



Review – June 2022

Temperature

Summertime temperatures made themselves known this month, with warm spells making headlines across the state. Things started near normal for the month before a heat wave impacted the region during the middle third of the period. Several daily high records were set, and dangerous heat indices were experienced due to the presence of a humid airmass concurrently. Temperature swings from above normal to slightly below normal occurred to finish things out, resulting in above average temperatures in the 65-75°F range for the month. (Fig. 1a) The highest departures from normal were felt across the north and west. (Fig. 1b) As a whole, the state experienced its 30th warmest June on record (Fig. 2), with most counties coming in around this mark within the top 1/3rd of the dataset. Of note: Hancock, Summit, and Portage Counties experienced their 10th, 12th, and 13th warmest June, respectively.

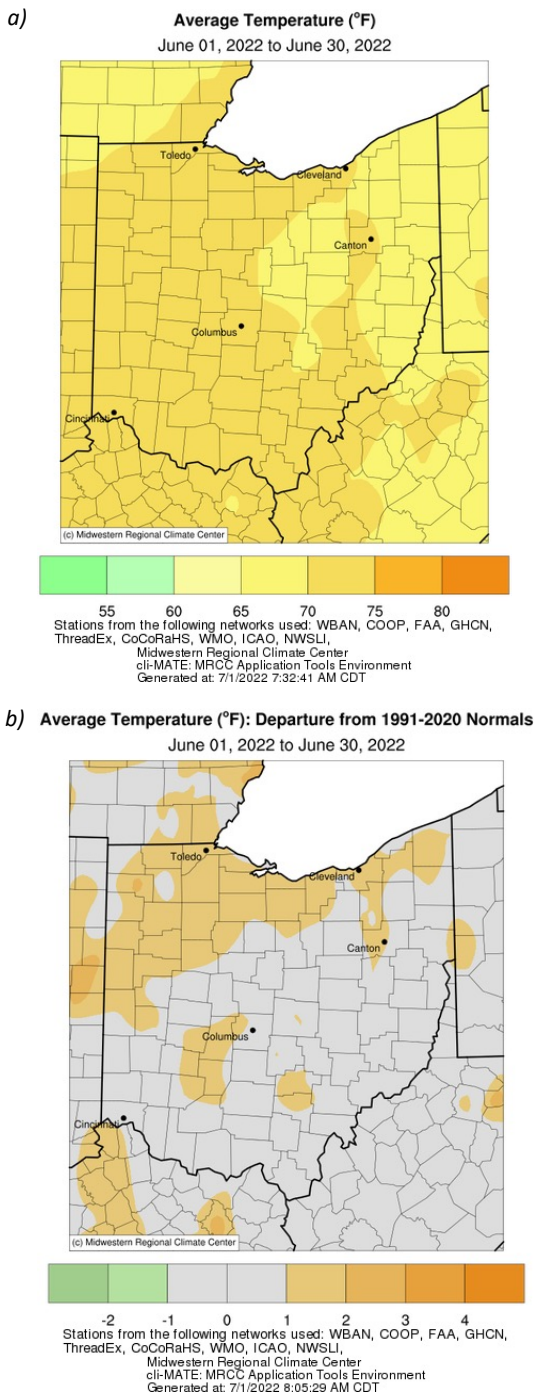


Figure 1a) Average temperature and 1b) Departures from Normal for the month of June 2022. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

