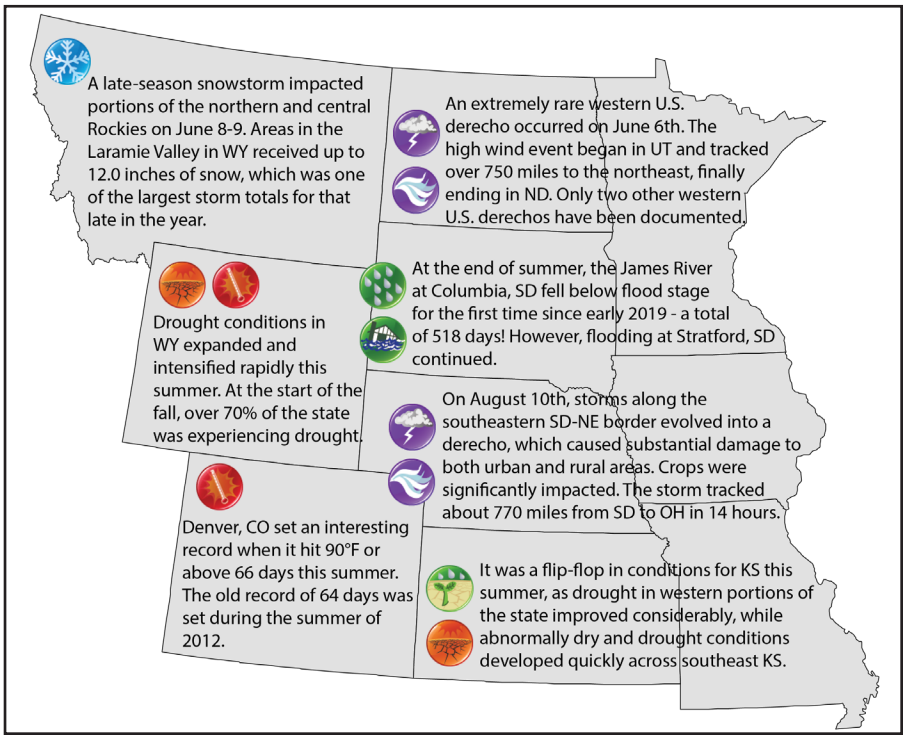
Quarterly Climate Impacts and Outlook

Missouri River Basin

September 2020

Regional – *Significant Events for June - August 2020*



Highlights for the Basin

Summer 2020 was one of the warmest on record for many states in the region, including CO (3rd), NE (9th), ND (10th), SD (11th), and WY (11th). It was also one of the driest summers for CO (7th), IA (14th), NE (16th), and WY (16th).

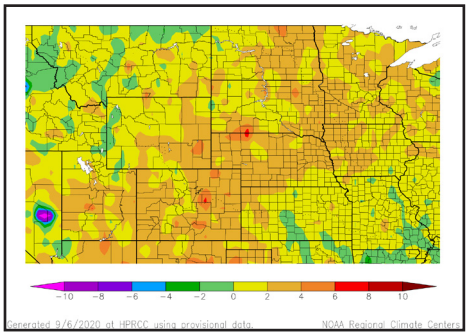
After a slow start to the severe weather season, this was the most active summer in at least 5 years for the Missouri Basin states, with over 4,000 tornado, wind, and hail reports. Year-to-date severe thunderstorm and tornado warnings, however, remained well below average.

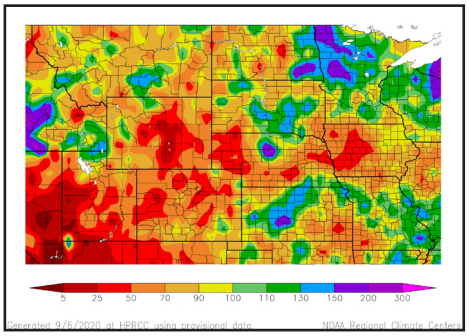
Over the past two years, excessive wetness and flooding has been a major issue for the region. This period of wetness has, for the most part, ended. The last widespread drought to impact the Missouri Basin was the Northern Plains drought of 2017.

