State of Ohio Monthly Climate Update

THE OHIO STATE UNIVERSITY

Review - February 2022

Issued: March 14th, 2022

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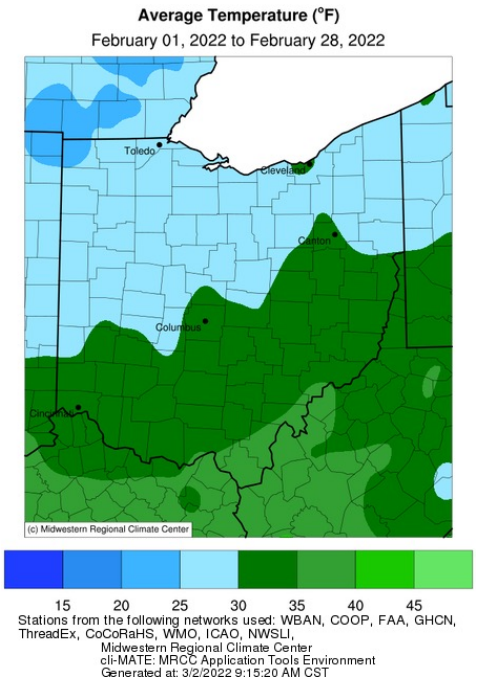

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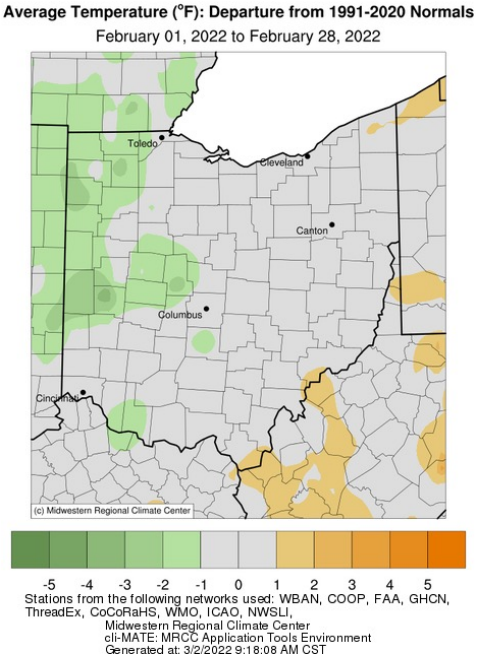

Figure 1a) Average temperature and 1b) Departures from Normal for the month of February 2022. Data courtesy of the Midwestern Regional Climate Center (http://mrcc.purdue.edu).

Temperature

February was an active and interesting month across the state of Ohio in all facets. Temperatures started out cold and winterlike before an active pattern increased variability. Many days saw 20-30°F temperature swings, as warmer conditions built in ahead of multiple storm systems before plunging below freezing after the active weather passed. This up and down temperature profile balanced itself out in the long-run. Monthly average temperatures ranged 25-30°F across the north and 30-35°F with warmer pockets across the south (Fig. 1a). Compared to 1991-2020 normals (Fig. 1b), most of the state reported near average temperatures, with the coldest differences across western counties. A few counties in the east reported above average temperatures and rankings (Fig. 2).

