

National - Significant Events for December 2014 - February 2015

Highlights for the Basin

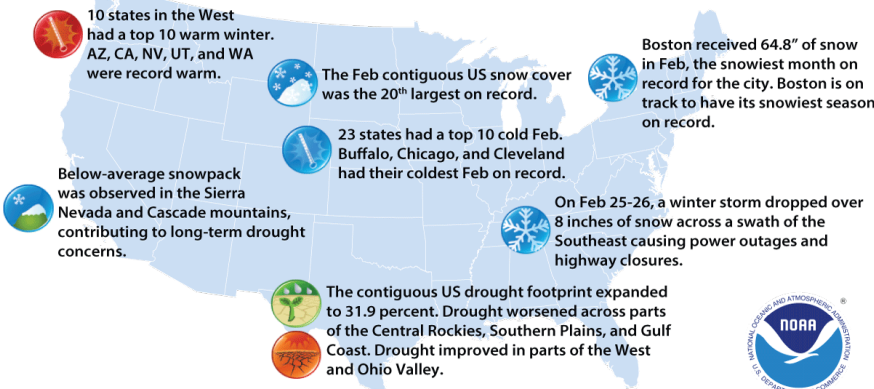
Extreme warmth occurred across the western U.S. this winter and western portions of the Missouri River Basin states were impacted. With records starting in 1895, Wyoming had its 9th warmest December, 9th warmest January, and 7th warmest February. Overall, it was Wyoming's 3rd warmest winter on record, Colorado's 8th warmest, and Montana's 12th warmest.

Several new records were set for highest January temperature ever recorded in Kansas, Nebraska, South Dakota, and Wyoming. With records going back to 1887, Topeka, Kansas set a new record with a high temperature of 78°F on the 28th.

Fargo, North Dakota set a new record for latest 1-inch snowfall. Although several lighter snows fell, the first 1-inch snowfall did not occur until February 10th. The previous record occurred January 27, 1944 (period of record 1885-2015).

February was a snowy month for parts of Colorado with some locations having their snowiest February on record. With 54.8 inches of snow, Boulder, Colorado broke its old record by over 20 inches! Boulder has snowfall records extending back to 1893.

U.S. Selected Significant Climate Anomalies and Events February and Winter 2015



The average US temperature during February was 33.0°F, 0.7°F below average. The winter US temperature was 34.3°F, 2.1°F above average. February US precipitation was 1.70 inches, 0.43 inch below average. The winter precipitation total was 6.12 inches, 0.67 inch below average.

Please Note: Material provided in this map was compiled from the NOAA's NCDC State of the Climate Reports. For more information please visit: <http://www.ncdc.noaa.gov/sotc>

Regional - Climate Overview for December 2014 - February 2015

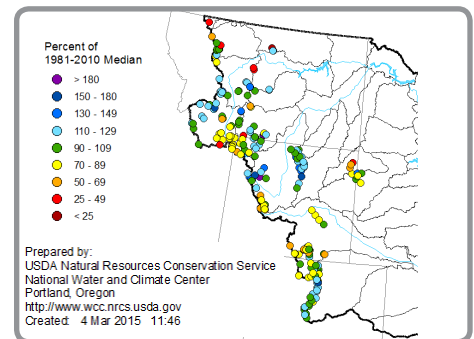
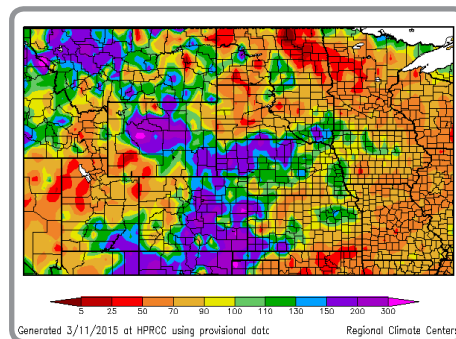
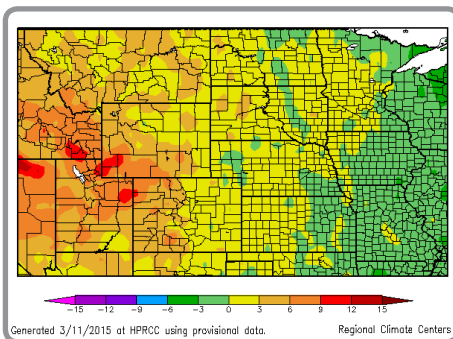
Temperature and Precipitation Anomalies

Departure from Normal Temperature (°F)
December 1, 2014 - February 28, 2015

Percent of Normal Precipitation (%)
December 1, 2014 - February 28, 2015

Mountain Snowpack

Missouri Basin Mountain Snowpack
03/01/2015



Extreme temperatures were a common theme this winter. Although December and January were overall quite warm across the region, there were interspersed periods of extreme cold. Meanwhile, February was dominated by a strong ridge/trough pattern with the Missouri River Basin states situated on the dividing line. This resulted in temperatures that were largely near normal with warmer weather to the west and cooler weather to the east. The resulting winter temperature pattern can be seen above.

As usual, precipitation varied this winter. Areas of Montana, Wyoming, Colorado, and Nebraska received above normal precipitation, but as a whole, these states were near average. The largest departures of 200 percent of normal precipitation were generally isolated to central Wyoming and eastern Colorado. Other areas were quite dry, including Missouri, eastern North Dakota, much of South Dakota, central and southeastern Kansas, and an area encompassing northwestern Colorado and southwestern Wyoming.