Regional – *Climate Overview for June - August 2020*

Temperature and Precipitation Anomalies

Departure from Normal Temperature (°F) (left) and Percent of Normal Precipitation (right) for Summer 2020

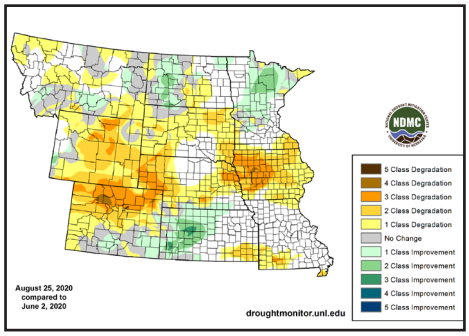




Overall, it was a warm and dry summer across the Missouri Basin states. July was the main exception, with widespread precipitation totals of at least 150% of normal across much of the eastern part of the region. In fact, Kansas and North Dakota both had a top 15 wettest July, ranking at 7th and 13th wettest, respectively. This precipitation did help improve drought conditions in some areas. These wet conditions did not last long, however, with August ranking among the warmest and driest on record for several states. For instance, Colorado had its warmest and 5th driest August on record, Wyoming had its 3rd warmest and 5th driest, Iowa had its 3rd driest, and Nebraska had its driest (period of record 1895-present). Interestingly, Nebraska's wettest August on record occurred just a year ago, in 2019.

Change in Drought Conditions

June 2 - August 25, 2020



Abnormally dry and drought conditions continued to develop and expand across portions of the region this summer. Several states had substantial increases in drought coverage, such as South Dakota (~29%), Colorado (~35%), Nebraska (~40%), Iowa (~61%), and Wyoming (~72%). Relatively few areas, like western Kansas and western North Dakota, had improvements.

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Regional – *Impacts for June - August 2020*

Fires

Several wildland and grassland fires impacted western areas of the region this summer, especially in Colorado. These fires forced evacuations, closed roads (including I-70), and impacted air quality. The Pine Gulch Fire, located north of Grand Junction, was triggered by lightning at the end of July. This fire grew to be Colorado's largest fire on record, with over 139,000 acres burned. This surpassed the Hayman Fire that burned in 2002.

Water Resources

According to the U.S. Army Corps of Engineers, drought conditions have impacted flows throughout the Basin. Reservoir inflows were much below average in the upper Missouri River Basin (above Sioux City), particularly in August. Releases from Gavins Point have also been adjusted upward to help meet navigation needs downstream. The 2020 runoff forecast as of Sept. 1 for the upper Basin was 30.6 MAF, which is 119% of average.

Agriculture

Drought has taken a toll on livestock, especially in western areas, where producers were hauling water and providing supplemental feed. Overall, crops were faring well, with record yields possible in Nebraska (soybeans) and South Dakota (corn and soybeans), according to the USDA. An early freeze at the start of fall may have impacted crops in certain areas, especially in North Dakota, where crop progress was slightly behind average.

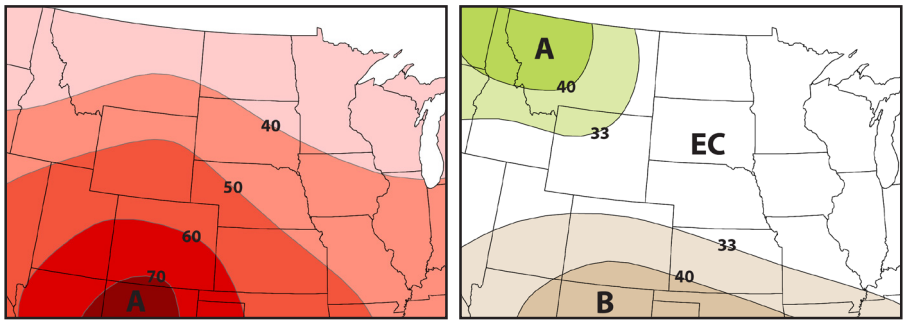
Above: Pine Gulch Fire in CO in mid-August, courtesy Chip Redmond, KSU Weather Data Library (left); Blue Mesa Reservoir in CO, courtesy Natalie Umphlett (center); Crop damage due to grasshoppers in MT, courtesy Anne Miller, Garfield County DES (right).

Regional – *Outlook for October - December 2020*

Temperature

Precipitation

Outlooks for October - December 2020



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

A: Above normal, B: Below normal

According to NOAA's Climate Prediction Center, La Niña conditions developed this summer and are likely to continue through winter. Through December, above-normal temperatures are favored across the entire region. The precipitation outlook is mixed, however, with the odds favoring above-normal precipitation in portions of the upper Basin and below-normal precipitation across the south. These conditions could impact drought, with improvements possible in areas of Montana and northern Wyoming and development likely across western and southern Kansas. While dry conditions could help with harvest activities, there could be impacts to winter wheat planting. It should be noted that conditions in early September have already impacted crop development and harvest in some areas due to untimely cold and snow.

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

USGS, Water Mission Area
www.usgs.gov/water

Western Governors' Association
http://westgov.org

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