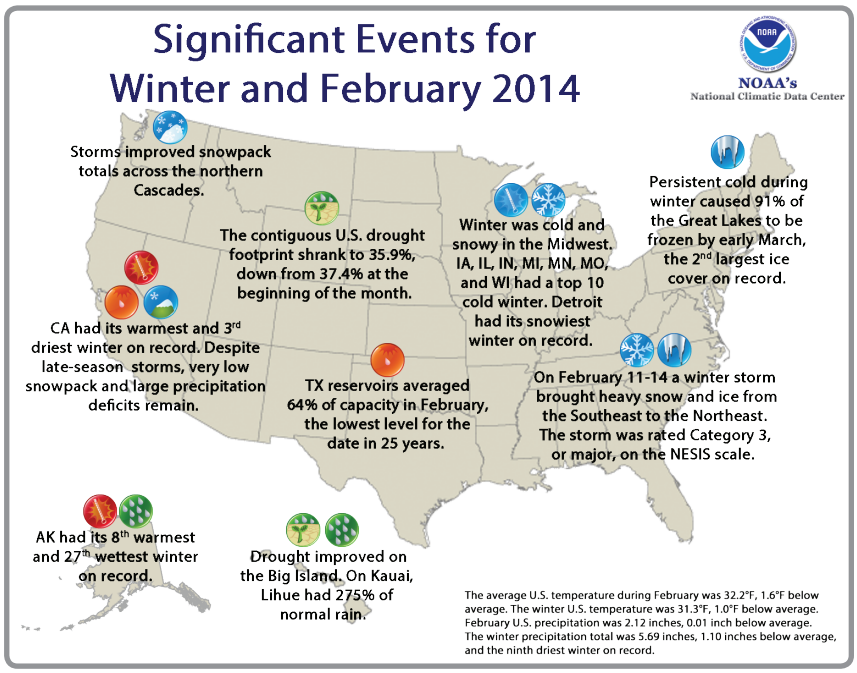
Quarterly Climate Impacts and Outlook

Midwest Region

March 2014

National - *Significant Events for December 2013–February 2014*



Highlights for the Midwest

Much of the Midwest experienced the most severe winter in 30 years. Based on preliminary data this was the eighth coldest winter on record for the region. Snowfall ranked in the top five for Illinois, Indiana, Michigan, Minnesota, and Wisconsin.

The winter mean temperature for Embarrass, Minnesota was -5.5°F, with 32 of 91 days recording a minimum temperature of -30°F or colder, a Minnesota state record. There were seven days with minimums of -40°F and lower.

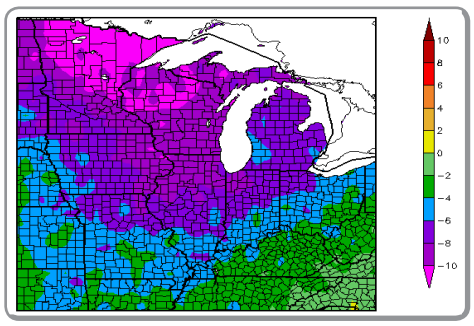
Snowfall in Detroit, Michigan as of the end of February totaled 79.2 inches, the second highest on record. Average snowfall for this period is 33.9 inches. Detroit measured a record 39.1 inches in January. Chicago totaled 67.4 inches of snow during the winter, the third highest on record.

A storm on January 5–6 led to blizzard warnings in some locations and winter storm warnings over a broad swath of the Midwest. Snowfall amounts ranged to more than a foot in some parts of Indiana and Michigan and more than 6 inches in most of Missouri, Illinois, Indiana, northwest Ohio, and southern Michigan.