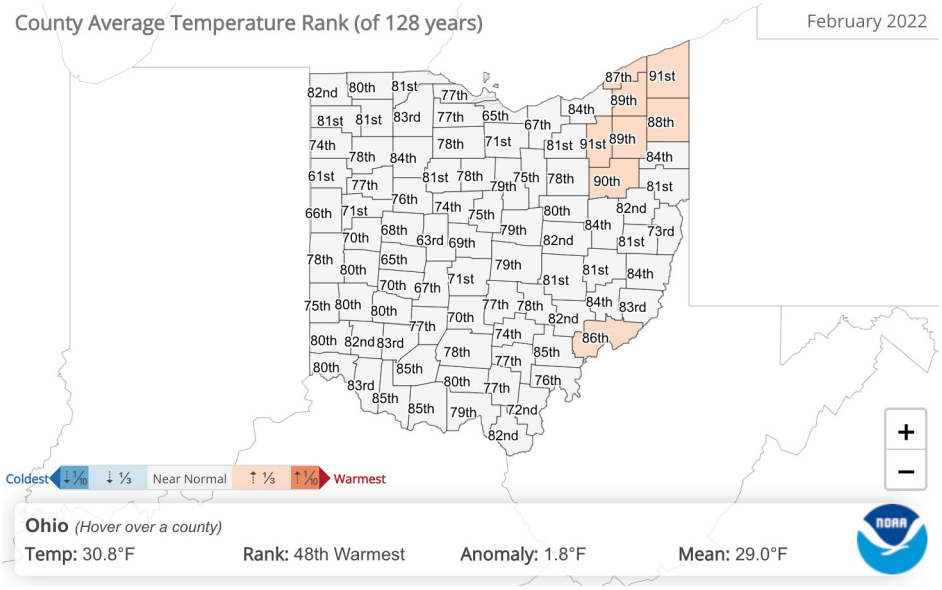

Figure 2). State of Ohio average temperature ranks by county for February 2022. Courtesy of the National Centers for Environmental Information (https://www.ncdc.noaa.gov/sotc/).

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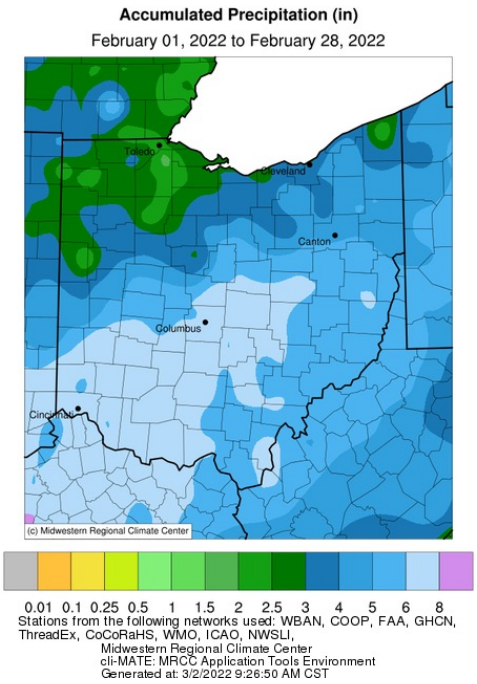

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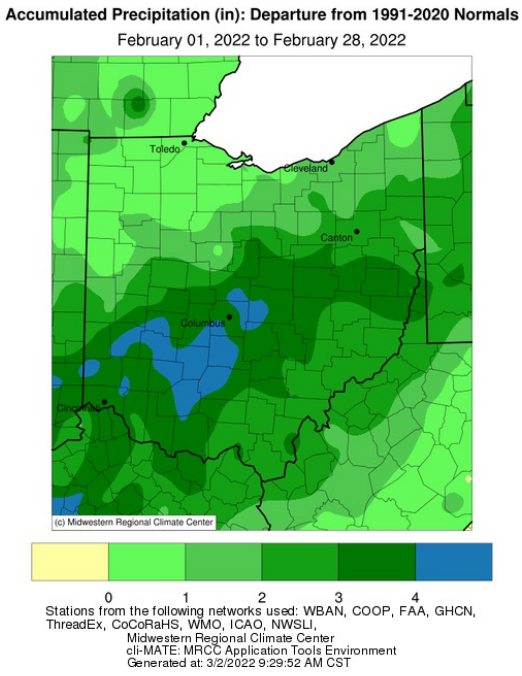

Figure 3a) Accumulated precipitation and 3b) Departures from Normal for the month of February 2022. Data courtesy of the Midwestern Regional Climate Center (http://mrcc.purdue.edu).

Precipitation

Forecasts for wetter than average precipitation for February delivered in full. The active weather pattern was present for most of the month, and central and southern Ohio took the brunt of multiple moisture-rich storm systems resulting in 5-8" of liquid-equivalent precipitation over the course of the period. Lighter amounts were observed in the northeast and northwest (Fig. 3a). The statewide precipitation for the month was well above the 1991-2020 long-term mean, coming in as the 6th wettest February on record (1895-present). The Cincinnati-Columbus corridor notably ran nearly 4" above average for the month (Fig. 3b). Six Ohio counties recorded their wettest February on record, with many others recording a top 5 precipitation ranking (Fig. 4).

