Temperature and Precipitation

The majority of Ohio experienced a warmer and wetter spring than normal apart from only a few small regions. Temperatures were around 3-6 °F above normal across the entire state with slight local variations (Fig. 1a). Three-month accumulated precipitation values indicate around 10-15 inches fell across Ohio with scattered pockets of 15-20 inches (Fig. 1b). Most of the state recorded 0-4 inches of precipitation above normal except for southwestern Ohio and the southeastern border. Additionally, a small pocket in the northwest of recorded 0-2 inches of precipitation below normal (Fig. 1c). In terms of percentages, the northwestern and eastern regions of Ohio saw 125-150% of normal precipitation, while the southwestern and southeastern regions had 75-100% of normal. Outside of these areas, the majority of the state was between 100-125% of normal (Fig. 1d).

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

The variation in departures from normal precipitation values is reflected in the quite varied values for the 3-month SPI. Most of Ohio had SPI values between -1 to 1 which indicated generally average soil conditions across most of the state (Fig. 2). Soil moisture from month to month was also varied due to strong storms that produced lots of precipitation in small areas. As a result, various localized areas, especially across northwestern Ohio, reported higher SPI values than the rest of the state.

Above-normal temperatures throughout the spring season resulted in fewer Heating-Degree Days (HDDs) than normal and more Cooling-Degree Days (CDDs) than normal. Moving into the summer months, the amount of Cooling Degree Days is likely to increase substantially, especially if the trend of warmer than average temperatures continues.
Notable Events
This spring was unique in Ohio due to the frequent occurrence of impactful tornadoes throughout the season. During the three-month period of March through May, Ohio experienced 44 tornadoes, including 14 EF0s, 24 EF1s, 7 EF2s, and 1 EF3. As a result of these tornadoes, 4 deaths, 69 recorded injuries, and widespread damage to homes, vehicles, and other property occurred (Fig. 4). This period is a sample of the very active tornado season that transpired throughout the first half of 2024, not only in Ohio but in much of the Midwest and Great Plains as well (Fig. 5). According to NOAA, tornado and severe weather outbreaks in the Midwest have accounted for five of the eleven billion-dollar disasters that have occurred so far this year, contributing to the major strain felt by state and federal emergency management organizations like FEMA in recent months.

For Ohio, this year’s tornado season is historic not only for its intensity, but also for the total number of tornadoes that have occurred. In early June, Ohio recorded it’s 62nd tornado of the year, tying the record set in 1992 according to NWS Wilmington. Although the main tornado season has already passed, Ohio is likely to surpass the record in the remaining half of 2024. While the causes for overall tornado frequency are not fully understood, influences from exceptionally warm water in the Gulf of Mexico as well as the recent transition away from El Niño are some of the likely culprits. As this historic year continues, it is important to remain weather aware, no matter the season.

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Figure 4: Image of the aftermath of the EF3 tornado that passed through Indian Lake in Logan County, Ohio on March 14, 2024, resulting in 3 deaths and 26 injuries. Image courtesy of the Columbus Dispatch (https://www.dispatch.com/story/news/local/2024/03/15/what-and-where-is-indian-lake-in-ohio-possible-tornado-hit-area/72984656007/).

Figure 5: Map of the departure from the average (2002-2024) number of tornado warnings in each state from March 1st to May 31st. Image courtesy of the Iowa Environmental Mesonet (https://mesonet.agron.iastate.edu/plotting/auto/).
Looking Ahead

The CPC’s three-month outlooks predict warmer than average temperatures for Ohio, though this is not the case for precipitation. Temperatures are forecast with marginal confidence to be warmer than average across Ohio, with a small increase in confidence around the eastern border of the state. The trend of warmer-than-average temperatures that was experienced in the winter and spring seasons will likely continue into summer, which may feature more significant heat-related impacts (Fig. 6a). Contrastingly the precipitation outlook depicts equal chances of below-average or above-average precipitation across Ohio (Fig. 6b). If especially warm conditions in the summer occur, the risk of heat stress will increase substantially. Also, extended periods of warmer-than-average temperatures in the absence of increased levels of precipitation may introduce further drought development, which would result in negative impacts on agriculture. These conditions can develop quickly, and the low temporal resolution of the three-month outlooks means that the overall magnitude and likelihood of these events can not be accurately predicted. As such, it is important to keep up to date with shorter-term forecasts.

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

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