



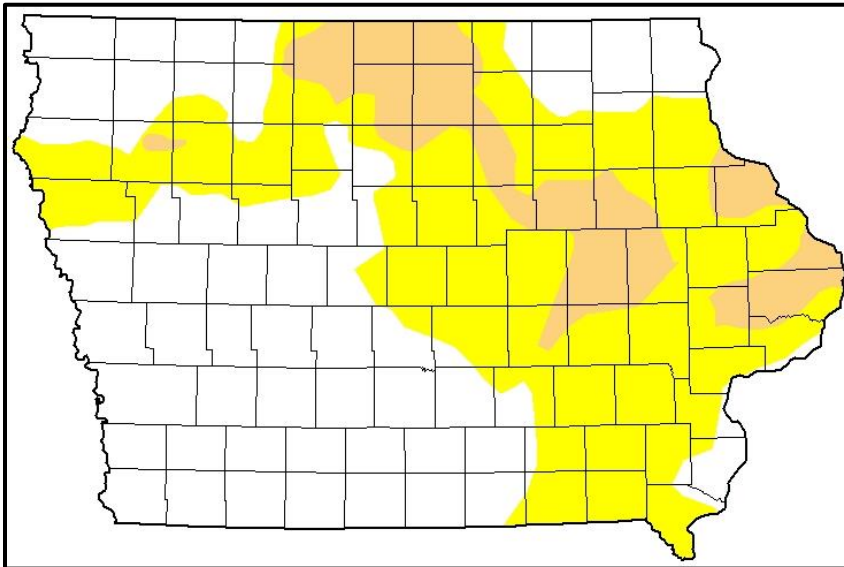
# WATER SUMMARY UPDATE

Published Date December 9, 2021 | Issue 126

## A snapshot of water resource trends for November, 2021

### Drought Monitor - Conditions as of December 7, 2021

National Drought Mitigation Center and partners

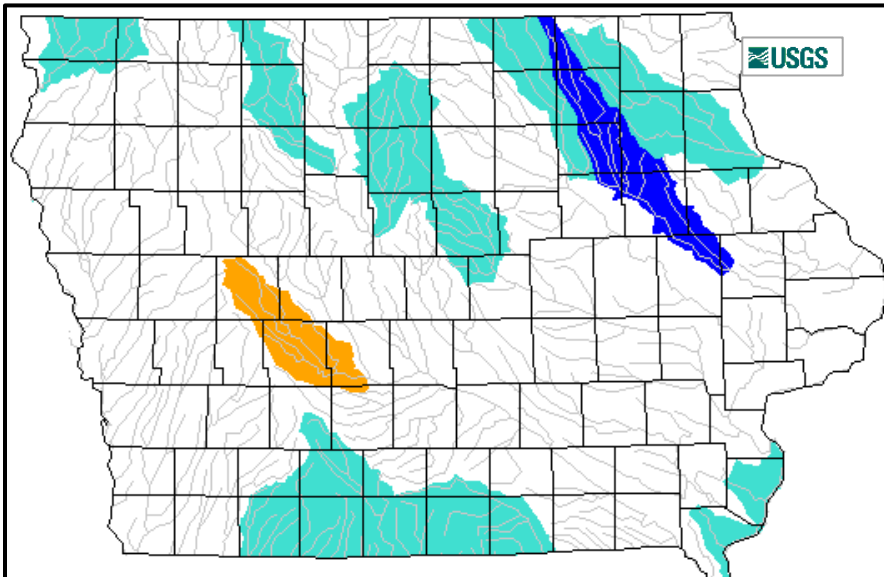


**Intensity:**

<span style="color: yellow;">■</span> D0 Abnormally Dry	<span style="color: red;">■</span> D3 Extreme Drought
<span style="color: lightorange;">■</span> D1 Moderate Drought	<span style="color: darkred;">■</span> D4 Exceptional Drought
<span style="color: orange;">■</span> D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

