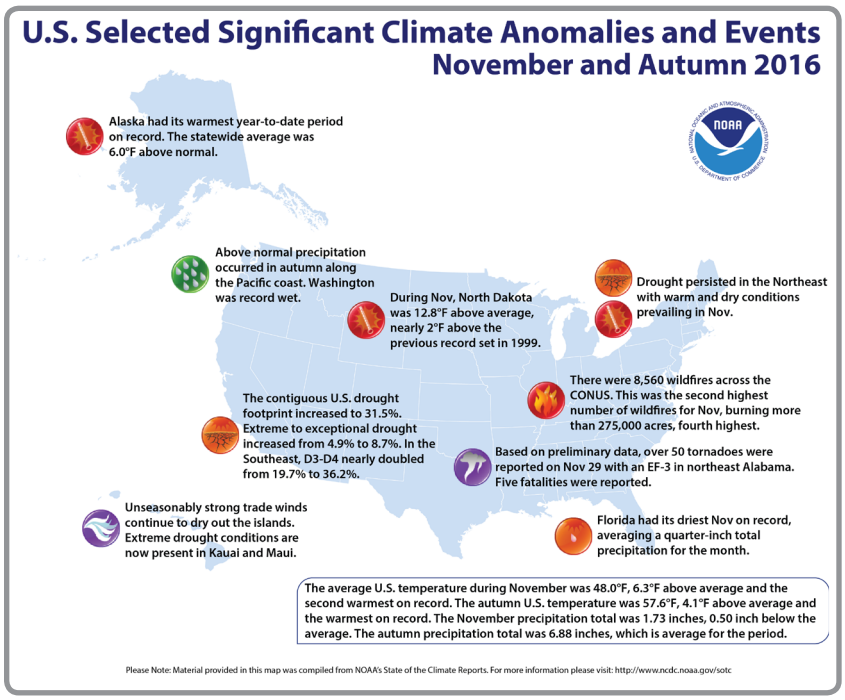
Quarterly Climate Impacts and Outlook

Midwest Region

December 2016

National - *Significant Events for September–November 2016*



Highlights for the Midwest

September ranked as the 7th warmest, October the 9th warmest, and November the 2nd warmest since 1895. This was the warmest fall on record in the Midwest.

Major flooding affected Iowa and Wisconsin in late September after 5 to 9 inches of rain. Rivers were in major flood stage in northeast Iowa and southwest Wisconsin.

The first snow of the season in the Midwest was reported on October 27 with 1 to 3 inches in northern Lower Michigan and the eastern Upper Peninsula.

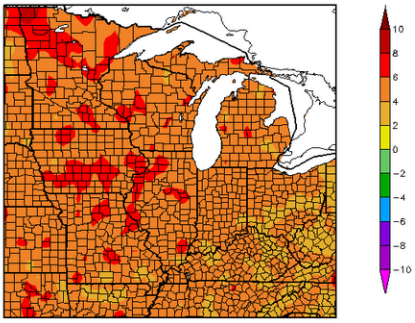
More than 500 daily high maximum temperature records were broken in the Midwest the first week of November, with 300 of these in the first 3 days of the month.

A strong storm on November 18–20 had wide-ranging impacts on the entire Midwest, including a blizzard in Minnesota, severe weather in Indiana and Michigan, and high winds and large temperature swings across the rest of the region. Cold air spilling in behind this system brought the first freeze to many areas in the southern half of the Midwest.

Regional - *Climate Overview for September–November 2016*

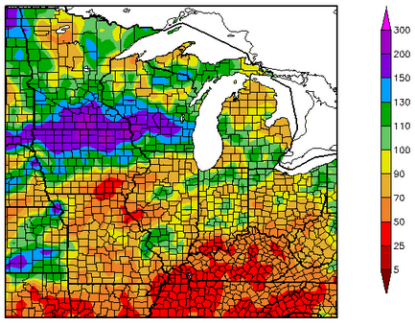
Temperature and Precipitation Anomalies

Departure from Normal Temperature (°F)
9/1/2016–11/30/2016



This was the warmest fall season on record for the Midwest. Only a few locations experienced more than a handful of normal to below-normal daily average temperatures during the 91-day fall period. Temperatures ranged 3°F to 7°F above average. It was the warmest fall on record for Minnesota, Wisconsin, Iowa, and Michigan, and the second warmest for the remainder of the states. It was the 2nd warmest November on record for the region. Temperature departures ranged from +1°F to +3°F in Kentucky to +10°F to +14°F across the northern half of Minnesota.

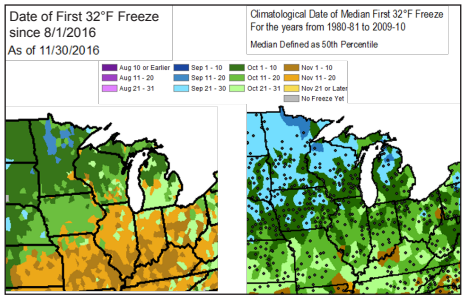
Percent of Normal Precipitation (%)
9/1/2016–11/30/2016



Fall precipitation was generally normal to above normal across the northwestern third of the region, and normal to well below normal across the southeastern two-thirds. The wettest area extended across southern Minnesota, northern Iowa, and southern Wisconsin where precipitation was 150 to 175 percent of normal. Much of this resulted from the heavy rain event at the end of September. South of the Ohio River precipitation averaged from 25 to 50 percent of normal. November precipitation in Kentucky ranged from less than 10 percent to about 50 percent of normal.

