



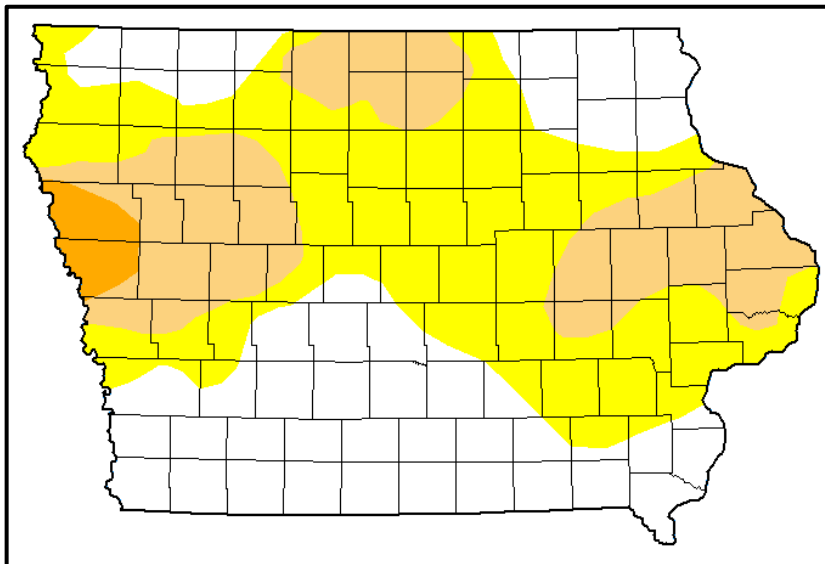
# WATER SUMMARY UPDATE

Published Date April 7, 2022 | Issue 130

## A snapshot of water resource trends for March, 2022

### Drought Monitor - Conditions as of April 5, 2022

National Drought Mitigation Center and partners

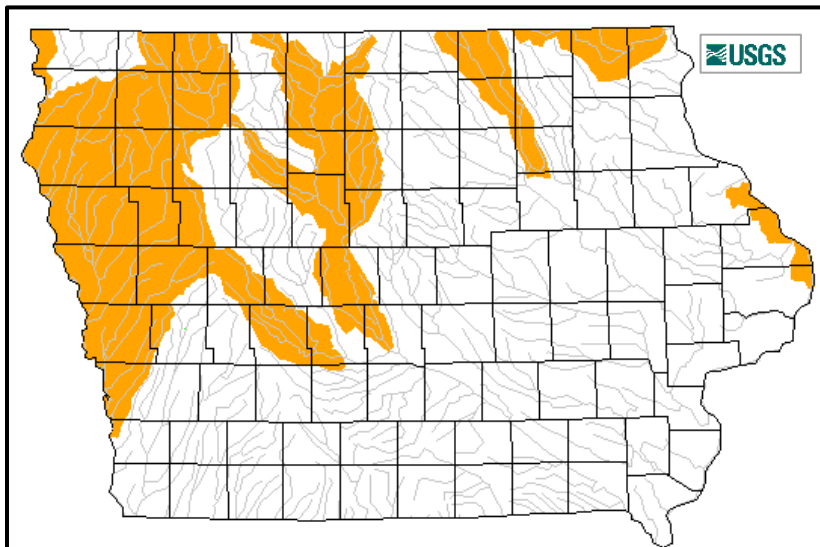


**Intensity:**

<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D0 Abnormally Dry	<span style="background-color: red; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D3 Extreme Drought
<span style="background-color: #f4a460; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D1 Moderate Drought	<span style="background-color: darkred; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D4 Exceptional Drought
<span style="background-color: orange; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D2 Severe Drought	

