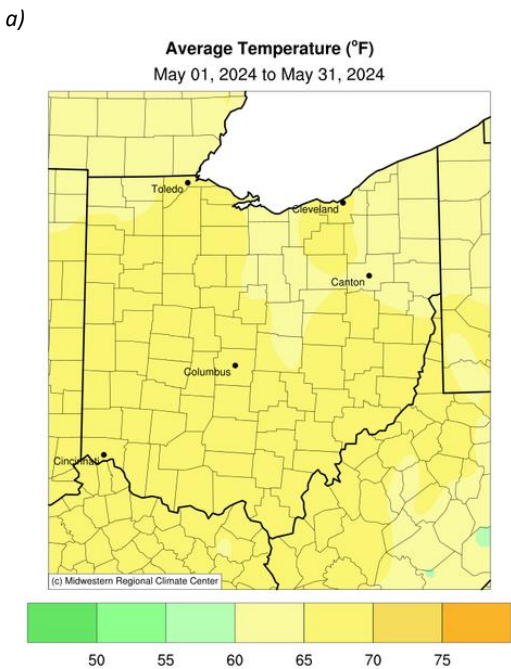




Review – May 2024

Temperature

The trend of warmer-than-average temperatures experienced in previous months continued into May, leading to a warm start to the summer season. Northeastern Ohio and a small portion of northwestern Ohio recorded average temperatures around 60-65°F while the rest of the state logged average temperatures of 65-70°F (Fig. 1a). While magnitudes varied, temperature departures throughout Ohio were 3-6°F above normal, which is considerably warmer than average (Fig. 1b). At the county level, almost the entire state ranked in the warmest tenth of their record, with Hancock county recording its fourth warmest May on record. The state as a whole experienced its ninth warmest May in its 130-year record.



b)

Average Temperature (°F): Departure from 1991-2020 Normals
May 01, 2024 to May 31, 2024

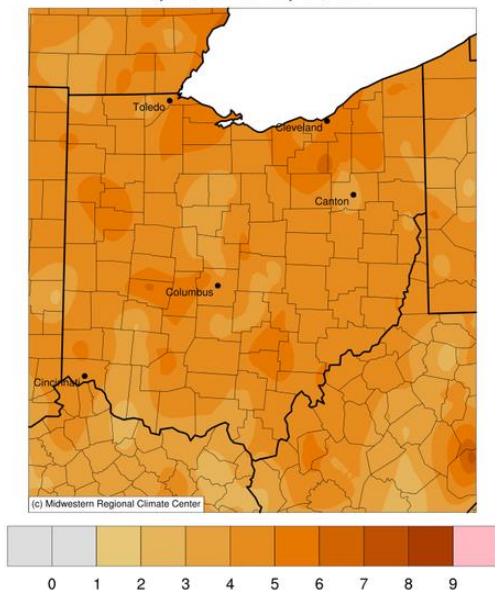


Figure 1a: Average temperature and 1b: Departure from Normal for the month of May 2024. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

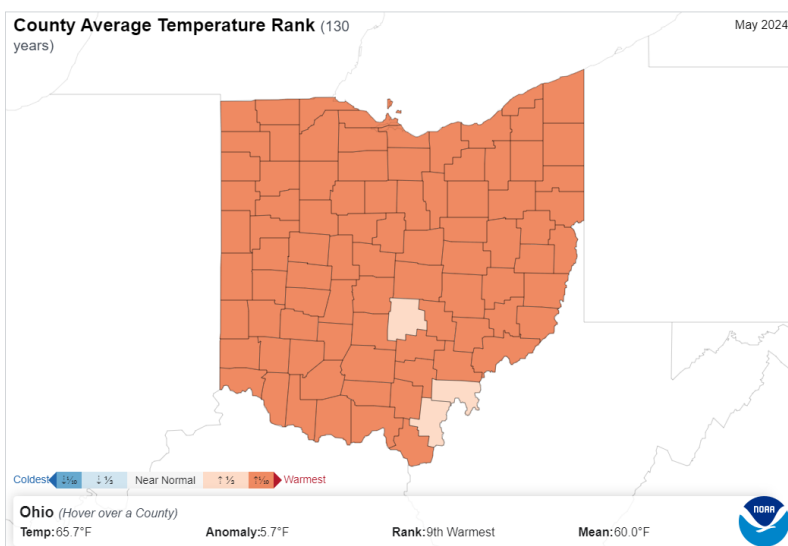


Figure 2: State of Ohio average temperature ranks by county for May 2024. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).



