IOWA DEPARTMENT OF NATURAL RESOURCES

WATER SUMMARY UPDATE

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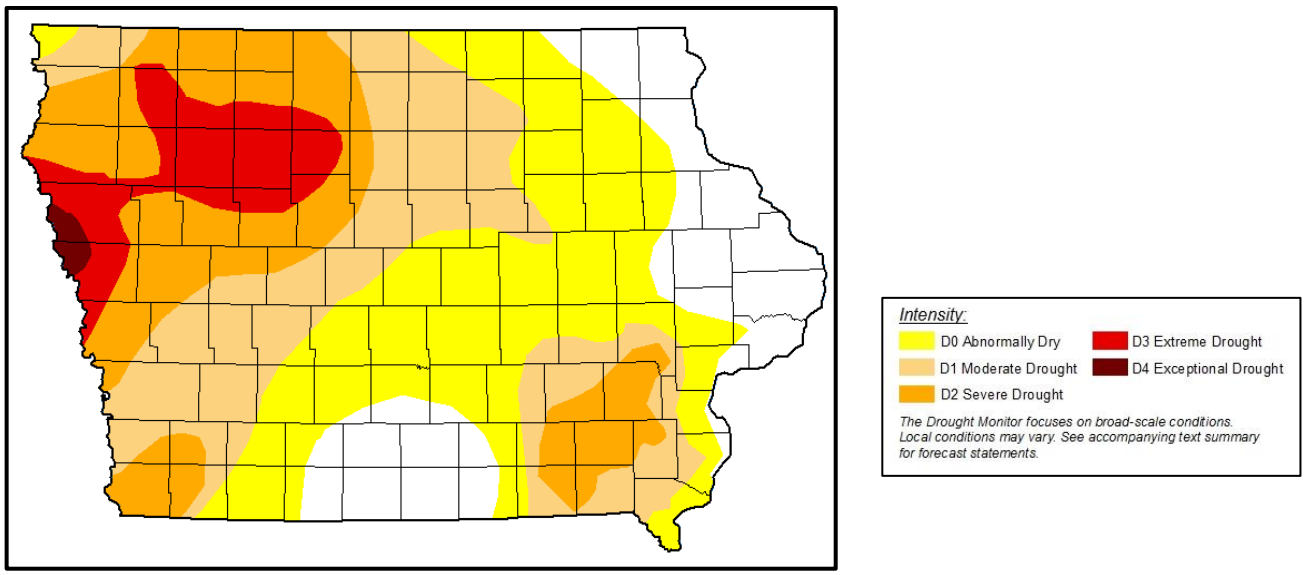
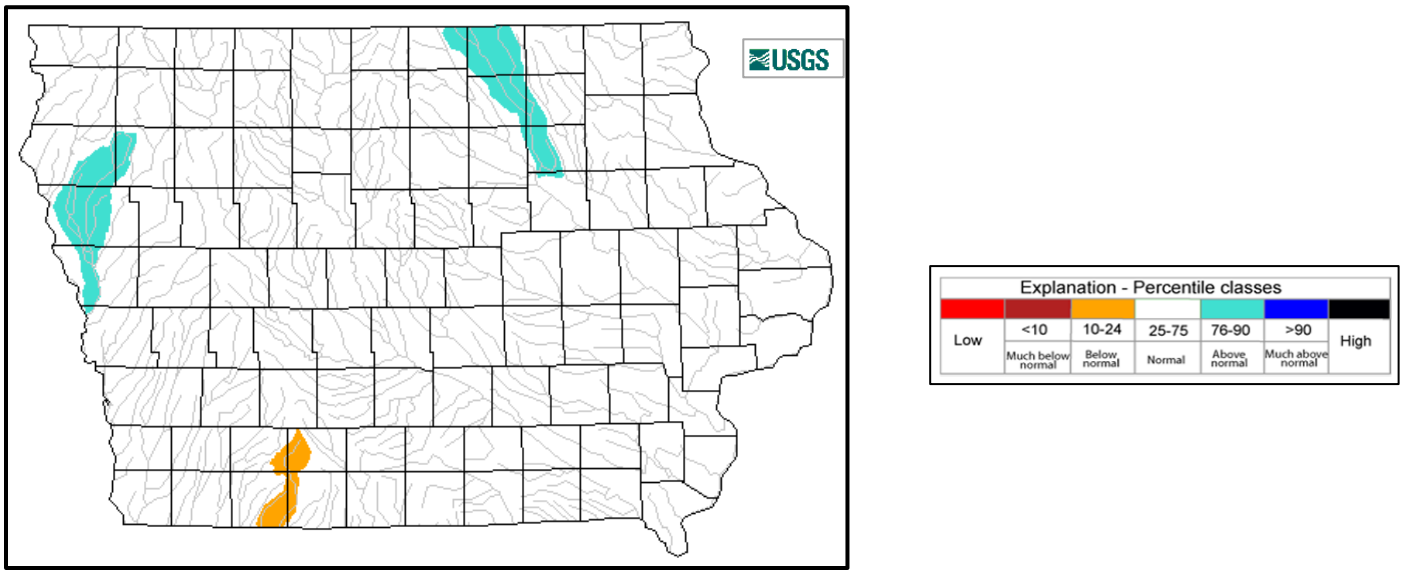
A snapshot of water resource trends for January, 2023