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

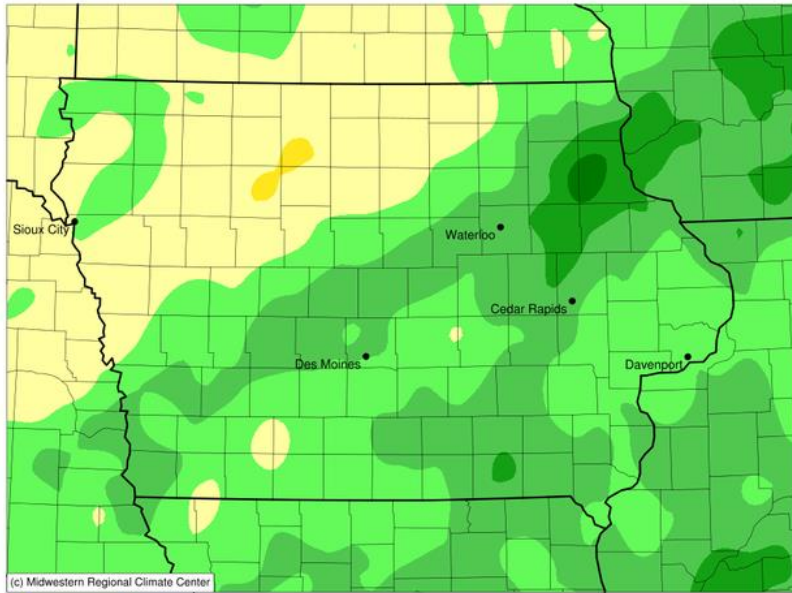
### Stream Flow – March, 2022



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

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

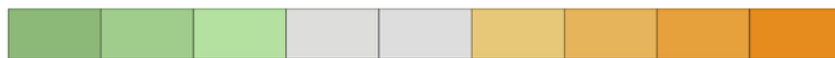
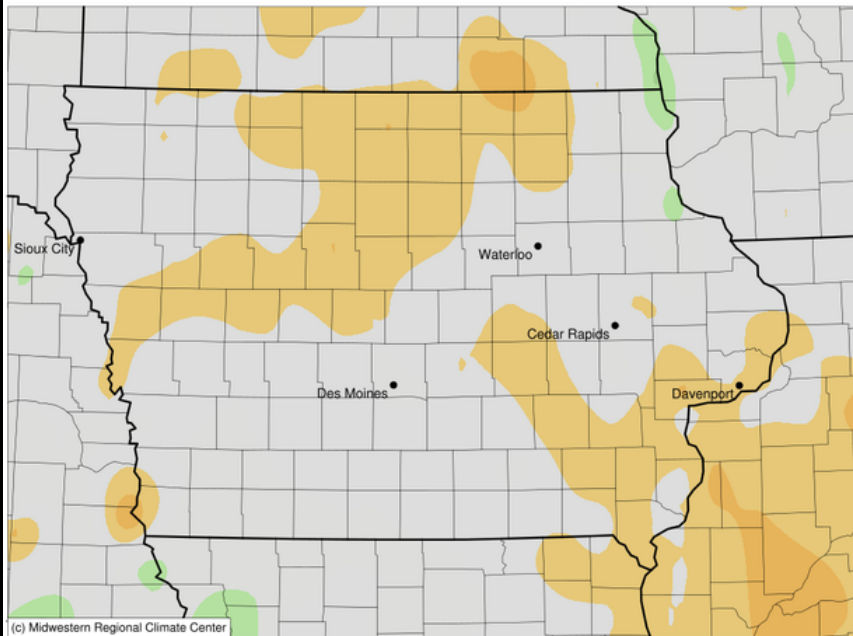
March 01, 2022 to March 31, 2022



-1 0 1 2 3 4  
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: 4/7/2022 9:13:15 AM CDT