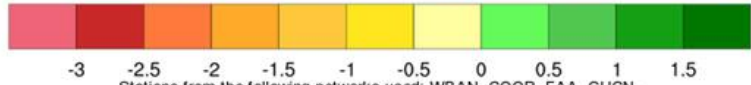
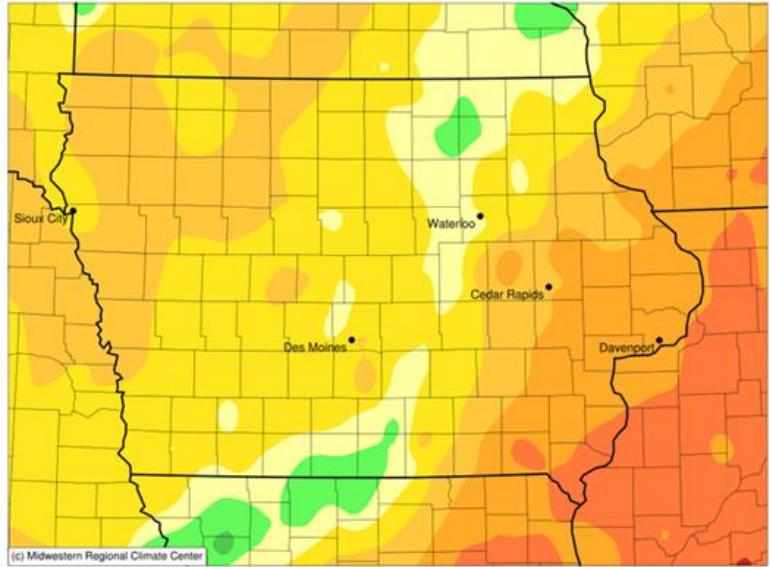
### Stream Flow – November 2021



Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

### Accumulated Precipitation (in): Departure from 1991-2020 Normals

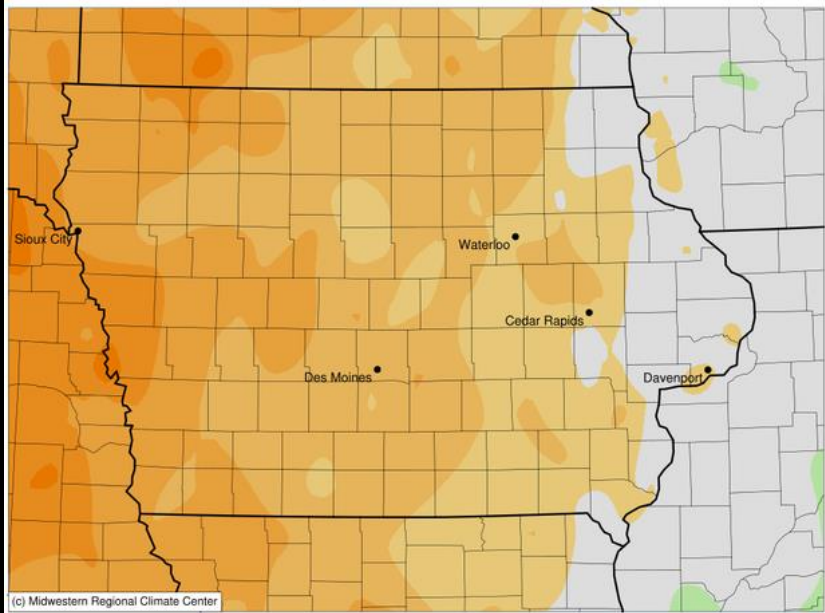
November 01, 2021 to November 30, 2021



-3 -2.5 -2 -1.5 -1 -0.5 0 0.5 1 1.5  
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  
Generated at: 12/1/2021 8:34:59 AM CST

