State of Ohio Quarterly Climate Summary

THE OHIO STATE UNIVERSITY

Winter Review (Dec-Feb)

Released: March 31, 2022

Temperature and Precipitation

Winter (Dec–Feb) 2021-2022 featured extreme variability with near to above average conditions compared to the 1991-2020 long-term mean (Fig. 1a). December-February brought wet conditions across Ohio thanks to an active weather pattern. The southeastern two-thirds of Ohio experienced above average precipitation as a result, with central and southern Ohio greatly impacted. Here, accumulated liquid-equivalent precipitation ran 3-6 inches above average (Fig. 1b) which was 125-150% above normal (Fig. 1c). This caused multiple instances of areal flooding, field flooding and erosion, and isolated areas of winter wheat crop damage. Percent of normal snowfall also ran higher than normal across southeast Ohio thanks to an impactful January snowstorm. Elsewhere, seasonal snowfall ran generally in the 50-100% of normal range (Fig. 1d).

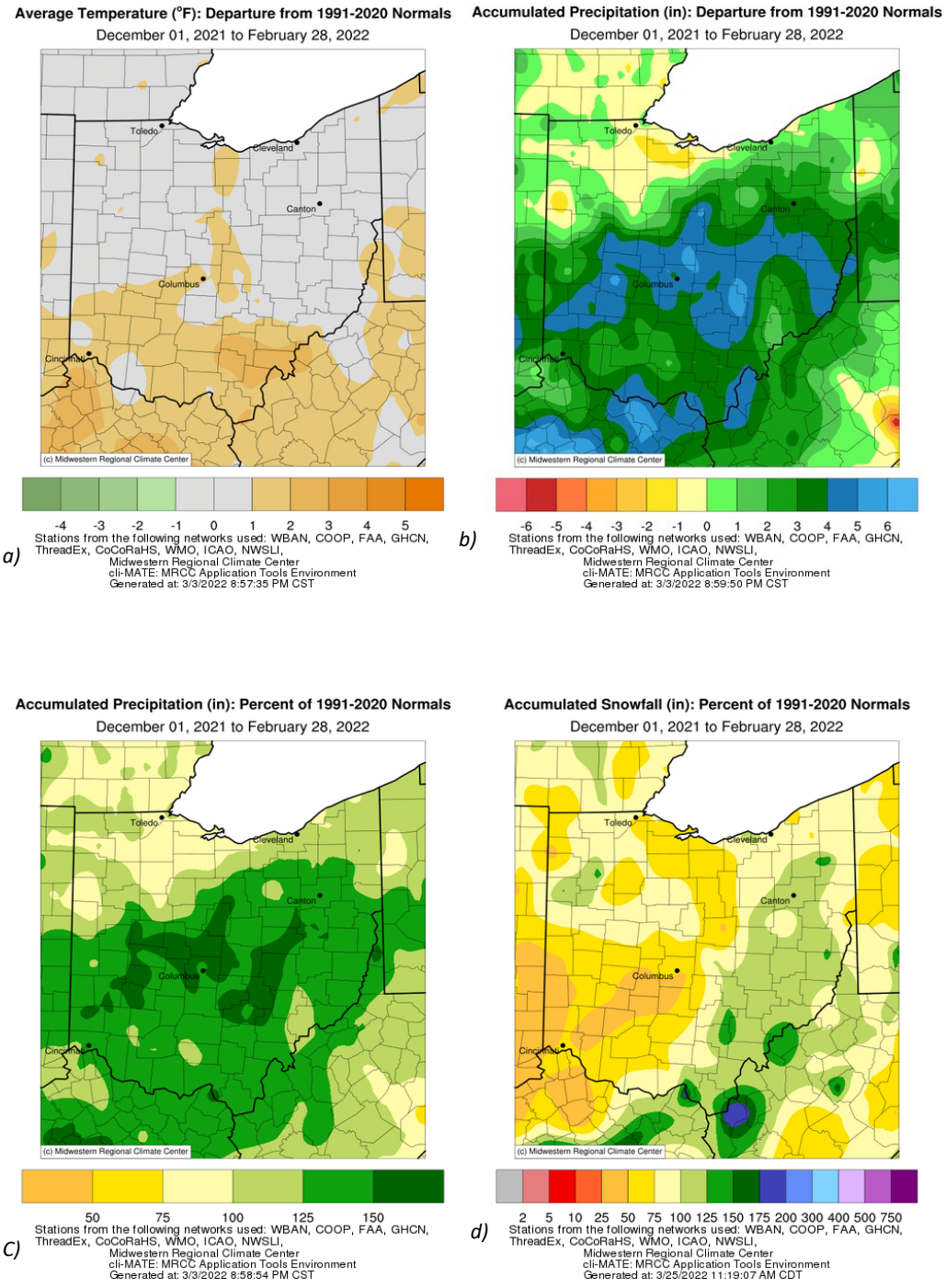