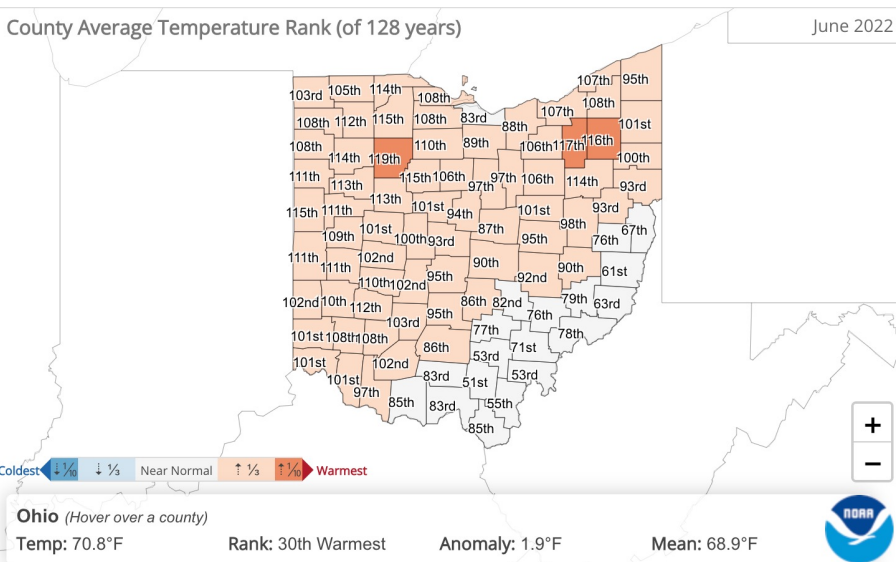


Figure 2). State of Ohio average temperature ranks by county for June 2022. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).



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Precipitation

Unlike prior months of the year, precipitation posed a hit and miss record for June. The month was divided into a wet start and dry finish, as an active pattern yielded to warm, quiet weather. Most rainfall was experienced in the south and east, where thunderstorms were able to develop more frequently due to system timing and available moisture. 4-8 inches of precipitation were experienced here for the month, whereas in the north and west, only 1-3 inches fell. (Fig. 3a) Localized areas in the far northeast and west central regions saw less than 2 inches, resulting in large negative departures from normal. (Fig. 3b) The month for many counties in these regions fell in the top 1/3rd driest compared to the 128-year record as a result. (Fig. 4) A significant outlier was Ashtabula County, which experienced its 10th driest June on record after averaging only 2.05" of precipitation.

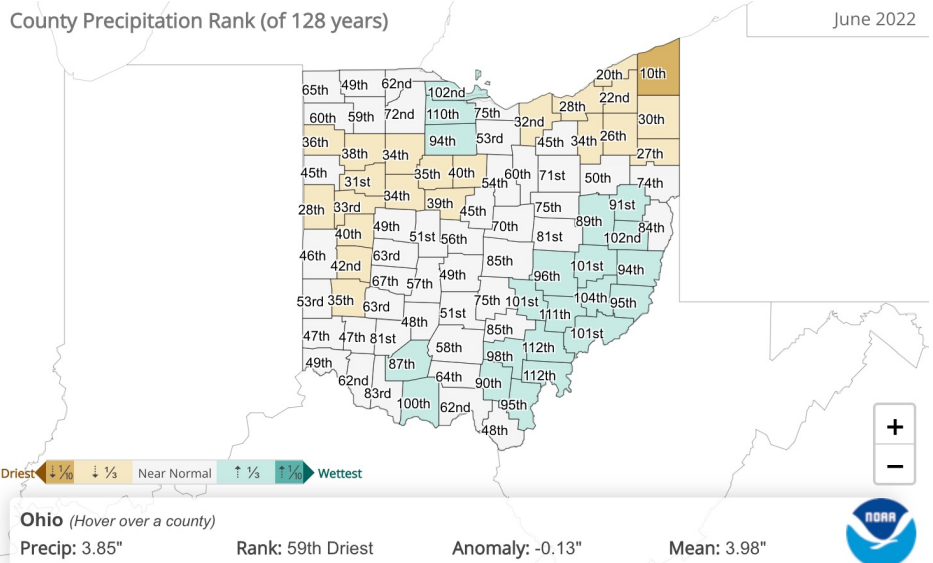
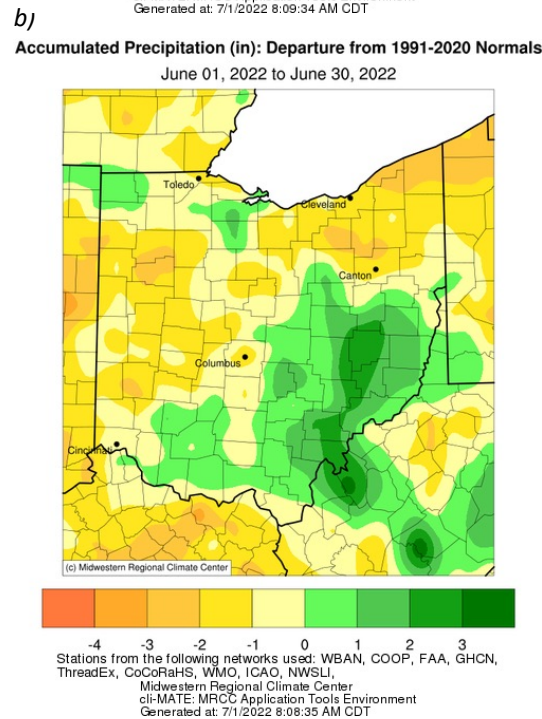
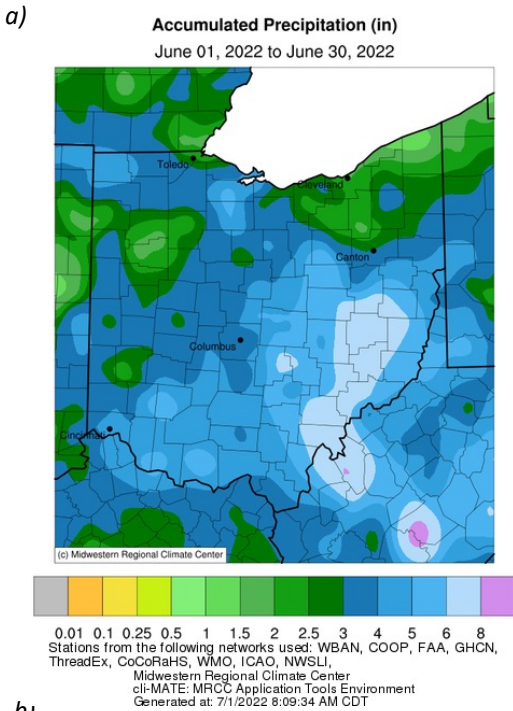


