12-2018

Umphlett QCI Dec 2018

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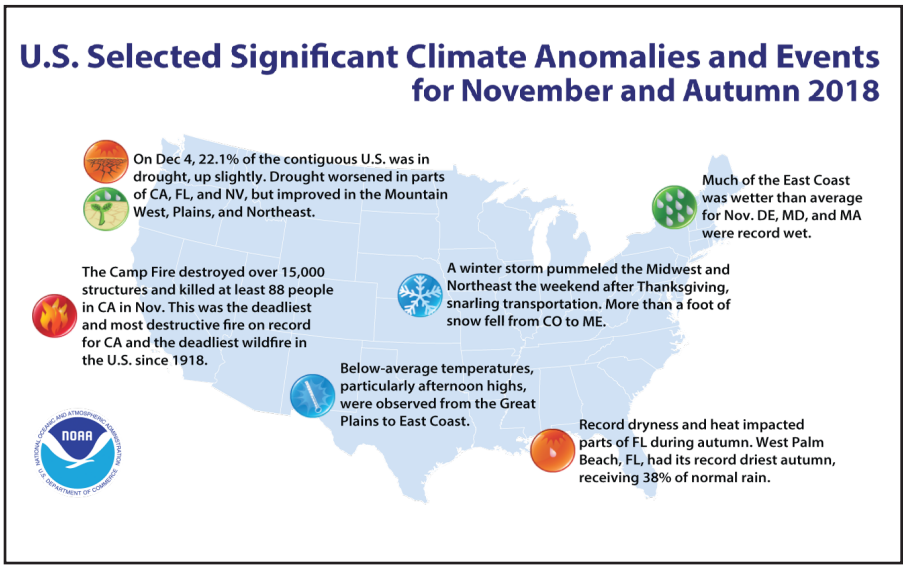
Quarterly Climate Impacts and Outlook

Missouri River Basin

December 2018

National – *Significant Events for September - November 2018*



The average U.S. temperature during November was 40.1°F, 1.6°F below average. The autumn average U.S. temperature was 53.8°F, 0.2°F below average. The November U.S. precipitation was 2.64 inches, 0.41 inch above average. The autumn U.S. precipitation was 9.61 inches, 2.73 inches above average, the second wettest on record. For more information, see: https://www.ncdc.noaa.gov/sotc.

Highlights for the Basin

Winter-like weather came early for the Missouri River Basin, with below-normal temperatures in October and November, and several early season snows.

Wichita, KS had its earliest snowfall on record with 0.7 inch on October 14th. This beat the previous record, set in 1996, by over a week.

A winter storm brought heavy snow and high winds to portions of IA, KS, MO, and NE the weekend after Thanksgiving, significantly impacting travel.

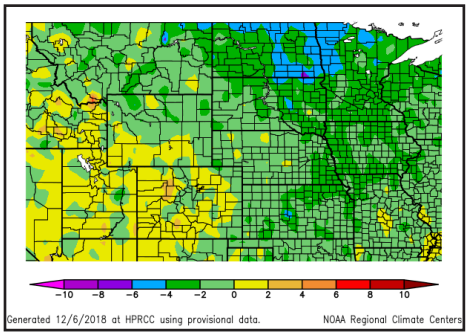
Persistent, heavy rains will cause 2018 to rank in the top 10 wettest years on record for several locations. Yankton 2 E, SD has already surpassed its old record!

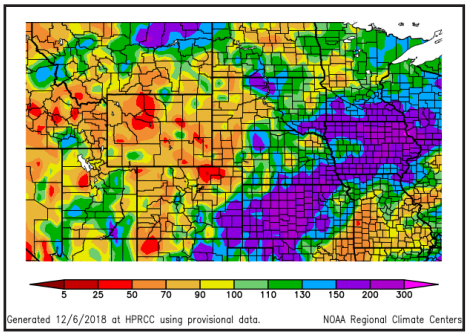
Drought continued in CO, which had its warmest and 2nd driest water year on record (Oct 2017-Sep 2018).