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Precipitation

Accumulated precipitation in Ohio was near average in May with local variability throughout the state. Eastern, southwestern, and north central Ohio recorded 4-7.5 inches of accumulated precipitation, while the rest of the state recorded 2-4 inches (Fig. 3a). Accumulated precipitation departures displayed a very similar trend with 0 to 2 inches above normal values in eastern, southern, and north central Ohio while western Ohio and the rest of the state saw 0 to 2 inches below normal levels (Fig. 3b). The reason these trends are so clear is likely the tracks strong storms took as they moved through these regions. At the county level, most of Ohio ranked near normal, while a few southern, north-central, and western counties ranked in the wettest third of their record. Mercer, Darke, Warren, Washington, and Cuyahoga counties ranked in the driest third of their record.

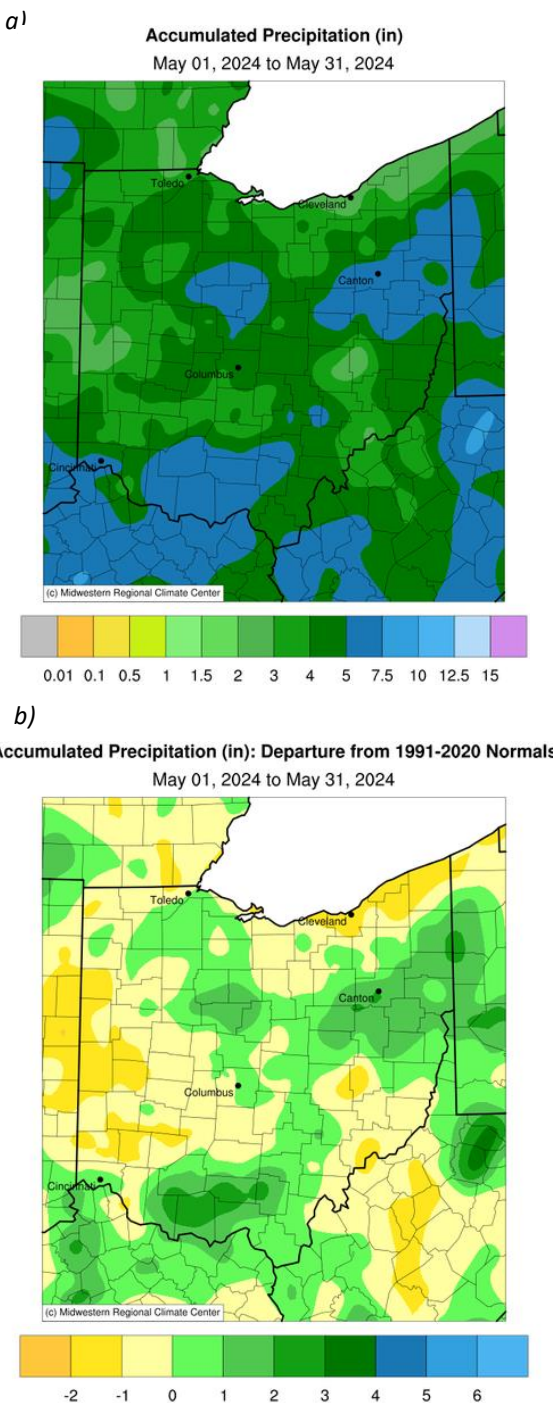


Figure 3a: Accumulated precipitation and 3b: Departures from Normal for the month of May 2024. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