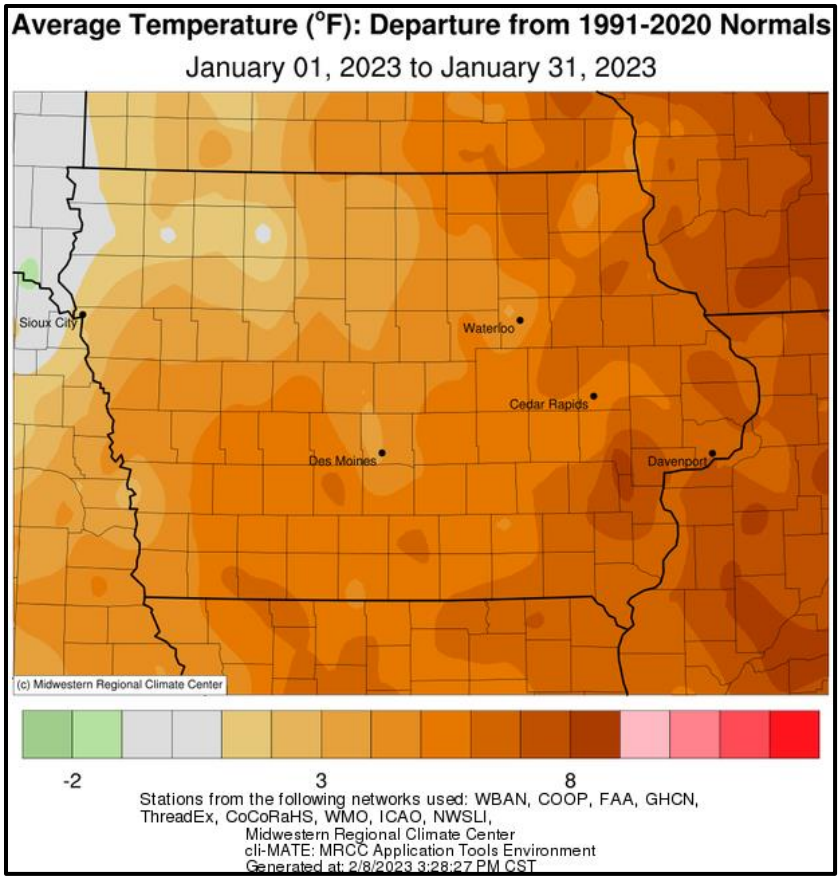
Drought Monitor - Conditions as of February 9, 2023

