

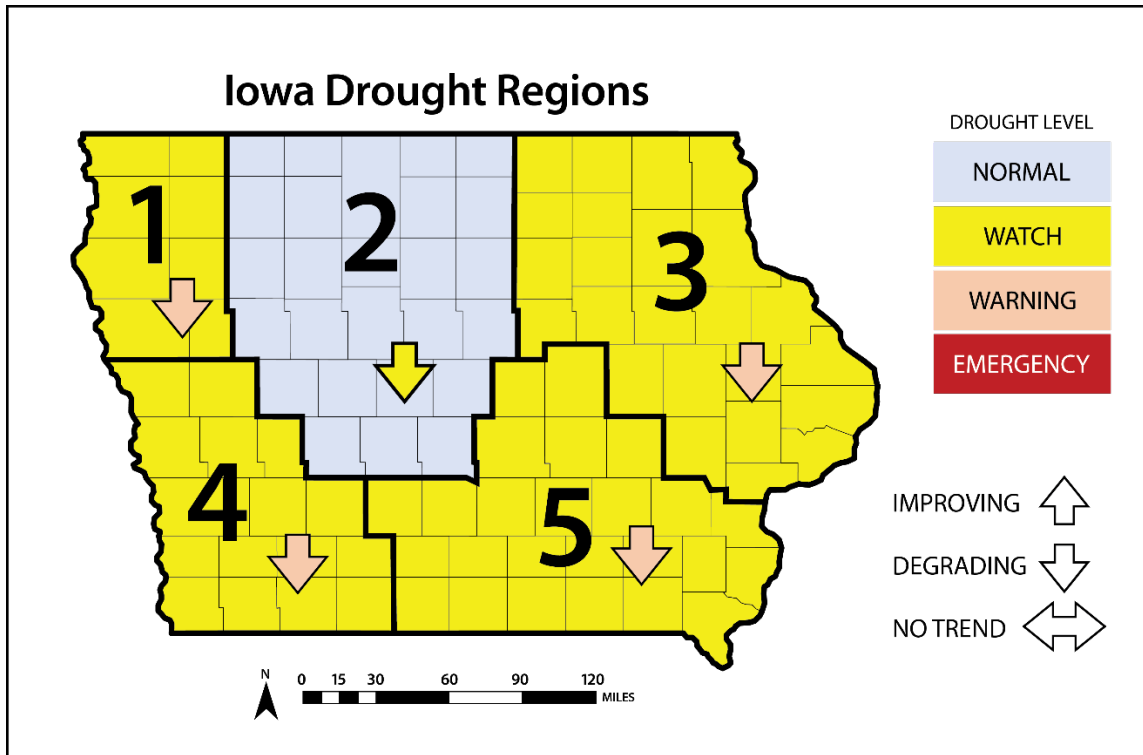


# WATER SUMMARY UPDATE

Published Date July 6, 2023 | Issue 145

## A snapshot of water resource trends for June 2023

### IOWA DROUGHT CONDITIONS

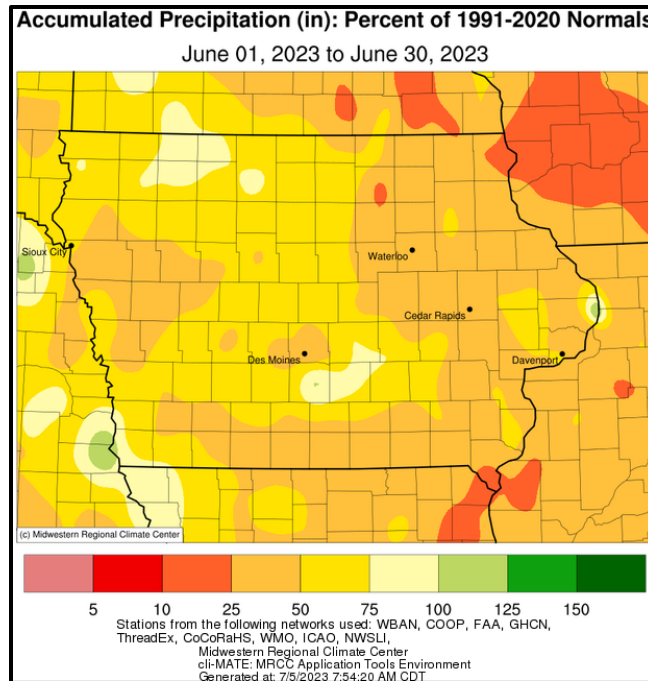


### CONDITION SUMMARY:

The month of June continued the drier than normal trend seen in March, April, and May. Rainfall in June totaled 2.90 inches, well below the expected monthly total of 5.26 inches. For the months of March through June, Iowa received a total of 9.16 inches of precipitation, just 65 percent of the expected 14.20 inches for those four months. All areas of Iowa had below normal rainfall in June. As a result of these moisture deficits, streamflow is down, and soil moisture profiles are depleted as well. The Iowa Drought Plan now has Drought Regions 1, 3, 4, and 5 in “Drought Watch,” with conditions across the entire state trending downward. For the first half of 2023 Iowa has received 83 percent of its expected precipitation. There are smaller areas within Drought Regions 4 and 5 which are nearing conditions of “Drought Warning”, and that designation may emerge in the near future.

### June Precipitation

Most of Iowa’s National Weather Service (NWS) co-op stations reported below-average totals during June, especially in western and northeastern Iowa where pockets of three to four-inch deficits were observed. There were also several small pockets on above-normal amounts across various sections of the state. Monthly precipitation totals ranged from just 0.55 inches in Clinton to 6.27 inches in Ackworth.



Average temperatures varied in June with near-normal conditions over portions of southern and eastern Iowa and temperatures up to three degrees above-normal in the northwest. Washington reported the month’s high temperature of 95 degrees on the June 24, which was 12 degrees above normal. Elkader reported the month’s low temperature of 35 degrees on June 12, 20 degrees below normal.

