

Review – June 2023

Temperature

Temperatures were consistently mild throughout the state as summer began in June. Average temperatures in the month ranged from 65-70°F in the majority of Ohio, with a small area in the northeast ranging from 60-65°F (Fig. 1a). These moderate conditions resulted in average temperature departures of around 2-4°F below normal, with regions in the northeast, southwest, and northwest seeing departures of only 1-2°F below normal (Fig. 1b). Meanwhile, small areas in central Ohio saw departures of up to 5°F below normal. At the county level, every county outside of the northwest ranked at least in the coldest third of the 129-year record, with some counties in the north and southeast ranking within the coldest tenth of the record (Fig. 2). Gallia and Meigs Counties saw the most notable rankings, seeing their fifth coldest June. In contrast, the northwest ranked near historical normals.

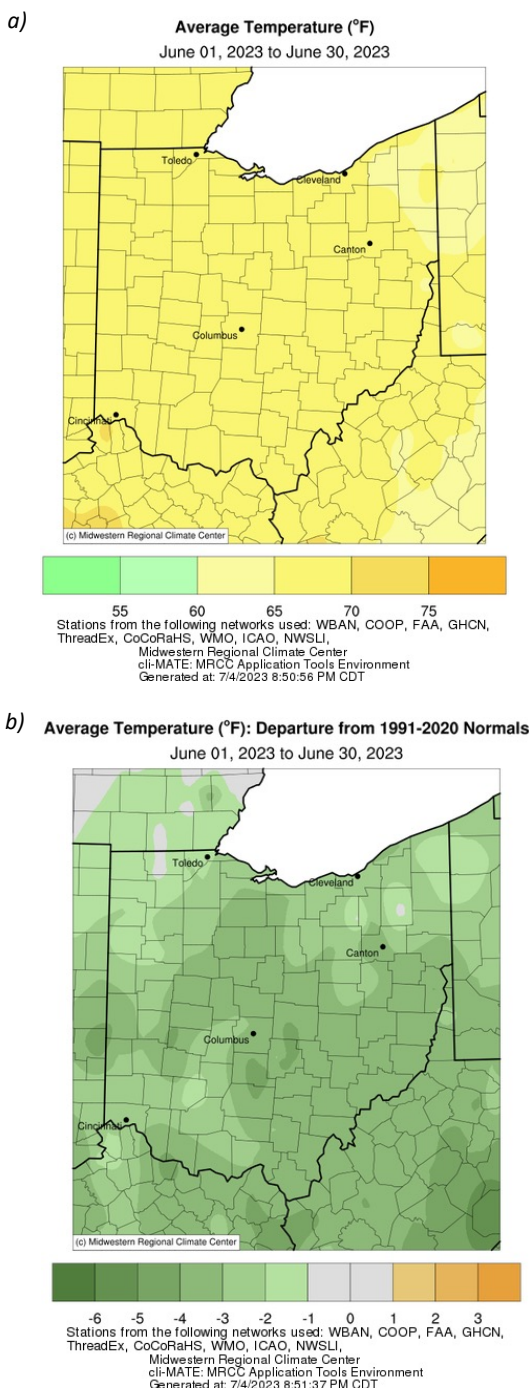


Figure 1a: Average temperature and 1b: Departure from Normal for the month of June 2023. Data courtesy of the Midwest Regional Climate Center (<http://mrcc.purdue.edu>).

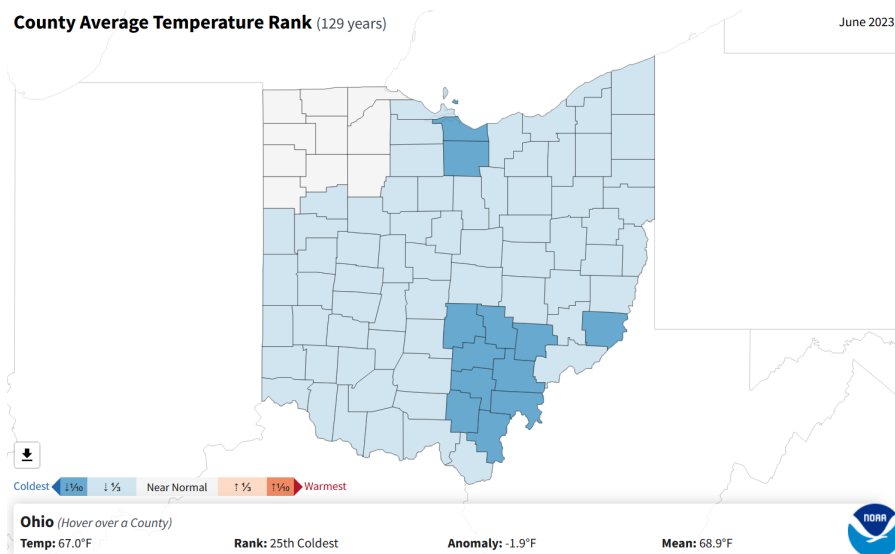


Figure 2: State of Ohio average temperature ranks by county for June 2023. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).