Figure 1: Statewide departures from normal temperature (a) and precipitation (b) over the winter months at top, followed by statewide percent normal of precipitation (c) and snowfall (d) at bottom. All data courtesy of the Midwestern Regional Climate Center (http://mrcc.purdue.edu).

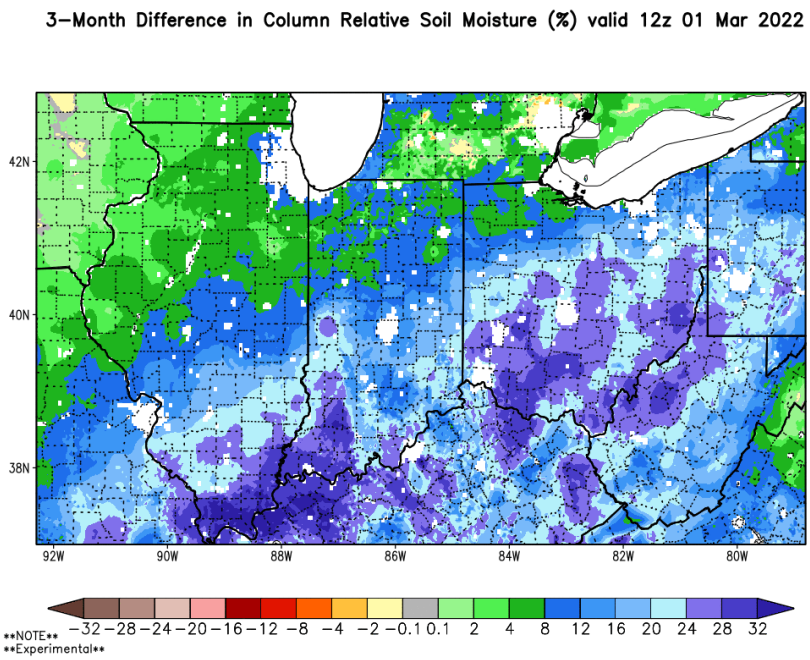


Figure 2: Three-month difference in column relative soil moisture across the region at the beginning of March. Courtesy of NASA SPoRTLIS (https://weather.msfc.nasa.gov/sport/case_studies/lis_IN.html).

Soil and Energy

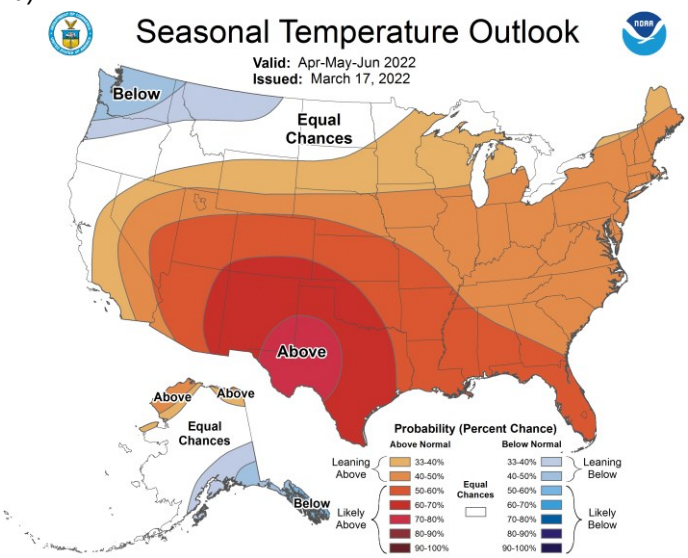
Winter weather had notable impacts on both soil and energy metrics across the state. Multiple moisture-rich storm systems resulted in saturated soils across the Ohio Valley. The three-month change in column-relative soil moisture increased by as much as 24-32%, especially across southwest and south-central Ohio (Fig. 2). This has led to plentiful runoff and above average stream flows across the state.

