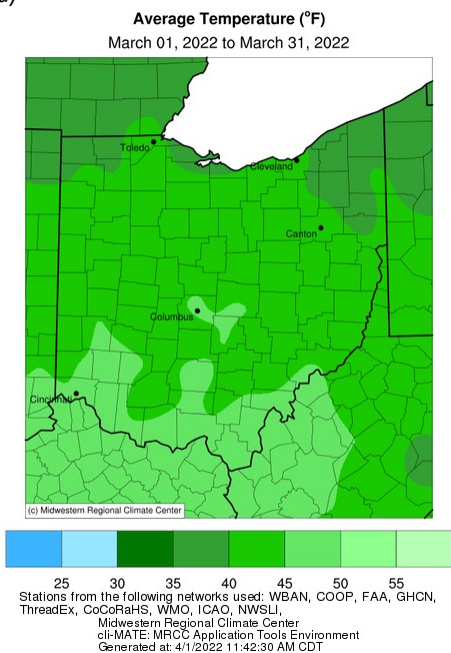
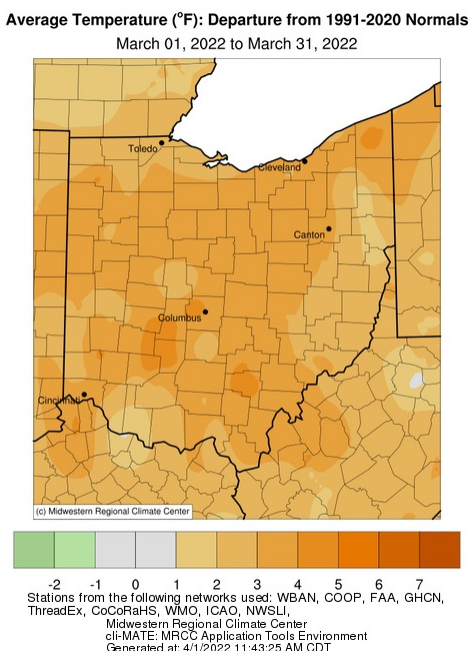


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a)



b)



Temperature

March carried on the trend of a persistently active and varied month in terms of weather. Temperatures broke into the 70°F range for the first time all year in many areas thanks to two stints of significantly warmer than average highs at the beginning and middle portions of the month. Though colder weather also made several appearances, these warm stretches were enough to create average temperatures generally in the 40-45°F range, with cooler pockets in the northwest and northeast and warmer areas in the far south. (Fig. 1a) These results were 2-5°F above average for the state compared to decadal normal (Fig. 1b), placing the month just outside the top 20 for March temperatures. (Fig. 2)

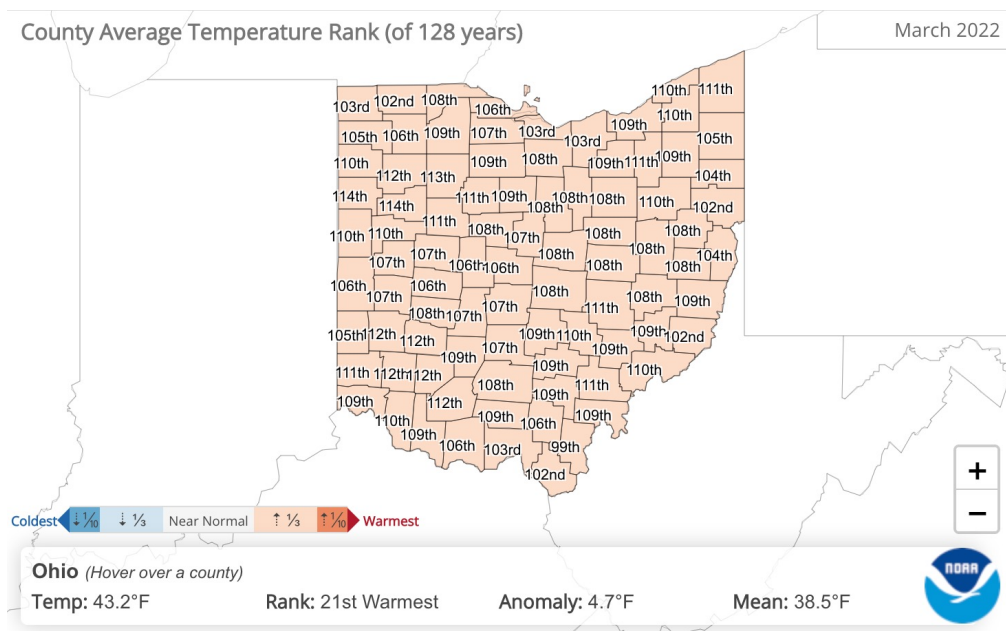
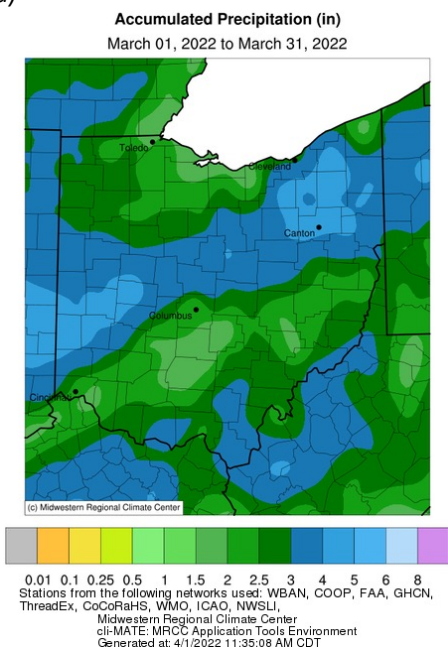