Figure 4). State of Ohio precipitation ranks by county for June 2022. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).

Figure 3a) Accumulated precipitation and 3b) Departures from Normal for the month of June 2022. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).



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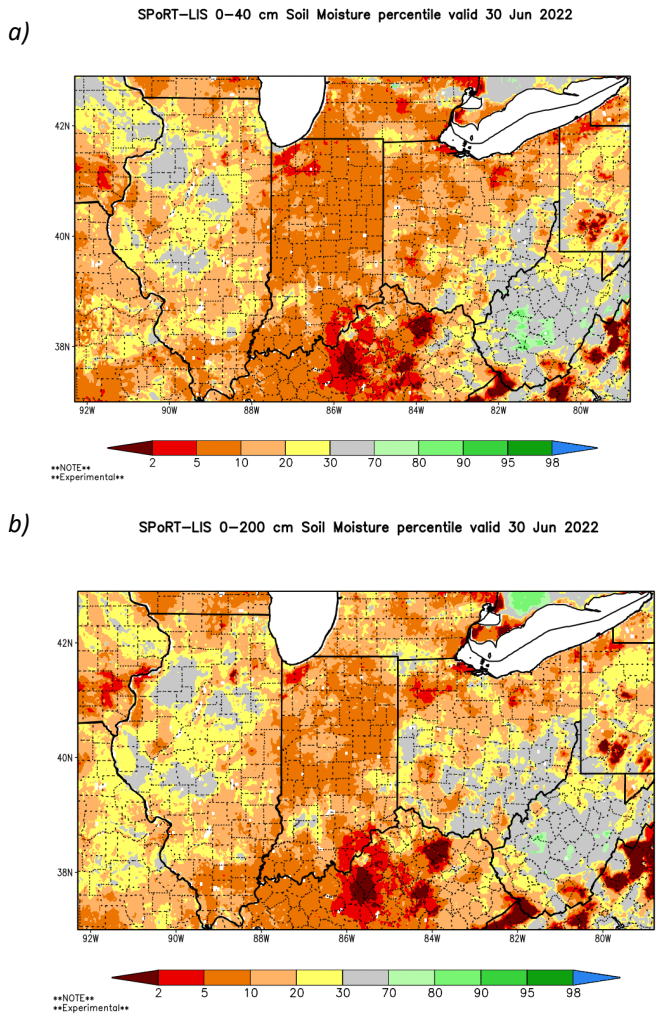


Figure 5a: 0-40 cm and 5b: 0-200 cm soil moisture percentile across the region at the end of June. Courtesy of NASA SPoRTLIS (https://weather.msfc.nasa.gov/sport/case_studies/lis_IN.html).

Soil and Energy

The impact of a warmer and drier than average month is evident in both soil and energy sectors. NASA SPoRTLIS products at the end of June indicate drier than average soil conditions in many areas across north and west OH at both the 0-40cm (Fig. 5a) and 0-200cm (Fig. 5b) metrics. Minor lawn and agricultural stresses have occurred as a result of these persistently dry conditions, but as of this writing, an increase in rainfall has helped to subdue some of these issues. A few areas of near-average soil moisture percentiles exist in southeast and south central OH where rainfall has been more consistent, and impacts have been less evident there as a result.