Regional - *Climate Overview for December 2013–February 2014*

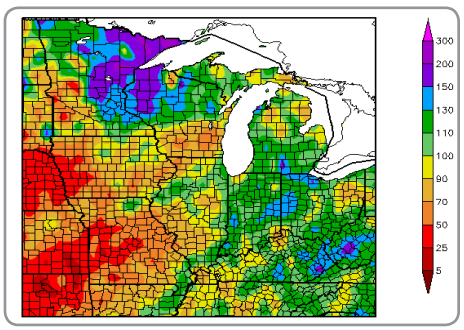
Temperature and Precipitation Anomalies

Departure from Normal Temperature (° F)
12/1/2013–2/28/2014



Temperatures were much below normal across the entire region during the winter except for the area south of the Ohio River. It was 6°F to 10°F below normal from northern Missouri, Illinois, and Indiana north to the Canadian border. December temperatures ranged from near normal in the southeast quarter of the region to 15°F below normal across northern Minnesota. In January the entire region was colder than normal with departures of -9°F to -12°F from northern Indiana northwest through eastern Minnesota. February temperatures ranged from 6°F to 16°F below normal.

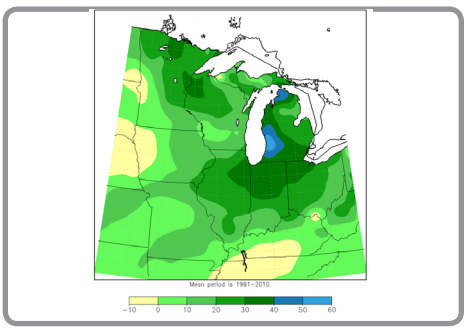
Percent of Normal Precipitation (%)
12/1/2013–2/28/2014



The winter season was dry across the western portion of the region with less than 50 percent to 70 percent of normal precipitation. It was generally near to above normal in the eastern half of the region, but much above normal across northeastern Minnesota and northwestern Wisconsin. December precipitation was much above normal across northern Minnesota and Wisconsin and the Ohio Valley. Iowa, most of Missouri, and much of Illinois received less than 75 percent of normal precipitation. Precipitation in the north-central Midwest in January and February was above normal.

Winter 2013-2014 Snow

Accumulated Snowfall, Departure from Average
12/1/2013–2/28/2014



Snowfall was above normal across the entire Midwest with the exception of western Iowa and southern Kentucky. In much of the region, winter snowfall was near or above twice the average. Areas downwind of the Great Lakes experienced the largest departures of 30 to 50 inches above normal. At the end of February, the southern extent of the snow cover extended from southern Iowa across northern Illinois, Indiana, and Ohio. In northern Minnesota, Wisconsin, and northern Michigan (including the Upper Peninsula) snow depths exceeded 30 inches.

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

Regional Impacts *for December 2013–February 2014*

Agriculture

Subzero temperatures and thin snow cover over the southern portions of the Midwest has likely resulted in some damage to the dormant winter wheat crop.

Transportation

Winter storms hampered travel throughout the winter. Thousands of flights were delayed or canceled due to snow and ice. Train traffic was halted by severe drifting resulting from the winter storms that hit the region. Blowing and drifting snow closed roads and interstates a number of times.

Persistent bitterly cold weather resulted in many rivers becoming choked with ice as much as 30 inches thick. This resulted in restrictions on barge traffic on the Illinois and Mississippi Rivers.

Environment and Infrastructure

Ice jams on rivers led to flooding in parts of Illinois and Indiana.

Many communities depleted their snow removal budgets due to the persistent cold and frequent snow. Pothole repair is a major concern and expense for many municipalities, both for repair and paying claims for damaged vehicles.

A propane shortage resulted in prices more than doubling from summer levels. Minnesota passed emergency heating assistance legislation to provide financial assistance to homeowners and businesses to pay their heating bills.