Figure 1a) Average temperature and 1b) Departures from Normal for the month of March 2022. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

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a)



b)

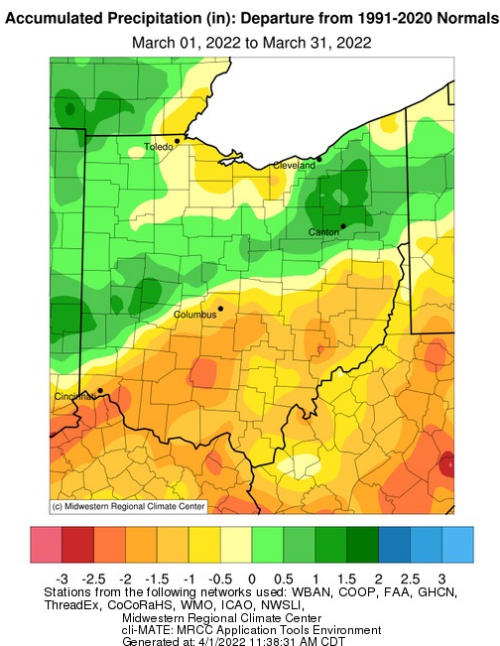


Figure 3a) Accumulated precipitation and 3b) Departures from Normal for the month of March 2022. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

Precipitation

After multiple soaking wet months in the winter, there was some relief from heavier rains over some of the state. However, precipitation was still prevalent thanks to almost weekly rounds of storm systems. The heaviest rain occurred along a crooked axis from southwest to northeast OH, where 3-5" of rain fell for the month. Drier areas in the northwest and south only saw 1.5-3" (Fig. 3a). This resulted in an interesting distribution of departures from normal, with wetter than average areas in the west and northeast versus drier than average regions dominating the south (Fig. 3b). Pickaway and Fayette counties notched a top 15 driest March on record, with multiple other southern counties ending up in the top 30. (Fig. 4) While this dryness in the south is notable, it may not necessarily be impactful just yet thanks to the winter's previous rains and future chances for precipitation.

