

Ag-Climate Update

Office of the Kansas State Climatologist

March 2019

climate.k-state.edu

Sharp transition to Spring

Summary

March continued with a colder than normal trend that dominated the winter. State-wide average temperature for the month was 38.3 °F, 5.0 °F cooler than normal (Fig. 1). This ranks as the 23rd coldest on record, with the coldest average at 30.3 °F set in 1912. The North Central Division had the largest departure with an average of 33.6 °F, 5.9 degrees cooler than normal. The South Central Division came closest to normal with an average of 41.8 °F or 3.6 °F cooler than normal.

State-wide average precipitation for the month was 2.07 inches, 98% of normal (Fig. 1). The central divisions were the driest, but still ranged at 80% of normal or higher. Root zone soil moisture conditions continued wet across Kansas (see Fig. 3b). Monthly snowfall totals ranged from trace amounts in southeastern Kansas to 9 inches in Ford County.

Fig.1. Departures from normal temperature (°F) and precipitation (inches)

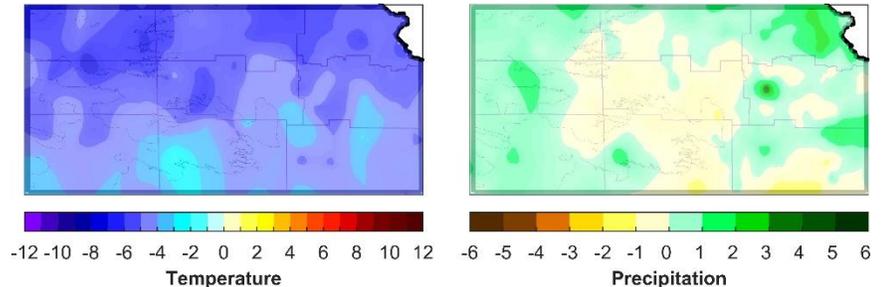


Fig. 2. Flooded wheat field in Central KS (G. Zhang)



Impacts

The cold, wet conditions have resulted in saturated fields even in the relatively dry regions (Fig. 2). These conditions have also had a negative impact on cattle, with higher feed demands, calving complications, and compaction of wheat pastures. Wet soils limited fertilizer applications for summer crops and wheat, and are delaying spring field work. Less GDD accumulation (Figs. 3a and 3b) is delaying crop development. Vegetation began to break dormancy towards the end of the month.

Fig. 3a. Planting-zone average accumulated Growing Degree Days (GDD) and precipitation (PRE) for winter wheat from planting date until Feb. 28 and their corresponding percentiles (base-period: 1981-2010). GDD is in °F and PRE is in inches.

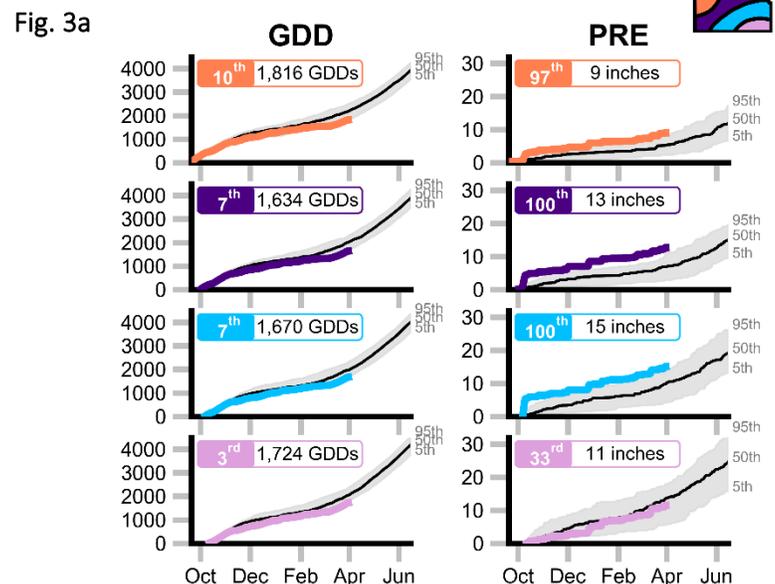


Fig. 3b. Spatial distribution of departures from normal GDDs for March and the root zone soil moisture percentile (from the GRACE satellite) as of Apr. 1.

