Ozone National Ambient Air Quality Standard Health Exceedances on August 9, 2022

On Tuesday, August 9, 2022, there were no exceedances in New Jersey of the National Ambient Air Quality Standard (NAAQS) for ozone (daily maximum 8-hour average of 70 ppb). See Table 1.

Table 1. New Jersey Ozone Concentrations on 8/9/2022

STATION	Daily Maximum 8-Hr Average (ppb)
Ancora State Hospital	51
Bayonne	48
Brigantine	37
Camden Spruce St	45
Chester	49
Clarksboro	59
Colliers Mills	65
Columbia	39
Flemington	51
Leonia	48
Millville	46
Monmouth University	57
Newark Firehouse	53
Ramapo	44
Rider University	55
Rutgers University	50
Washington Crossing*	49
TOTAL EXCEEDANCES	0

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

From the out-of-state stations within New Jersey's ozone nonattainment areas, there were two (2) exceedances of the ozone NAAQS. See Table 2.

Table 2. Ozone Concentrations at Out-of-State Monitoring Stations in New Jersey's Ozone Nonattainment Areas on 8/9/2022

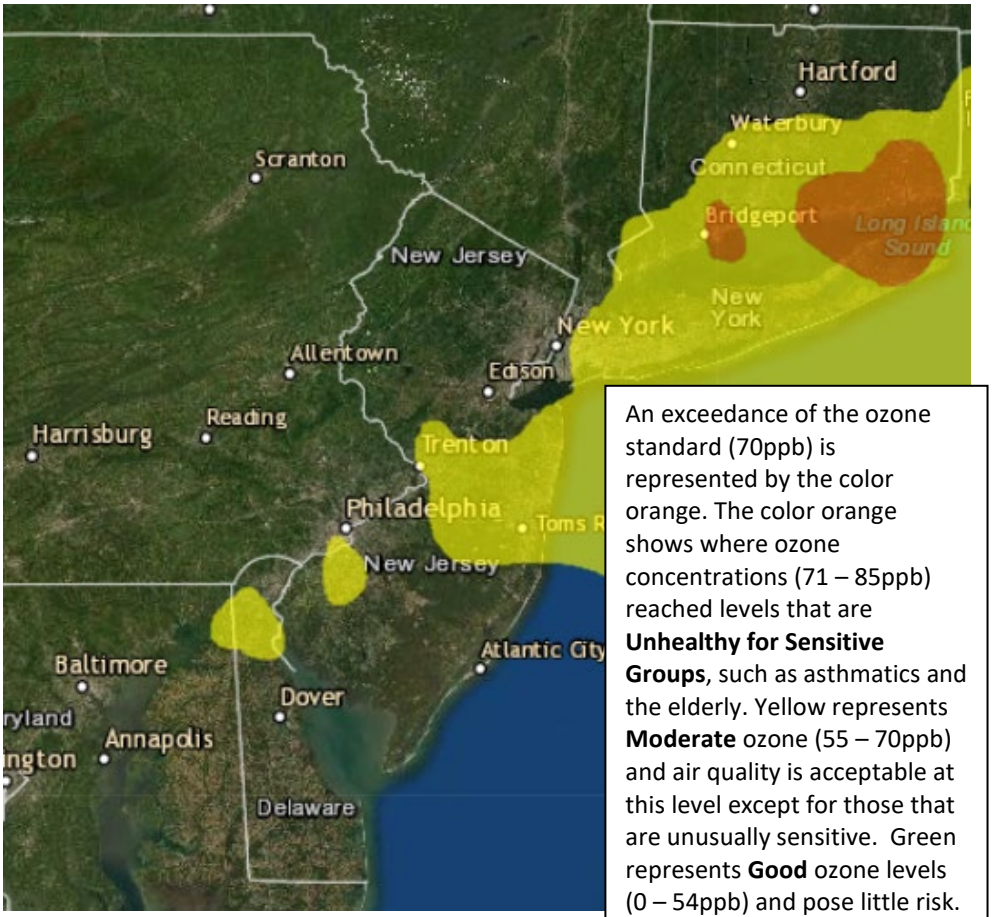
STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Danbury	49
CT	Greenwich	61
CT	Madison-Beach Road	77
CT	Middletown-CVH-Shed	56
CT	New Haven	55
CT	Stratford	73
CT	Westport	61
DE	BCSP (New Castle Co.)	46
DE	BELLFNT2 (New Castle Co.)	49
DE	KILLENS (Kent Co.)	38
DE	LEWES (Sussex Co.)	39
DE	LUMS 2 (New Castle Co.)	60
DE	MLK (New Castle Co.)	50
DE	SEAFORD (Sussex Co.)	39
MD	Fair Hill	51
NY	Babylon	60
NY	Bronx - IS52	53
NY	CCNY	52
NY	Flax Pond	69
NY	Fresh Kills	51
NY	Holtsville	56
NY	Pfizer Lab	53
NY	Queens	60
NY	Riverhead	62
NY	Rockland Cty	45
NY	White Plains	51
PA	BRIS (Bucks Co.)	53
PA	CHES (Delaware Co.)	45
PA	NEWG (Chester Co.)	38
PA	NORR (Montgomery Co.)	47
PA	LAB (Philadelphia Co.)	42
PA	NEA (Philadelphia Co.)	54
PA	NEW (Philadelphia Co.)	No Data
	TOTAL EXCEEDANCES	2

