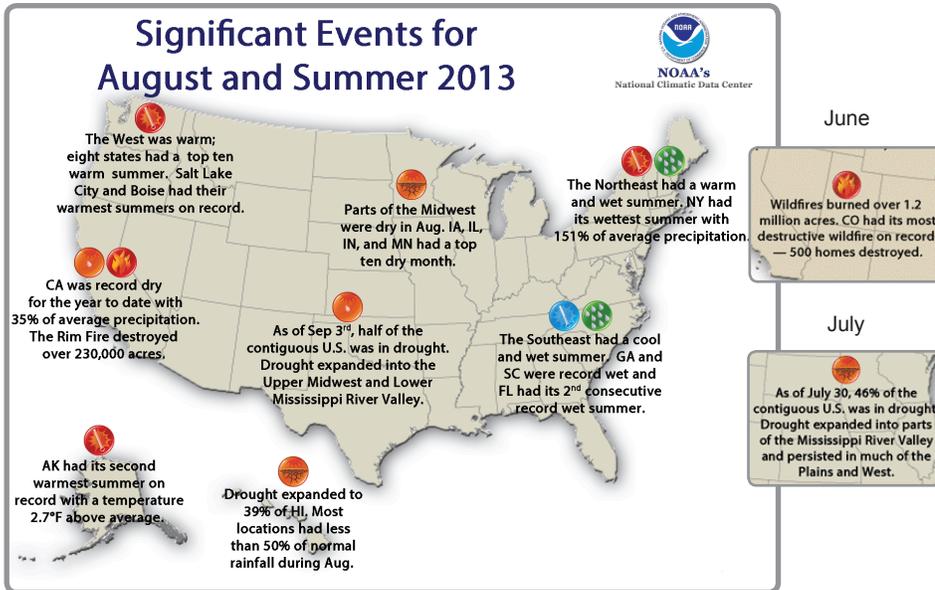


National - Significant Events for June 2013 - August 2013



Highlights for the Basin

Significant statewide rankings include a dry June for Colorado and Wyoming, with these states ranking as the 10th and 7th driest, respectively. Meanwhile in August, Wyoming had its 3rd warmest, Kansas had its 8th wettest, and both Iowa and Minnesota had their 7th driest.

Monsoonal moisture brought much needed precipitation to Colorado which helped alleviate some long and short term drought conditions, while also decreasing fire danger. However, the rains also caused destructive flash flooding in and around recent burn scars.

There were extremes in precipitation on the local level with many stations ranking in either the top 10 wettest or driest summers on record. For instance, Wichita, KS had its 3rd wettest summer on record, while Lincoln, NE had its 6th driest.

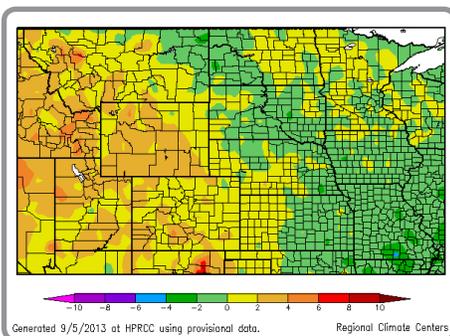
While this summer brought a record low number of tornadoes to the region, the Rapid City, SD National Weather Service Office issued its second highest number of severe thunderstorm warnings (442).

The summer contiguous U.S. temperature of 72.6°F was 1.2°F above the 20th century average and the 15th warmest summer on record for the nation. The summer precipitation total for the contiguous U.S. was 9.53 inches, 1.28 inches above average. This marked the 8th wettest on record and the wettest since 2004.

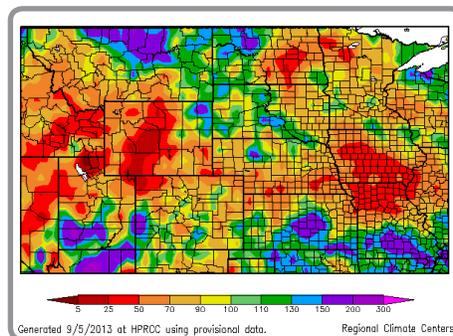
Regional - Climate Overview for June 2013 - August 2013

Temperature and Precipitation Anomalies

Departure from Normal Temperature (°F)
June 1 - August 31, 2013

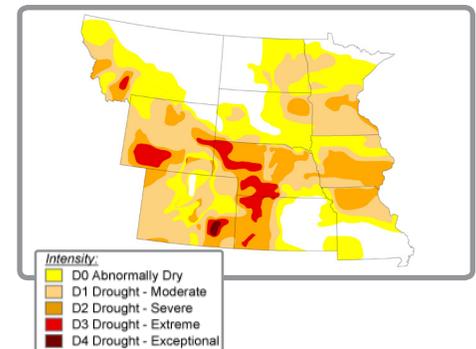


Percent of Normal Precipitation (%)
June 1 - August 31, 2013



Drought in the Basin

U.S. Drought Monitor
9/17/2013



Summer temperatures were generally slightly warmer than normal in the western half of the region (Montana, Wyoming, and Colorado) and slightly lower than normal in the eastern half (North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, and Missouri). The largest temperature departures occurred in Wyoming, western Montana, and pockets of Colorado where average temperatures were up 4.0°F above normal and areas of southern Missouri where average temperatures were up to 4.0°F below normal.

