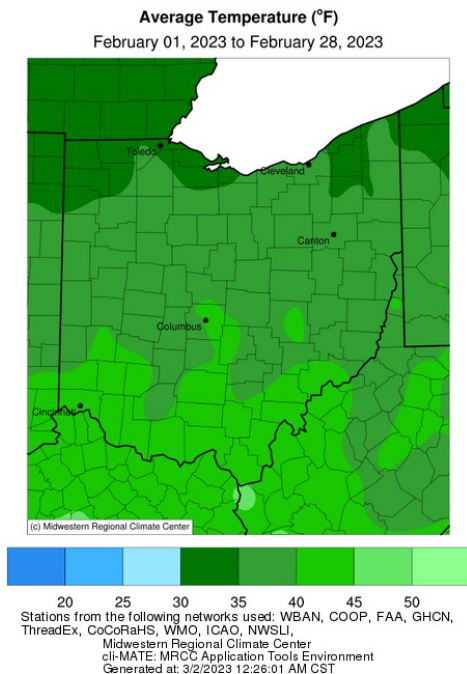


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a)



b) **Average Temperature (°F): Departure from 1991-2020 Normals**
February 01, 2023 to February 28, 2023

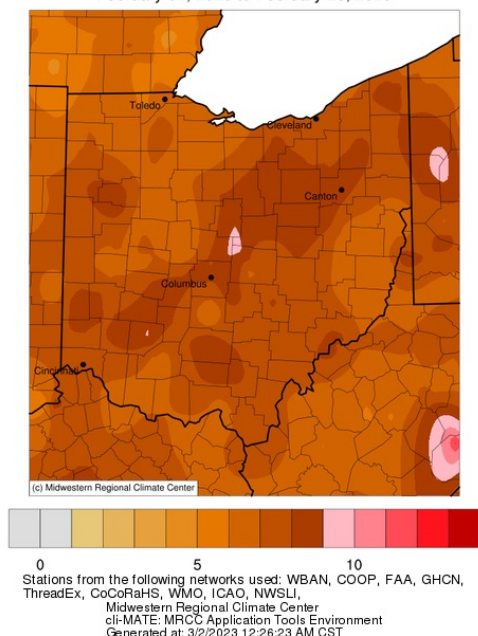


Figure 1a: Average temperature and 1b: Departure from Normal for the month of February 2023. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

Temperature

Temperatures in February were defined by their variability, as Ohio experienced multiple unseasonable days with maximum temperatures in the upper 60's to lower 70's throughout the month. Overall, these fluctuations mostly resulted in average temperatures of 35-45°F, with far northern Ohio seeing averages of only 30-35 °F (Fig. 1a). Warm spikes contributed to average temperature departures of 6-9°F higher than 30-year normals, with a small area northeast of Columbus seeing temperatures 10°F higher than normal (Fig. 1b). At the county level, every Ohio county ranked within their 4th warmest February in the 129-year record, with Knox, Licking, and Lawrence Counties seeing their warmest February on record (Fig. 2).

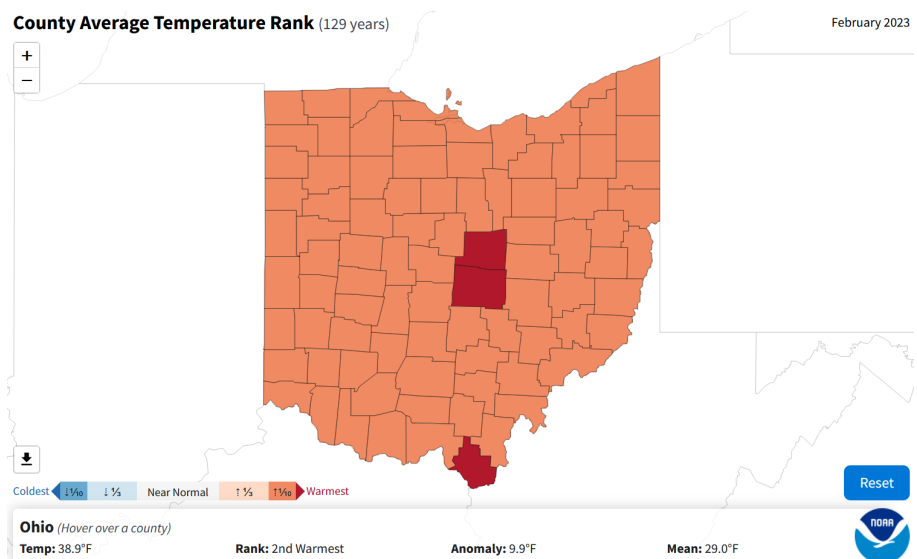


Figure 2: State of Ohio average temperature ranks by county for February 2023. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).