### Average Temperature (°F): Departure from 1991-2020 Normals

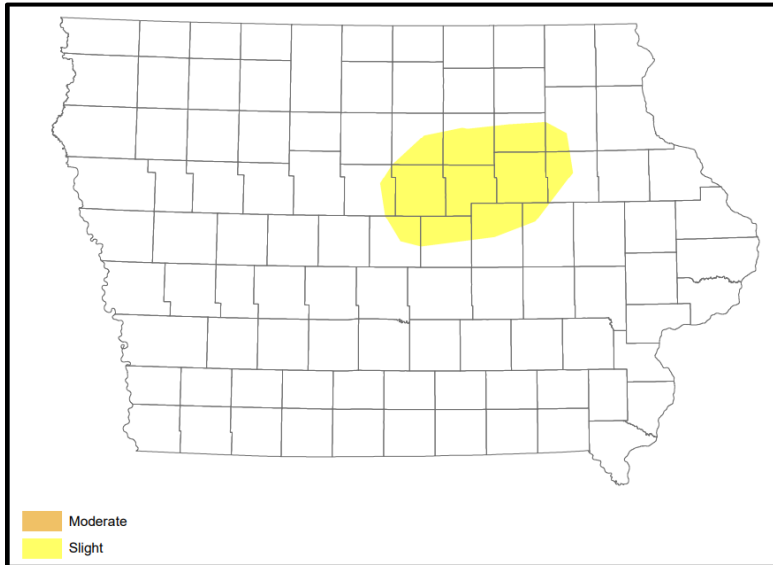
November 01, 2021 to November 30, 2021



-3 -2 -1 0 1 2 3 4 5 6 7  
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  
Generated at: 12/8/2021 12:07:07 AM CST

## Shallow Groundwater - Conditions for November 2021

Iowa DNR and IIHR-Hydroscience and Engineering



### RECENT DEVELOPMENTS AND CHANGES

#### SUMMARY

While November in Iowa had only half the normal precipitation, the wet October combined with the rain that did fall in November has continued to improve conditions. For the first time since July 2020 there are no D2 (Severe Drought) conditions in the state. 38 percent of the state is designated as being abnormally dry (D0), while only 13 percent of the state is shown in moderate drought (D1). This is a continued improvement of conditions from the summer and fall months. Shallow groundwater conditions, as well as soil moisture are showing improvement. Streamflow is nearly normal for this time of the year across nearly all of the state. These conditions are generally favorable as Iowa heads into the normally dryer winter months.

#### FALL SUMMARY:

Temperatures over the three autumn months (September-October-November) averaged 53.8 degrees or 3.4 degrees above normal while precipitation was nearly normal, with a total of 7.79 inches falling during these three months, which is only 0.20 inches below normal. Fall 2021 ties 1947 as the 13th warmest fall among the period of record; it was also the 68th wettest fall on record.

#### DROUGHT MONITOR

Over the past month drought conditions eased across north-central and eastern Iowa, where D2 Drought is no longer present. A broad one-category improvement occurred over the last week of October as reflected in the first depiction of the month with the 10 percent area of D2 upgraded to D1. This was the first time since July 7, 2020, that D2 was absent from the state. Drought is largely gone across western Iowa as well, with the lowest extent of D0 and D1 since March 2020. After a wet stretch into the middle of November, D0 and D1 were further reduced in central and eastern Iowa. Longer-term deficits have become nearly balanced out by short-term precipitation gains across much of Iowa. Sub-soil moisture profiles had also improved significantly along with elevated stream flows. These factors pointed to soils getting deep moisture infiltration and allowing some rainfall to runoff into streams. Drought conditions remained steady through the end of the month with a small

expansion of D0 in southeast Iowa where 30-day precipitation deficits are stacking up. As of December 7, D0 covered 38 percent of Iowa while D1 covered 13 percent.

#### **NOVEMBER PRECIPITATION AND TEMPERATURE**

After the 8th wettest October on record, a less active weather pattern set up over Iowa with below-average precipitation totals reported in most locations. Only portions of northeast and south-central Iowa reported above-normal precipitation. Widespread, measurable snow was also absent across Iowa with only six stations observing at least an inch. Statewide average precipitation totaled 0.92 inches or 0.90 inches below normal, ranking as the 41st driest November on record; a drier November last occurred in 2014. Monthly precipitation totals ranged from 0.17 inches at the Sioux City Airport to 3.01 inches in Allerton. The statewide average snowfall was 0.1 inches, which is 2.6 inches below average. Sanborn reported the highest monthly snowfall at 1.7 inches.