The number of days in 2022 on which exceedances of the ozone NAAQS were recorded for all the states within New Jersey's ozone nonattainment areas is summarized in Table 3.

Table 3. Number of Days Ozone NAAQS was Exceeded in NJ's Nonattainment Areas in 2022

STATE	# of Days NAAQS was Exceeded January 1 – August 9, 2022 NAAQS = 70 ppb
Connecticut	20
Delaware	0
Maryland	1
New Jersey	8
New York	8
Pennsylvania	3

Figure 1. Ozone Air Quality Index for August 9, 2022



An exceedance of the ozone standard (70ppb) is represented by the color orange. The color orange shows where ozone concentrations (71 – 85ppb) reached levels that are **Unhealthy for Sensitive Groups**, such as asthmatics and the elderly. Yellow represents **Moderate** ozone (55 – 70ppb) and air quality is acceptable at this level except for those that are unusually sensitive. Green represents **Good** ozone levels (0 – 54ppb) and pose little risk.

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

High pressure centered over the Atlantic Ocean brought hot and humid conditions to the area on Tuesday, August 9,2022, where two exceedances were observed in Connecticut. Early on Tuesday, the region saw widespread light southwesterly winds and abundant sunshine. As the day progressed, temperatures began to rise into the mid to upper 90s throughout much of the nonattainment area, with temperatures along the coast reaching the mid-80s. These meteorological conditions were conducive to ozone formation throughout the area, while southwest winds brought in more ozone precursors to Connecticut from upwind locations, further enhancing ozone formation there. Later in the afternoon, winds turned more westerly in northern portions of the nonattainment area and spotty cloud cover could also be observed over much of the region as a cold front advanced from the west. As this front approached, scattered showers and thunderstorms began to pop up. Small storms moved through Connecticut first in the early afternoon. These isolated storms were able to clean out some areas, but did not go over the exceedance locations, where ozone formation continued through the rest of the afternoon. Later in the evening, stronger storms developed and moved through Long Island and New Jersey, producing heavy rain and strong downbursts. These storms helped to clean out the rest of the region where no exceedances were observed. These meteorological conditions, combined with favorable transport from southwesterly winds, allowed ozone levels to reach the USG category at two locations in Connecticut.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2, 3, and 4 show the back trajectories of different wind heights for the monitored exceedance(s) on this day. The figures illustrate where the air came from during the 48 hours preceding the 8-hour ozone standard exceedances. A transport analysis is provided with each figure shown below along with a map of the National Air Quality Index for the previous day (Figure 5). The monitoring station(s) that were chosen to model back trajectories are listed in Table 4.