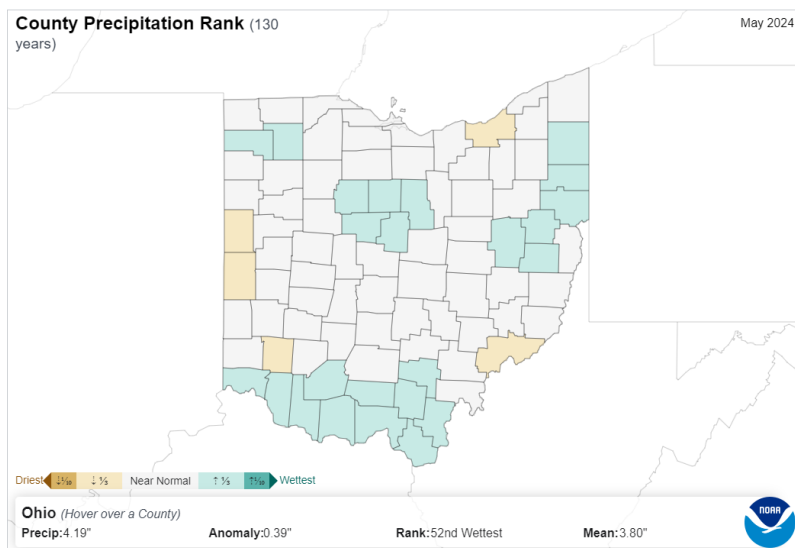
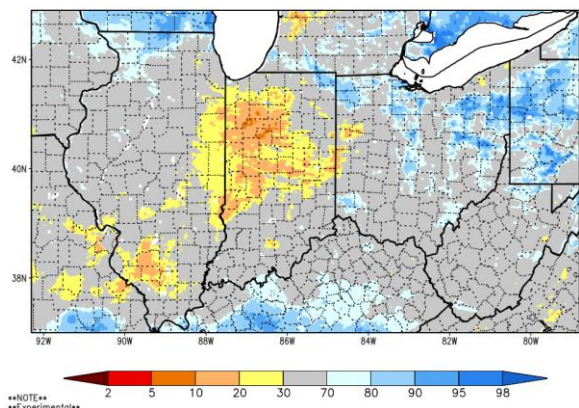


Figure 4: State of Ohio precipitation ranks by county for May 2024. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).

Review – May 2024

a) SPoRT-LIS 0–40 cm Soil Moisture percentile valid 31 May 2024



b) SPoRT-LIS 0–200 cm Soil Moisture percentile valid 31 May 2024

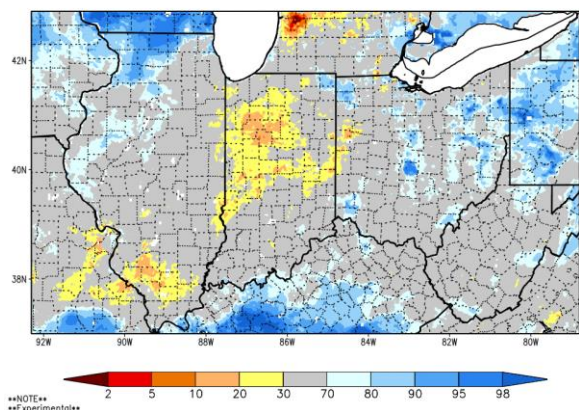


Figure 5a: 0–40 cm and 5b: 0–200 cm soil moisture percentile across the region at the end of May 2024. Courtesy of NASA SPoRTLIS (https://weather.msfc.nasa.gov/sport/case_studies/lis_IN.html).

Soil and Energy

Moist soil conditions have developed in localized regions by the end of May. For the 0–40 cm map, moist soil conditions in the northwest, central, and eastern regions of the state are evident while dry soil conditions are present on the western border (Fig. 5a). The rest of the state displayed neutral/normal levels of soil moisture. For the 0–200 cm map, similar features are present just to a slightly lesser degree. Much like the accumulated precipitation map, the regions of moist soil conditions align with the tracks of storms that passed throughout the month (Fig. 5b).

Warmer-than-average conditions this month led to fewer than average Heating Degree Days (HDDs), as well as greater than average number of Cooling Degree Days (CDDs). These departures were likely beneficial for energy consumption this month. If warm conditions persist into the summer months this would likely result in an increase in energy consumption as the number of CDDs would increase considerably.

Product Note: Both NASA SPoRT LIS soil moisture products contain small pockets of inaccurate data indicating extremely wet or dry conditions. These small-scale errors can emerge in remote sensing products covering large areas or grid-spacings. For more information, please contact Geddy Davis (davis.5694@osu.edu).