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Precipitation

Though multiple precipitation events brought widespread rain accumulation to Ohio in June, most areas failed to match up to historical normals. Most of the state received 3-4 inches of accumulated precipitation during the month, with areas in the west, south and northeast receiving only 1.5-3 inches (Fig. 3a). While this resulted in near-normal departures for various pockets throughout eastern Ohio, most of the state saw departures of 0.5-1.5 inches less accumulated precipitation than normal, with the southwest seeing departures of around 2-3 inches less (Fig. 3b). At the county level, rankings were varied throughout the state, with drier than normal counties scattered across the southwest, northwest, and east (Fig. 4). Of the drier counties, those near Cincinnati ranked the driest. Near normal counties stretched across the rest of the state, with Licking, Muskingum, and Monroe Counties ranking slightly wetter than normal.

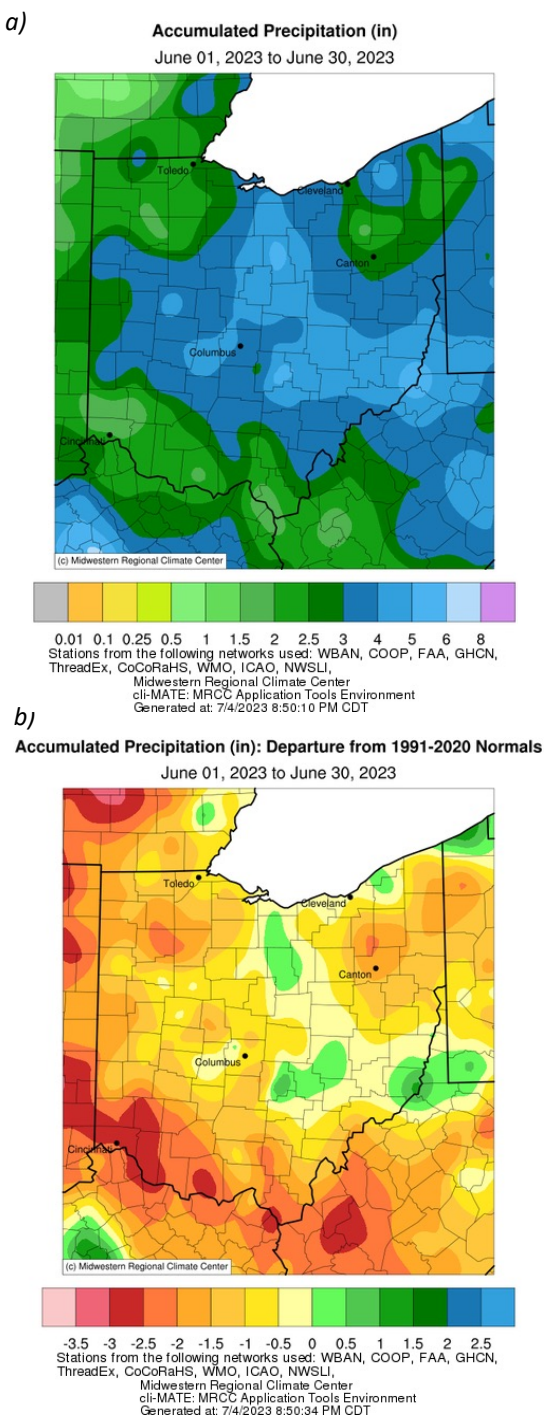


Figure 3a: Accumulated precipitation and 3b: Departures from Normal for the month of June 2023. Data courtesy of the Midwest Regional Climate Center (<http://mrcc.purdue.edu>).

