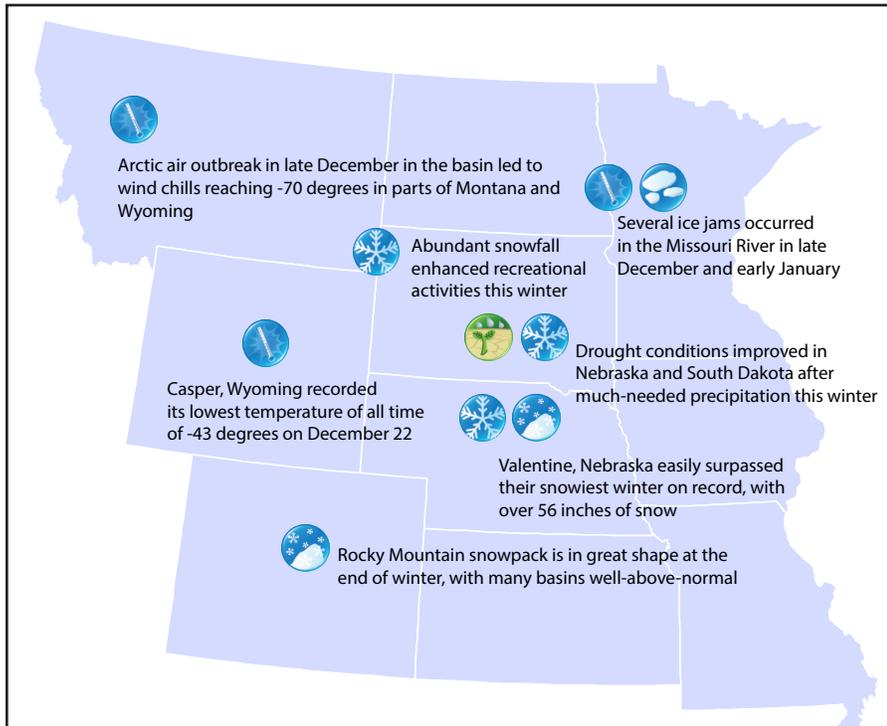




Regional – Significant Events for December 2022 - February 2023



Highlights for the Basin

A historic Arctic air outbreak in late December led to hundreds of daily and thirty all-time record cold temperatures. Strong and sustained winds were present, leading to dangerous and life-threatening wind chills. Tragically, at least 11 people are known to have perished from the cold temperatures and icy roads.

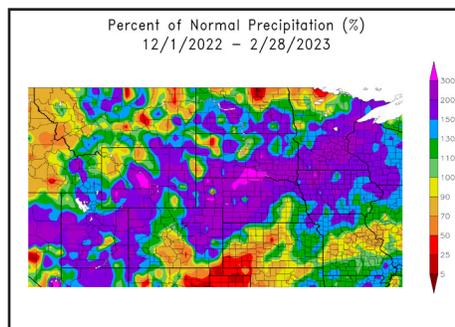
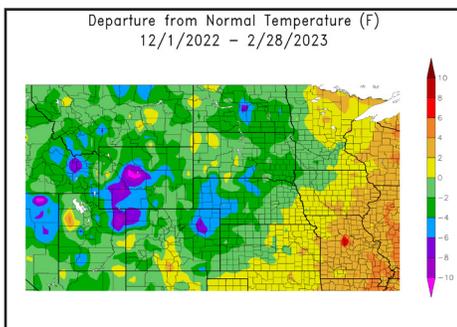
A series of storms traversed portions of the Missouri Basin States, leading to new records of snowiest winters in Nebraska, South Dakota, and Wyoming.

The Missouri River Basin recorded its 2nd wettest winter, a stark contrast to the 10th driest of the previous year. Drought conditions improved in some areas as a result.

Regional – Climate Overview for December 2022 - February 2023

Temperature and Precipitation Anomalies

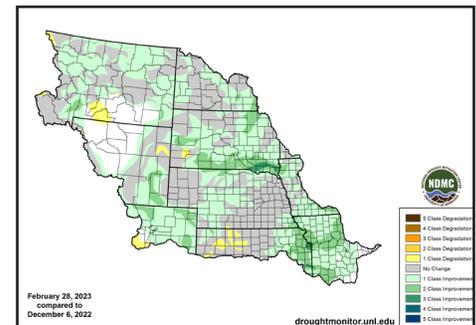
Departure from Normal Temperature (°F) (left) and Percent of Normal Precipitation (%) (right) for Winter 22-23



Changes in

Drought Conditions

Dec. 6, 2022 - Feb. 28, 2023



Temperatures were below normal for much of the region. Western Wyoming saw departures of 10 degrees below normal. December was unusually cold in Montana and North Dakota. Parts of western Colorado and Wyoming observed their coldest February on record.