Regional – *Climate Overview for September - November 2018*

Temperature and Precipitation Anomalies

Departure from Normal Temperature (°F) (left) and Percent of Normal Precipitation (right) for Autumn 2018

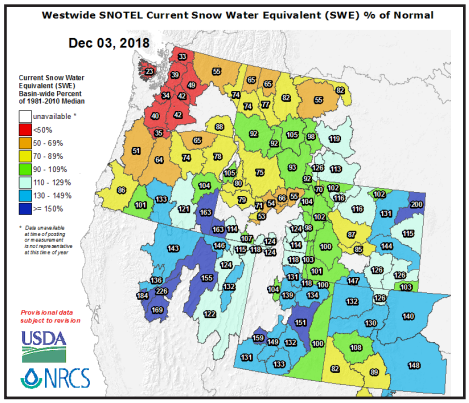




Overall, it was a cool autumn across the Missouri River Basin, with widespread temperature departures in the 2-6°F below-normal range. Daytime high temperatures were quite cool during this time period, with several states ranking in the top 15 coolest autumns on record, in terms of maximum temperature, including MO (9th), ND (9th), SD (10th), KS (11th), and NE (14th). While precipitation varied across the region, it was a particularly wet autumn for an area extending from eastern New Mexico through Wisconsin. October was the wettest month, with areas of eastern Colorado and central Kansas receiving over 300 percent of normal precipitation. This led to the 2nd wettest October and 7th wettest autumn on record for Kansas.

Mountain Snowpack

Snow Water Equivalent (SWE) as of Dec 3, 2018



The snow season started strong for areas of Colorado and Wyoming, with many basins reporting above-normal SWE at the beginning of December. The ample snowfall allowed several ski resorts in Colorado to open early for the first time in several years. How this early snowfall will impact drought conditions is yet to be determined.

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Regional – *Impacts for September - November 2018*

Water Resources and Drought

According to the U.S. Army Corps of Engineers, 2018's above-normal snowpack and heavy rains contributed to what is forecast to be the third highest runoff on record for the Upper Missouri River Basin. As winter sets in, flows on the Missouri will be reduced, but releases from Gavins Point Dam are forecast to be higher than average to finish evacuating all of 2018's stored flood waters. Meanwhile, drought conditions improved significantly this fall, with the lower Basin now drought-free. As of early winter, however, drought persisted across northern North Dakota, southern Wyoming, and the majority of Colorado. Drought over the past several years continues to impact the region, as a nationwide shortage of Christmas trees caused prices to surge. Some local farms had no mature trees for this season, due to recent droughts.

Agriculture

2018 was a successful year for producers nationally; however, cool and wet conditions caused some issues in the Basin. In parts of the Dakotas, fields were so wet that producers were waiting for soils to freeze in order to complete harvest. Wet conditions also significantly delayed winter wheat planting in Kansas and impacted cattle on feedlots in Kansas and Nebraska. Additionally, in Kansas, some soybeans and sorghum did not reach maturity before the first freeze.

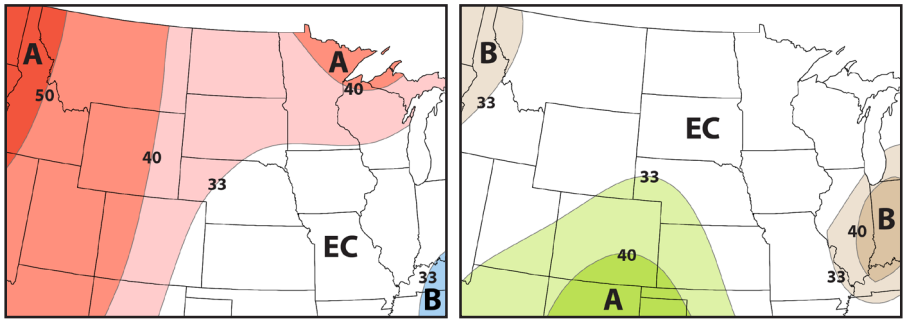
Above: Snow on trees in Lincoln, NE, photo courtesy Natalie Umphlett (left); Rime on a North Dakota Agricultural Weather Network station, photo courtesy Barb Mullins (middle); Snow on soybeans, east of Manhattan, KS, photo courtesy Chip Redmond (right).

Regional – *Outlook for January - March 2019*

Temperature

Precipitation

Outlooks for January - March 2019



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

A: Above normal, B: Below normal

According to NOAA's Climate Prediction Center, ENSO-neutral conditions continued this fall and early winter. El Niño conditions, however, are expected to develop later this winter and may continue into the spring. In general, above-normal temperatures are favored across northern and western portions of the region, while above-normal precipitation is favored across the Southern Rockies and central High Plains. Some areas to monitor over the winter include Kansas, Montana, Nebraska, and parts South Dakota and Wyoming, where wet soils were in place at the end of autumn. Depending on winter conditions, these wet soils could cause concerns for spring flooding or hinder planting efforts.

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.crh.noaa.gov/crh

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

NOAA NWS Missouri Basin River Forecast Center
www.crh.noaa.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