First Freeze

Fall 2016



The average minimum temperature for the Midwest for the fall ranked the warmest in Minnesota, Wisconsin, and Michigan. It was the second warmest in the rest of the states except Kentucky, which had it sixth warmest. There, persistent warm weather delayed the occurrence of the first fall freeze by two weeks or more in most of the region. Most locations in the Midwest reached freezing by the second week in November, and all the Midwest had reached freezing by November 19. A number of locations set new records for the latest first fall freeze.

Contact: Doug Kluck (doug.kluck@noaa.gov)

Regional Impacts *for September–November 2016*

Agriculture

After a slow start, corn and soybean harvest picked up pace in October as the result of a period of prolonged warm and dry weather. Harvest in most areas was completed on time. Record soybean and near-record corn yields are expected.

Some locations in the central and southern Midwest set records for the latest first freeze.

Flooding

The late September flooding in northeast Iowa, southwest Wisconsin, and southeast Minnesota caused widespread damage to roads, bridges, farm crops, homes, and businesses. Damages in Iowa were estimated at more than $22 million, with 19 counties declared disaster areas. Ten southeast Minnesota counties were declared federal disaster areas with an estimated $22.8 million in damages. More than $14 million in damages were tallied in Wisconsin and 10 counties were declared federal disaster areas.

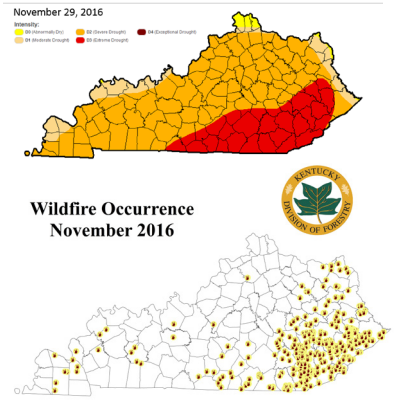
Five locations in northeast Iowa have set new records for annual precipitation through November 30, by between 3 to 7 inches. Precipitation totaled from 50 to 56 inches so far.

Drought

The severe drought in the southeastern United States extended north into Kentucky during the fall. At the end of November, southeastern Kentucky was in extreme drought while the rest of the state was mostly classified in Severe Drought.

Farmers in 10 southeastern Kentucky counties may be eligible for federal aid under an agricultural disaster declaration issued as a result of the ongoing drought. Livestock producers have been forced to feed hay earlier than usual because their pastures are depleted.

Early in October, Kentucky Governor Matt Bevin declared a state of emergency due to 38 wildfires burning largely in the eastern part of the state. By November 7, there were 21 wildfires affecting more than 16,923 acres. Sixty-nine counties had burn bans in effect.



Wildfire burning a hillside near Harlan, Kentucky.

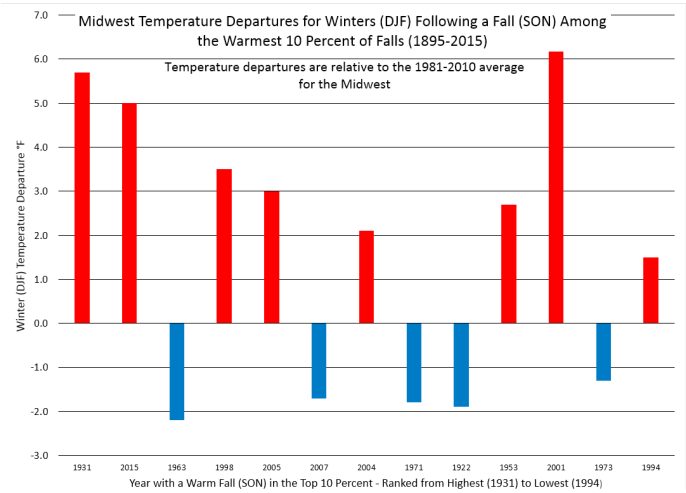
Regional Outlook *for Winter 2016*

Colder, Wetter Across the Midwest

The latest outlook issued by the Climate Prediction Center calls for a higher probability of colder than normal weather across the northern Midwest for January through March and equal chances for below, normal, or above-normal temperatures in the southern half of the Midwest. A higher probability for above normal precipitation exists from the upper Midwest and for the Midwest east of the Mississippi River. The amount of snow this winter is dependent on individual systems and cannot be deduced from this outlook.

The weak La Niña across the central and eastern Pacific is expected to persist through February and then transition to neutral conditions. While the current La Niña may have some effect on Midwest weather, the signal is typically weak and can be dominated by other climate effects such as the Arctic Oscillation or North Atlantic Oscillation.

In the Midwest, there is a tendency for warmer winters to follow an extremely warm fall, but not in all cases. In the past, extremely cold winters have not followed a very warm fall.



Midwest Region Partners

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Midwestern Regional Climate Center
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Missouri Basin River Forecast Center
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National Centers for Environmental Information
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National Drought Mitigation Center
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National Integrated Drought Information System
www.drought.gov

National Weather Service Central Region
www.crh.noaa.gov/crh

North Central River Forecast Center
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NWS Climate Prediction Center
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State Climatologists
www.stateclimate.org

WaterSMART Clearinghouse, U.S. Dept. of Interior
www.doi.gov/watersmart/html/index.php

Western Governors' Association
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