Precipitation was well above-normal in the central portions of the basin, with record to near-record wetness. December and January brought multiple winter storms, leading to numerous snowfall and precipitation records broken in Nebraska and Wyoming. Both North and South Dakota recorded their wettest December on record. Southwestern Kansas continued to remain very dry, with well-below normal precipitation observed.

Improvements to drought conditions occurred across much of the basin in response to the above-normal precipitation, with the region observing a nearly 15 percent decrease in drought. According to the Drought Monitor, D4 was reduced by 11 percent in Nebraska this winter. The map above shows the areas of increasing (yellow) and decreasing (green) categories of drought.



Regional – Impacts for December 2022 - February 2023

Agriculture

The wetness this winter has been beneficial to soil moisture, however, conditions are still in poor shape and still need improvement in southwestern Kansas. Luckily, much of soils are not frozen completely allowing infiltration of melting snow and rain. There were reports of livestock loss due to the heavy snows and wildly fluctuating temperatures.



Transportation

Repeated snowstorms in the central basin greatly hampered conditions. Numerous large wrecks were reported due to slick conditions. Thousands were stranded along roads and in their homes as a result of the December storms and cold. Closed roads and widespread loss of power were also noted in many areas. The Oglala and Rosebud Sioux Tribes were greatly impacted.



Water Resources

Several ice jams formed in the Missouri River due to the rapid onset of cold temperatures. In late December, a significant blockage occurred, leading to record low river levels near Omaha. The reduced flows in the river impacted a nearby power plant, forcing it to be temporarily shut down.



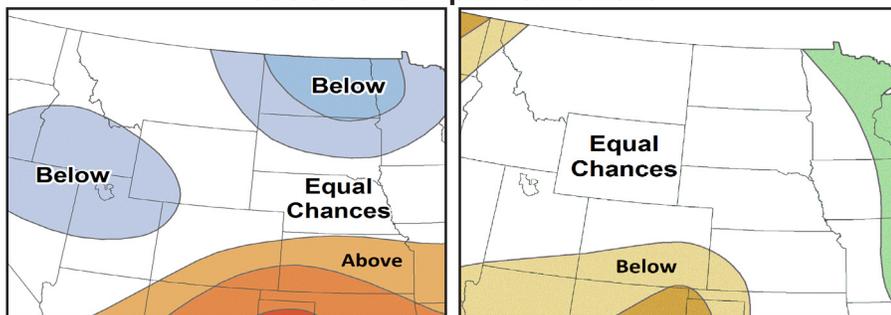
Above: Snowdrifts inside the Rosebud Reservation in South Dakota, credit Bert Shields (left); Road clearing outside of Mission, South Dakota, credit Bert Shields (center); Ice jam upstream of Omaha, Nebraska, credit Ryan J Larsen (right).

Regional – Outlook for April - June 2023

Temperature

Precipitation

Outlooks for April - June 2023



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 indicates increased chances of above-normal temperatures across Kansas and southeastern Colorado, while below-normal temperatures are favored in the Dakotas. Increased chances of below-normal precipitation are present in southern Colorado and drought-stricken southwestern Kansas. The rest of the Basin has equal chances of above, below, and near-normal precipitation.

La Nina influences have ended, and conditions will shift towards Neutral this spring. Based on the outlooks, drought conditions will improve across much of the basin. Areas favored for below-normal precipitation this spring will likely have persisting drought conditions.

MO River Basin Partners

High Plains Regional Climate Center
www.hprcc.unl.edu

National Drought Mitigation Center
<http://drought.unl.edu/>

National Integrated Drought Information System
<https://www.drought.gov/>

NOAA NCEI
www.ncdc.noaa.gov

NOAA NWS- Central Region
www.weather.gov/crh

NOAA NWS Climate Prediction Center
www.cpc.ncep.noaa.gov

NOAA NWS Missouri Basin River Forecast Center
www.weather.gov/mbrfc

American Association of State Climatologists
<https://www.stateclimate.org/>

U.S. Army Corps of Engineers
www.nwd-mr.usace.army.mil/rcc/

U.S. Bureau of Reclamation
<https://www.usbr.gov/>

USDA Natural Resources Conservation Service
www.nrcs.usda.gov

USDA Northern Plains Climate Hub
www.climatehubs.oce.usda.gov

Bureau of Indian Affairs – Great Plains Region
www.bia.gov/regional-offices/great-plains