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Precipitation

While February saw the finalization of drought removal in Ohio, sporadic precipitation in the month resulted in varied accumulation in the state. Most of Ohio's midsection received 0.5-3 inches of accumulated precipitation in February, while northwest and far southern portions of the state saw up to 5 inches (Fig. 3b). This resulted in the bulk of Ohio seeing negative departures from 30-year normals, ranging from 0-2 inches less accumulation than normal. Conversely, the northwestern and southern regions saw 0-3 inches more accumulated precipitation than normal (Fig. 3b). At the county level, the state was split into three parts, with the northwest ranking wetter, the southeast ranking drier, and the southwest through northeast, as well as the south ranking near 129-year normals for February. The northwest saw the greatest departures, with widespread rankings in the top ten wettest Februaries (Fig. 4).

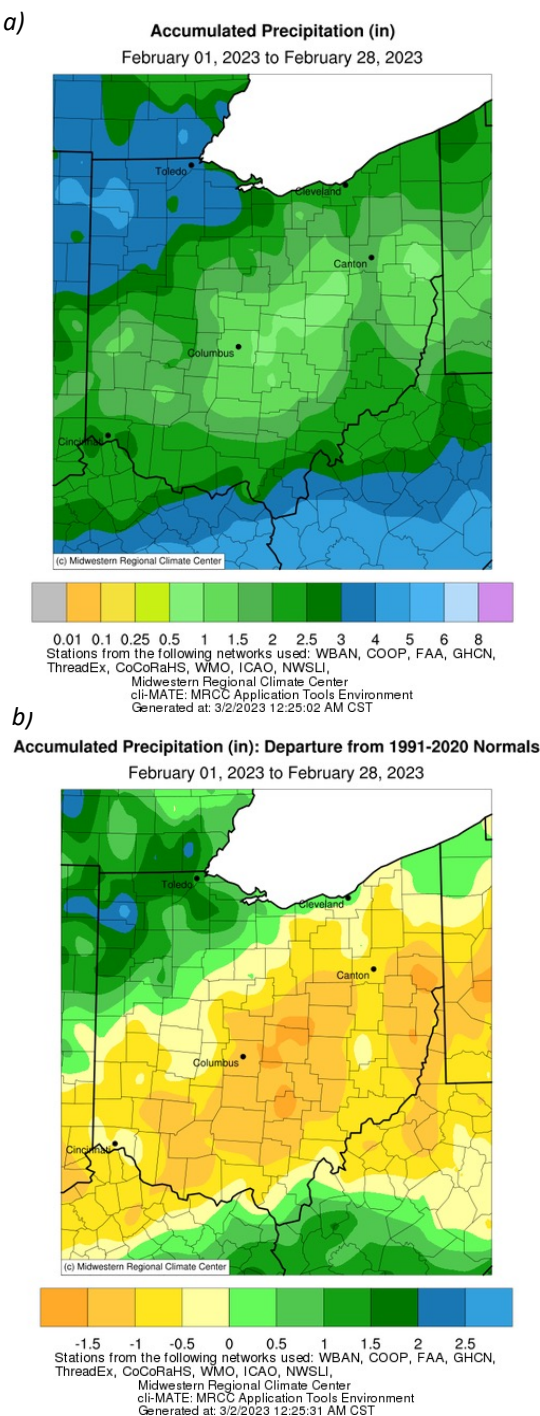


Figure 3a: Accumulated precipitation and 3b: Departures from Normal for the month of February 2023. Data courtesy of the Midwest Regional Climate Center (<http://mrcc.purdue.edu>).

