IOWA DEPARTMENT OF NATURAL RESOURCES

WATER SUMMARY UPDATE

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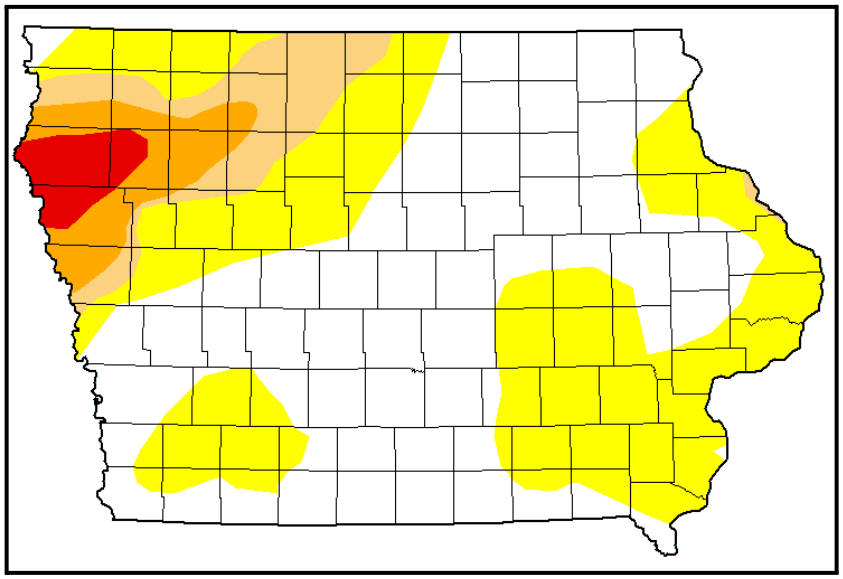
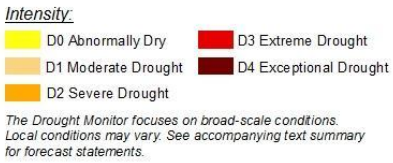
A snapshot of water resource trends for June, 2022

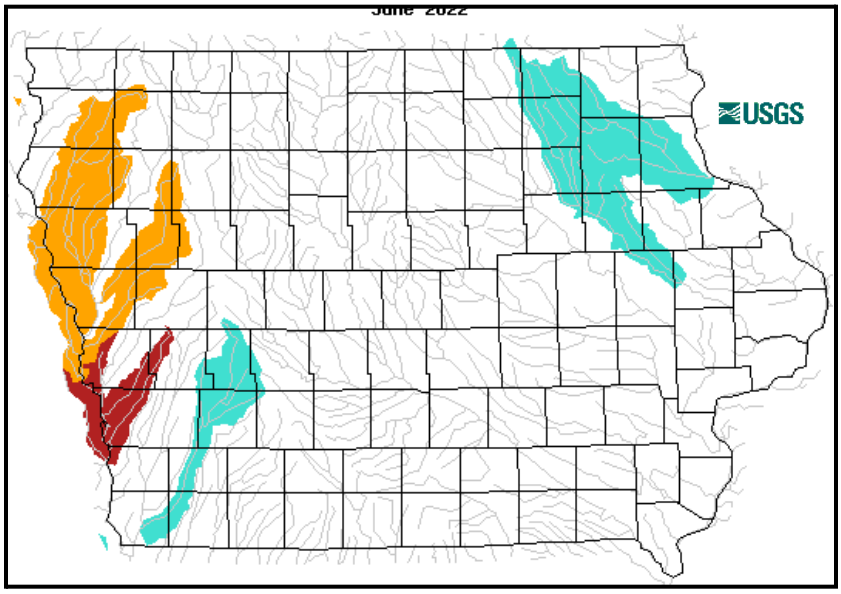
Drought Monitor - Conditions as of July 5, 2022

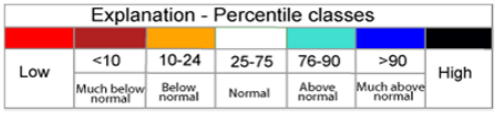
National Drought Mitigation Center and partners