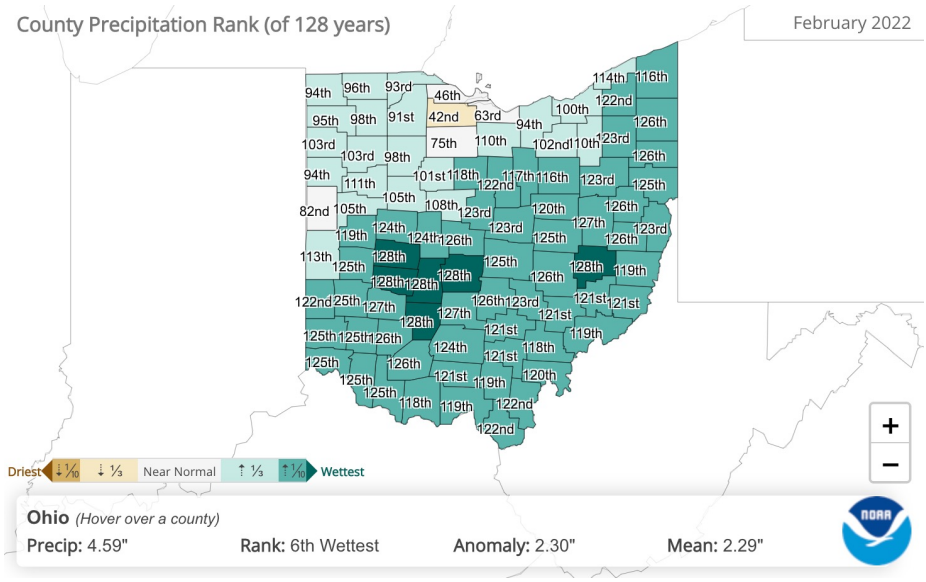

Figure 4). State of Ohio precipitation ranks by county for February 2022. Courtesy of the National Centers for Environmental Information (https://www.ncdc.noaa.gov/sotc/).

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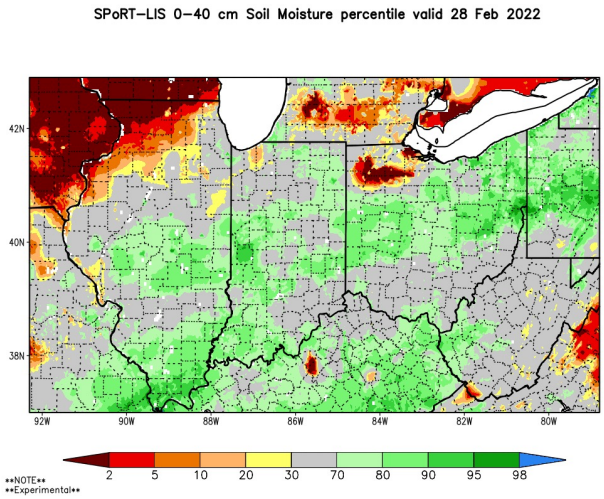

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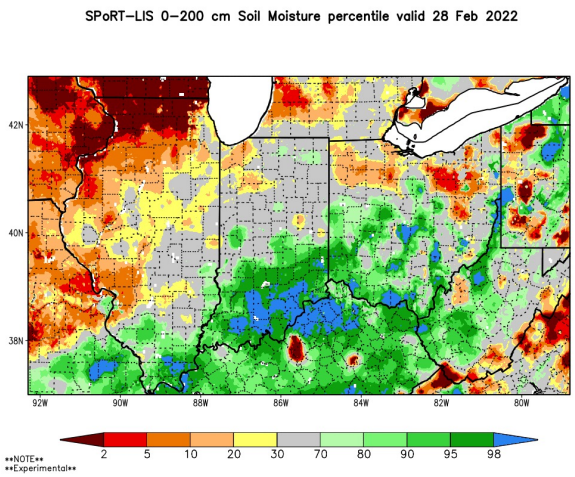

Figure 5a: Snapshot 0-40 cm and 5b: 0-200 cm soil moisture percentile across the region at the end of February. Courtesy of NASA SPoRTLIS (https://weather.msfc.nasa.gov/sport/case_studies/lis_IN.html).

Soil and Energy

Repeated rounds of moisture, combined with gradually warming temperatures, have led to some notable impacts on soil. What was once majority frozen ground at the end of last month has slowly thawed. This allows the ground to absorb more moisture, and there has been plenty to soak up as the repeated storms mentioned in the Precipitation section have moved through the region. NASA SPoRTLIS products reveal the depth of this saturated ground, with many areas in central and southern Ohio demonstrating conditions in the top 80-98 percentiles at both the 0-40cm (Fig. 5a) and 0-200cm metrics (Fig. 5b). On the energy front, despite active weather and challenging temperature swings, many of Ohio's climate divisions reported near normal numbers of Heating Degree Days (Fig. 6). Divisions 1, 4, 5, and 8 had the highest positive departures from normal, likely attributing to harsher impacts from colder air and more wintry precipitation compared to divisions in the eastern portion of the state.

