Ozone National Ambient Air Quality Standard Health Exceedances on May 28, 2016

Exceedance Locations and Levels

On Saturday, May 28, 2016, four (4) exceedances were recorded in New Jersey of the new 8-hour average ozone NAAQS of 70 ppb that became effective in December 2015 (See Table 1):

Table 1. Ozone NAAQS Exceedances in New Jersey on May 28, 2016

STATION	Daily Maximum 8-Hr Average (ppb)	Exceeds 70 ppb NAAQS	Exceeds 75 ppb NAAQS	Exceeds 84 ppb NAAQS
Ancora State Hospital	74	Yes		
Leonia	77	Yes	Yes	
Rutgers University	73	Yes		
Washington Crossing*	74	Yes		

*The Washington Crossing station is operated and maintained by EPA as part of the nationwide Clear Air Status and Trends Network (CASTNET).

One (1) station also exceeded the 75 ppb 8-hour ozone NAAQS of 2008, but none exceeded the 84 ppb 8-hour ozone NAAQS of 1997. The highest 1-hour average ozone concentration recorded on May 28, 2016 in New Jersey was 90 ppb at the Leonia station, which is below the 1-hour ozone NAAQS of 120 ppb.

Saturday marks the 5th day in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in New Jersey. By the 28th of May in 2015, there were a total of 2 days on which ozone exceedances were measured in New Jersey (based on the 75 ppb NAAQS of 2008), and there was one 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 non-attainment areas. From this group of stations in the other neighboring states, there were seven (7) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Saturday, May 28, 2016: (See Table 2):

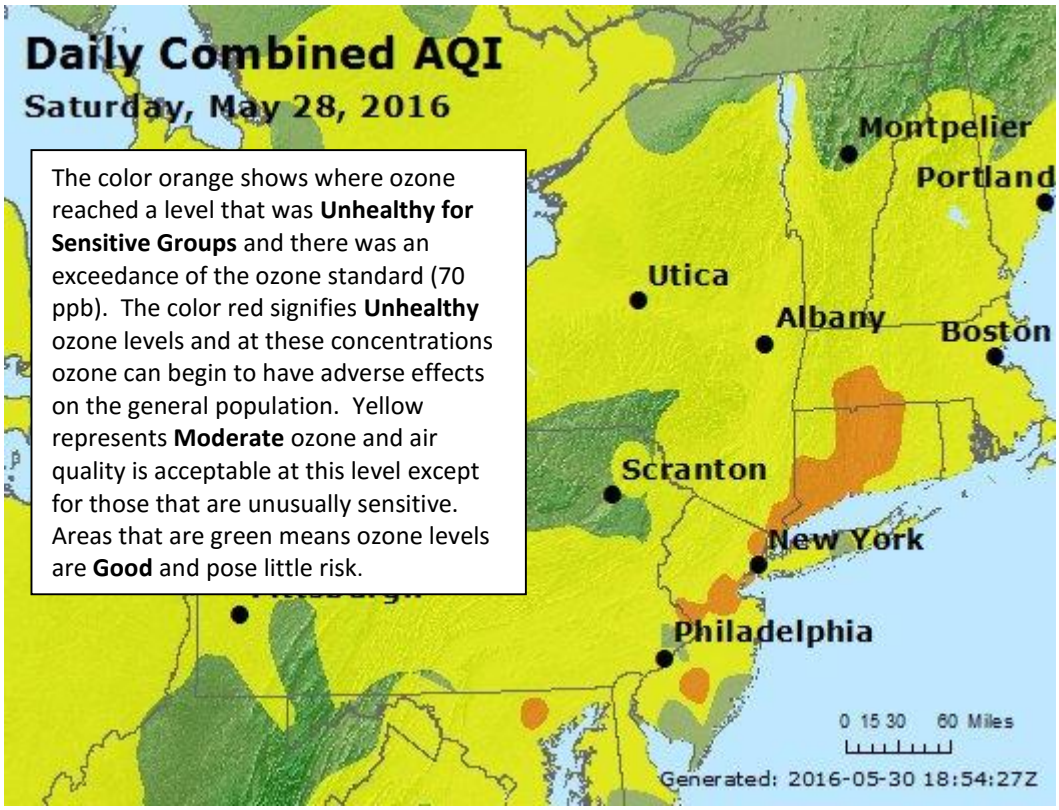
Table 2: Ozone NAAQS Exceedances at other Monitoring Stations in New Jersey's Ozone Nonattainment Areas on May 28, 2016

