ppb
MD	Fair Hill	100
DE	BCSP	94
CT	New Haven - Criscuolo Park	93
CT	Westport	92
PA	NEWG	92
PA	BRIS	91
NJ	Camden Spruce St	90
NJ	Monmouth University	87
CT	Greenwich	86
NJ	Rider University	84
NJ	Colliers Mills	81
NY	Queens	81
NJ	Clarksboro	80
NY	Susan Wagner	80
PA	NORR	80
PA	CHES	78
NJ	Leonia	77
DE	LUMS 2	76
NJ	Bayonne	76

Figure 1. Ozone Air Quality Index for June 11, 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 reached into the low 90s^{o} F, while winds were from the southwest ahead of a weakening cold front that approached the region from the northwest. Skies were partly cloudy across the region, but there was enough sunshine to promote ozone formation. Sufficient sunlight, combined with warmer temperatures and a southwest wind component 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 8 selected monitored exceedances for June 11. Figure 2 shows where the low level winds came from during the 48 hours preceding the high ozone levels at various locations. This indicates that the low level winds carried pollutants up the I-95 Corridor, where there are significant amounts of air contaminant emissions from cars and trucks. Figure 3 shows that higher level winds came from more westerly winds across the Ohio River Valley, where there are many coal fired power plants. The combination of these winds caused air pollution from both mobile sources

and power plants to be transported into New Jersey and other areas that experienced high ozone on June 11.

Visible satellite imagery showed a large plume of smoke being blown into the region from western Canadian wildfires (see Figure 4). This plume was mixed down closer to the surface as it interacted with the frontal system. This smoke plume may have enhanced the formation of ground-level ozone across the region.

Electric Generation

Yesterday's peak regional electric load of 50,119 MW was the highest so far this year. It was similar to that of an ozone violation day in 2012. NOx emissions from electrical generation can be over 2 times the seasonal average. This contributes to high ozone levels on hot summer days.

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.