National Drought Mitigation Center and partners



Stream Flow – January, 2023




Average Temperature (°F): Departure from 1991-2020 Normals
January 01, 2023 to January 31, 2023
Sioux City
Waterloo
Cedar Rapids
Des Moines
Davenport
(c) Midwestern Regional Climate Center
-2
3
8
Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI,
Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
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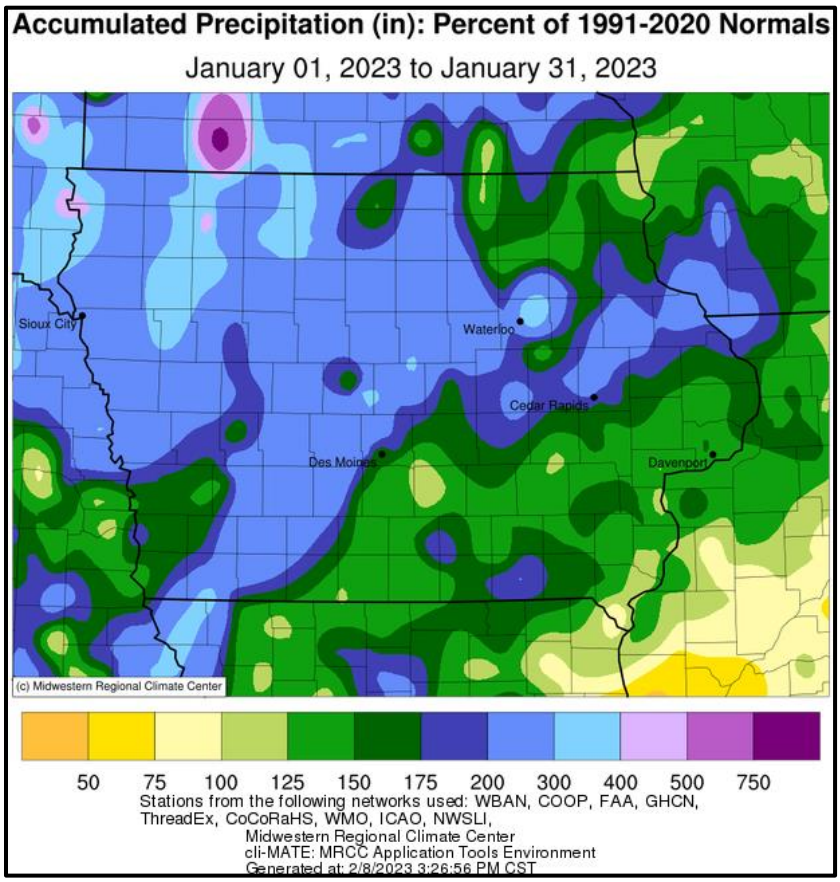
Accumulated Precipitation (in): Percent of 1991-2020 Normals
January 01, 2023 to January 31, 2023
Sioux City
Waterloo
Cedar Rapids
Des Moines
Davenport
(c) Midwestern Regional Climate Center
50
75
100
125
150
175
200
300
400
500
750
Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI,
Midwestern Regional Climate Center
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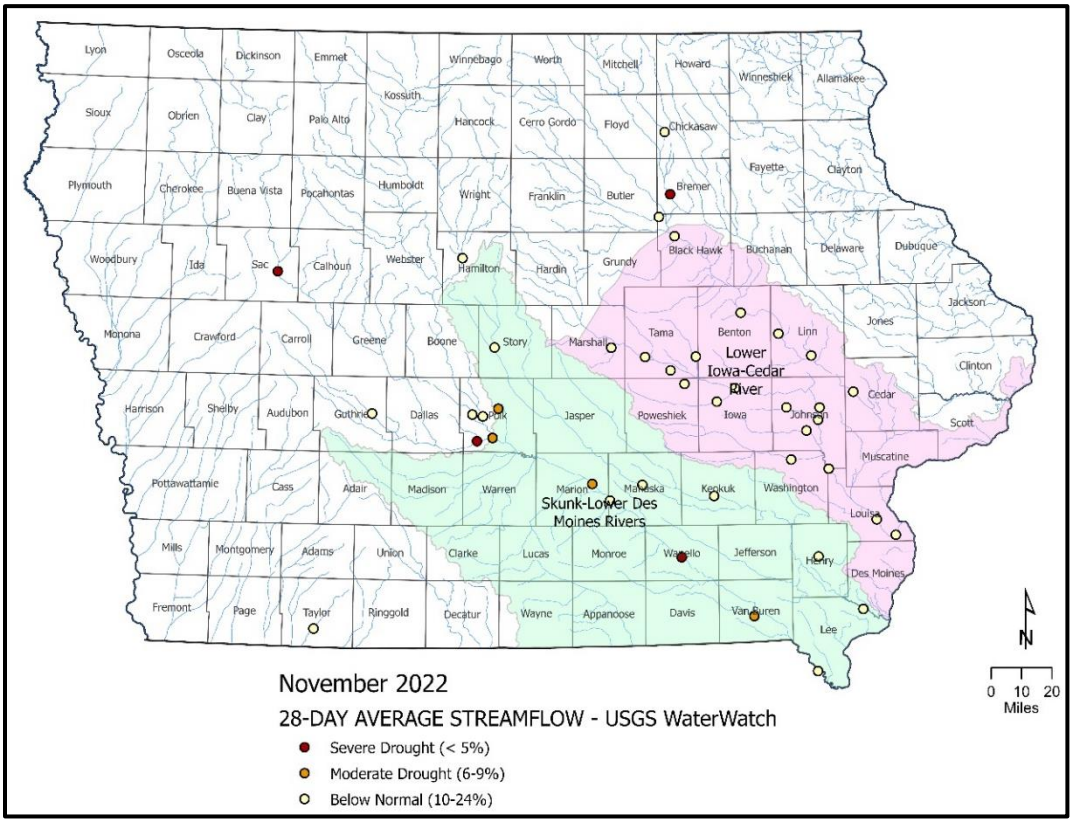
Shallow Groundwater - Conditions for January 2023