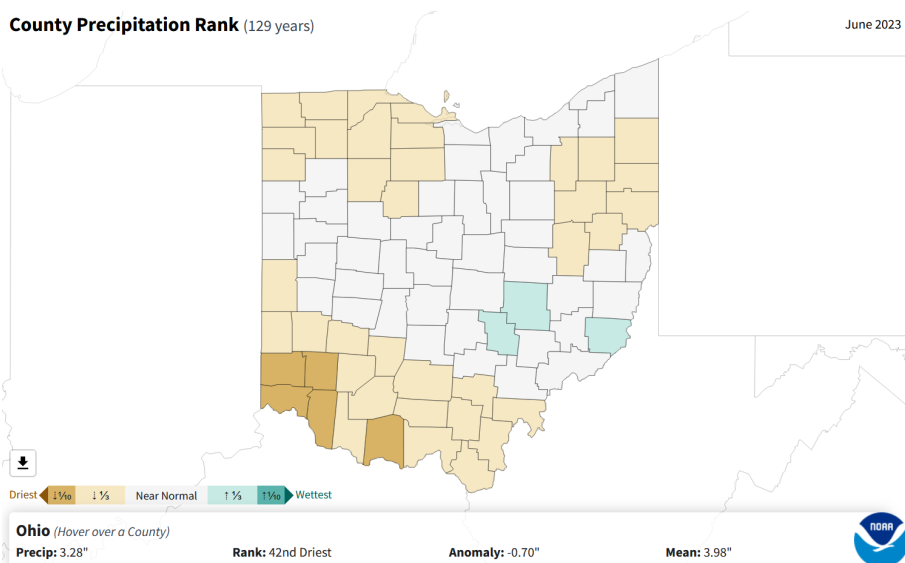
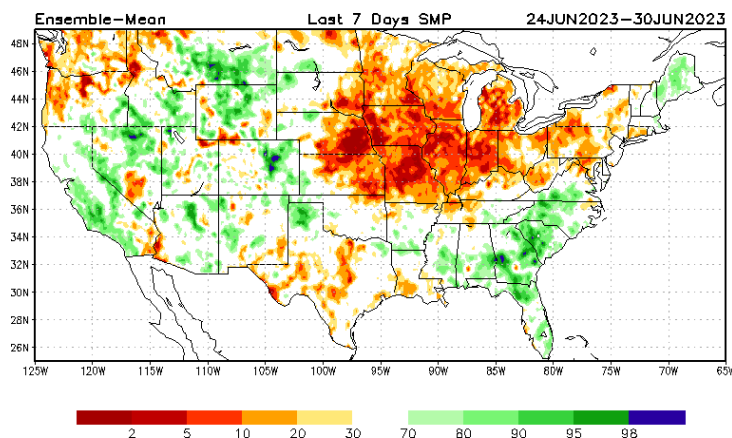


Figure 4: State of Ohio precipitation ranks by county for June 2023. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).

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a)



b)

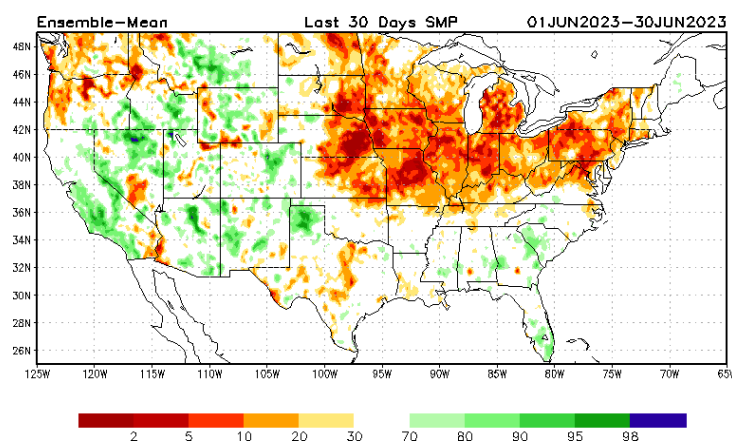


Figure 5a: Last 7 days and 5b: last 30 days mean soil moisture percentile across the United States. Courtesy of the Climate Prediction Center (https://www.cpc.ncep.noaa.gov/products/Drought/Monitoring/smp_new.shtml#).

Soil and Energy

The first days of summer continued the trend of moderately dry soil moisture conditions in Ohio. While the average soil moisture remained generally dry across the state over the last 30 days, the last 7 days of June saw improvement towards intermediate soil moisture across central Ohio (Figs. 5a and 5b).

Although mild, rising temperatures have resulted in the first month of the year with more Cooling Degree Days (CDDs) than Heating Degree Days (HDDs) in Ohio. Despite this, the state saw more HDDs than normal in every region except the northwest. Meanwhile, Ohio saw significant negative departures of CDDs throughout the state, with most regions recording nearly half of what was expected (Fig. 6).

Product Note: The NASA SPoRT LIS soil moisture product is currently unavailable due to a technical failure. While this is repaired, we will be using national soil moisture percentage products from the Climate Prediction Center. For more information, please contact Geddy Davis (davis.5694@osu.edu).