STATE	STATION	Daily Maximum 8-Hr Average (ppb)	Exceeds 70 ppb NAAQS	Exceeds 75 ppb NAAQS	Exceeds 84 ppb NAAQS
CT	Danbury	81	Yes	Yes	
CT	Greenwich	82	Yes	Yes	
CT	Middletown	79	Yes	Yes	
CT	New Haven	73	Yes		
CT	Westport	81	Yes	Yes	
NY	Susan Wagner	74	Yes		
NY	White Plains	74	Yes		

Four (4) stations also exceeded the 75 ppb ozone NAAQS of 2008, but none exceeded the 84 ppb ozone NAAQS of 1997. The highest 1-hour average ozone concentration recorded was 120 ppb at Danbury, CT, which is below the 1-hour ozone NAAQS of 120 ppb.

Saturday marks the 6th day in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in Connecticut, and the 4th day for New York. The number of days on which exceedances were recorded in Delaware, Maryland, and Pennsylvania remains at two (2).

Figure 1. Ozone Air Quality Index for May 28, 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 showed temperatures reached into the high 80°F's-low 90°F's, while winds were light and from the south/ southwest. A high pressure system was centered over the eastern Atlantic Seaboard leading to mostly sunny conditions across the region while tropical storm Bonnie was affecting the South East coast. Tropical storms often create areas of sinking air at their edges. This can allow polluted air aloft to mix down to the surface. This feature in combination with abundant sunlight, warm temperatures and light south/southwesterly winds, are all features commonly seen with an ozone exceedance.

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 May 28, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event. The eleven (11) monitoring stations with 8-hr ozone exceedances were chosen to run back trajectories. The selected sites and the maximum 8-hr ozone levels recorded are listed in Table 3 below.

Table 3. 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	81
CT	Greenwich	82
CT	Middletown	79
CT	New Haven	73
CT	Westport	81
NJ	Ancora Hospital	87
NJ	Leonia	77
NJ	Rutgers Univ.	73
NJ	Washington Crossing	74
NY	Susan Wagner	74
NY	White Plains	74

The back trajectory maps (Figures 2 and 3) for the low level (10 meter) and mid-level (500 meter) winds illustrate similar transport pathways to the exceedance monitors. Winds traveling to monitors located in New Jersey's nonattainment areas traveled along the I-95 corridor. The winds brought in dirty air from the Baltimore metropolitan area that had ozone exceedances the day before, and combined with local emissions from cars trucks, and industry. The 1500 meter winds (Figure 4) came from a more westerly flow across the Ohio River Valley, bringing additional pollution from power plants and a region that had high ozone levels to start with. Figure 5 illustrates the ozone exceedances recorded in the Mid-Atlantic and Northeast regions on May 27, 2016, the day before the high ozone event in our area.

The long range transport from the Ohio River Valley, across Pennsylvania and New York, mixed with local pollution created from cars, trucks, and industry along the I-95 corridor to cause the regional ozone exceedance event that occurred on May 28, 2016. This is the fourth day in a row that there have been widespread ozone exceedances across the region.

