

GROUND-LEVEL OZONE

2008 April – September

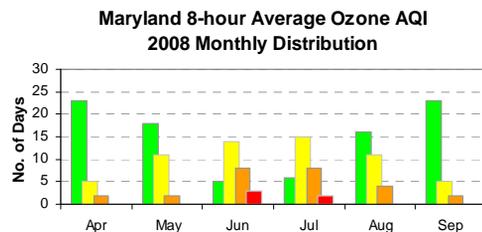
The Maryland ground-level ozone season spans from April¹ - September due to an increase in ozone production that typically occurs during the summer months. This enhanced production usually makes it the primary pollutant for the region. Ozone activity can be measured by the number of days the daily maximum 8-hour average ozone National Ambient Air Quality Standard (NAAQS) is exceeded. This standard is exceeded when the ozone Air Quality Index² (AQI, see color bar below) reaches beyond 100, at which point it is declared an exceedance day.

This season proved to be milder than average when compared to the last five years. The 2008 season recorded 31³ exceedance days whereas across 2003-2007, there were about 39 exceedance days. The chart "Seasonal Comparison of Exceedance Days" (pg. 2) shows their monthly distribution throughout the season compared to the five-year average. Furthermore, Haze Cam images to the right compare a good air quality day to a poor air quality day in Frostburg, MD. With nearly unlimited visibility occurring on May 24, 2008, the Negro Mountain Range (located in Pennsylvania) can be seen in the distance at about 14 miles away from the Haze Cam. In contrast, July 18, 2008 shows greatly reduced visibility and the mountain range can no longer be observed.

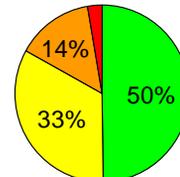


SEASONAL HIGHLIGHTS

The 2008 ozone season accumulated 31 exceedance days. The pie chart to the right outlines the percent occurrence of each AQI category within the season. Overall, 50% of the AQI values were in the Good category. The second most frequent AQI was Moderate at about 33%. Lastly, Unhealthy for Sensitive Groups (USG) represented approximately 14% while the Unhealthy category was 3%, totaling all AQI values greater than 100 at 17%.



Maryland 8-hour Average Ozone AQI 2008 Seasonal Total



During April, air quality was healthy for most days with AQI values of Good occurring most frequently. Only two days, April 18th and 19th, saw ozone levels reach the USG range with AQI values of 129 and 124, respectively. The bar chart "Maryland 8-hour Average Ozone AQI 2008 Monthly Distribution" indicates the monthly trends that occurred throughout the season. Also, ozone exceedance days of 2008 are listed in the table on pg. 2. This table cites the number of air monitoring sites that recorded an AQI greater than 100, the air monitoring site name that had the highest AQI value, and the AQI value associated with that site. The map above the table displays Maryland's ozone monitoring network.

In May, a similar trend was present as the AQI was Good on most days. However, there was a slight increase in Moderate days and, again, two USG days. The number of exceedance days rose dramatically during the month of June with 11 days, three of which reached the Unhealthy range. July was comparable as well with a reported 10 exceedance days, eight USG and two Unhealthy days. The worst ozone day occurred on July 18th at Fairhill with an AQI value of 169. On this day, 13 air monitoring sites measured AQI values greater than 100. (continued on pg. 2)

Air Quality Index (AQI)



¹ Previous ozone seasons were May - September

² AQI based on the 2008 8-hr ozone NAAQS

³ Report based on official ozone data

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SEASONAL HIGHLIGHTS

(continued from pg. 1)

August showed that ozone activity was beginning to slow. Good days prevailed over higher ozone days with 11 Moderate and four USG days. September marked the end of the ozone season with predominantly Good ozone levels except for several Moderate and two USG days.

WEATHER & AIR QUALITY

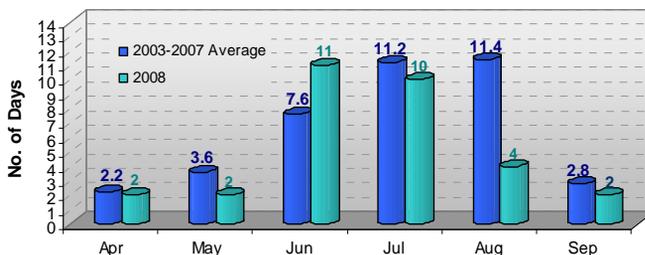
During the 2008 season, the U.S. experienced cooler than average temperatures across central regions and into the Northwest when compared with the climatological average. This anomaly and others are shown on maps of temperature and precipitation trends from April - September 2008 to the long-term average of 1950-2007 (pg. 3). Also, there were warmer conditions throughout California and select New England areas while nearly all other regions in the U.S. were about average. Precipitation patterns proved to be close to normal throughout the U.S. with a few exceptions. The Great Plains region and some locations along the Gulf Coast appear to have experienced above average, or wetter, conditions, as did much of the Mid-Atlantic and New England. Generally drier regions included southeastern Texas, western Carolinas, and Georgia.