### Standardized Precipitation Index (SPI)

The SPI is an index based on accumulated precipitation for various time scales. SPI is the most commonly used indicator worldwide for detecting and characterizing meteorological droughts. The SPI indicator measures precipitation differences based on a comparison of observed total precipitation amounts over the period of interest with the long-term historical precipitation record for that period. Droughts are characterized by negative SPI values, while positive SPI values indicate wet periods. The range of SPI values is between -2 and +2.

90-day SPI values for the Drought Regions for the month of June (comparing April, May, and June precipitation) range from -0.9 to -1.3. These negative SPI values found across nearly all of Iowa show a deterioration from last month, with the wetter than normal winter months now more than 90 days in the past.

Drought Region	3-month SPI	6-month SPI	IDP Classification ↑ = improving ↓ = degrading ↔ = no trend
1	-1.3	-1.0	Drought Watch ↓
2	-0.9	-0.5	Normal ↓
3	-1.5	-0.7	Drought Watch ↓
4	-0.9	-0.6	Normal ↓
5	-1.3	-0.8	Drought Watch ↓

## Standardized Streamflow Index (SSI) and Streamflow

SSI is a metric that compares current streamflow against the historical record to determine how far away the current streamflow value is from the river's historical mean observed on the same date. For this WSU daily streamflow yields from approximately six to 12 rivers in each region are averaged to create the region's mean daily flow, which is then compared to historical streamflow since 1960 to determine how current streamflow fits into historical context. Drought index values typically range from 0 (streamflow is the same as the mean) to -3, which indicates the current streamflow is three standard deviations less than the historical mean for the period. Positive SSI values indicate wetter than normal or flood-level flows.

For June, the SSI for each drought region are:

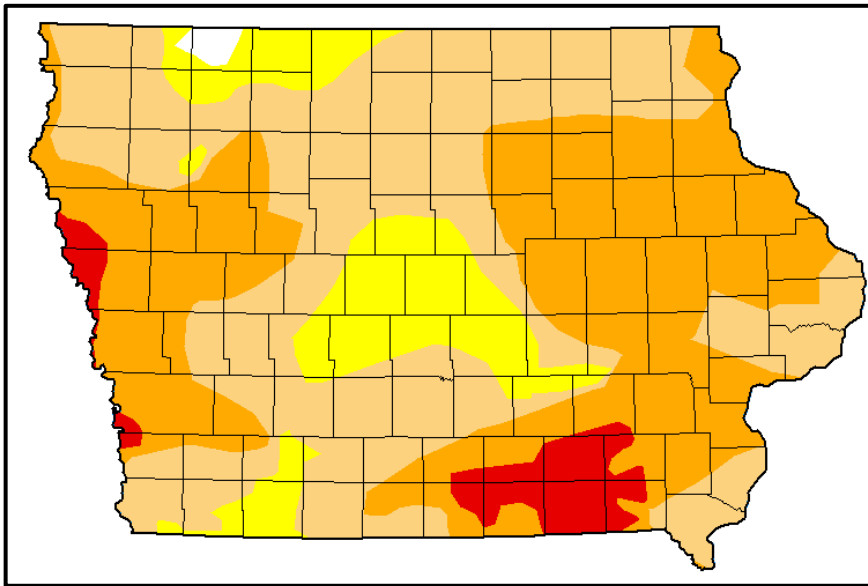
Drought Region	30-Day SSI	365-Day SSI	IDP Classification ↑ = improving ↓ = degrading ↔ = no trend
1	-0.82	-0.77	Normal ↓
2	-0.84	-0.63	Normal ↓
3	-1.01	+0.24	Drought Watch ↓
4	-1.66	-0.97	Drought Warning ↓
5	-1.16	-1.03	Drought Watch ↓