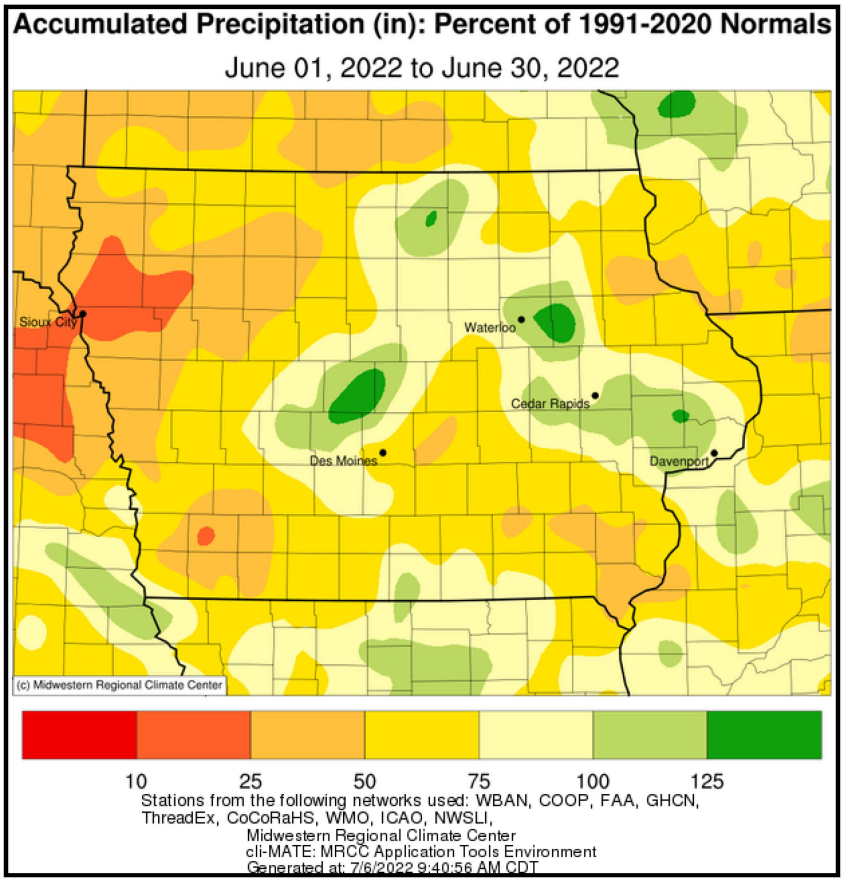


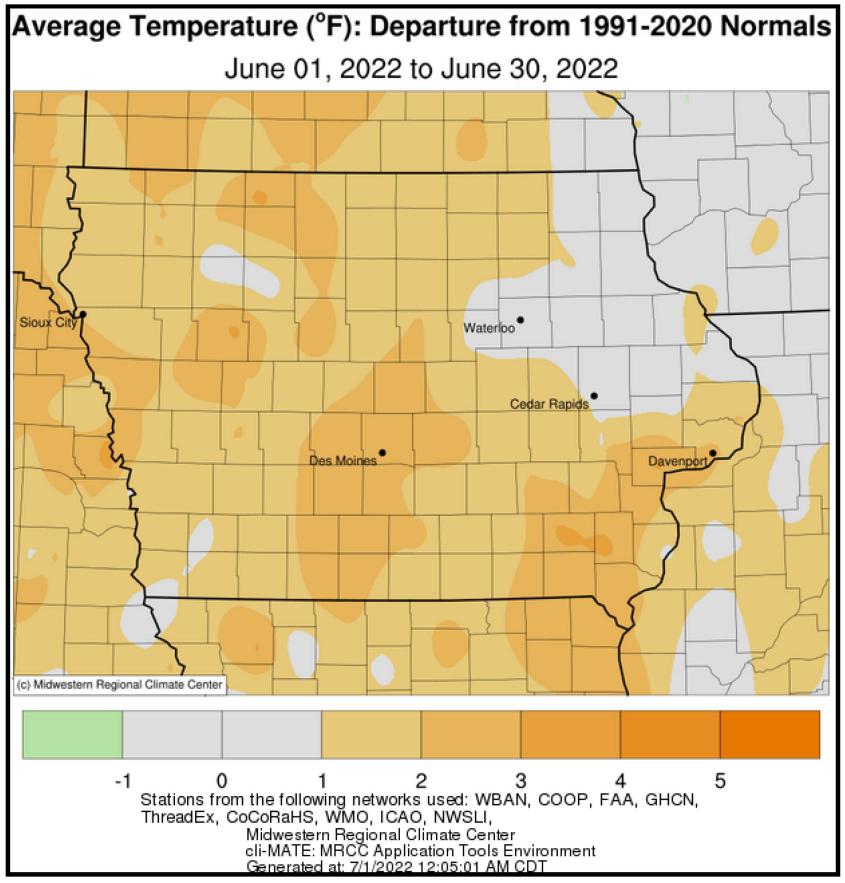


Stream Flow – June, 2022






Accumulated Precipitation (in): Percent of 1991-2020 Normals
June 01, 2022 to June 30, 2022
Sioux City
Waterloo
Cedar Rapids
Des Moines
Davenport
(c) Midwestern Regional Climate Center
10
25
50
75
100
125
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: 7/6/2022 9:40:56 AM CDT


Average Temperature (°F): Departure from 1991-2020 Normals
June 01, 2022 to June 30, 2022
Sioux City
Waterloo
Cedar Rapids
Des Moines
Davenport