The hot weather noted in mid-June led to a minor increase in Cooling Degree Days (CDDs), especially across the northern climate divisions as warmer than average temperatures required more effort to cool down facilities. As expected, Heating Degree Days (HDDs) were lower than average across the state due to these conditions. (Fig. 6)

Climate Division	Heating Degree Days	Normal	Departure	Cooling Degree Days	Normal	Departure
1	4	25	-21	201	179	21
2	6	28	-22	200	174	25
3	30	45	-16	143	125	18
4	2	20	-18	204	194	10
5	4	18	-14	191	193	-2
6	9	30	-21	175	155	20
7	14	28	-15	153	149	4
8	1	13	-12	213	211	3
9	5	13	-8	201	203	-2
10	7	20	-13	171	172	-1
Statewide	8	23	-16	186	178	9



Figure 6: (Left) June 2022 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

The month of June is typically Ohio’s climatological peak when it comes to severe weather. This month was no exception, with multiple severe weather events impacting different parts of the state. On June 8th, a tornado outbreak impacted southwest Ohio. Multiple thunderstorms produced six tornadoes, including two EF-2 tornadoes: one that impacted the Tipp City, OH area and another that moved through Hocking County. (Fig. 7)

A more widespread severe weather event impacted almost the entirety of the state on June 13-14th. A pair of “derechos”, large storm complexes that produce damaging winds over a long path, moved through Ohio the evening of June 13th and into the morning of June 14th. (Fig. 8) The first derecho impacted southwest Ohio, producing winds of up to 70mph around Cincinnati and along the Ohio River. The second complex impacted northwest and north central Ohio, causing widespread tree and power infrastructure damage. Parts of north central OH remained out of power for days afterwards, with temperatures in the upper 90°F range prolonging the outages and amplifying the impacts.

Ohio Severe Weather Reports: June 8, 2022

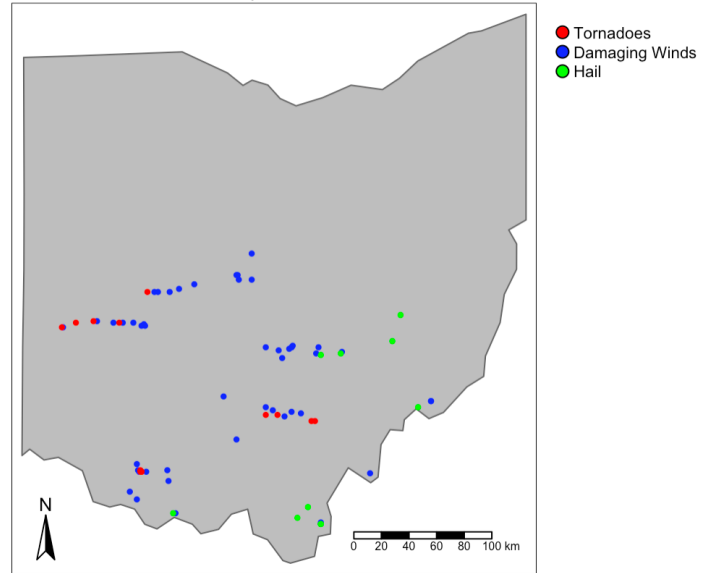


Figure 7: Statewide severe weather reports for June 8, 2022. Includes damaging winds, hail, and tornadoes. Data courtesy of National Weather Service Local Storm Report archive, accessed via Iowa Environmental Mesonet. (<https://mesonet.agron.iastate.edu/>)