During May, the US Geological Survey notes that in June streamflow conditions across the majority of the state were in the below-normal or much below-normal conditions.

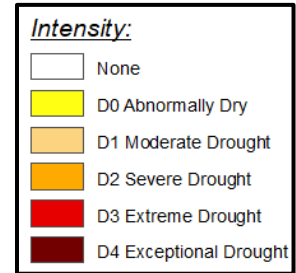
## US DROUGHT MONITOR AND DROUGHT CONDITIONS

During the month of June, the State of Iowa saw continued intensification of drought conditions in the eastern and southeastern parts of the state. An area of D3 – Extreme Drought was introduced in Davis, Appanoose, and surrounding counties. Over the past two weeks the area has grown to include all or parts of nine counties. At the same time, the area of D2 – Severe Drought now covers western and eastern Iowa, with about 40 percent of the state classified as D2. Less than one percent of Iowa is now free from drought or abnormal dryness.

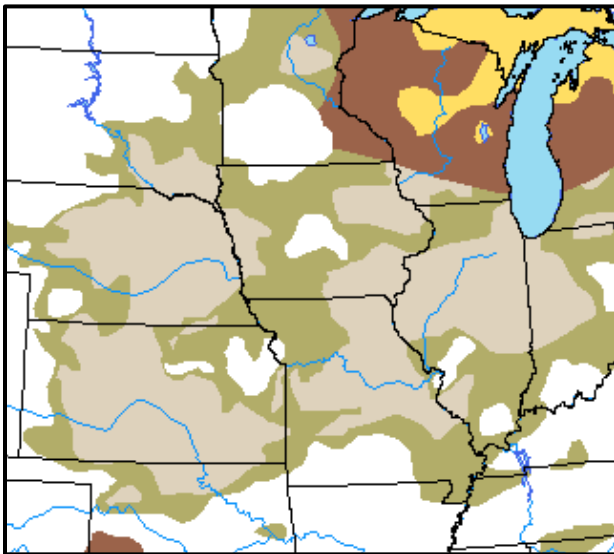
Abnormal dryness or drought conditions have now been continuously present in Iowa for more than three years. The last USDM to show no dryness or drought in the state was May 5, 2020. This is the longest continuous period of dryness or drought in Iowa since the start of the USDM in 2000. On a national scale, the most significant drought conditions are found in Kansas and Nebraska, which have the largest areas of D3 – Extreme Drought and D4 – Exceptional Drought in the United States. Large areas of significant drought exist from Kansas and Nebraska eastward, through Missouri, Iowa, Illinois, and Wisconsin. The western states, which have seen significant drought over the past two decades, are currently shown with only small areas of D2 drought in Nevada and New Mexico, and an area in Texas of D3 and D4 – Exceptional Drought. Over 70 percent of California, which had been one of the most severely impacted states in recent years, is free from any dryness or drought, with less than 5 percent of that state rated as D1 – Moderate Drought.



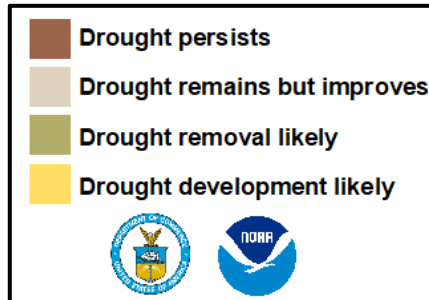
**July 4, 2023**  
 (Released Thursday, Jul. 6, 2023)  
 Valid 8 a.m. EDT



The Seasonal Drought Outlook issued by the CPC, valid for July 1 through September 30, shows most of Iowa with a tendency for improvement or even removal of drought conditions. This improvement in drought conditions is also shown for the surrounding states of South Dakota, Nebraska, Kansas, Missouri, and Illinois.