Table 4. Monitoring Stations with an 8-hr Ozone Exceedance that were selected to Run 48-hr Back Trajectories

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Madison-Beach Road	77
CT	Stratford	73

Figure 2. 48-hour Back Trajectories for August 9, 2022 at 10 meters

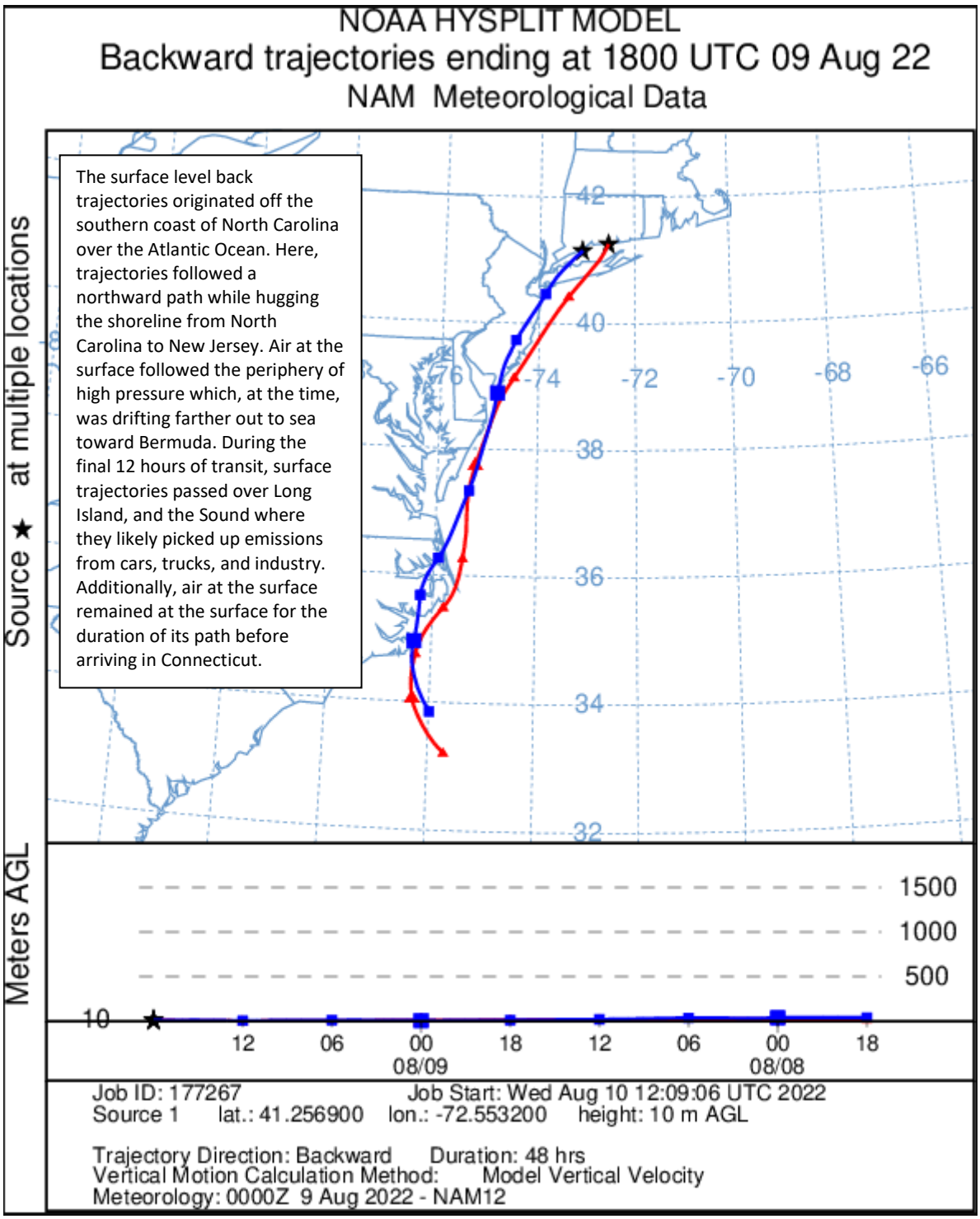