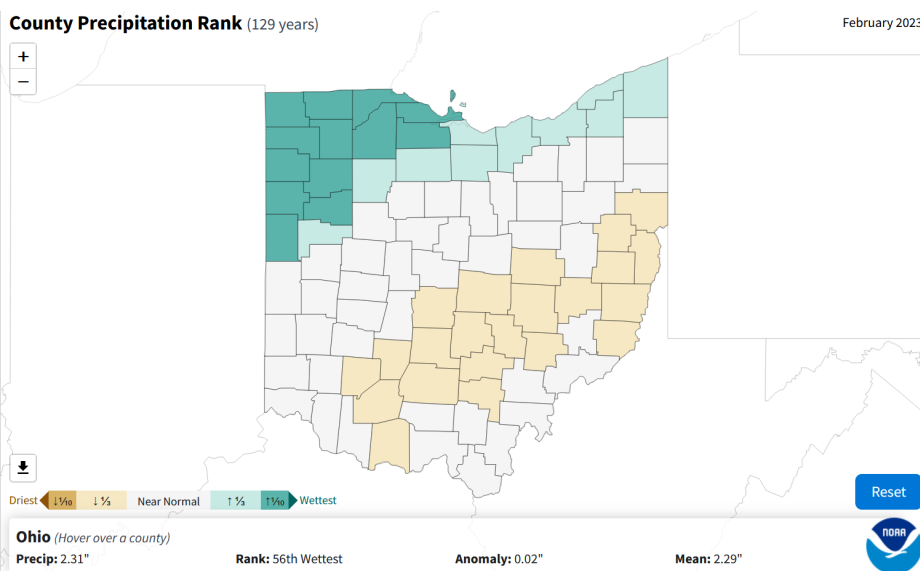


Figure 4: State of Ohio precipitation ranks by county for February 2023. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).

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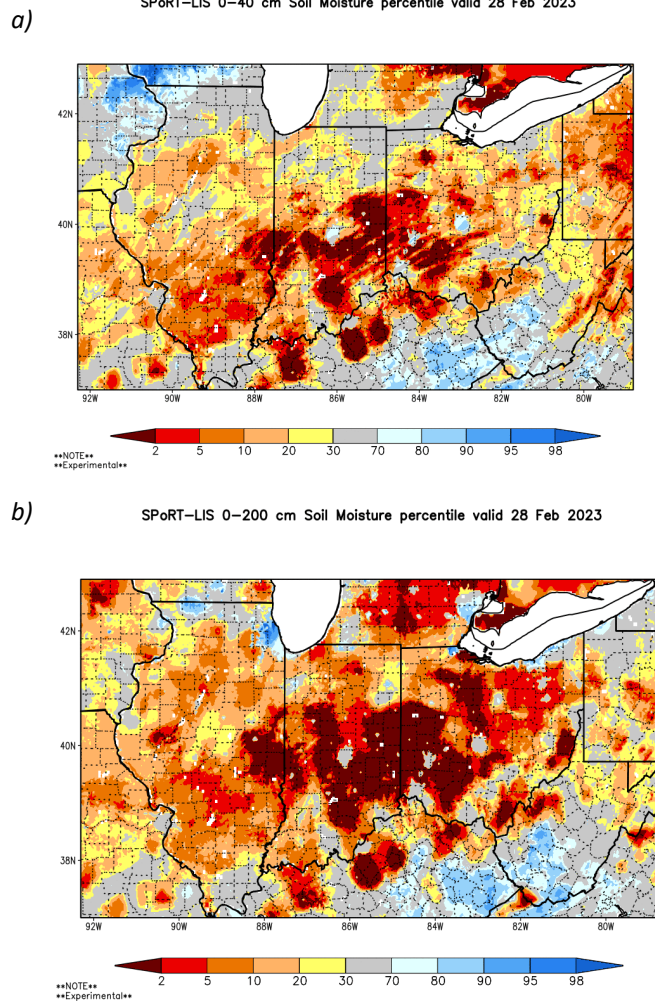


Figure 5a: 0–40 cm and 5b: 0–200 cm soil moisture percentile across the region at the end of February. Courtesy of NASA SPoRTLIS (https://weather.msfc.nasa.gov/spo/case_studies/lis_IN.html).