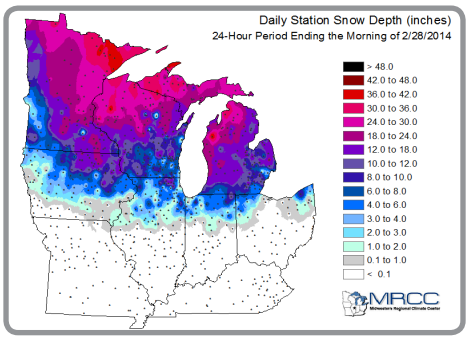
Cryoseism, or "frost quakes," were reported over parts of the Midwest toward the end of January and early February.

The frost level at the end of February ranged from about a foot north of the Ohio River to as much as five feet in northern Minnesota. Frozen pipes and water main breaks were common through the Midwest.

Many school districts used their allotment of snow days and then some due to the snow and days with extreme wind chill. Some districts will need to extend their school year to make up the time.

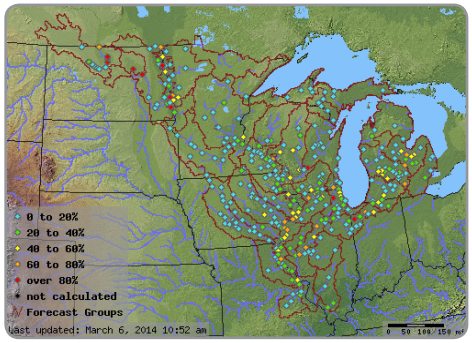
Drought conditions and a deeper than normal frost depth across Missouri are expected to lead to die offs of turtles and perhaps amphibians.

Illinois River ice near LaSalle, Illinois. Photo courtesy LaSalle County Emergency Management Agency.

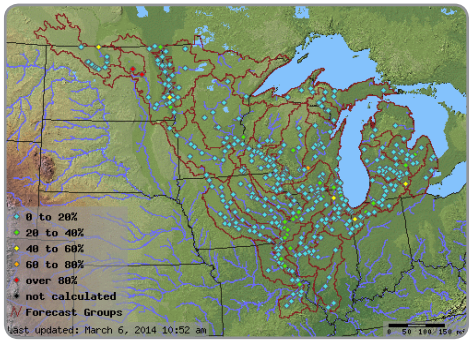


Regional Outlook - *for Spring 2014*

Spring Flood Outlook



Probability for moderate flooding for the period from March 10 to June 8, 2014



Probability for major flooding for the period from March 10 to June 8, 2014

Snow and ice pack in the Mississippi River basin is mostly well above average, particularly from eastern Minnesota and northwestern Wisconsin into northeastern Iowa, where 2 to 4 feet of snowpack is common. However, with streamflows along the Mississippi River at low levels for this time of year, this snowpack should produce only minor flooding along the Mississippi River with average rainfall this spring.

Although snowfall has been much above normal across most of the northern half of the Midwest, the liquid water content of the snow cover has not been significantly above normal. The exception is in northwestern Wisconsin and in northern Illinois where the snow water equivalent of the remaining snow cover is well above normal for this time of year. The chance of flooding is above normal in northern Illinois, northwestern Wisconsin, and southern Michigan due to above normal water content of the snow.

Additionally, significant frost depths of 2 to 3 feet will impede infiltration of water until the ground thaws. The deeply frozen soils will be a factor to watch as snowmelt and rainfall on frozen ground will runoff quickly.

However, the likelihood of flooding is going to be greatly dependent on how the spring weather unfolds.

Streamflows in the Ohio River basin are expected to be near normal through the spring.

Central Region Partners

Climate Science Program, Iowa State University
climate.engineering.iastate.edu

High Plains Regional Climate Center
www.hprcc.unl.edu

Midwestern Regional Climate Center
mrcc.isws.illinois.edu

Missouri Basin River Forecast Center
www.crh.noaa.gov/mbrfc

National Climatic Data Center
www.ncdc.noaa.gov

National Drought Mitigation Center
drought.unl.edu

National Integrated Drought Information System
www.drought.gov

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

North Central River Forecast Center
www.crh.noaa.gov/ncrfc

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

South Dakota State University and SDSU Extension
www.igrow.org

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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