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

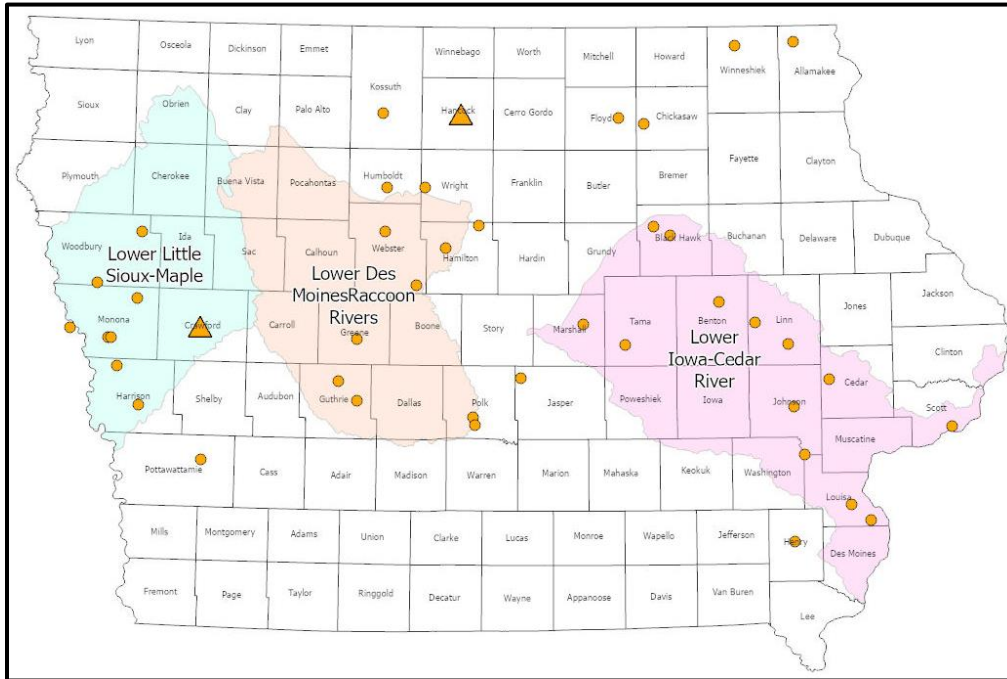
March 01, 2022 to March 31, 2022



-3 -2 -1 0 1 2 3 4  
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: 4/7/2022 9:14:40 AM CDT

## Shallow Groundwater - Conditions for March, 2022

Iowa DNR and Iowa Geological Survey – IIHR Hydroscience and Engineering



### RECENT DEVELOPMENTS AND CHANGES

#### SUMMARY

The dry month of February was followed by a wetter than normal March. Temperatures were close to normal for the state, while precipitation totaled 2.70 inches, 0.71 inches above normal. The US Drought Monitor reflected the wetter than normal month with a decrease in drought conditions across much of the state. Dryness in western Iowa did result in the introduction of a small area of Severe Drought by mid-March. Streamflow is normal across much of the state, but some areas in western and northern Iowa are showing lower than normal flow levels. Those same areas of western Iowa are causing some concern for shallow groundwater supplies.

#### DROUGHT MONITOR

Over the month of March drought conditions generally improved across the state. At the beginning of March over 92 percent of the state was in some form of dryness or drought, but by the start of April that number was reduced to 62 percent. Improvement was most noticeable across southern Iowa and into eastern and northeast Iowa. Moderate Drought (D1) conditions were reduced from 35 percent to 25 percent of the state during the month. On March 15 an area of Severe Drought (D2) was introduced in parts of Monona and Woodbury Counties in western Iowa. The area of D2 designation covers 2.3 percent of the state. Normal to above normal rainfall should continue to generate improvements in April.

#### MARCH PRECIPITATION AND TEMPERATURE

After the 6th driest February on record, the preliminary statewide average precipitation for March totaled 2.70 inches, or 0.71 inches above normal. Most locations across the southeastern two-thirds of Iowa reported near to above average precipitation during the month with generally below normal total in the northwest. The wettest conditions were found over northeastern Iowa with totals of up to three inches above normal. Monthly

precipitation (melted snow and sleet plus rain) totals ranged from just 0.85 inches in Estherville to 5.77 inches at Elkader. In March, a majority of the Iowa's northwestern stations measured below-average snowfall, while an area of south-central Iowa received up to four inches more snow than normal. Preliminary statewide average snowfall for the month was 3.0 inches, 1.7 inches below normal.

For the month, temperatures were slightly above normal in north-central and southeastern Iowa, though the preliminary statewide average temperature was just 0.2 degree below the normal of 36.4 degrees. Muscatine reported the month's high temperature of 79 degrees on the 21st, 27 degrees above average. Rockwell City and Sioux City Airport reported the month's low temperature of -5 degrees on the 12th, on average 29 degrees below average.

### **MARCH STREAM FLOW**

During the month of March, streamflow conditions remained normal for the majority of the state. Portions of the Des Moines, Cedar, Upper Iowa, Raccoon, Nishnabotna, Floyd, Boyer, Little Sioux, and Soldier Rivers have moved into below normal 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.