Iowa DNR and IIHR-Hydroscience and Engineering



RECENT DEVELOPMENTS AND CHANGES

IOWA DROUGHT PLAN

In January 2023, the Directors of the Iowa Department of Natural Resources (DNR), the Iowa Department of Homeland Security & Emergency Management (HSEMD), and the Secretary of the Iowa Department of Agriculture and Land Stewardship (IDALS) endorsed the Iowa Drought Plan (IDP). This marks the first time the State of Iowa has had a statewide drought plan, which was developed by staff from the DNR, HSEMD, and IDALS, as well as from the National Drought Mitigation Center and the US Department of Agriculture's Midwest Climate Hub. Starting in March 2023 the Water Summary Update will be modified to reflect the structure of the IDP. Information on current conditions will be provided, as well as new drought level triggers for the State of Iowa. It is anticipated that the IDP will provide better targeted information that can be used by state, county, and local governments and organizations to better plan for, and respond to, drought conditions across the state.

SUMMARY

2023 started off on an encouraging note, with the month of January providing more than twice the normal precipitation. This marks the third month in a row of wetter than normal conditions. It should be noted, however, that January is typically the driest month of the year in Iowa, so the doubling of normal precipitation brought just one extra inch of moisture. The month of January brought 1.82 inches of moisture, with nearly the

entire state receiving above normal amounts of moisture. The US Drought Monitor remained nearly unchanged over the month of January, as frozen ground does not allow much moisture to infiltrate the soil. Streamflow conditions have also improved in many areas, with a few watersheds showing below normal flow. Soil moisture and shallow groundwater conditions are also showing improvement, with the winter season a time of generally low demand for water use.

DROUGHT MONITOR

Over the last month the US Drought Monitor showed limited improvement in Iowa. Soil profiles are frozen with a frost depth between 6 and 13 inches, with snowpack helping insulate the soil profile and preventing a deeper freeze. The January above-average precipitation will not infiltrate any farther than the top inch or two in most areas. However, as the snow melts later in the winter, the moisture will help reduce longer-term deficits, which should help in drought recovery.