Figure 2. 48-hour Back Trajectories for May 28, 2016 at 10 meters

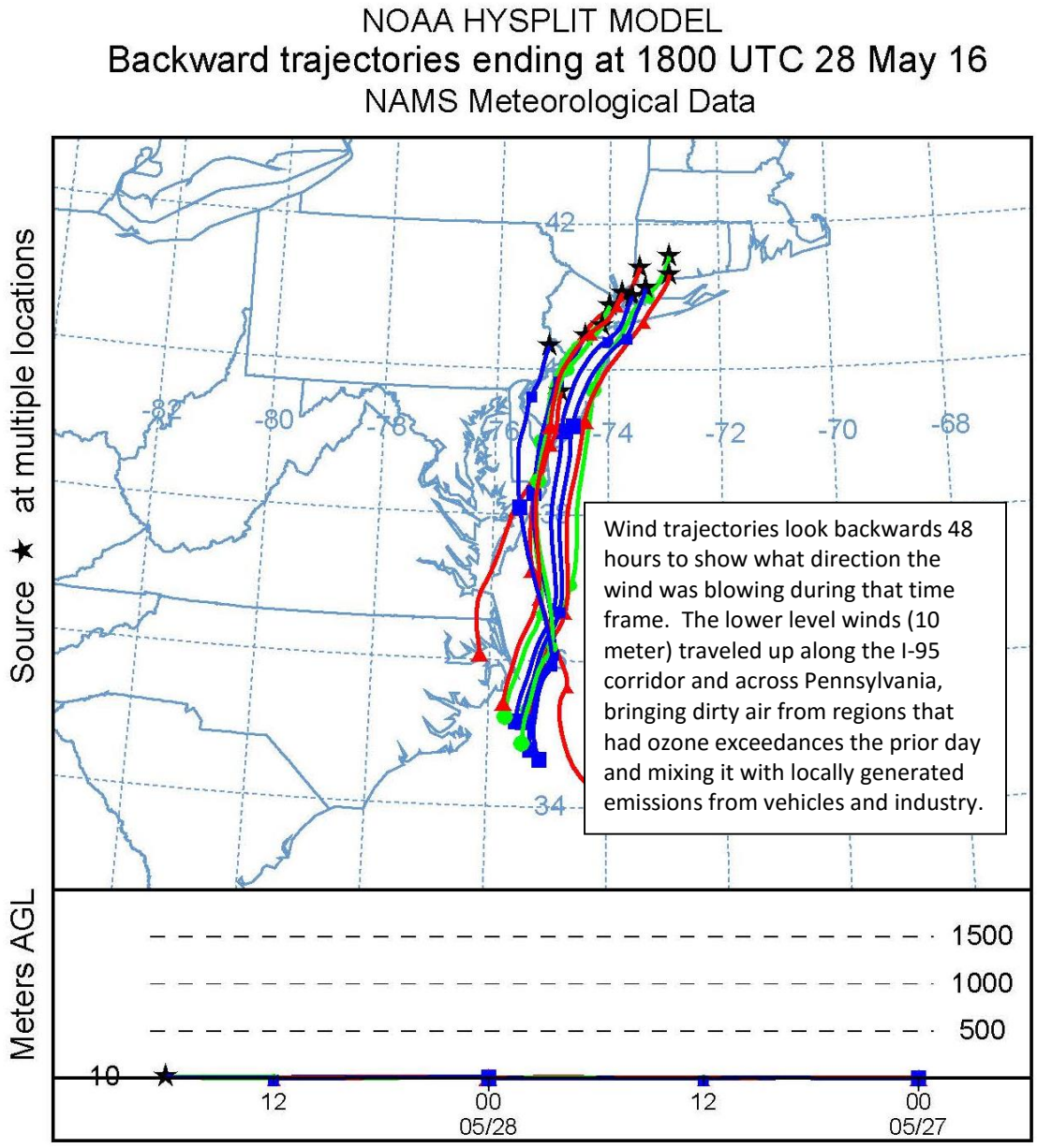


Figure 3. 48-hour Back Trajectories for May 28, 2016 at 500 meters