Ohio Severe Weather Reports: June 13-14, 2022

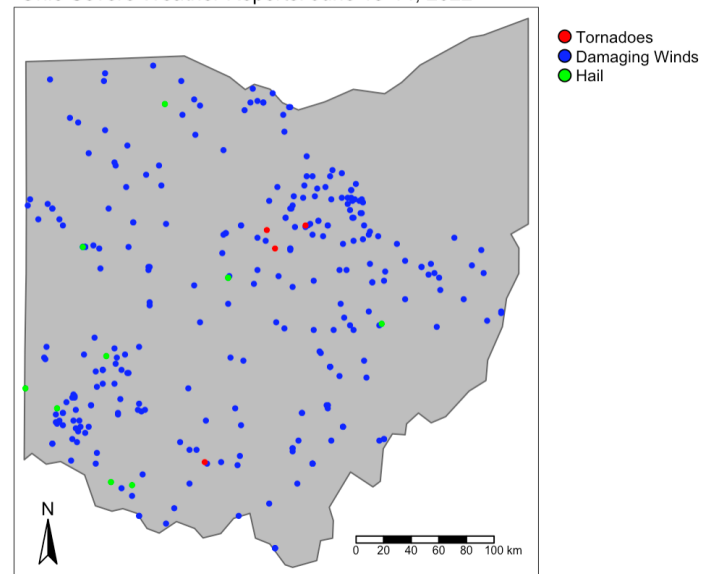
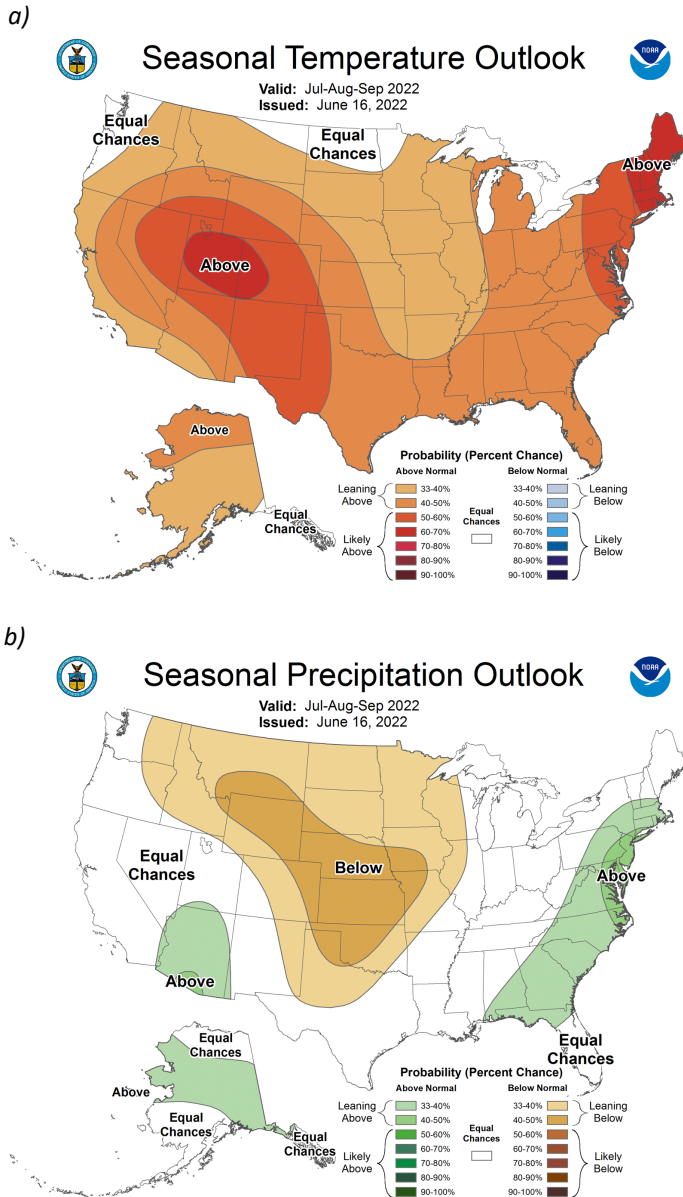


Figure 8: Statewide severe weather reports for June 13-14 2022. Includes damaging winds, hail, and tornadoes. Data courtesy of National Weather Service Local Storm Report archive, accessed via Iowa Environmental Mesonet. (<https://mesonet.agron.iastate.edu/>)

All data plotted in R Studio.



Forecast: Jul-Sept 2022



Looking Ahead

The 3-month outlook from the Climate Prediction Center remains similar compared to last month's edition. Probabilities continue to favor above average temperatures for the remainder of the summer months in the Great Lakes region. (Fig. 9a) Forecasts continue to suggest equal chances for either above average, below average, or normal amounts of precipitation across the region. (Fig. 9b) A large part of this "equal chance" forecast is due to the subtle nature of the disturbances moving through the region as of late, with some areas experiencing heavy rainfall and others not receiving much at all. As it stands, more widespread rainfall near the time of this writing has already occurred to help alleviate dry conditions, but with this type of pattern in place, it may not remain consistent through 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).

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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