**U.S. Seasonal Drought Outlook**  
 Drought Tendency During the Valid Period

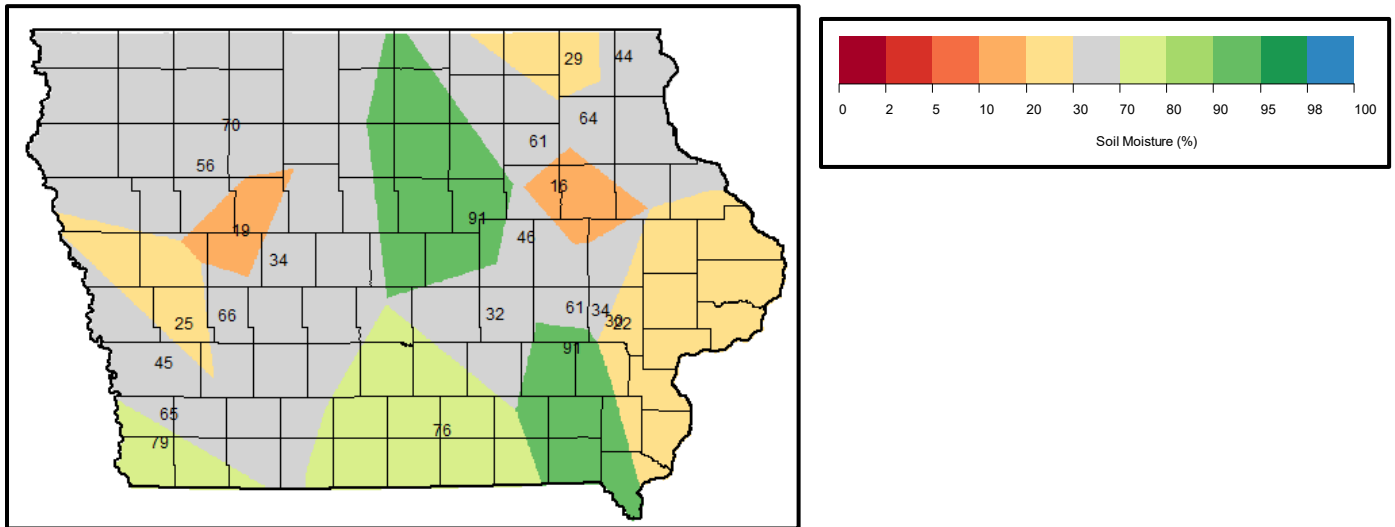


*Valid for July 1 - September 30, 2023*  
*Released June 30, 2023*

**OTHER WATER RESOURCE INFORMATION**

**JUNE SOIL MOISTURE**

Surface soil moisture conditions up to 20 inches of depth are considerably wetter than the previous month, with wetness values above 75 percent in most southern and central Iowa. Drier surface conditions with wetness below 30 percent are seen at eastern and western Iowa. Soil moisture conditions at 20-inch depth have not changed considerably during the last month. Areas in central, northeastern and southeastern Iowa have wetness values above 75 percent. Drier conditions are shown in the Cedar River valley.



Another source of soil moisture information is the US Department of Agriculture’s National Agricultural Statistics Service (NASS) that reports conditions weekly. In the report from July 3, 40 to 80 percent of subsoil in Iowa is reported as being short or very short of soil moisture. Many locations in Iowa lack sufficient direct soil moisture measurement stations, making reporting on this important element of drought monitoring challenging.

**BORDER RIVER CONDITIONS**

In their weekly update of Missouri River conditions dated June 27, the Army Corps of Engineers indicated that system storage is 52.6 million-acre feet (MAF), an increase in stored water of 2.5 MAF over the past month. Available storage in the reservoir system for the season’s remaining runoff capacity remains well above normal. Mountain snowpack is completely melted, with melting finishing 2-3 weeks ahead of average, resulting in above-average runoff in May and June. Conditions remain very dry across much of the Basin. After peaking in early May, flow volumes on the Mississippi River are below normal headed into the summer months.

**ADDITIONAL INFORMATION**

This edition of the Water Summary Update continues to reflect use of the 2023 Iowa Drought Plan (IDP), which was developed as a collaborative effort between the Department of Natural Resources, the Department of Agriculture and Land Stewardship, and the Department of Homeland Security and Emergency Management. The IDP can be seen in its entirety on the DNR’s website: [The Iowa Drought Plan](#).

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

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