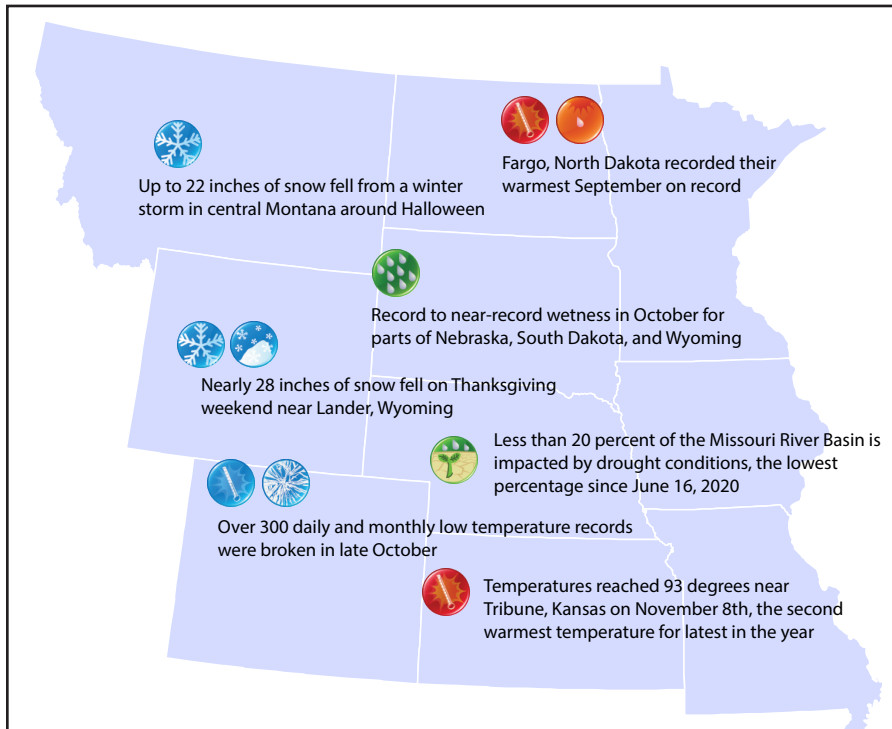




Regional – Significant Events for September - November 2023



Highlights for the Basin

Eastern Kansas was pummeled by a [snow storm](#) on Thanksgiving weekend. A number of cities like Wichita received more snow from this single event than all of [last winter](#). It was the largest November snowstorm for Wichita since 1906.

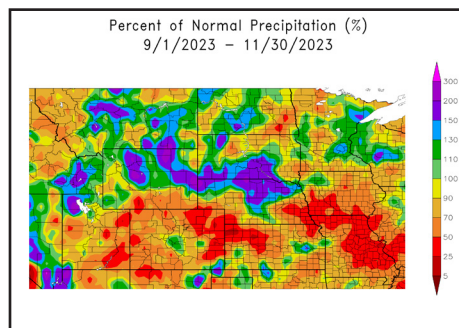
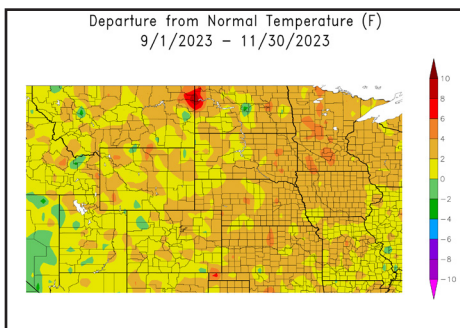
Very heavy rains fell across portions of Nebraska, Kansas, and South Dakota in October. Record monthly single-day rainfall fell on October 12th near Ewing, NE (7.39”) and the following day near Fairfax, SD (5.90”). On October 25th over 9” fell near Osage City, KS, but only [minor flooding](#) was reported due to very dry conditions.

Arctic air and gusty winds sent a shock through the Basin around Halloween. Subzero temperatures were recorded in the northern Basin, while single-digit lows reached all the way to Kansas.

Regional – Climate Overview for September - November 2023

Temperature and Precipitation Anomalies

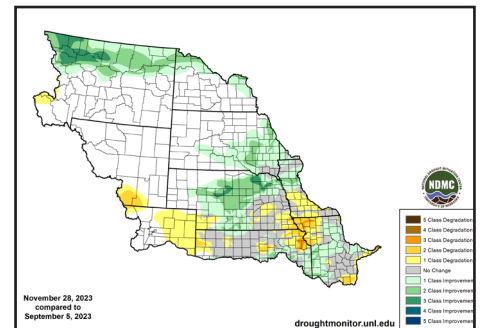
Departure from Normal Temperature (°F) (left) and Percent of Normal Precipitation (right) for Fall 2023



Changes in

Drought Conditions

September 5 - December 5, 2023



Warmer temperatures dominated the region, with cooler temperatures arriving for short periods at the end of October and November. Minimum temperatures were well above normal throughout the entire region this fall. Two heatwaves impacted the region on Labor Day weekend and the first week of October, breaking hundreds of records in the process.