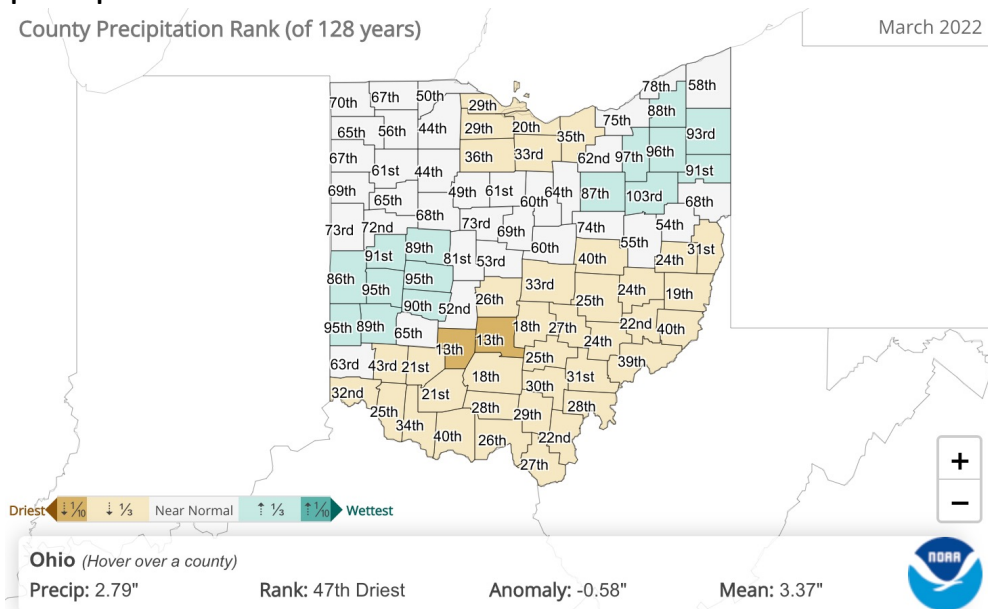


Figure 4). State of Ohio precipitation ranks by county for March 2022. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).

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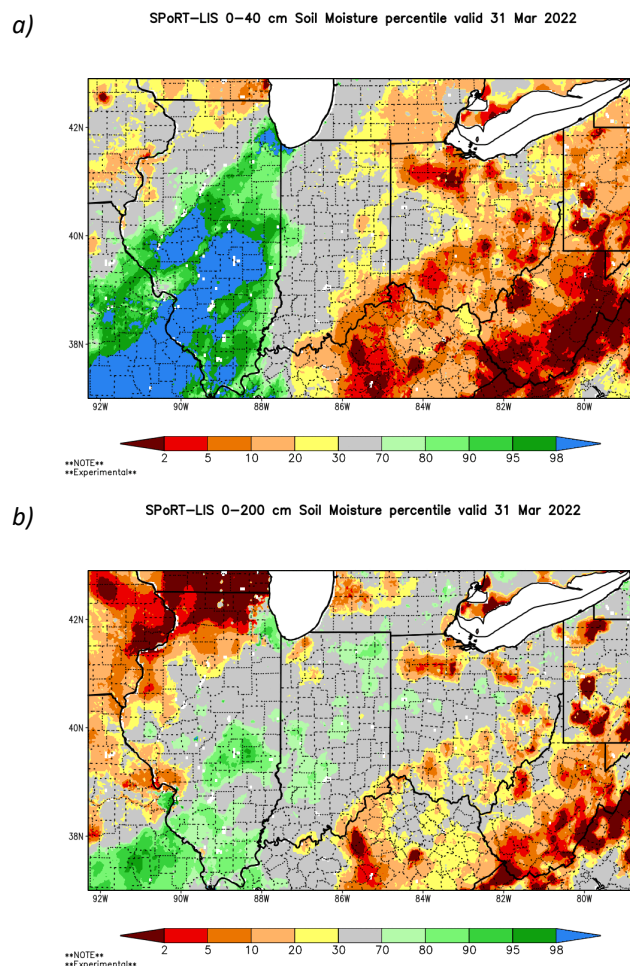


Figure 5a: 0-40 cm and 5b: 0-200 cm soil moisture percentile across the region at the end of March. Courtesy of NASA SPoRTLIS (https://weather.msfc.nasa.gov/sport/case_studies/lis_IN.html).

Soil and Energy

The patterns of precipitation seen in March had varied impacts on soil moisture. Areas that were quite saturated in Jan-Feb have now seen a dry out over the course of the past month. Conditions in the 10th-30th percentile are present throughout most of the state at the 0-40cm level. (Fig. 5a) The larger 0-200cm column, however, remains right around average (Fig. 5b). The driest regions exist in the northwest and south, but this early in the spring, impacts should not be significant for the reasons previously mentioned.