Precipitation was hit or miss this summer across the Missouri River Basin states. Some areas received up to 200% of normal precipitation including north-central Montana, central Kansas, and southern Missouri. Meanwhile, others received less than 25% of normal precipitation. The dry areas included central Wyoming, northern Missouri, and east-central North Dakota. Flooding was reported in many of the wet areas while drought persisted or redeveloped in the dry areas.

Temperatures played an important role in drought this summer as many of the impacts of dryness were staved off by cool conditions. However, in mid-August, once the heat built in, drought conditions quickly emerged and/or deteriorated in the eastern parts of the Dakotas and Nebraska. Drought also re-emerged in parts of Minnesota, Iowa, and northern Missouri. Improvements were made in areas receiving ample precipitation including most of Kansas, western South Dakota, and central and eastern Colorado.

Regional - Impacts for June 2013 - August 2013

Precipitation Extremes - Flooding and Drought

Precipitation disparities were common throughout the Missouri River Basin states this summer. Missouri was a prime example with the northern half receiving less than 50% of normal precipitation and the southern half up to 200% of normal. While crop stress emerged in northern areas of the state due to a lack of adequate precipitation, just to the south, historic flooding occurred across the Ozarks with some areas receiving up to 10 inches in just a 24-hour timeframe. The flooding caused roadways to close, water rescues, and even 3 deaths.

Agriculture

A late planting combined with unseasonably cool temperatures led to slow crop development across the Missouri River Basin states. This led to some concern about whether crops would reach maturity before the first fall freeze. Toward the end of August, warmer than normal temperatures prevailed which aided crop development where moisture was available but stressed crops in dry areas.

Wildfires

Colorado had its most destructive fire on record, in terms of structures burned, when the Black Forest Fire burned over 500 homes near Colorado Springs. Just last year, the Waldo Canyon Fire had been deemed the most destructive with 346 homes destroyed.

Water Resources

According to a news release from The Central Nebraska Public Power and Irrigation District, a combination of drought conditions, stream-flow depletions, and low inflows into Lake McConaughy (a reservoir on the North Platte River) have led to reduced storage at the reservoir. This year, 10 inches per acre were granted to irrigators while next year only 9 inches per irrigator will be available. Irrigators normally get up to 18 inches per acre.

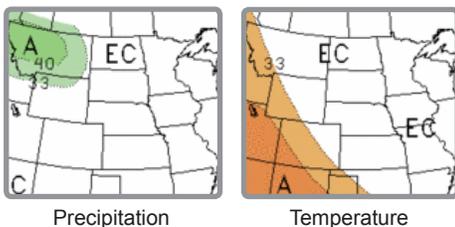


Top: Drought-damaged wheat field in Lamar, CO in early June - courtesy The Denver Post
Middle: Flooding at Roaring River State Park, MO in early August - courtesy National Weather Service Office, Springfield, MO
Bottom: Cheney Reservoir in KS (left: April, right: August) - courtesy Howard Miller, NRCS

Regional - Outlook for Fall 2013

3-Month Precipitation and Temperature Outlooks

Valid for October - December 2013

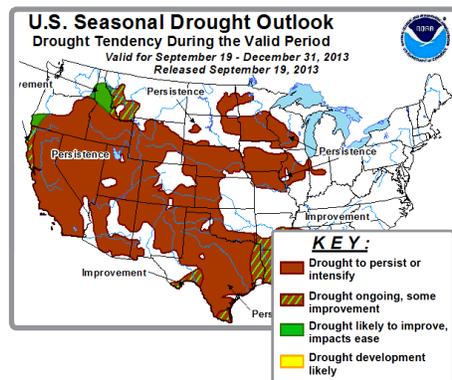


EC: Equal chances of above, near or below normal
A: Above normal, B: Below normal

ENSO (El Niño/Southern Oscillation) neutral conditions were present at the end of the summer and are forecast to continue through Fall 2013. Models, combined with past weather trends, indicate enhanced chances of above normal precipitation for much of Montana and northern Wyoming. Meanwhile, areas with an increased chance for above normal temperatures include western Montana, western Wyoming, and much of Colorado. Fall conditions can have quite an impact on agriculture in this Region. With cooler, wetter conditions, crop drydown and harvest activities could be slowed. However, with warmer, drier conditions, harvesting activities should proceed as usual.

U.S. Seasonal Drought Outlook

Valid for 9/19/2013 - 12/31/2013



The fall outlook could be quite important for crops as cooler temperatures slowed crop development this summer - development which was already behind in many places due to either a late snowpack or wet field conditions. The latest drought outlook indicates that drought conditions should persist across the Missouri River Basin states through at least the end of December. Only areas of western Montana have a chance at improvements. If drought conditions do not improve over the fall, they will likely continue into next year as winter-time precipitation is typically low.

MO River Basin Partners

- High Plains Regional Climate Center
www.hprcc.unl.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 Drought Mitigation Center
drought.unl.edu
- State Climatologists
www.stateclimate.org
- South Dakota State University Extension
<http://igrow.org>
- National Integrated Drought Information System (NIDIS)
www.drought.gov
- US Army Corps of Engineers - Missouri River Basin Water Management Division
www.usace.army.mil
- USGS South Dakota Water Science Center
<http://sd.water.usgs.gov>
- Western Governors' Association
westgov.org