Climate Division	Heating Degree Days	Normal	Departure	Cooling Degree Days	Normal	Departure
1	24	25	-1	122	179	-58
2	33	28	5	101	174	-74
3	65	45	20	63	125	-62
4	24	20	5	106	194	-88
5	28	18	10	99	193	-94
6	48	30	18	83	155	-72
7	49	28	21	73	149	-77
8	14	13	0	121	211	-90
9	18	13	6	100	203	-103
10	33	20	13	87	172	-85
Statewide	32	23	9	97	178	-81



Figure 6: (Left) June 2023 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

This June hosted a few impactful severe weather events in Ohio. Most notable of these was the June 15 storm outbreak, which impacted northern Ohio along Lake Erie. With the passage of a cold front in the evening, numerous supercell thunderstorms formed around the Ohio/Michigan border, before moving southeastward across Ohio, producing 12 tornadoes and dropping large hail across the region, in addition to damaging winds which briefly left around 28,000 homes across northern Ohio without power (Fig. 7). Though there were no injuries associated with the storm, moderate tornado damage to houses and trees was reported, along with golf ball to tennis ball sized hail. In addition to the June 15 outbreak, areas across Ohio saw impacts from a series of severe weather events throughout the month. Along with multiple reports of damaging winds across the southwest, two additional EF0 tornadoes were recorded in Miami and Champaign Counties (Fig. 8).

Ohio Severe Weather Reports: June 15, 2023

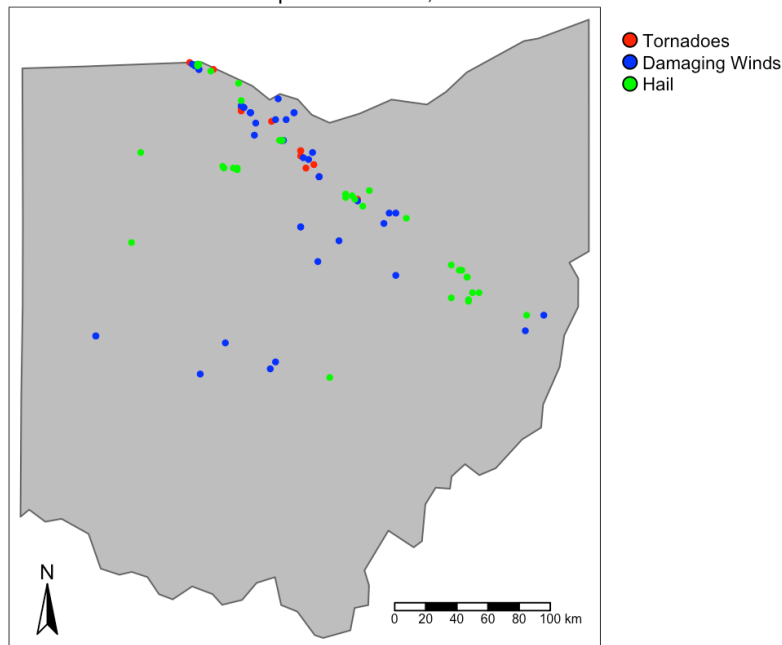
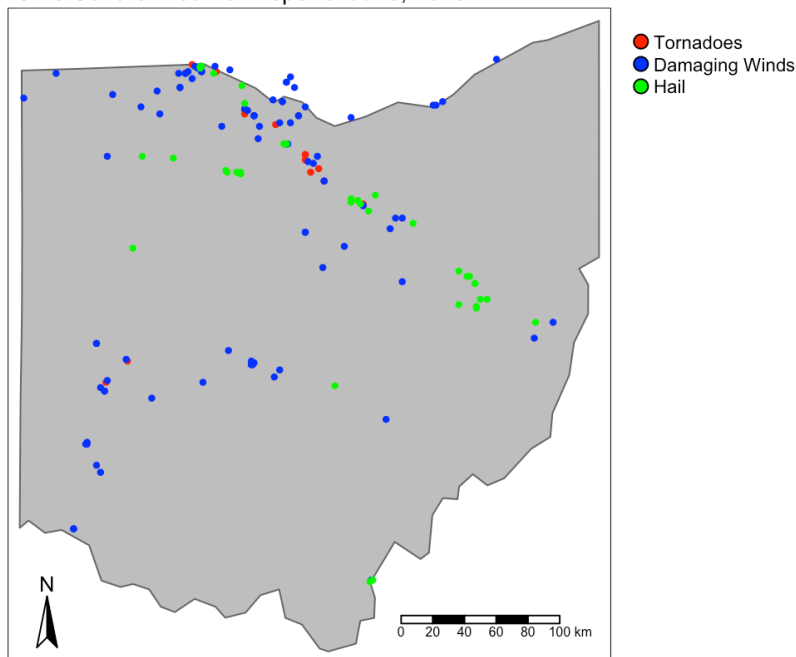