Figure 3. 48-hour Back Trajectories for August 9, 2022 at 500 meters

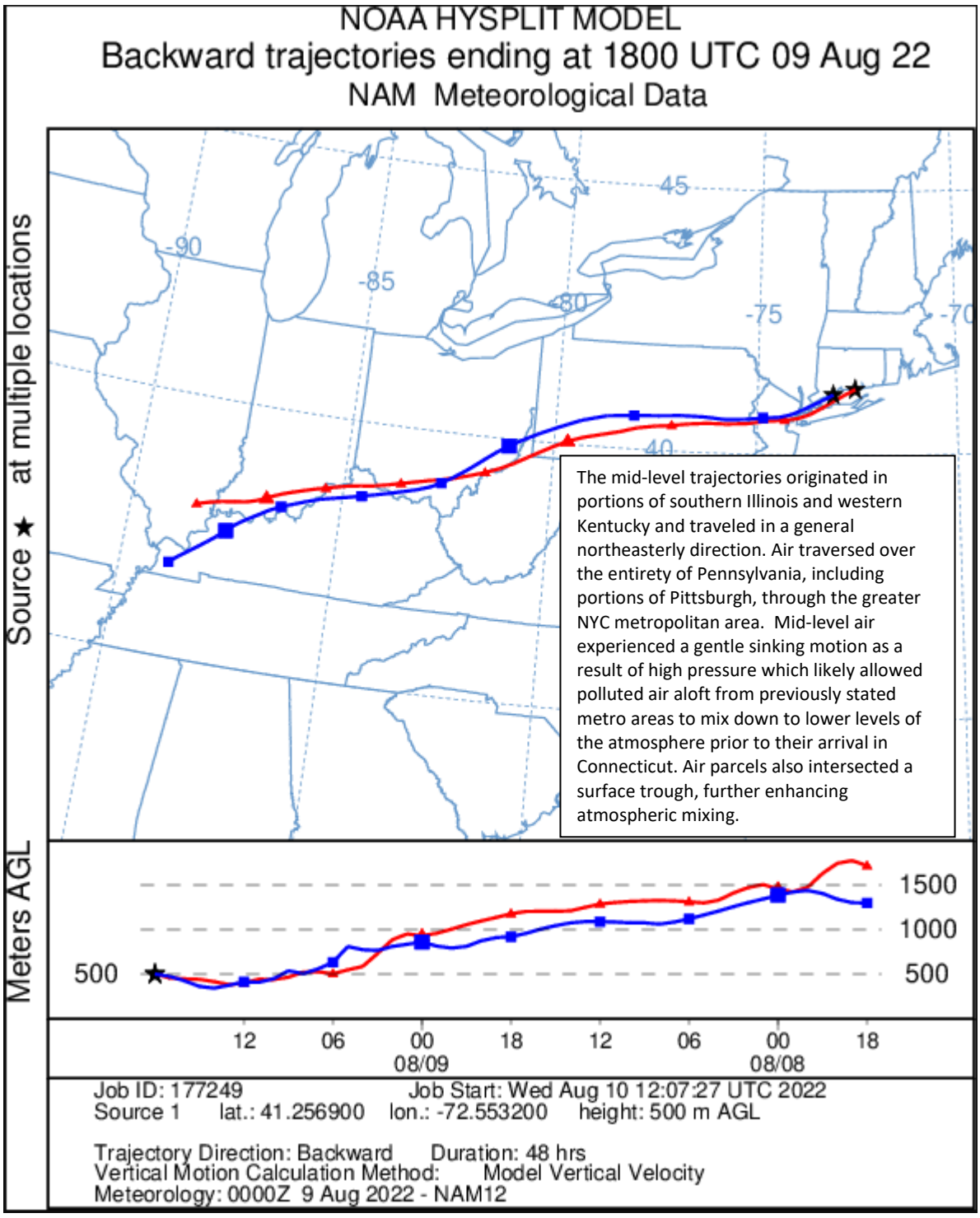


Figure 4. 48-hour Back Trajectories for August 9, 2022 at 1500 meters

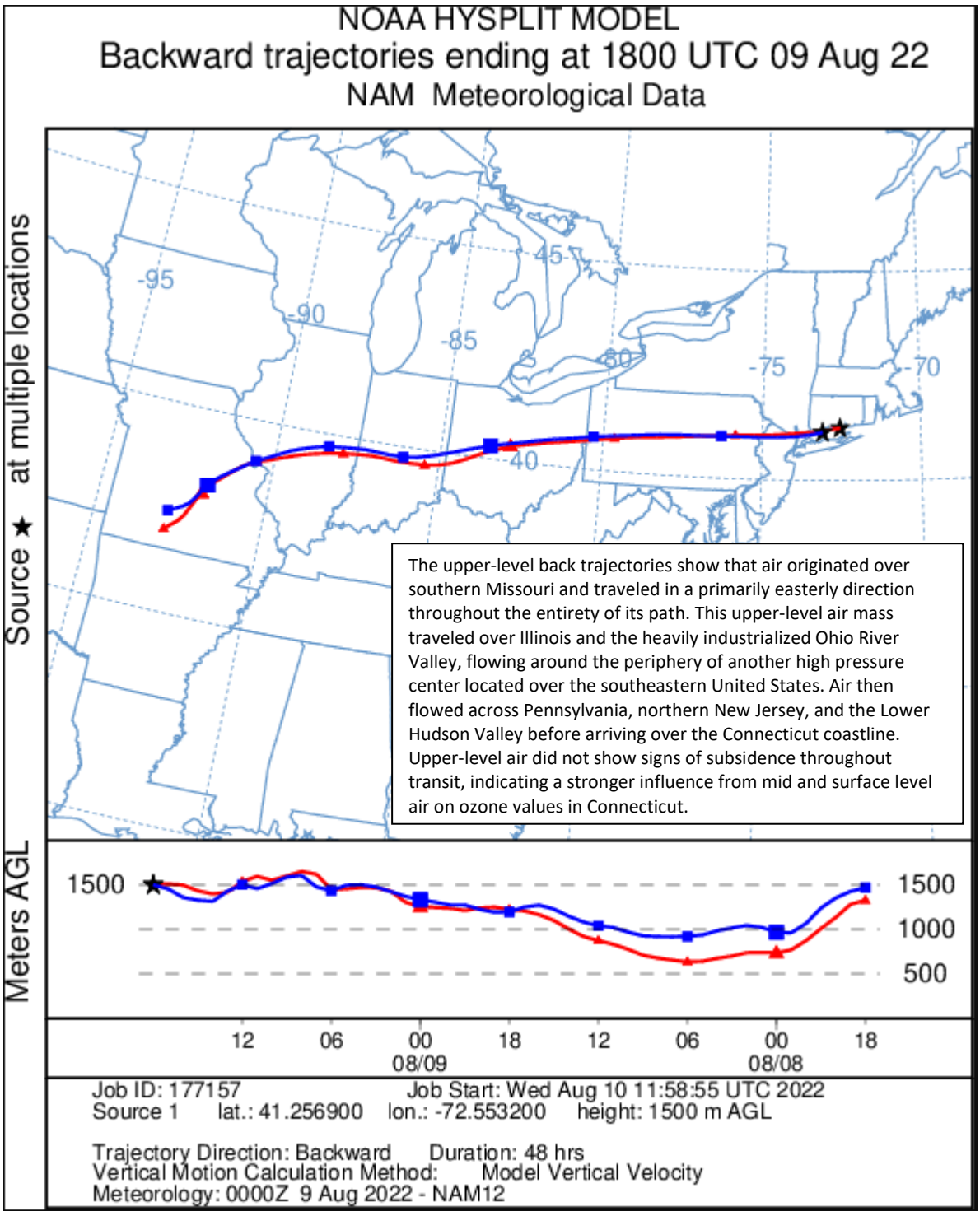
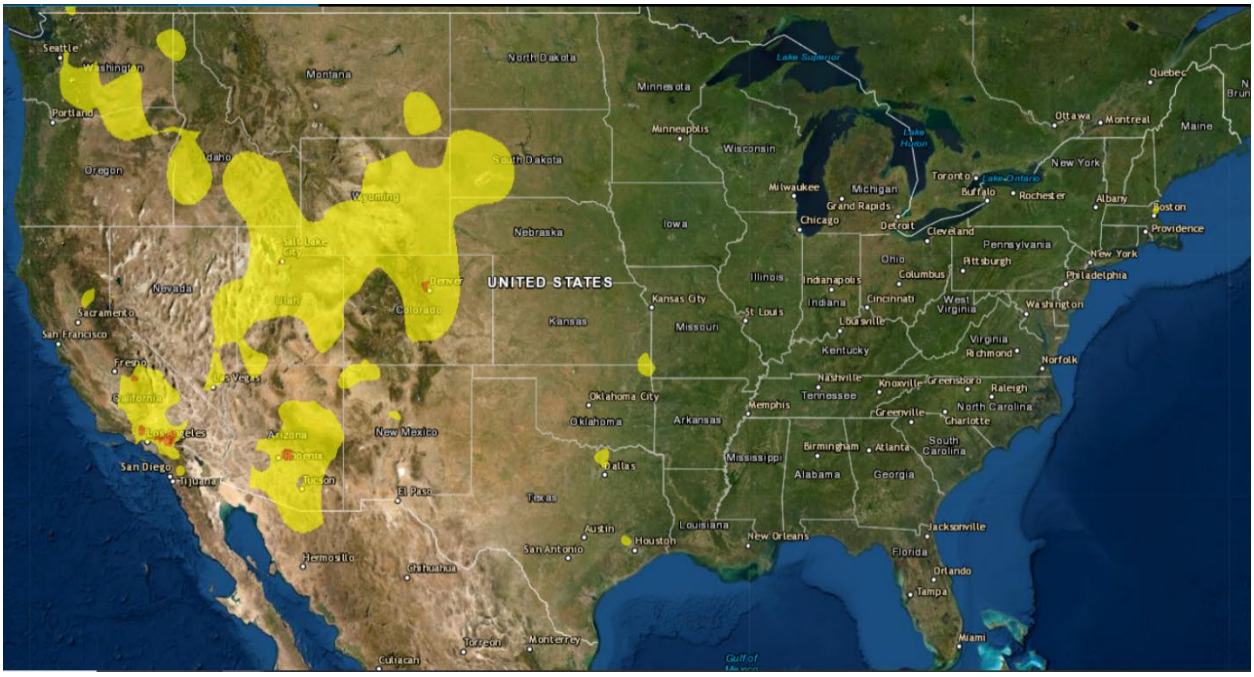


Figure 5. Air Quality Index for the United States on August 8, 2022



Source: www.airnow.gov

How is Ozone Created?

Ground-level ozone is an air pollutant known to cause several health effects and negatively impact air quality and the environment in New Jersey. Ozone is formed when oxides of nitrogen (NOx) and volatile organic compounds (VOCs) react in the presence of sunlight. Ozone can irritate any person's lungs, but the effect may be more pronounced for those with existing lung-related deficiencies, and therefore, one should take extra precautions on bad ozone days.

Find Out About Air Quality Every Day

Learn more about your local ozone air quality forecast by visiting the "What's Your Air Quality Today?" page at https://www.nj.gov/dep/baqp/aqitoday.html .