Despite periods of extreme warmth, mountain snowpack is near median for the Missouri River headwaters. The warm temperatures this winter led to early snowmelt and increased flows in the Missouri River and its tributaries. According to the latest outlooks, no significant flooding is expected in the basin due to mountain snow runoff during the spring season. There is a risk of minor to moderate flooding in lower portions of the basin due to convective activity; however, this risk is typical in spring.

Regional - Impacts for December 2014 - February 2015

Agriculture

According to K-State Research and Extension, Hessian flies have been detected in a winter wheat field in southeastern Kansas. The warm fall weather may have led to multiple broods. Hessian fly infestations can cause weak stems, which can lead to partially filled heads or broken stems.

Dry soils and a low snowpack in South Dakota and eastern North Dakota could be beneficial to farmers this spring. In recent years, farmers have had trouble getting into fields due to muddy conditions. Additionally, the dry conditions reduce flood risk in these areas.

Recreation and Tourism

The low snowpack in parts of eastern North Dakota had a negative impact on outdoor recreation, especially for snowmobilers. Even in the better snowmobiling locations in western Minnesota, it has been a poor season.

Forestry

According to a study by the U.S. Forest Service and Colorado State Forest Survey, the spruce beetle epidemic has expanded in Colorado due to a number of factors, including drought. The most rapid expansion of the infestation has occurred in southwestern areas of the state. For more information see:

<http://csfs.colostate.edu/districts/boulder-district/boulder-insects-diseases/>

Drought Impacts Continue

For much of the Missouri River Basin states, drought conditions have eased or been eliminated over the past year; however drought impacts are still being realized. According to the USDA, over \$2.7 billion in Livestock Forage Disaster Assistance payments have been paid, which retroactively covers 2012 and 2013, in addition to 2014. Kansas producers received payments of \$461.26 million, while Nebraska producers received payments of \$512.89 million.

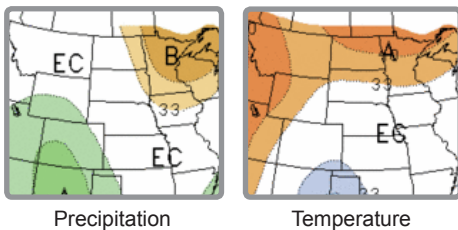


Above: (Top) Winter wheat with Hessian fly infestation, courtesy K-State Research and Extension and (Bottom) an example of the destruction from a pine beetle infestation, courtesy the archives of the North Central Climate Science Center.

Regional - Outlook for April - June 2015

3-Month Precipitation and Temperature Outlooks

Valid for April - June 2015



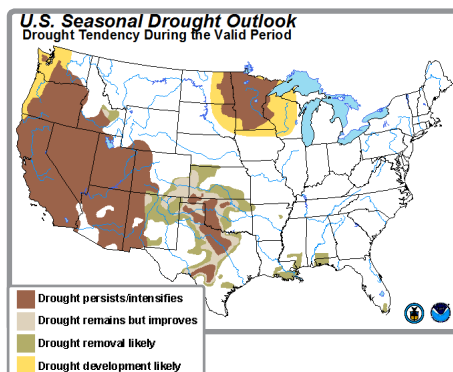
EC: Equal chances of above, near or below normal
A: Above normal, B: Below normal

El Niño conditions have developed and are expected to continue through the summer. Current El Niño conditions are weak and impacts in the spring and summer are limited during these seasons in the Basin states.

Over the next three months, outlooks indicate increased chances for above normal temperatures for northern parts of the region including Montana, North Dakota, northern South Dakota, and much of Wyoming. There are increased chances for above normal precipitation across Colorado and southern Wyoming, while portions of the Dakotas have an increased chance for below normal precipitation.

U.S. Seasonal Drought Outlook

Valid for 03/19/2015 - 06/30/2015



Drought conditions expanded in some areas of the region this winter. This is unusual as drought developments/improvements do not typically occur in winter across this region. The combination of extreme warmth and a low snow water content in the mountains led to the development of moderate drought conditions across western Colorado into southern Wyoming. Moderate drought conditions also expanded in eastern North Dakota. The seasonal outlook indicates that drought development is likely in the Dakotas, while improvements are expected in eastern Colorado and portions of Kansas through June.

MO River Basin Partners

High Plains Regional Climate Center

www.hprcc.unl.edu

Kansas State, Department of Agronomy

www.agronomy.k-state.edu

National Oceanic and Atmospheric Administration

www.noaa.gov

National Weather Service - Central Region

www.crh.noaa.gov/crh

National Climatic Data Center

www.ncdc.noaa.gov

Missouri River Basin Forecast Center

www.crh.noaa.gov/mbrfc

Climate Prediction Center

www.cpc.ncep.noaa.gov

National Operational Hydrologic Remote Sensing Center

www.nohrsc.noaa.gov

National Drought Mitigation Center

www.drought.unl.edu

National Integrated Drought Information

System (NIDIS)

www.drought.gov

State Climatologists

www.stateclimate.org

South Dakota State University Extension

<http://figrow.org>

U.S. Army Corps of Engineers - Missouri River Basin

Water Management Division

www.usace.army.mil

U.S. Department of Agriculture

www.usda.gov

NRCS National Water & Climate Center

www.wcc.nrcs.usda.gov

Regional Climate Hubs

www.usda.gov/oce/climate_change/regional_hubs.htm

U.S. Geological Survey, Water Mission Area

www.usgs.gov/water

Western Governors' Association

www.westgov.org