Maryland experienced varying trends across the state. Although temperature conditions were about average in western Maryland, central locations were slightly cooler by 0.5-1°F. In southern to eastern areas, temperatures were slightly warmer by nearly the same magnitude. Also, precipitation trends were slightly wetter. These conditions had clear effects on the number of ozone (continued on pg. 3)

Maryland's 2008 Ozone Season Exceedance Days

Date	No. of Monitors	Monitor with Highest AQI	8-hour Average Ozone AQI
18-Apr	10	Davidsonville	129
19-Apr	10	Fairhill	124
7-May	1	Rockville	101
30-May	1	South Carroll	101
7-Jun	5	Aldino	142
9-Jun	1	Millington	119
10-Jun	5	Padonia	159
12-Jun	6	Millington	132
13-Jun	12	Padonia	154
14-Jun	5	Millington	159
20-Jun	1	Millington	109
21-Jun	6	Padonia	129
25-Jun	3	Fairhill	111
26-Jun	1	Millington	111
27-Jun	1	Millington	119
3-Jul	3	Fairhill	145
8-Jul	2	Fairhill	124
11-Jul	4	Edgewood	161
12-Jul	2	Edgewood	109
15-Jul	1	Davidsonville	114
16-Jul	9	Hagerstown	122
17-Jul	9	Southern Maryland	135
18-Jul	13	Fairhill	169
28-Jul	1	Edgewood	114
29-Jul	7	Fairhill	135
18-Aug	1	Fairhill	111
19-Aug	2	Southern Maryland	104
21-Aug	1	Hagerstown	106
25-Aug	2	Davidsonville	109
3-Sep	4	Barstow (Calvert Co)	129
4-Sep	5	Frederick	116

Seasonal Comparison of Exceedance Days



Air Quality Index (AQI)



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WEATHER & AIR QUALITY

(continued from pg.2) exceedance days each month. The bar chart “Seasonal Comparison of Exceedance Days” (pg. 2) indicates that within the months of June and August, there were significant differences from the five-year average (2003-2007) whereas all other months did not experience such variations. In June, 11 ozone exceedance days occurred in 2008 as compared to a five-year average of approximately eight days. This increase was most likely due to a jump in temperatures within this month to as high as 4°F above average across the eastern U.S. High temperatures have been known to accelerate the photochemical reaction that produces ozone, and thus results in higher ozone AQI values. In August, only four exceedance days occurred compared to a five-year average of about 11 days. This dramatic decrease could be a consequence of two tropical systems, Tropical Storm Fay and Hurricane Gustav. Both made landfall along the Gulf Coast during this month. Although precipitation did not experience a major increase within the Mid-Atlantic region, the remnants of these systems led to increased cloud cover and a moister airmass that resulted in reduced amount of sunlight, another necessary factor in ground-level ozone development.

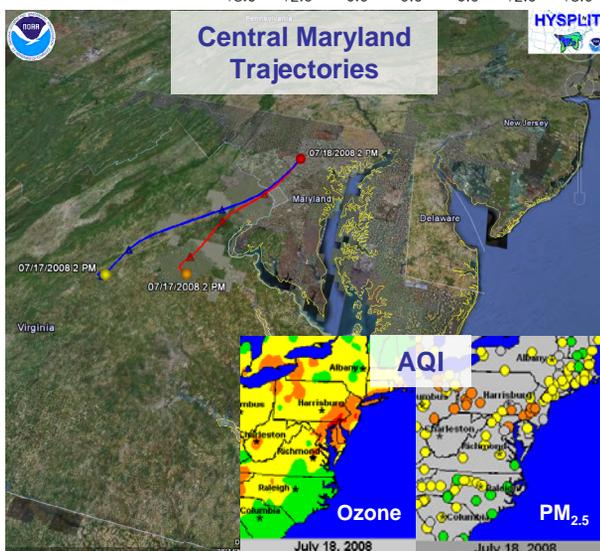
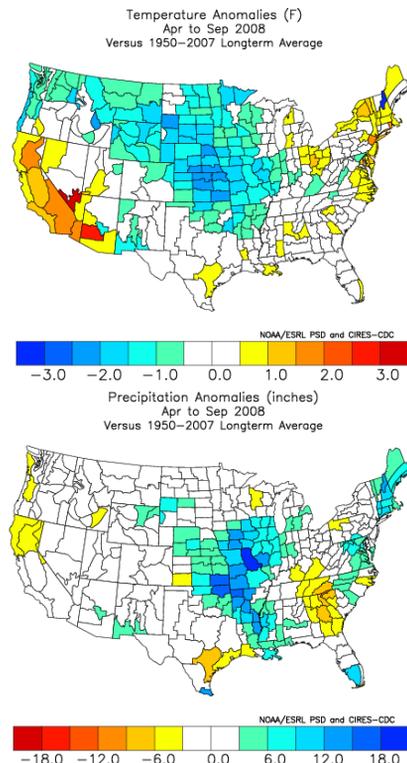
FEATURED EVENT: July 18, 2008

This air quality episode began on July 12th with a high pressure system centered over the northern Mid-Atlantic region. This high pressure area expanded to encompass much of the East Coast by the 17th, causing calm to light winds, high summertime temperatures, and sunny skies. The surface wind pattern from the 17th to 18th is shown by the red 24-hour back trajectory to the right (initiated at 10 m above ground level, or AGL). Very light southerly winds indicate that an already polluted airmass of USG category was transported to central Maryland by the 18th. The blue trajectory (500 m AGL) shows that south-southwesterly winds aloft were also very light.

These conditions led to daily maximum 8-hour ozone AQI to reach into the Unhealthy range on the 18th. AQI maps display the extent of this event along the upper East Coast. During this episode, PM_{2.5} pollution reached the USG category. This episode ended as both an upper level disturbance and the development of Tropical Storm Cristobal brought cloud cover and stronger winds to the Mid-Atlantic.

MORE INFORMATION

Visit www.cleanairpartners.net for current air quality conditions and forecasts, or call the air quality hotline at 410-537-3247. References: [AIRNow](#), [NOAA ARL READY HYSPLIT Trajectory Model](#), [NOAA ESRL PSD Climate Analysis Branch](#)



Air Quality Index (AQI)

0-50 Good	51-100 Moderate	101-150 USG	151-200 Unhealthy	201-300 Very Unhealthy	301-500 Hazardous
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