Climate Division	Heating Degree Days	Normal	Departure	Cooling Degree Days	Normal	Departure
1	56	188	-132	68	47	21
2	57	190	-134	76	47	28
3	94	224	-130	40	34	7
4	34	160	-125	93	59	35
5	43	152	-109	100	59	41
6	62	188	-126	77	43	34
7	66	181	-115	71	41	30
8	24	133	-108	105	68	38
9	33	128	-95	110	65	45
10	45	155	-110	99	52	47
State	51	170	-118	84	52	33



Figure 6: (Left) May 2024 heating & cooling degree days. (Right) Corresponding Ohio Climate Divisions. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

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Notable Events

Ohio experienced another month of active weather in May with 22 total tornadoes developing throughout the month. Most of this severe weather was linked to the storms that occurred on May 7th (Fig. 7). An active upper-level pattern combined with warm air and moisture from the Gulf of Mexico led to favorable conditions for supercells to develop across Indiana and western Ohio. These storms would produce most of the main damage in western Ohio but would continue moving through Ohio into West Virginia and Pennsylvania. In Mercer, Darke, Auglaize, and Warren Counties, roofs were torn off, trees were uprooted, and mobile homes were overturned as a result of these tornadoes. This event was the third-largest tornado outbreak of Ohio's severe weather record (1950-present) with 19 tornadoes occurring on May 7th (Fig. 8). Fortunately, no fatalities or injuries were reported from these storms. Along with tornadoes, these storms also produced very intense winds and hail.

This 2024 tornado season in Ohio is quickly approaching its record from 1992 of 62 tornadoes. At the end of May, a total of 58 tornadoes had been reported since the beginning of this year. Typically, tornado season is from March through June with most tornadoes developing during this time. That means that Ohio is extremely close to hitting its state record with an entire month remaining in the main tornado season.

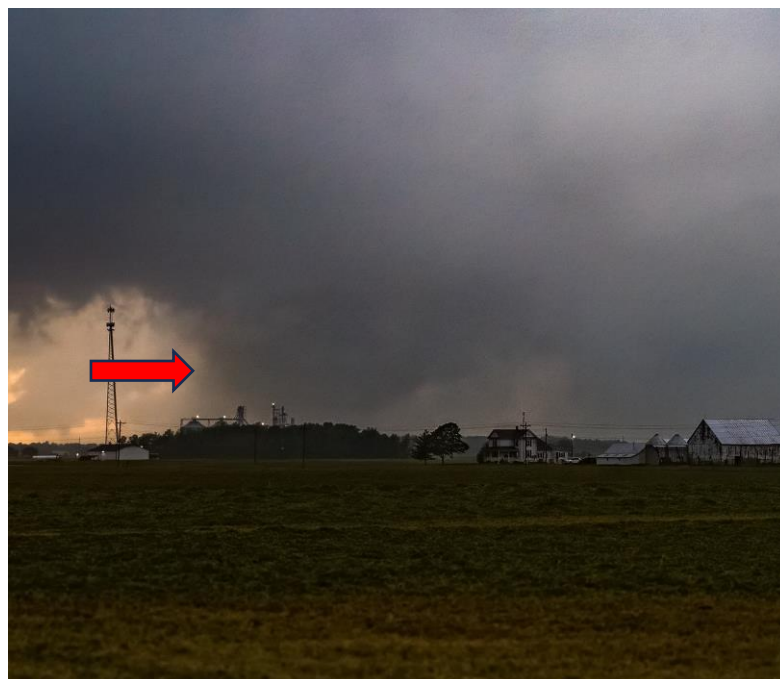


Figure 7: Image of Coldwater, Ohio EF2 tornado from May 7, 2024. Visibility of tornadoes can be obscured by rain/hail, so it is important to heed all warnings. Image courtesy of Geddy Davis.

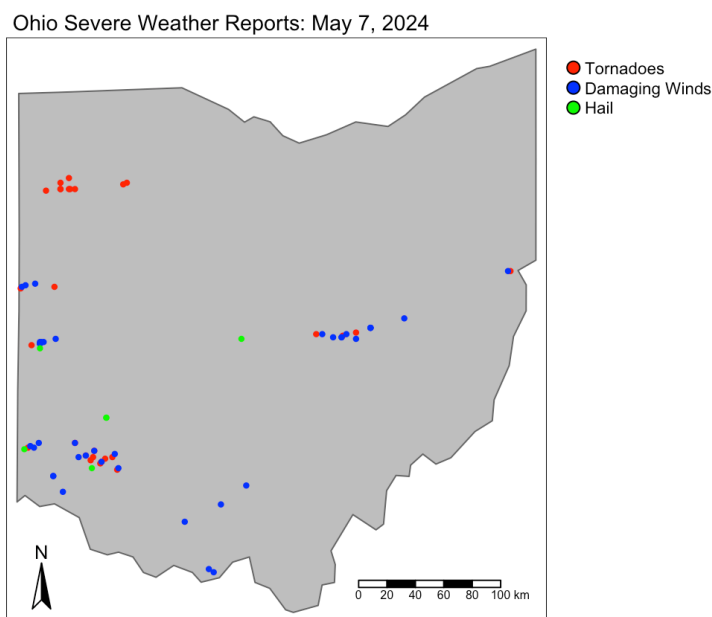


Figure 8: Plot of Ohio severe weather reports from May 7, 2024. Courtesy of Geddy Davis