After above-normal precipitation in September and October in parts of the basin, conditions dried out significantly in November. Multiple counties along the Nebraska and South Dakota border ranked in the top five wettest this fall due to the heavy rains in October. To the south, several counties in eastern Colorado and western Kansas ranked in the top five driest.

The map above shows the areas of increasing and decreasing drought. Green shading indicates where drought improved and yellow shading shows where conditions degraded over the fall. Drought conditions improved up to four categories this fall across northern Montana and North Dakota, while dryness intensified in northeastern Kansas and northwestern Missouri.



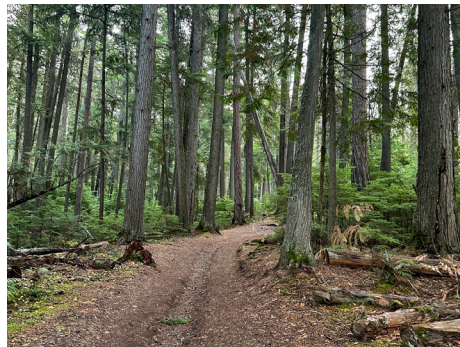
Regional – Impacts for September - November 2023

Agriculture

Warm and dry conditions led to optimal conditions for harvest. A hard freeze with record low temperatures at the end of October finally ended the growing season for most crops. The same conditions that were conducive to harvest were not ideal for winter wheat, with [32 percent rated poor to very poor in Kansas](#). Heavy precipitation in October greatly improved soil moisture in South Dakota and northern Wyoming. On the opposite end of the spectrum, the dryness that has plagued portions of Kansas, Missouri, and Nebraska this fall has left soils dry heading into the winter months.

Transportation

The winter storms on the weekends of Halloween and Thanksgiving greatly impacted travel conditions throughout the basin. Travel across Colorado was greatly hampered on October 29th after up to 10 inches of snow fell. Over [100 flights were canceled and over 700 delays](#) at Denver International Airport. Two people [died same day](#) due to traffic accidents along I-80 in Nebraska. Heavy snow on the 24th and 25th of November led to chaos for those traveling on the holiday weekend. [1500 flights were delayed](#) in Denver, while [hundreds of wrecks](#) were reported throughout the lower Missouri River basin.



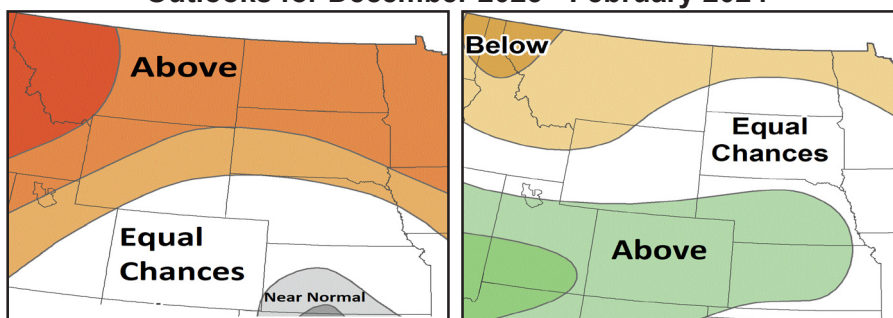
Above: People skating on a frozen lake in Montana (left), credit Michael Downey, Glacier National Park in Montana (center) and Snowfall in western Kansas (right), credit Gannon Rush

Regional – Outlook for December 23 - February 24

Temperature

Precipitation

Outlooks for December 2023 - February 2024



EC: Equal chances of above, near, or below normal

A: Above normal, B: Below normal

According to NOAA's Climate Prediction Center, the outlook for the upcoming season follows a typical El Niño pattern with warmer temperatures and below-normal precipitation favored across the northern Basin. Above-normal precipitation is slightly favored in Colorado, Kansas, and Nebraska, which would help replenish dry soils in those states. The rest of the Basin has equal chances of above, below, and near-normal precipitation.

The continued dry weather and potential for lack of snowfall can lead to an elevated risk of wildfires and impact wheat growth this winter. An [ENSO blog](#) from NOAA Climate details the impact that El Niño can have on snowfall this winter.

MO River Basin Partners

[High Plains Regional Climate Center](#)

[National Drought Mitigation Center](#)

[National Integrated Drought Information System](#)

[National Centers for Environmental Information](#)

[National Weather Service- Central Region](#)

[NOAA Climate Prediction Center](#)

[NWS Missouri Basin River Forecast Center](#)

[American Association of State Climatologists](#)

[U.S. Army Corps of Engineers](#)

[U.S. Bureau of Reclamation](#)

[USDA Northern Plains Climate Hub](#)

[Bureau of Indian Affairs – Great Plains Region](#)