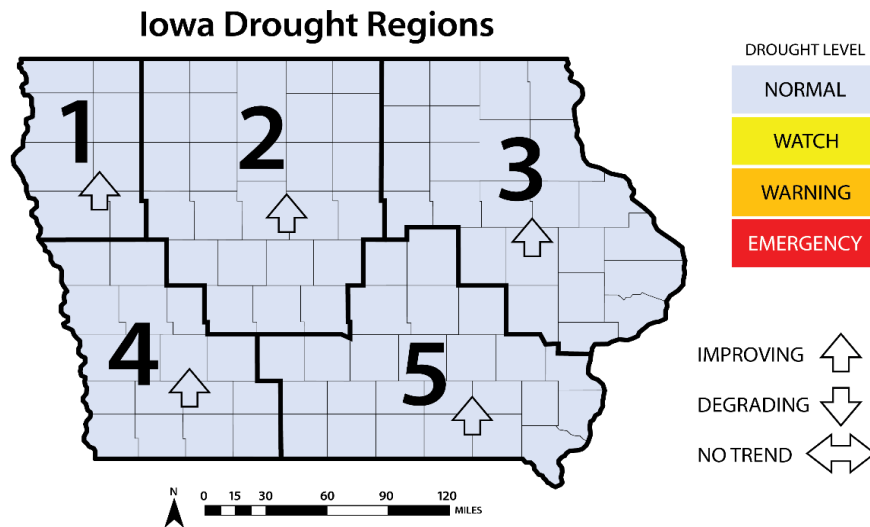


WATER SUMMARY UPDATE

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A snapshot of water resource trends for May 2024

IOWA DROUGHT CONDITIONS



CONDITION SUMMARY

Month of May Brings the Drought to an End

After four years of below normal precipitation and drought, the State of Iowa has returned to normal hydrologic conditions. May, climatologically the second wettest month for Iowa, saw rainfall of 7.51 inches across the state, which will rank as one of the top 10 wettest Mays in 152 years of records. The spring months of March, April, and May will also be among the top 10 wettest spring seasons on record. Continued above-normal moisture during the wettest month of the year, June, will be beneficial as the state heads into the warm months of summer. For the month of April, temperatures averaged 50.7 degrees or 2.1 degrees above normal.

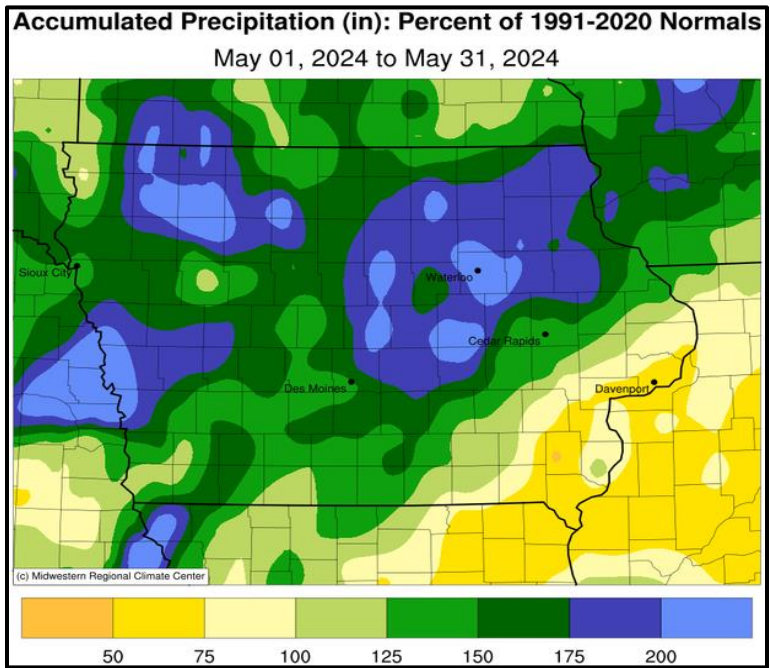
Soil moisture levels and streamflow have also improved across the state in response to recent rainfall events. The US Drought Monitor, one measure reflected in the Iowa Drought Plan (IDP), shows only limited areas of D0 – Abnormal Dryness, with no drought areas indicated for the first time since June 2020.

According to the IDP, all five monitoring regions are drought free, with conditions continuing to improve. After above normal precipitation in six of the last eight months, all areas of the state are now in “Normal” condition for the first time since the start of the IDP, and according to the US Drought Monitor, the state is free from drought and dryness for the first time in four years.