Figure 7: Statewide severe weather reports for June 15, 2023, including damaging winds, hail, and tornadoes (above) and Figure 8: Statewide severe weather reports for June 2023, including damaging winds, hail, and tornadoes (below). Data courtesy of the National Weather Service Local Storm Report archive, accessed via Iowa Environmental Mesonet (<https://mesonet.agron.iastate.edu/>).

Ohio Severe Weather Reports: June, 2023



Forecast: July - September 2023

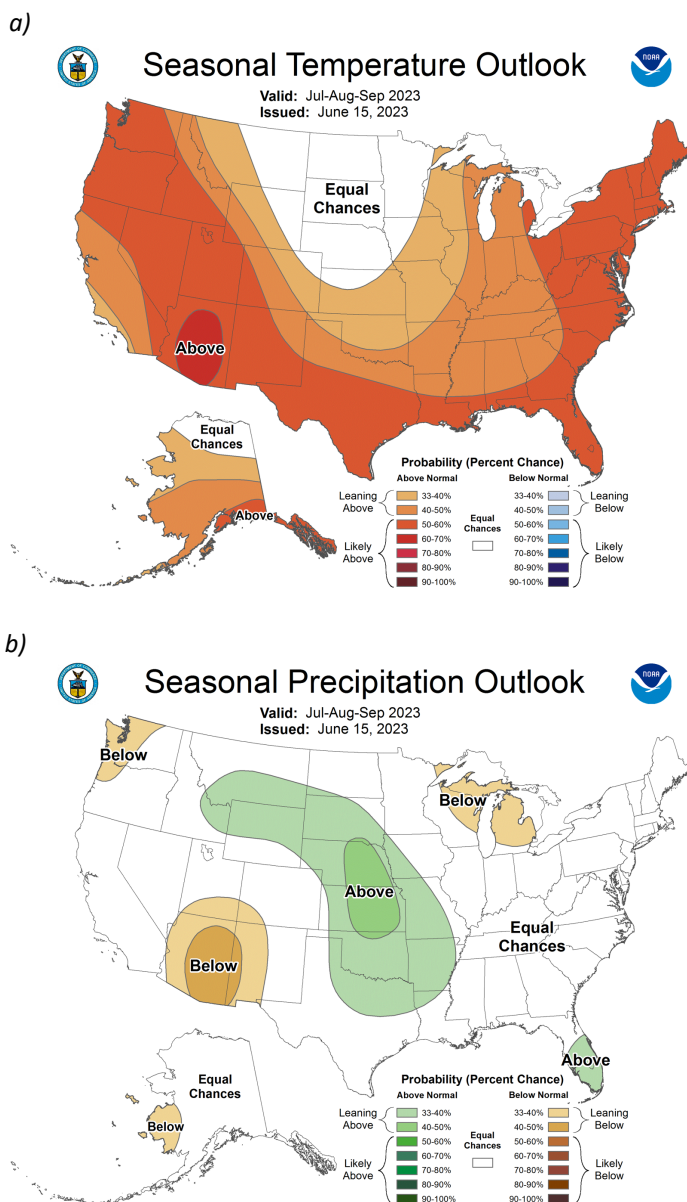


Figure 9a: Nationwide Seasonal Temperature and 9b: Precipitation Outlook for July-September. Courtesy of the Climate Prediction Center (<https://www.cpc.ncep.noaa.gov/>).

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Looking Ahead

The CPC's 3-month outlooks continue to predict shifting trends in both temperature and precipitation. All of Ohio is forecast to see above-normal temperatures in the coming months, with predictions for the eastern half of the state having a higher probability than in the west (Fig. 9a). Meanwhile, precipitation outlooks lack confidence, as the entire state has equal chances of receiving above- or below-normal precipitation (Fig. 9b).

In addition to the CPC's outlooks for Ohio, predictions concerning the evolving presence of drought is of similar importance. Despite mostly falling below historical normals, frequent precipitation halted further drought development in Ohio. Though short-term improvement has occurred as well, continued uncertainty in precipitation forecasts mean that the long-term status of soil moisture cannot be well predicted. As such, regular drought monitoring will continue to be important in the coming months.

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