Forecast: June - August

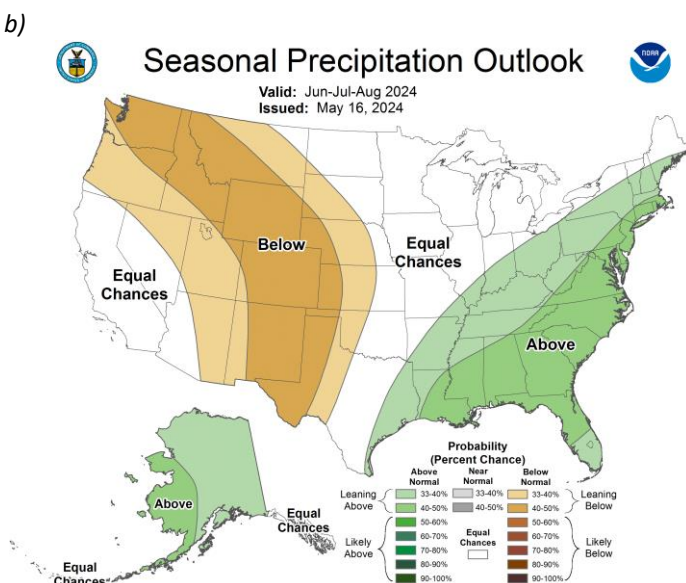
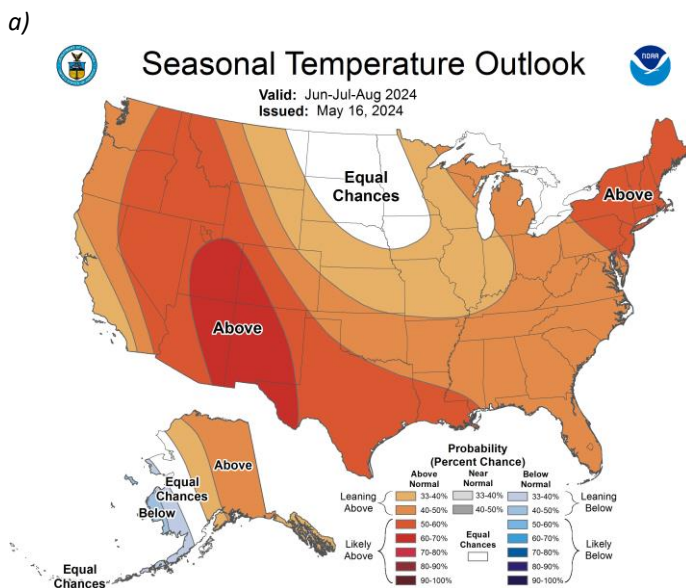


Figure 9a: Nationwide Seasonal Temperature and 9b: Precipitation Outlook for June-August. Courtesy of the Climate Prediction Center (<https://www.cpc.ncep.noaa.gov/>).

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Looking Ahead

The CPC's 3-month outlooks suggest a warmer-than-average summer for Ohio, with a slight chance of above-average levels of precipitation. Looking at the temperature outlook, the entire state is predicted to experience warmer-than-average temperatures, though confidence is low (Fig. 9a). Meanwhile, Ohio has a small probability of above-average precipitation, with a small region in the northwestern corner of the state that displays equal chances of being above or below normal (Fig. 9b). This forecast could prove disruptive for normal summer activities, as heat-related stress can make physical activity more difficult, especially for those with pre-existing health conditions. Warm and wet conditions could result in a productive growing period, but extremes in these categories could be detrimental. Although forecasted probabilities from the CPC's products are low, short-term forecasts are also beginning to indicate above-average temperatures through the middle of June. It's important to keep up to date with shorter-term forecasts as they are often more detailed in their predictions.

Note: these outlooks do not provide the quantity of above or below normal conditions, just the likelihood of occurrence (i.e., the probability).

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