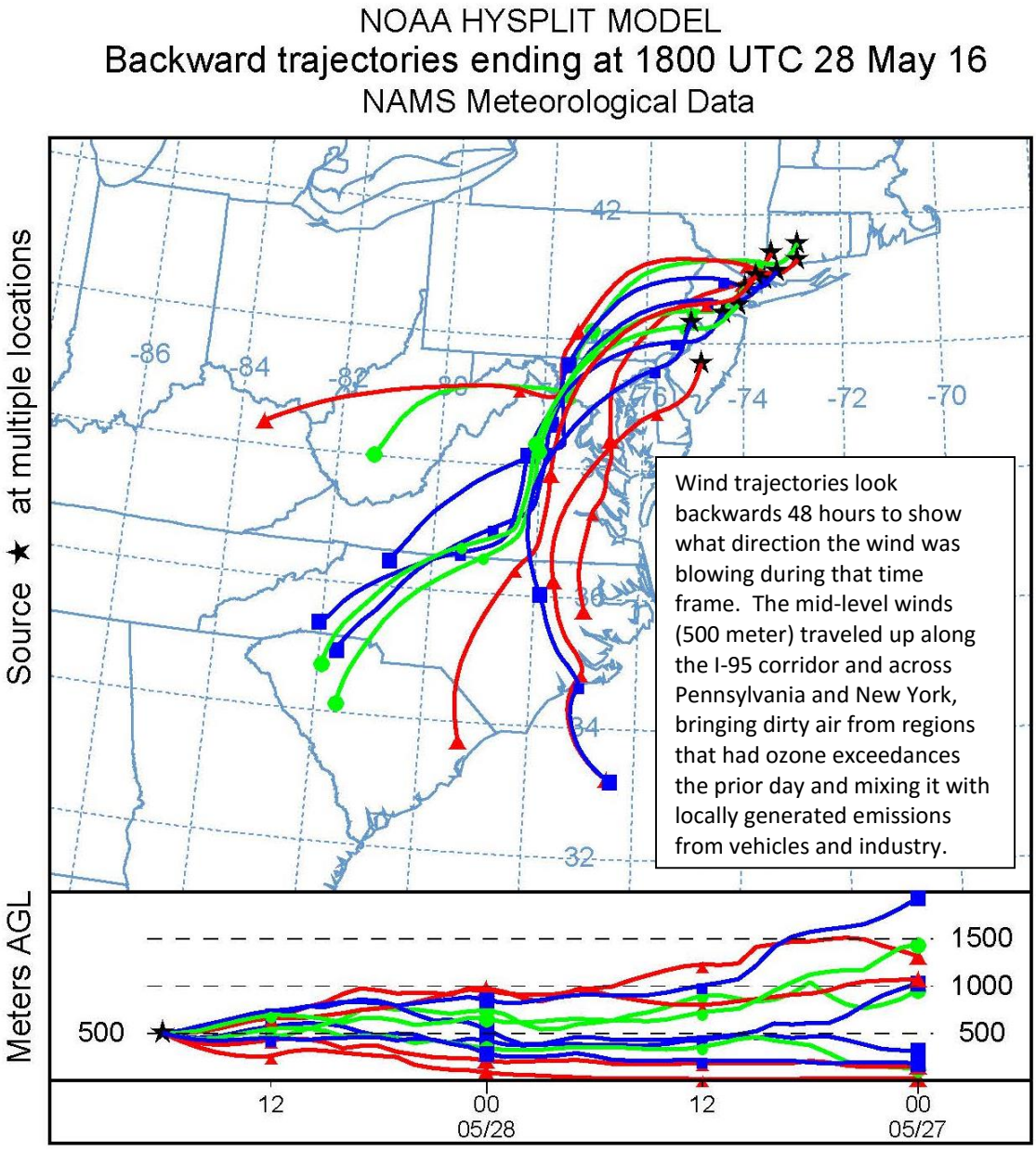


Figure 4. 48-hour Back Trajectories for May 28, 2016 at 1500 meters

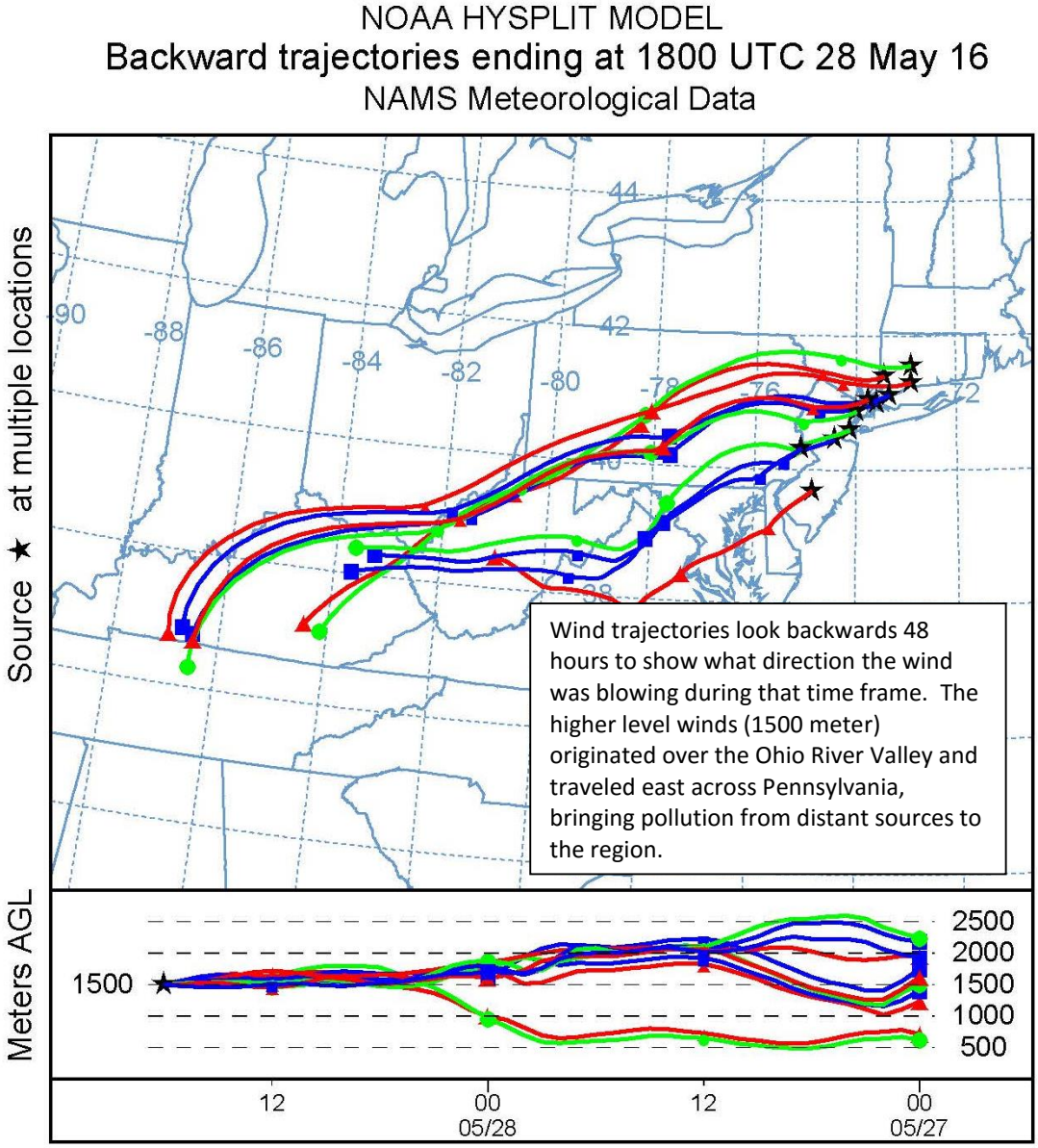