Climate Division	Heating Degree Days	Normal (1991-2020)	Departure	Cooling Degree Days	Normal (1991-2020)	Departure
1	1062	1040	22	0	0	0
2	1018	1019	-1	0	0	0
3	1051	1041	11	0	0	0
4	1012	985	28	0	0	0
5	982	955	28	0	0	0
6	997	999	-2	0	0	0
7	971	973	-2	0	0	0
8	946	914	31	0	0	0
9	865	862	3	0	0	0
10	920	919	2	0	0	0
Statewide	980	967	13	0	0	0

Figure 6: (Left) February 2022 heating & cooling degree days. (Right) Corresponding Ohio Climate Divisions. Data courtesy of the Midwestern Regional Climate Center (http://purdue.mrcc.edu).

Notable Events

Unlike earlier months this winter, February had no shortage of impactful weather. All types of precipitation were seen across the state and provided their own set of unique impacts. The most disruptive of February's storms was a multi-day system that brought heavy rain, heavy snow, and mixed precipitation from February 2nd-4th. A strong cold front approached the state from the northwest, initially bringing rain before cold air filtered in and began changing precipitation to snow from NW to SE. This front then stalled in the OH Valley allowing moisture to stream into the region. The result was a prolonged swath of precipitation across the state, with heavy snow in the north/northwest, mixed precipitation and ice in central regions, and heavy rain in the southeast. Widespread 8-12 inch snow totals were observed in the north along with isolated higher amounts, while 3-5 inches of snow on top of mixed amounts of sleet and freezing rain were noted in central areas (Fig. 7). Two to four inches of rain fell in the far southeast, primarily along the river, with only small amounts of wintry precipitation falling as the front moved out of the area. (Fig. 8)

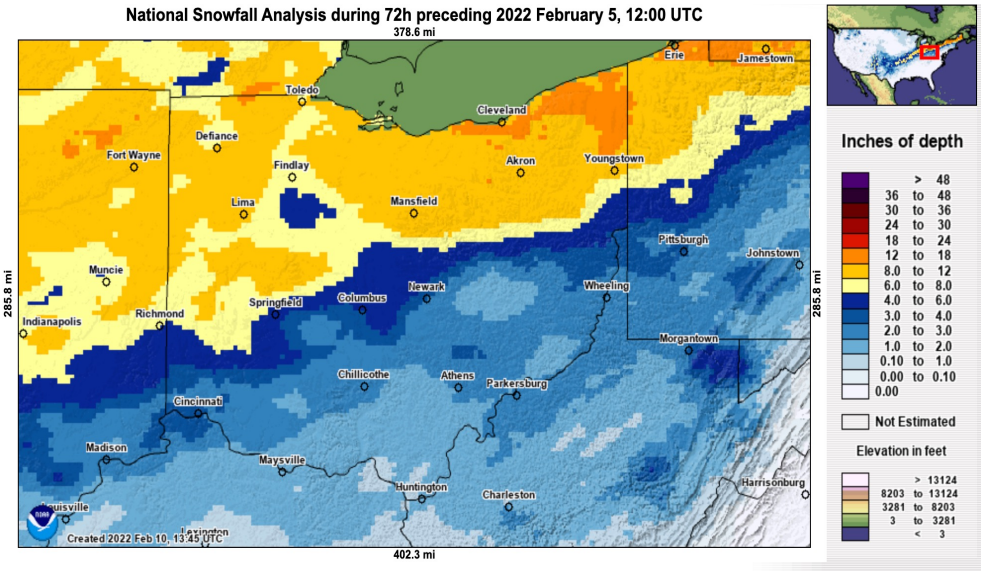

Figure 7: Statewide snowfall analysis for the 72-hour period preceding February 5, 2022. Courtesy of NOAA's National Operational Hydrologic Remote Sensing Center (NOHRSC) (https://www.nohrsc.noaa.gov/nsa/).