May Preliminary Precipitation and Temperature

The vast majority of Iowa’s National Weather Service co-op stations reported wetter than normal conditions for May, with many experiencing double their normal rainfall. Only a small swath of southeast Iowa observed below-normal rainfall totals. Monthly precipitation totals ranged from 2.80 inches in Fort Madison to 14.38 inches at Vining. The

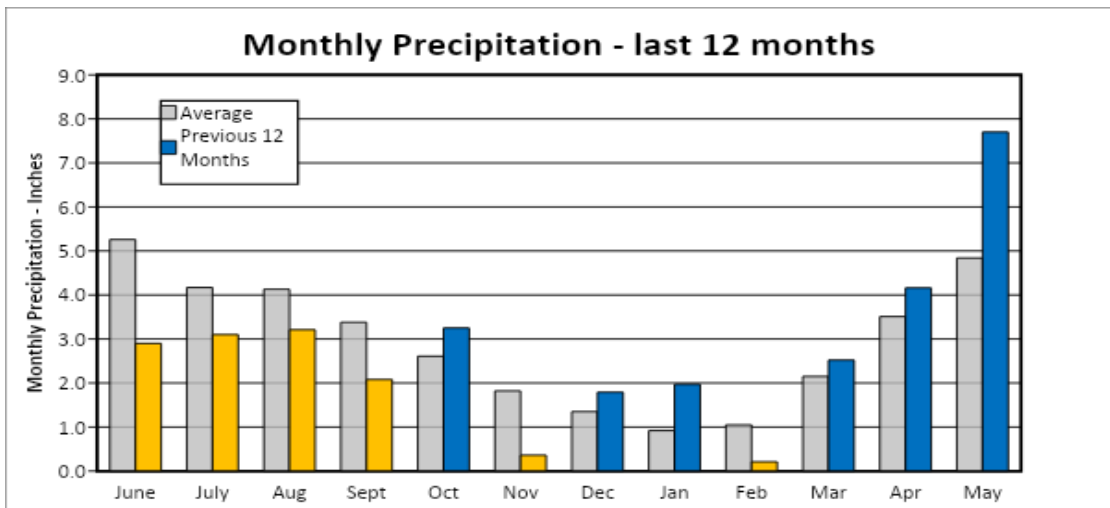
statewide preliminary precipitation came in at 7.51 inches or 2.67 inches above normal. May 2024 will rank in the top 10 wettest in 152 years of records.



The graph below shows monthly precipitation in Iowa compared to normal (gray bars), and indicates that Iowa received above normal precipitation during six of the last eight months. More importantly, rainfall has been above normal during the spring months when the state is generally wetter overall. This month-over-month trend has helped to lift the state out of drought conditions.

Preliminary statewide temperatures averaged 62.0 degrees or 2.1 degrees above normal. The warmest conditions were found in southeastern Iowa. Davenport Municipal Airport reported the month's high temperature of 91 degrees on the 21st, 17 degrees above average. Forest City and Storm Lake reported the month's low temperature of 32 degrees on the 5th, 12 degrees below normal.

Temperatures for the three spring months of March, April and May averaged 51.1 degrees, 2.8 degrees above normal. Precipitation totaled 14.23 inches or 3.73 inches above normal, which will place it in the top 10 wettest springs on record.



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 -3 and +3, denoting “extremely dry” to “extremely wet”.

Both the 90-day and the 180-day SPI values for all Drought Regions in May (comparing, March, April, and May precipitation) are well above zero. This shows significant improvement in precipitation going back six months, and puts all the drought regions into normal conditions for this indicator.

Drought Region	3-month SPI	6-month SPI	IDP Classification ↑ = improving ↓ = degrading ↔ = no trend
1	+ 2.5	+ 2.4	Normal ↑
2	+ 2.3	+ 2.1	Normal ↑
3	+ 1.9	+ 1.8	Normal ↑
4	+ 1.7	+ 1.5	Normal ↑
5	+ 1.5	+ 1.7	Normal ↑

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. 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. All of the SSI values in all five drought regions continue to improve, reflecting the overall improvement of hydrological conditions across the state. For May the SSI values for each drought region are:

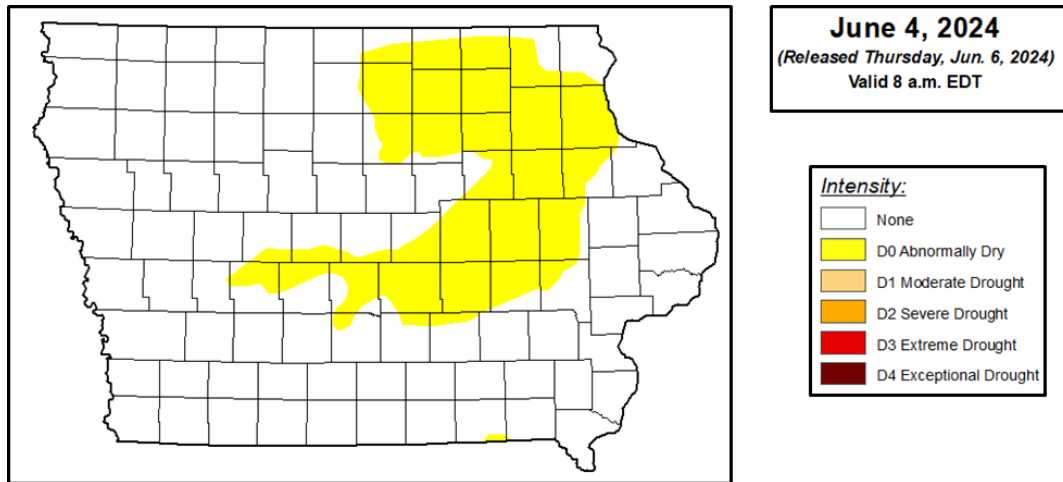
Drought Region	30-Day SSI	365-Day SSI	IDP Classification ↑ = improving ↓ = degrading ↔ = no trend
1	+ 1.88	- 0.35	Normal ↑
2	+ 1.28	- 0.95	Normal ↑
3	+ 1.39	- 1.17	Drought Watch ↑
4	+ 0.74	- 1.36	Drought Watch ↑
5	+ 1.06	- 1.39	Drought Watch ↑

Stream flows are improving, with only the 365-day comparisons remaining negative. This reflects the significant long-term statistical low flows that have been present in Iowa for the last year. The short-term (30-day) values are all positive, which reflects near-term significant improvement in stream flow values. All their conditions can lag behind precipitation, as runoff works its way into the system. As another indicator of improved streamflow, the US Geological Survey shows that precipitation during May improved streamflow conditions from normal to above and much above normal flow for most of the state.

US DROUGHT MONITOR AND DROUGHT CONDITIONS

The current US Drought Monitor map reflects the remarkable improvement in conditions seen over the last month. At the start of May nearly half of Iowa was in some level of drought designation, including over two percent rated as D2 – Extreme Drought. By the end of May, the USDMS showed that the worst conditions in Iowa are only D0 – Abnormally Dry. 75 percent of Iowa is free from any drought or dryness designation, and only 25 percent of Iowa is designated as D0. The

removal of D1 – Moderate Drought from Iowa on May 28 came 204 weeks after its introduction into Iowa in late June 2020. This was the longest period of drought in Iowa since the start of the US Drought Monitor in 2000 and the longest drought since 1954-1959.



On a national scale, about 75 percent of the United States is free from drought or dryness. Only a few small pockets of D3 – Extreme Drought, or D4 – Exceptional Drought, are present in Kansas, New Mexico, and Texas. These areas represent less than one percent of area of US. With the exception of parts of southern Florida, all of the US east of the Mississippi River is free from any dryness or drought.

The Seasonal Drought Outlook issued on May 31 by the Climate Prediction Center (CPC), valid for June 1 through August 31, indicates that drought conditions are not expected to reappear in Iowa or other locations in the upper Midwest.

OTHER WATER RESOURCE INFORMATION

Border River Conditions

According to the US Army Corps of Engineers drought conditions in the upper Basin are expected to persist through the end of August. As of the end of May, about 70% of the basin has no abnormally dry or drought conditions. Mountain snowpack has peaked in basin. The reach above Fort Peck had 56 percent of this year’s peak snowpack remaining, and the reach between Fort Peck and Garrison had 74 percent remaining.

April Soil Moisture

With the wet month of May, soil moisture has increased in most of the state to normal levels. The June 3 USDA’s National Agricultural Statistics Service (NASS) report rates most topsoil and subsoil moisture levels in the state as adequate or surplus. Very little of the state’s topsoil or subsoil is rated as “very short” for moisture. This is much improved over conditions a month ago.

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](#).

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