Fig. 3b

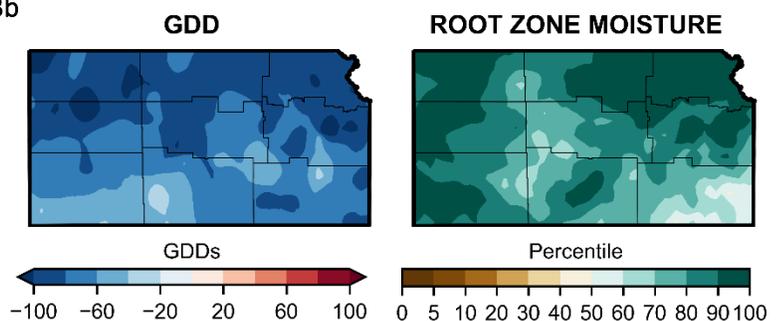
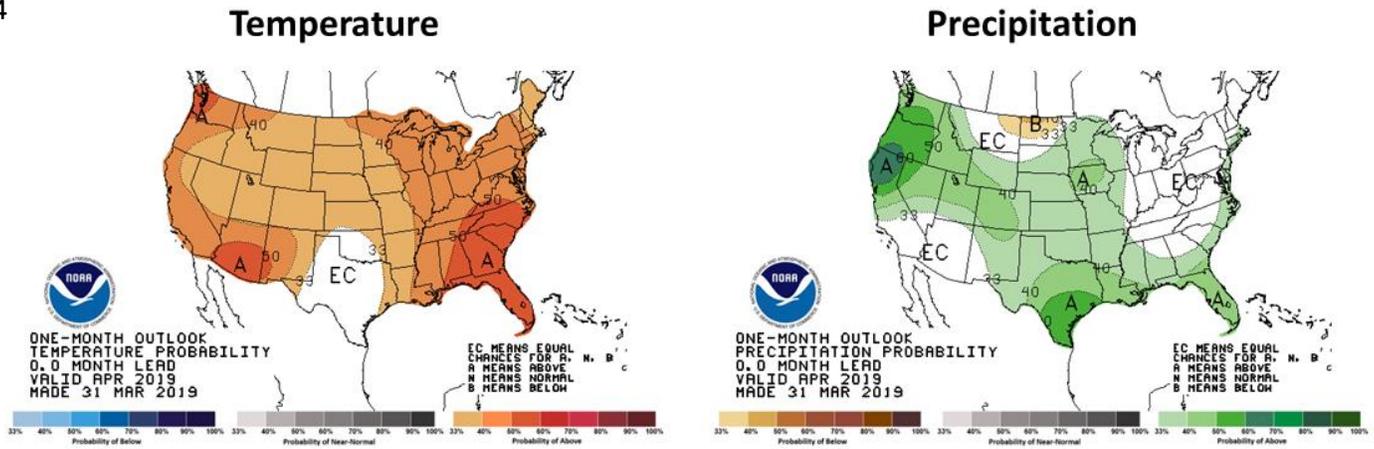


Fig. 4



CPC 1-month Outlook

The Climate Prediction Center (CPC) outlook for April favors a warmer-than-normal pattern across most of the state (Fig. 4). This warmer pattern stretches northward to the Canadian border. For Kansas, normal average temperatures range from 49.7 °F at Colby in the northwest to 57.0 °F at Columbus in the southeast. It is important to remember that this represents the average for April. Wide variations in temperatures are likely to continue, with significant cold temperatures still possible.

Currently, things are settling down. The weak-to-moderate El Niño is expected to increase precipitation throughout most of the US. The outlook for precipitation in April favors greater than normal precipitation across the Central Plains and westward (Fig. 4). Wetter-than-normal conditions are also expected in the Desert Southwest and Southern Plains, increasing confidence in the forecast. Atmospheric systems from the southwest tend to bring greater amounts of moisture than those that originate in the north. As we move into spring, the normal expected precipitation amount increases, with a sharp gradient increasing from the northwest to the southeast. Normal precipitation in Colby for April is 2.03 inches. For Columbus, the normal is 4.47 inches.

Highlights

When we examine the past month, we see a very slow start to spring. Vegetation has been slow to emerge from dormancy, but warm weather at the end of the month has been beneficial for the fall planted crops such as wheat and canola.

The big severe weather event for March was the "bomb cyclone" on March 13th. Winds increased dramatically late morning across western Kansas as the storm system strengthened in eastern Colorado. As the low shifted eastward into Kansas, the wind field expanded across the state. Strong winds continued through the duration of Wednesday and even strengthened into Thursday morning. Damage was reported to buildings, trees down across the state, and trucks were flipped as a result.

The only severe weather reports for the month of March were damaging winds associated with the March 13th storm. Minor to moderate flooding was also seen, though not to the degree that affected Nebraska, Iowa, and Northwest Missouri.

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March Extremes

Kansas Mesonet, operated by the Department of Agronomy at Kansas State University, observed the following extremes this March (<http://mesonet.k-state.edu/weather/historical/>):

Highest air temperature: 85.2°F on Mar. 28 at Richfield

Lowest air temperature: -14.7° F on Mar. 5 at Cheyenne

Highest 4-in soil temperature: 73.5°F on Mar. 14 at St John 1NW

Lowest 4-in soil temperature: 20.6°F on Mar. 6 at Clay

Highest 30-ft wind speed: 66.1 mph on Mar. 14 at Garden City