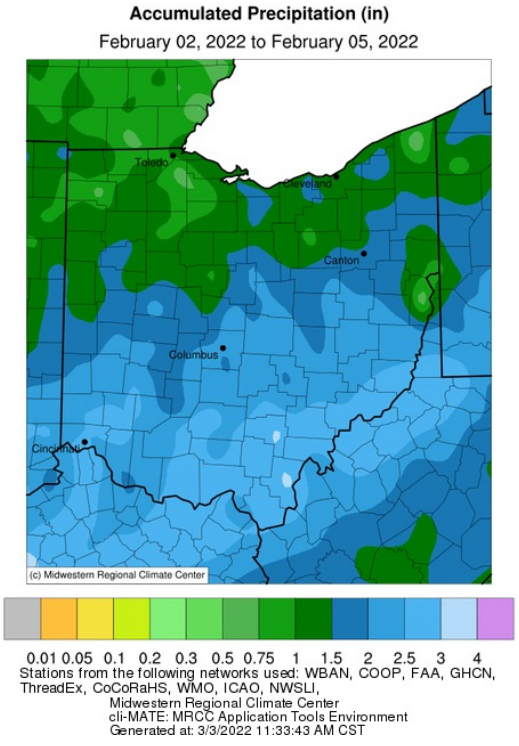

Figure 8: Statewide liquid-equivalent precipitation analysis for the 72-hour period between February 2-5, 2022, showing the disparity between the large amounts of snow received versus resulting liquid water. Courtesy of the Midwestern Regional Climate Center (https://mrcc.purdue.edu).

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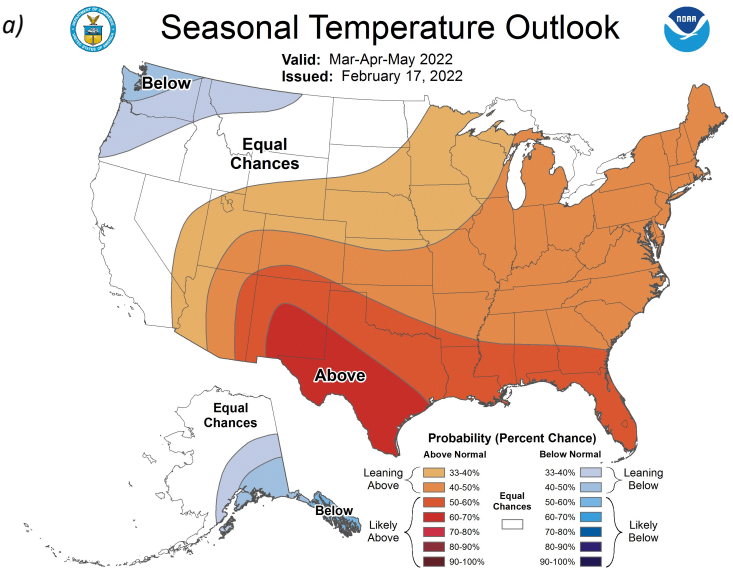

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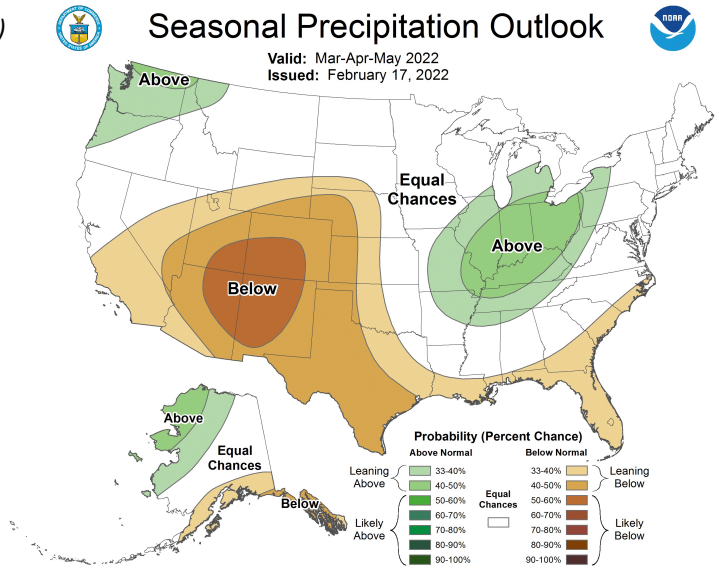

Figure 9a: Nationwide Seasonal Temperature and 9b: Precipitation Outlook for March-May 2022. Courtesy of the Climate Prediction Center (https://www.cpc.ncep.noaa.gov/).

Looking Ahead

With March comes a transition toward more spring-like weather, as temperatures begin to moderately increase with increasing daylight hours. Some notably warmer days have already occurred across the state, including a 70°F+ day on March 5th for many locations. Guidance from the Climate Prediction Center for the coming months suggests that warmer than average temperatures may continue to show up as we head toward deeper into the spring season along with above average precipitation (Fig. 9a). This signals that the stormy pattern experienced in February may continue into the coming months, and that all types of precipitation and sudden swings in temperature associated with storm systems remain at play (Fig. 9b). With most areas of Ohio now quite saturated from prior rain and snowstorms, some attention will need to be given to soil and flooding issues, especially in the near term. Note: these outlooks do not provide the quantity of above or below normal conditions just the likelihood of occurrence (i.e., the probability).

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