Climate Division	Heating Degree Days	Normal	Departure	Cooling Degree Days	Normal	Departure
1	832	1040	-207	0	0	0
2	802	1019	-216	0	0	0
3	815	1041	-226	0	0	0
4	762	985	-223	0	0	0
5	745	955	-209	0	0	0
6	771	999	-228	0	0	0
7	760	973	-214	0	0	0
8	706	914	-208	0	0	0
9	654	862	-208	0	0	0
10	706	919	-213	0	0	0
Statewide	753	967	-214	0	0	0

Soil and Energy

Although mostly dry throughout the month, the passage of a strong storm system on February 27th resulted in saturated soil close to the surface at the end of February. At the 0–40cm level, soil moisture was moderating throughout the state on the last day of the month, though the events of the previous day were very influential (Fig. 5a). The 0–200cm level, which is a deeper cross section of the soil near the surface, was less affected by the precipitation, as moisture gradually moves downward through the soil over time. As such, this level saw the driest soil moisture in portions of Ohio’s western half, with the northeast seeing more moderate moisture at the end of the month (Fig. 5b).

Numerous warm spikes resulted in significantly less heating degree days (HDDs) than normal in February, with consistent departures throughout Ohio. Despite occasionally reaching the lower 70’s, no cooling degree days (CDDs) were recorded in the state, agreeing with historical normals for February (Fig. 6).



Figure 6: (Left) February 2023 heating & cooling degree days. (Right) Corresponding Ohio Climate Divisions. Data courtesy of the Midwestern Regional Climate Center (<http://purdue.mrcc.edu>).

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Notable Events

On February 27, the passage of a strong low-pressure system through the Great Lakes produced severe weather across the western, southern, and central parts of the state. Average high temperatures in the upper 50s and lower 60s throughout Ohio combined with ample low-level moisture allowed for widespread thunderstorm development, resulting in numerous damaging wind and hail reports, as well as two confirmed EF1 tornadoes in the towns of Middletown and New Carlisle and two EF0 tornadoes in Orient and Etna Township near Pataskala (Fig. 7). The storm also delivered up to 1 inch of accumulated precipitation to much of the northern half of the state, constituting the wettest day of the month for Columbus (Fig. 8). This event was notable not just for its severity, but because tornado-producing storms are very unusual in Ohio during February, with less than 2% of all tornado events in the state since 1950 having occurred in this timeframe.

Ohio Severe Weather Reports: February 27, 2023

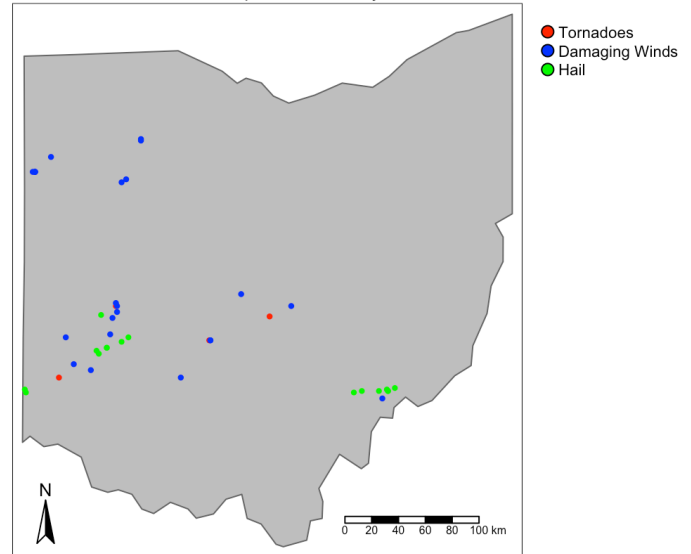
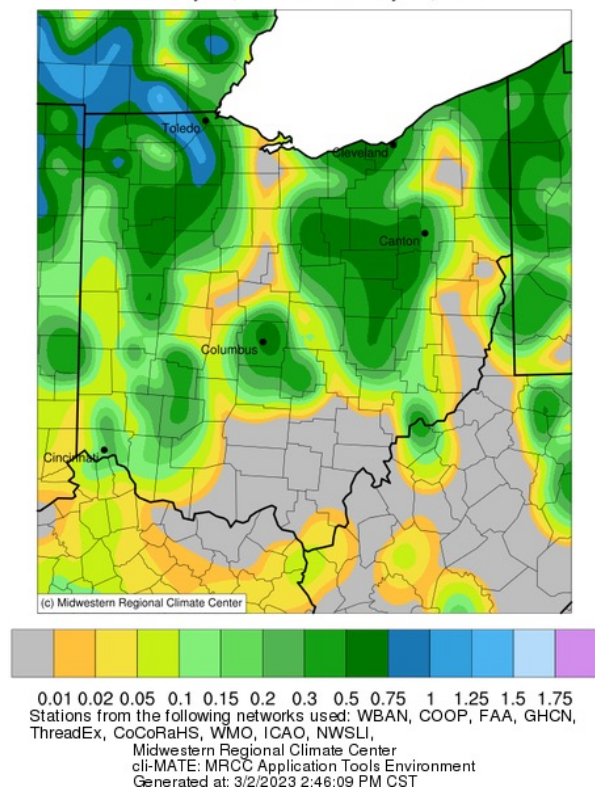