Figure 2. 48-hour Back Trajectories at 10 meters

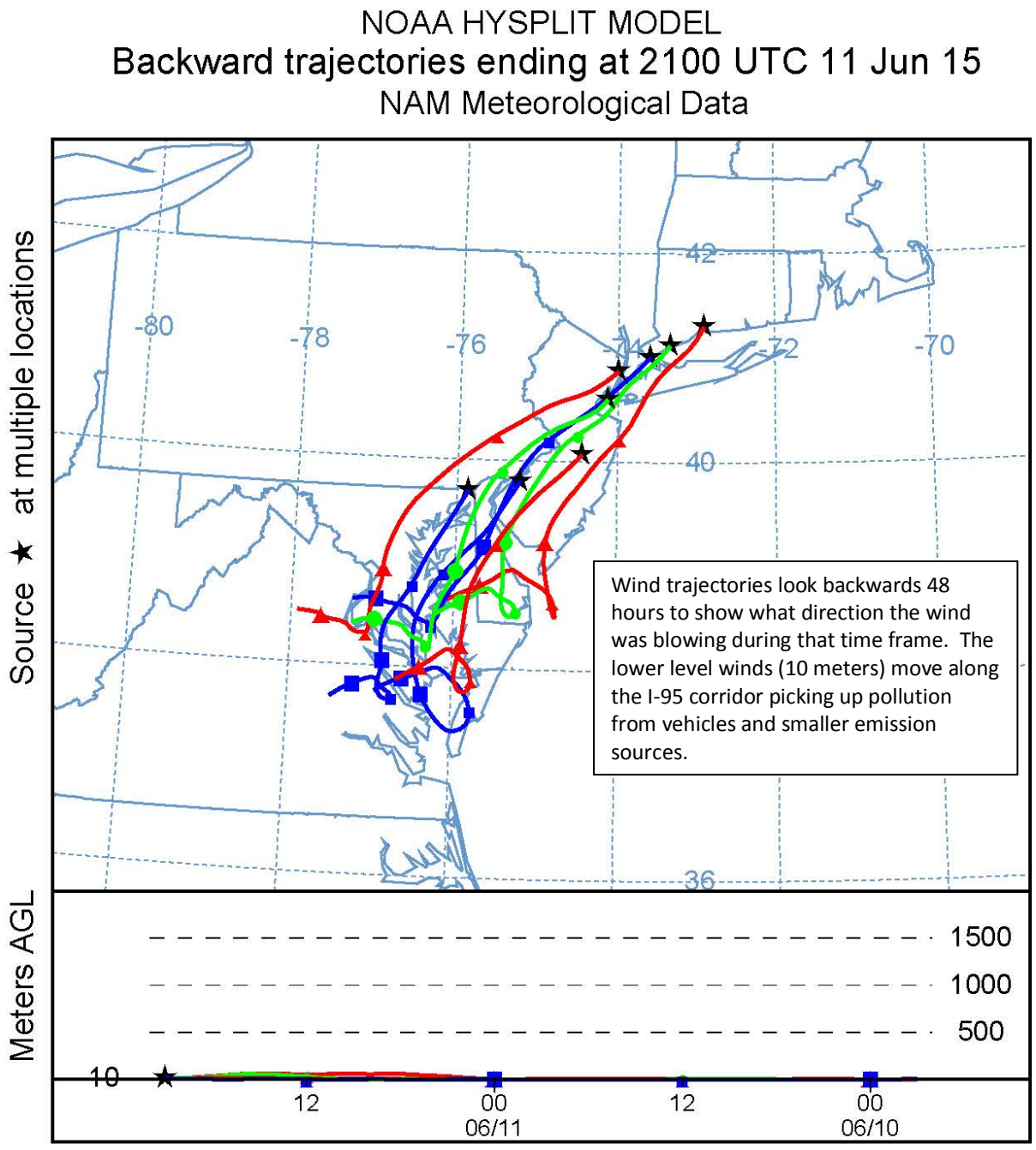


Figure 3. 48-hour Back Trajectories at 500 meters

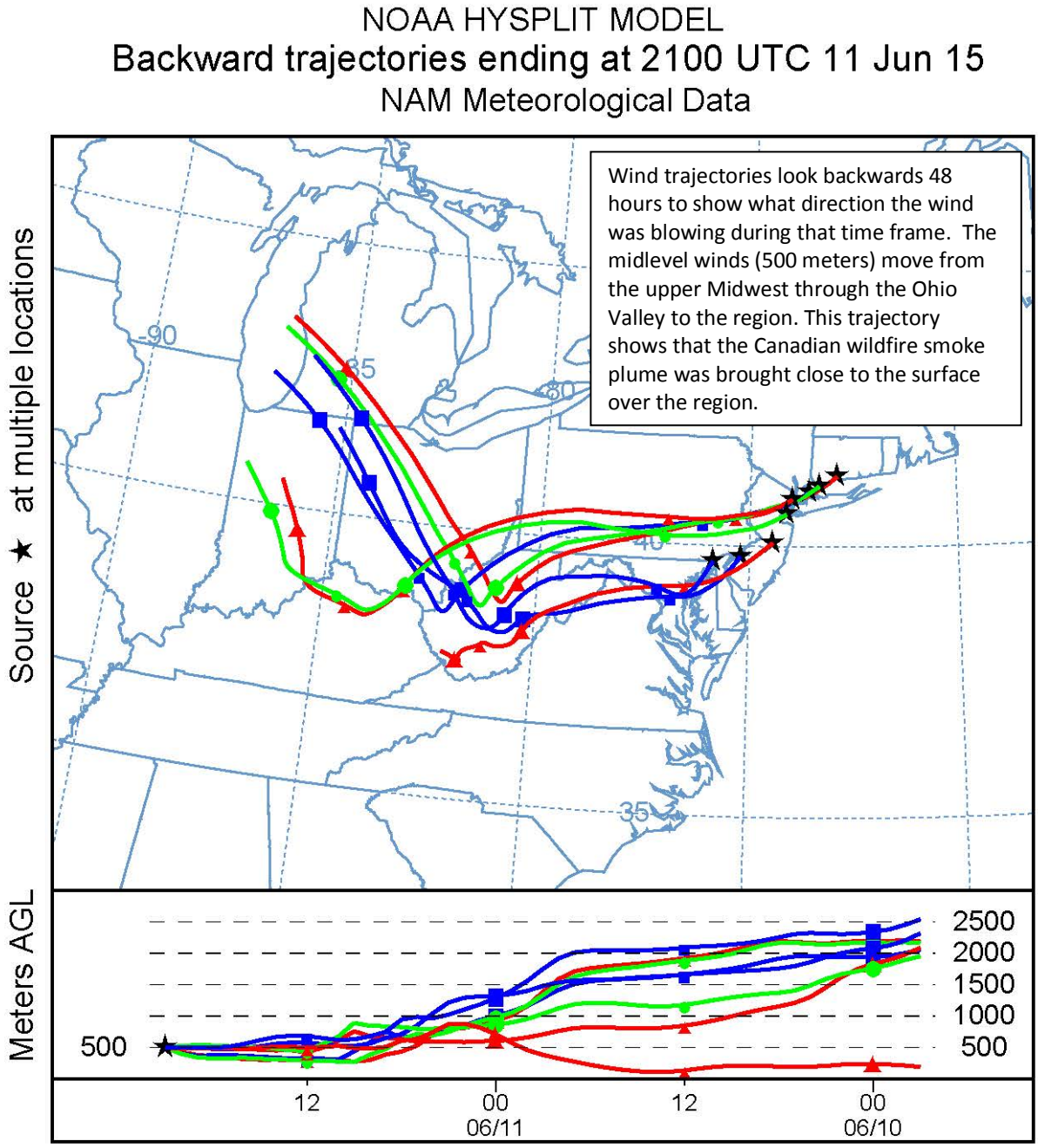
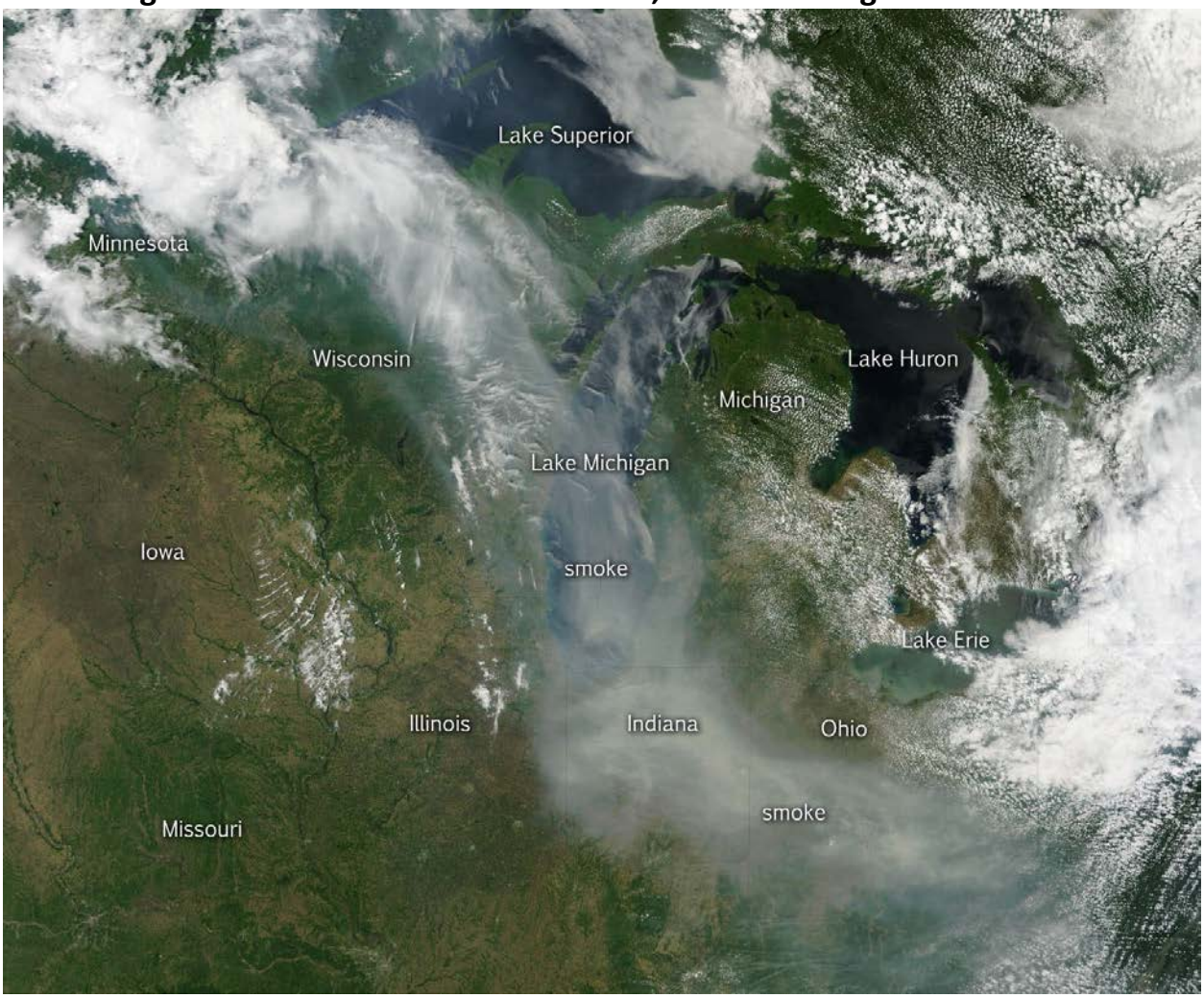


Figure 4. Visible Satellite for June 11, 2015 Showing Smoke Plume



This natural-color satellite image was collected by the Moderate Resolution Imaging Spectroradiometer (MODIS) aboard the Terra satellite on June 9, 2015. Credit:Jeff Schmaltz, MODIS Rapid Response Team.