Drought conditions have improved in areas of south central, east central, and northeast Iowa. Over the past month the area designated as D1 – Moderate Drought, has reduced from 37 percent of the state to about 24 percent. The area shown with no drought or dryness has increased from 10 percent to 17 percent. As the January snow melts, conditions should continue to show improvement. With the recent heavy precipitation in California and western states, the most significant area of drought in the country now exists in Nebraska, Kansas, and Oklahoma.

JANUARY PRECIPITATION AND TEMPERATURE

Statewide average precipitation totaled 1.82 inches, which is 0.85 inches above normal. This ranks January 2023 as the 12th wettest January in 151 years of records. All of Iowa's reporting stations observed near to above-average precipitation. Monthly precipitation (melted snow and sleet plus rain) totals ranged from 0.75 inch near Bedford to 3.47 inches in Muscatine. Above-average snowfall also blanketed much of northern Iowa with an average snowfall of 9.5 inches, 1.2 inches above average. Portions of northwest Iowa measured up to 20 inches of snowfall.

Temperatures in January were unseasonably warm, on average 24.3 degrees or 4.8 degrees above normal. This ties 1983 as the 26th warmest on record; a warmer January last occurred in 2012. Eastern Iowa reported the warmest conditions where positive departures of up to eight degrees were observed in the monthly averages. Stations in northwestern Iowa reported near-average temperatures where snowpack was deepest. January's statewide average maximum temperature was 31.3 degrees, 3.2 degrees above normal, while the average minimum temperature was 17.2 degrees, 6.3 degrees above normal. Donnellson reported the month's high temperature of 64 degrees on the 17th, 32 degrees above normal. Elkader and Stanley reported the month's low temperature of -25 degrees on the 30th, on average 31 degrees below normal.

JANUARY STREAM FLOW

During January, streamflow conditions improved across the majority of the state, increasing from below normal to normal conditions. The Upper Cedar, and West Fork Ditch Rivers moved into the above normal condition. The East Fork 102 River remained in below normal conditions.

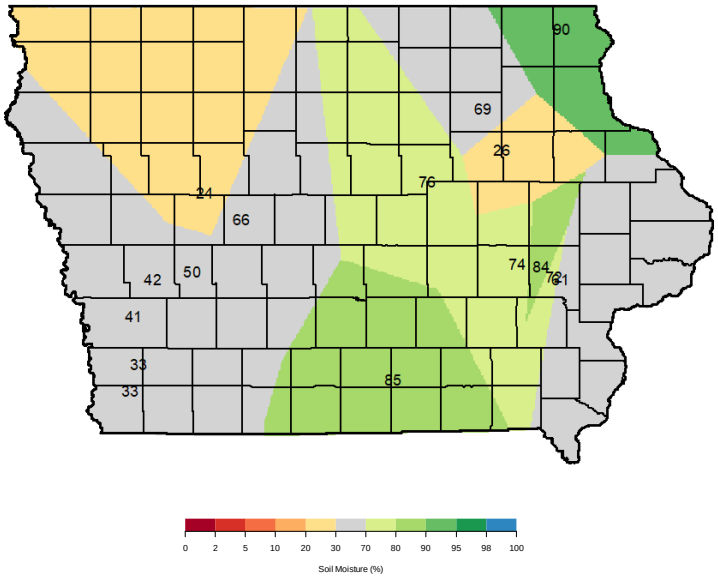
JANUARY SHALLOW GROUNDWATER

January shallow groundwater conditions continue to improve, but the situation is being very closely monitored, with water managers in northern Iowa remaining concerned. Levels across most of the state are inferred to be substantially recovered. There are locations in northwest Iowa that will continue to be evaluated in the coming

weeks, especially when the growing season, and its corresponding increase in water demand begins. Below normal dry conditions persist at several spread-out locations in the Skunk River and Lower Des Moines River hydrologic unit and at the southeast margin of the Lower Des Moines and Raccoon River hydrogeologic unit. In lieu of a direct shallow groundwater monitoring network the USGS's 28-day average stream baseflow statistical trends are used as an indicator of longer-term water level changes in shallow aquifers.