On the energy front, the warmer than average month again led to a lower number of heating degree days than normal. In fact, an average of 691 HDDs observed statewide lead to a departure of -102 HDDs compared to 1991-2020 norms. (Fig. 6) Despite the stints of warm weather, no cooling degree days were observed.

| Climate Division | Heating Degree Days | Normal (1991-2020) | Departure | Cooling Degree Days | Normal (1991-2020) | Departure |
|------------------|---------------------|--------------------|-----------|---------------------|--------------------|-----------|
| 1 | 754 | 856 | -102 | 0 | 1 | -1 |
| 2 | 727 | 851 | -124 | 0 | 1 | -1 |
| 3 | 775 | 892 | -116 | 0 | 0 | 0 |
| 4 | 690 | 796 | -107 | 0 | 1 | -1 |
| 5 | 673 | 770 | -98 | 0 | 1 | -1 |
| 6 | 709 | 829 | -119 | 0 | 1 | -1 |
| 7 | 717 | 815 | -98 | 0 | 1 | -1 |
| 8 | 639 | 727 | -89 | 0 | 2 | -2 |
| 9 | 607 | 693 | -85 | 0 | 1 | -1 |
| 10 | 655 | 749 | -94 | 0 | 1 | -1 |
| Statewide | 691 | 793 | -102 | 0 | 1 | -1 |



Figure 6: (Left) March 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

Despite March's warmth, Ohio was still not free from a late season snowfall. The source of this was a gain a southwest to northeast traveling low pressure system. On March 11th, this storm traversed the Ohio Valley, bringing snow that started in the afternoon before persisting overnight and into the morning of March 12th. Widespread light to moderate snowfall totals were observed, with 1-2" generally seen in central areas, 2-4" in the south and along the Ohio River, and 4-6" in the northeast (Fig. 7).

March was also notable for another reason: the beginning of "traditional" severe weather season in the region. With multiple storm systems bringing in warmer and more humid air, instances of severe thunderstorms began to grow and as a result, reports of damaging winds, large hail, and even a few tornadoes hit the news across many parts of the state (Fig. 8).

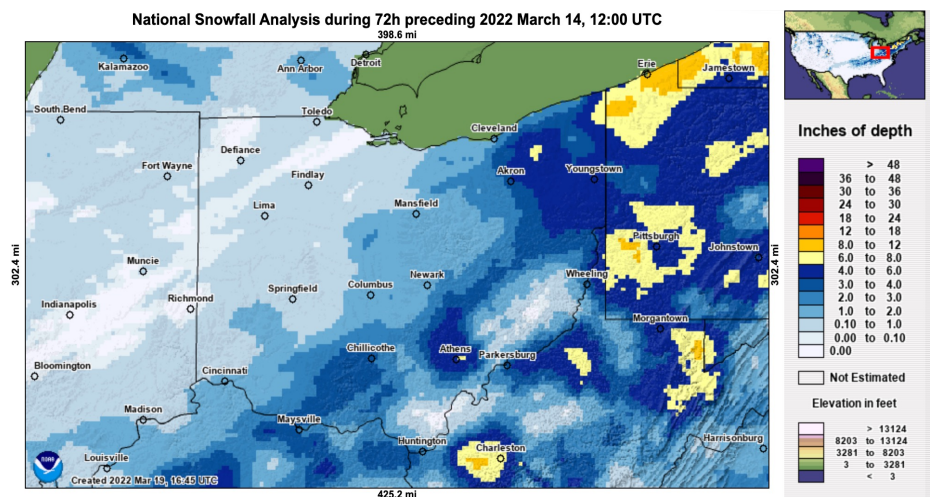


Figure 7: Statewide snowfall analysis for the 72-hour period preceding March 14, 2022. Courtesy of NOAA's National Operational Hydrologic Remote Sensing Center (NOHRSC) (<https://www.nohrsc.noaa.gov/nsa/>).