Figure 7: Statewide severe weather reports for February 27, 2023, including damaging winds, hail, and tornadoes (above) and Figure 8: Accumulated Precipitation on February 27, 2023 (below). Data courtesy of National Weather Service Local Storm Report archive, accessed via Iowa Environmental Mesonet (<https://mesonet.agron.iastate.edu/>), and the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

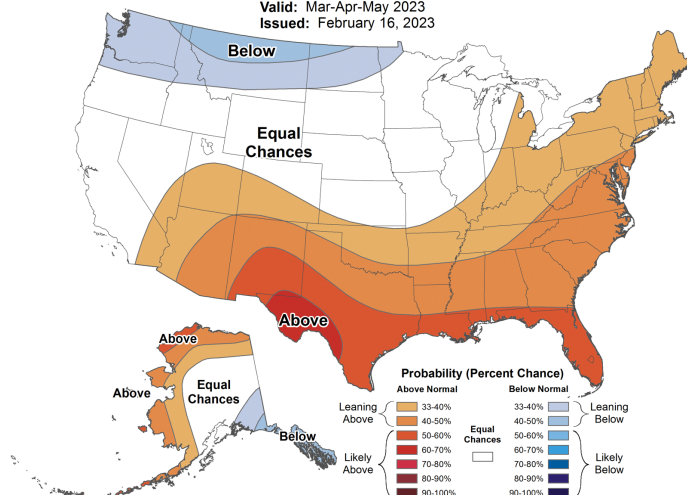
Accumulated Precipitation (in)
February 27, 2023 to February 27, 2023



Forecast: Mar-May 2023

a) Seasonal Temperature Outlook

Valid: Mar-Apr-May 2023
Issued: February 16, 2023



b) Seasonal Precipitation Outlook

Valid: Mar-Apr-May 2023
Issued: February 16, 2023

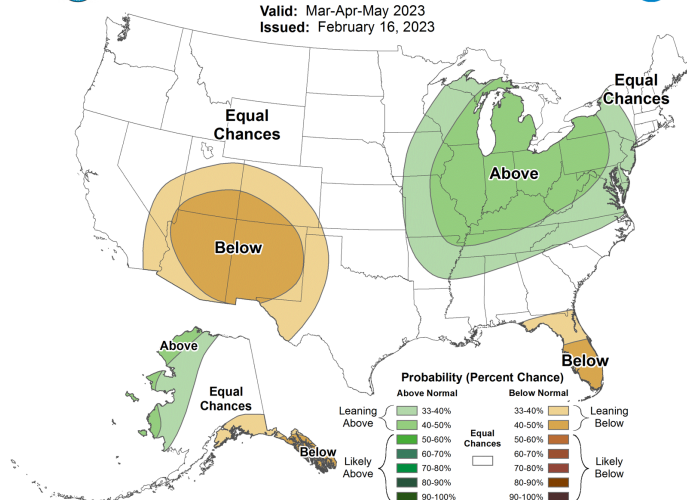


Figure 9a: Nationwide Seasonal Temperature and 9b: Precipitation Outlook for March-May. Courtesy of the Climate Prediction Center (<https://www.cpc.ncep.noaa.gov/>).

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Looking Ahead

The CPC's 3-month outlook further maintains predictions of higher temperature and precipitation in Ohio through May. The entire state has a slight probability of above-normal temperatures in the coming months, though confidence is relatively low (Fig. 9a). Although previous warm temperatures in February have currently transitioned to a cool snap so far in March, above-normal temperatures may return in the April timeframe after the last vestiges of winter present themselves. Warming trends will also be noticed as day-length continues to increase.

Along with most of the Midwest and northern Appalachians, Ohio has a high probability of above-normal precipitation through May (Fig. 9b). In transitioning to the warm season, a continuation of an active pattern in Ohio is expected to bring more rain producing events, as well as potentially impactful storms as spring progresses.

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