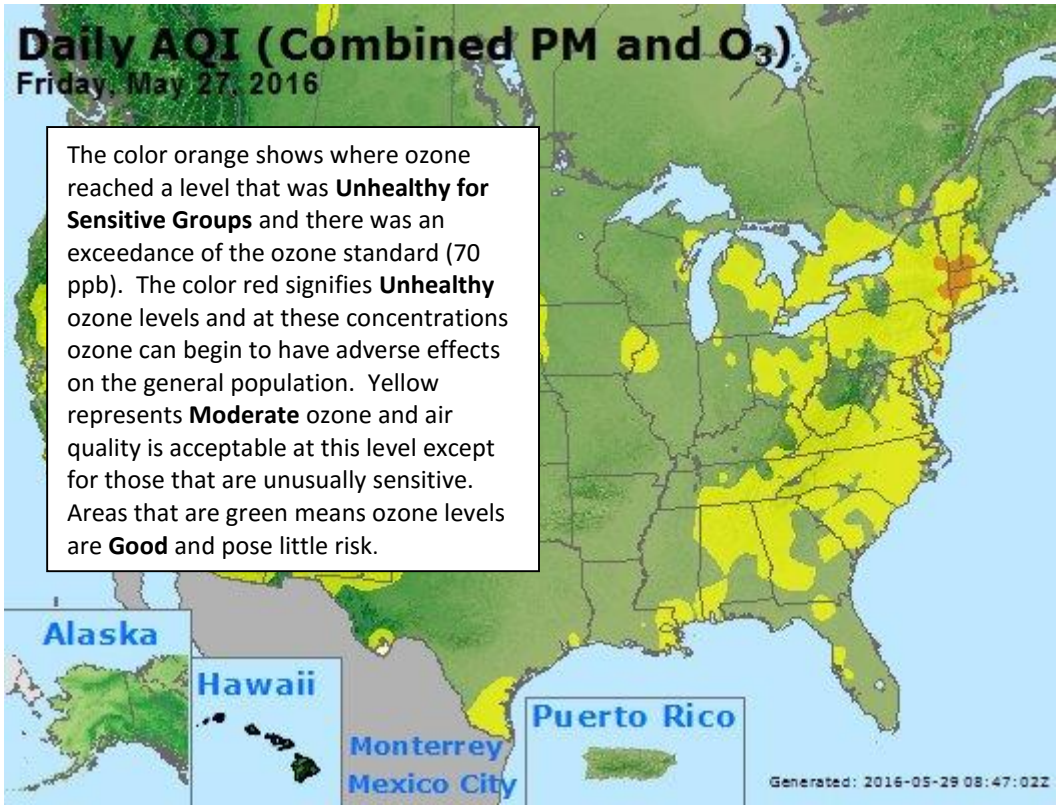


Figure 5. Ozone Air Quality Index for the Mid-Atlantic and Northeast Regions on May 27, 2016



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.