### **MISSOURI RIVER BASIN CONDITIONS**

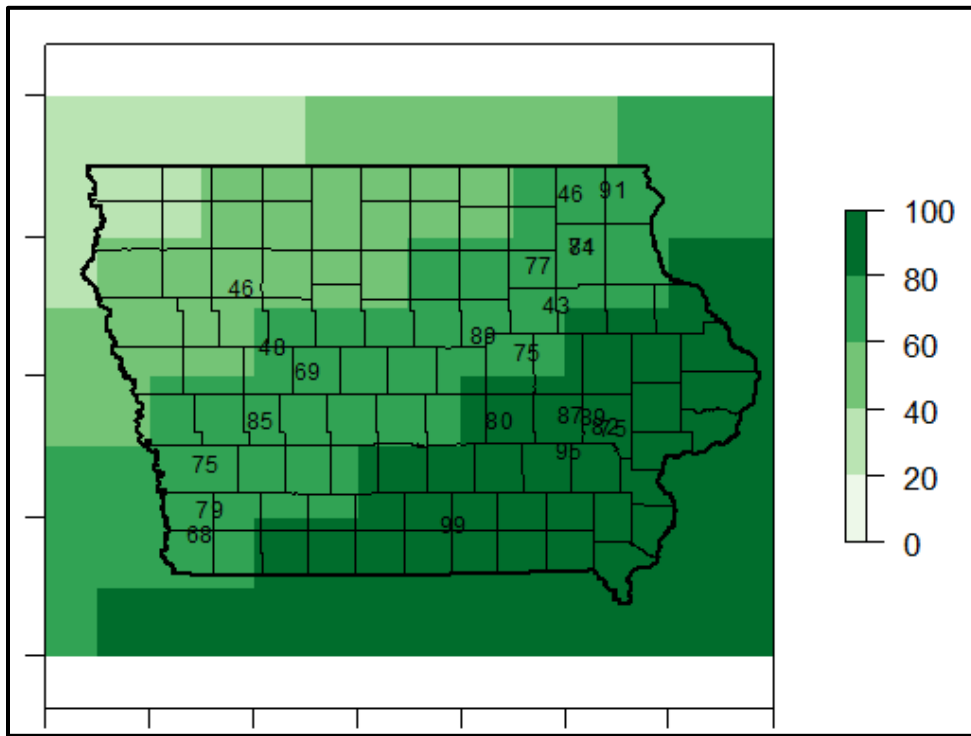
The total volume of water stored in the system of reservoirs is 48.3 million acre feet (MAF), only 0.2 MAF more than one month ago. All of the 16.3 MAF of flood storage capacity is available, plus an additional 7.9 MAF of multiple use storage. The 2022 calendar year forecasted runoff, updated April 1st, for the Missouri River Basin above Sioux City is 17.8 MAF, roughly 69 percent of average. If realized, this would be the second year of well below normal runoff, as 2021's runoff was only 15.2 MAF, just 59 percent of average. As of early April 2022, most of the plains snow had melted off, and the mountain snowpack remains below average.

### **MARCH SHALLOW GROUNDWATER**

For March 2022 the shallow groundwater level conditions are normal across most of the state, but there are also areas vulnerable to declining water levels. In the absence of a shallow groundwater monitoring network, below normal average streamflow can be used as an indirect measure of water level changes in adjoining shallow aquifers. During March, below normal streamflow was clustered in three broad areas, including around the Lower Little Sioux and Maple Rivers, the Lower Des Moines and Raccoon Rivers, and the Lower Iowa and Cedar Rivers, along with other dispersed locations mainly in the north-central and northeast part of the state. Two USGS groundwater wells also exhibited statistically below normal water levels. Current impacts to groundwater are likely relatively minor, however, if drought conditions develop or intensify, these areas may be vulnerable to declining shallow groundwater levels and reduced aquifer recharge. Spring precipitation can have a significant impact on recovery.

### **MARCH SOIL MOISTURE**

The Iowa Flood Center map of soil moisture levels shows similar trends to the previous month, with northwest Iowa having the driest soils, and southeast Iowa having the wettest soils. The map shows soil wetness, as a percentage, at a 20-inch depth. Parts of northwest Iowa have soil moistures near 20 percent, while some areas in southeast are showing fully saturated soils. This map shows soil wetness in percentage, aggregated to 20-inch depth for the last day of March.



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