Despite a cooler January and February, the abnormally warm December led to below average heating degree days for the season. Figure 3 shows seasonal departures ranging from 60- to 100-degree days below average compared to normal (1991-2020).

Climate Division	Heating Degree Days	Normal (1991-2020)	Departure	Cooling Degree Days	Normal (1991-2020)	Departure
1	3277	3339	-61	0	0	0
2	3137	3251	-114	0	0	0
3	3240	3281	-41	0	0	0
4	3119	3192	-74	0	0	0
5	3047	3091	-43	0	0	0
6	3131	3206	-75	0	0	0
7	3052	3116	-64	0	0	0
8	2914	2985	-71	0	0	0
9	2722	2821	-99	0	0	0
10	2911	2978	-68	0	0	0
Statewide	3048	3117	-70	0	0	0

Figure 3: (Left) Total Dec 2021 - Feb 2022 heating & cooling degree days. (Right) Corresponding Ohio Climate Divisions . Data courtesy of the Midwestern Regional Climate Center (http://purdue.mrcc.edu).

a)



b)

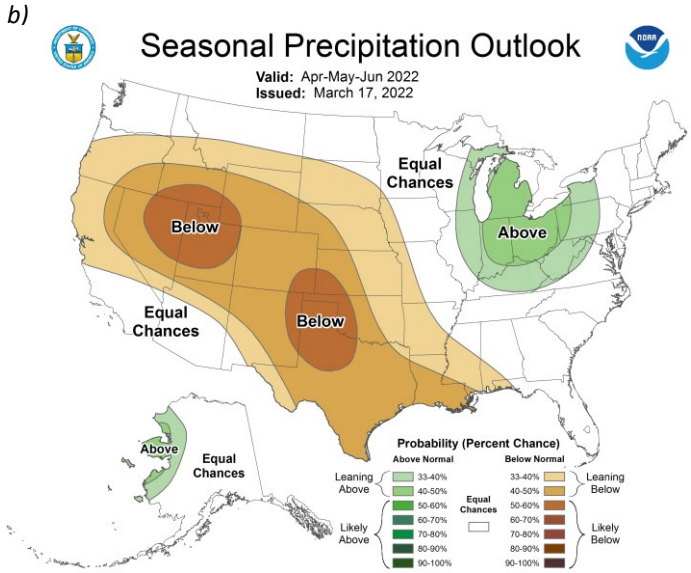


Figure 4: a) Nationwide Seasonal Temperature and b) Precipitation Outlook for April-June 2022. Courtesy of the Climate Prediction Center (https://www.cpc.ncep.noaa.gov/).

Looking Ahead

The most recent seasonal outlook from the Climate Prediction Center suggests more of the same for the state as we move through spring. Increased probabilities of above average temperature days remain in place for the next three months (Fig. 4a). However, increased chances for above average precipitation remain (Fig. 4b). This suggests a warm but stormy pattern may persist throughout the region. Given the wet conditions over the past couple of months, this bears watching as the agricultural community head into planting season and construction firms increase activity. A stormy pattern may also lead to impacts in the temperature outlook, as back-to-back storms often lead to noticeable large swings in temperature. Above average highs in the 70s may rapidly give way to highs in the 40-50°F range, for example, and lurking cold air masses behind stronger storms may impact early budding plants and trees through frost and freeze issues.

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