November temperatures averaged 39.2 degrees, 2.3 degrees above normal, tying 2006 and 2011 as the 43rd warmest on record; a warmer November occurred just last year. Overall warmer than average conditions blanketed Iowa during November with positive departures of up to four degrees in western Iowa. Statewide temperatures in eastern Iowa were near-normal to slightly warmer than average. November's statewide average maximum temperature was 49.6 degrees, 3.2 degrees above normal while the average minimum temperature was 28.7 degrees, 1.3 degrees above normal. Lake Park reported the month's high temperature of 73 degrees on the 6th, 25 degrees above normal. Several northern stations reported the month's low temperature of eight degrees on the 26th, on average 12 degrees below normal.

#### **NOVEMBER STREAM FLOW**

During the month of November, streamflow conditions moved into the normal range for the majority of the state. A portion of the Wapsipinicon River moved into the much above normal flow and the Middle Raccoon River moved to below normal flow. The Turkey, Boone, Des Moines, East Fork Des Moines, Rock, East Fork 102, Thompson, and Chariton Rivers are in the above normal flow condition.

It should be noted that during the winter season, USGS streamflow data may be impacted by ice formation and backwater. This information should be used as preliminary information only.

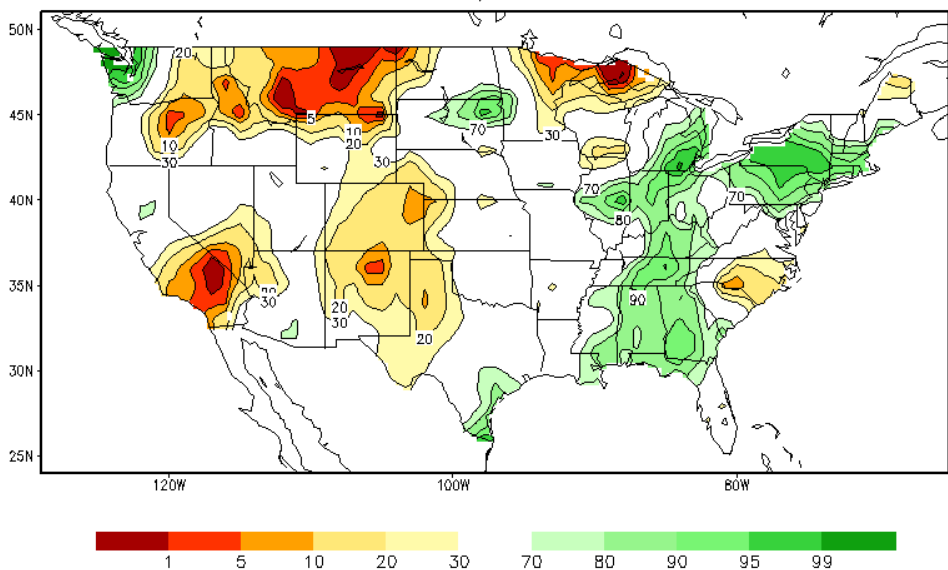
#### **NOVEMBER SHALLOW GROUNDWATER**

Shallow groundwater conditions have held steady or shown slight improvement statewide, especially across Central and North Central Iowa. Rainfall during November improved shallow groundwater conditions in most locations. Slight concern for shallow groundwater conditions still exist in parts of Central and North Central Iowa.

#### **NOVEMBER SOIL MOISTURE**

The very wet October has continued to improve soil moisture levels in Iowa. As that month's rainfall infiltrated the soil profile, the calculated soil moisture rankings improved (see figure below) across nearly all of Iowa. The late November soil moisture information from the State Climatologist indicates that three percent of Iowa has topsoil moisture levels rated as very short and 20 percent rated as short. The numbers for topsoil are seven percent very short and 29 percent short. Colder weather will limit evaporation from the soil, which should help to retain current soil moisture until the spring.

Calculated Soil Moisture Ranking Percentile  
NOV, 2021



**ADDITIONAL INFORMATION**

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

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