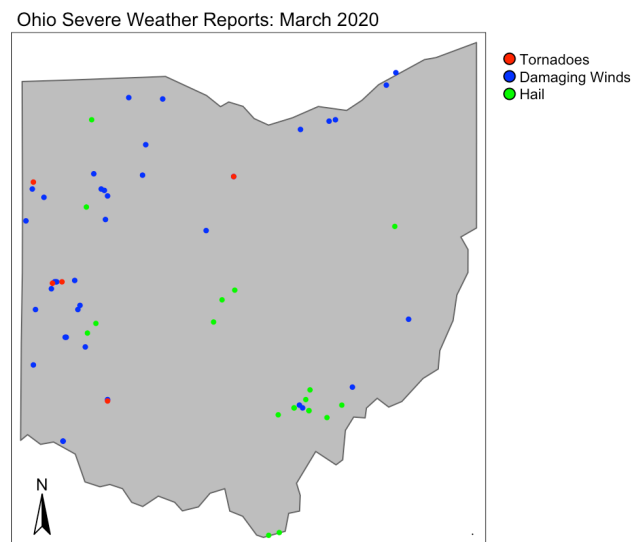
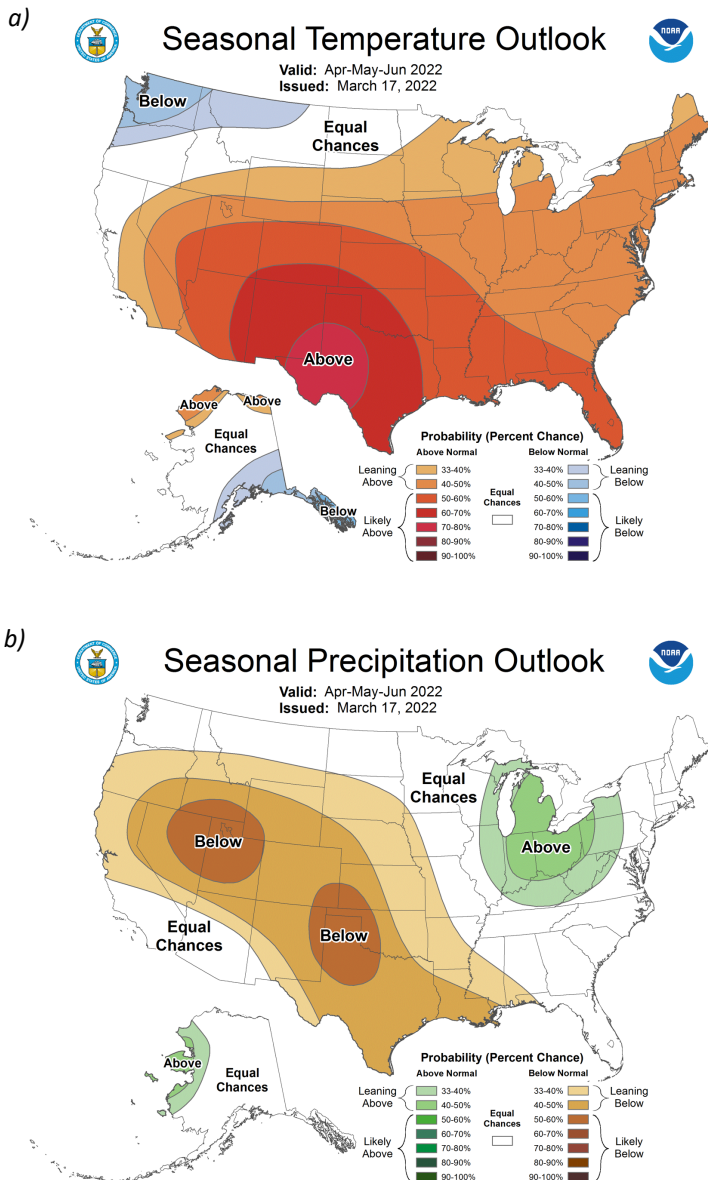


Figure 8: Statewide severe weather reports for March 2022. Includes damaging winds, hail, and tornadoes. Data courtesy of National Weather Service Local Storm Report archive, accessed via Iowa Environmental Mesonet. (<https://mesonet.agron.iastate.edu/>)

Data plotted in R Studio.

Forecast: April-June 2022



Looking Ahead

The three-month outlook produced by the Climate Prediction Center remains on track for the coming period. Chances for warmer than average temperatures across the region persist heading into April and beyond. (Fig. 9a) In tandem with this, a signal for more of the same active and stormy pattern in the Great Lakes region continues, resulting in continued chances for above average precipitation. (Fig. 9b) Continued stormy periods will influence the temperature pattern some as well, with fluctuations between warm and cool temperatures likely to continue into the next month. An active pattern continuing into spring may also increase the potential of seeing more instances of severe weather in the region, though it is too uncertain to make a more specific forecast on that potential. 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 February-April 2022. Courtesy of the Climate Prediction Center (<https://www.cpc.ncep.noaa.gov/>).

Authors: Geddy R. Davis
Atmospheric Science Major
Undergrad Research Assistant –
Byrd Polar and Climate Research Center
The Ohio State University
davis.5694@osu.edu

Aaron B. Wilson
State Climate Office of Ohio
Byrd Polar and Climate Research Center
OSU Extension
The Ohio State University
wilson.1010@osu.edu