JANUARY SOIL MOISTURE

Iowa soil moisture conditions have improved somewhat due to the wetter than normal January. The corridor from south central to north eastern Iowa shows higher moisture conditions than the rest of the state, due to rainfall during the early part of January. The northwestern part of the state remains dryer than the rest of the state. It should be noted that freezing temperatures in the soil profile increases the uncertainty of these estimates. The figure below shows soil moisture percentile at the 20-inch depth at the end of January for the state.



MISSOURI RIVER BASIN CONDITIONS

The U.S. Army Corps of Engineers, Northwestern Division (USACE) updated its 2023 calendar year runoff forecast for the Missouri River Basin above Sioux City, Iowa. January runoff in the Missouri River Basin above Sioux City was 1.1 million acre-feet (MAF), or 134 percent of average. This increased runoff was due to warmer-than-normal temperatures in the upper basin resulting in some snowmelt runoff. Precipitation in January was below normal for most of the upper basin except for southern South Dakota, which saw above-normal precipitation.

Despite this encouraging runoff for January, the runoff forecast for the entire calendar year is 21.1 MAF, or 82 percent of average. The runoff forecast is based on current soil moisture conditions, plains snowpack, mountain snowpack, and long-term precipitation and temperature outlooks.

At the start of the 2023 runoff season, which typically begins around March 1, the total volume of water stored in the Missouri River Mainstem Reservoir System is expected to be 46.0 MAF, leaving 10.1 MAF of storage below the start of Annual Flood Control Zone. To conserve water in the system, minimum releases of 12,000 cubic feet per second (cfs) from Gavins Point Dam are planned.

Mountain snowpack in the upper Missouri River Basin is accumulating at near average rates, while the plains snowpack, which typically melts from mid-February into April, is currently above normal. Two to four inches of snow water equivalent (SWE) covers eastern Montana and much of the Dakotas. Some areas in the central and eastern Dakotas are showing up to five inches of SWE.

ADDITIONAL INFORMATION

For additional information on the information in this Water Summary Update please contact any of the following:

General Information, Tim Hall, Iowa DNR . . . . . Tim.Hall@dnr.iowa.gov 515-452-6633
Monthly Climate Information, Justin Glisan, IDALS . . . . . Justin.Glisan@iowaagriculture.gov 515-281-8981
Stream Flow, Dan Christiansen, USGS . . . . . dechrist@usgs.gov 319-358-3639
Stream Flow, Mike Anderson, Iowa DNR . . . . . Michael.Anderson@dnr.iowa.gov 515-725-0336
Shallow Groundwater, Greg Brennen, IGS . . . . . greg-brennan@uiowa.edu 319-335-4465
Soil Moisture, Filipe Quintero Duque, Iowa Flood Center . . . . . .felipe-quintero@uiowa.edu 319-384-1727

The current USDM map released this morning continues to show no change or “status quo.”

Categorical breakdown vs. previous week: D0 (29%/29%), D1 (25%/25%), D2 (21%/21%), D3 (8%/8%), D4 (0.6%/0.6%)
D0 is not drought (D0-D4) =83%/83%
Drought: D1-D4 = 54%/54%
Population in drought (D1-D4) region = 1,093,401/1,093,401

Categorical breakdown vs. 52 weeks ago: D0 (29%/41%), D1 (25%/14%), D2 (21%/0%), D3 (8%/0%), D4 (0.6%/0%)
D0-D4 =83%/55%
Drought: D1-D4 = 54%/14%

Climatological Outlooks:
The seven-day precipitation forecast shows 0.01”-0.25” (liquid-equivalent) west to east.
6-10 day outlooks (valid Feb. 8-12) show warmer and wetter chances.
Final February outlooks (issued Jan. 31) show no clear temperature signal and wetter potential across the eastern 1/2 of Iowa.
February-March-April outlooks (issued Jan. 19) show EC on temperature and a slightly elevated wet signal east.