(c) Midwestern Regional Climate Center
-1
0
1
2
3
4
5
Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI,
Midwestern Regional Climate Center
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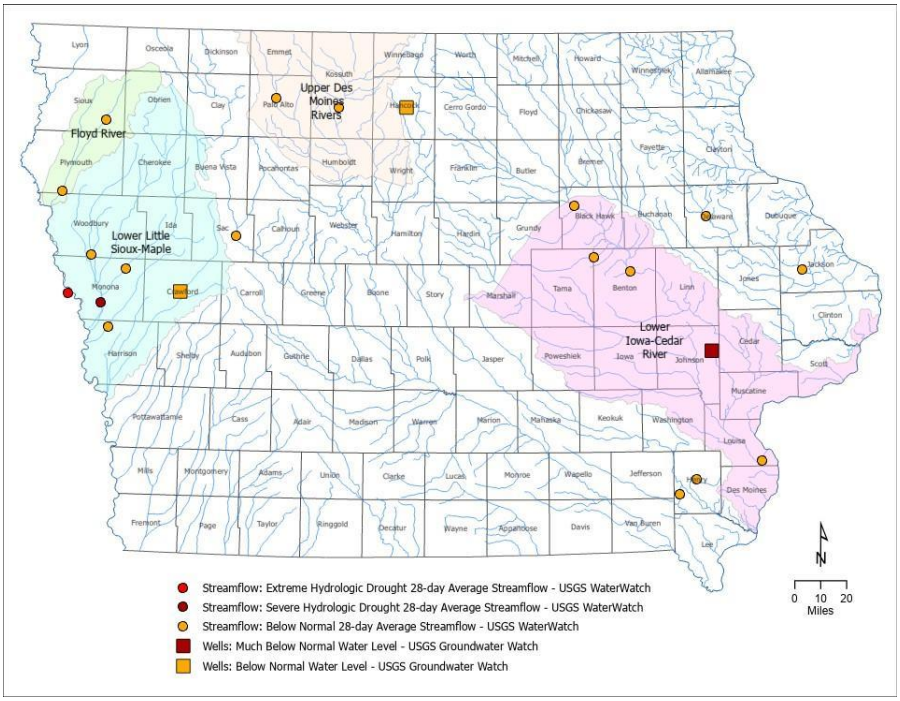
Shallow Groundwater - Conditions for June, 2022

Iowa DNR and Iowa Geological Survey – IIHR Hydroscience and Engineering



RECENT DEVELOPMENTS AND CHANGES

SUMMARY

Drought conditions had been improving through May, but June reversed that trend. The US Drought Monitor showed the first D3 Extreme Drought designation in Iowa since August 2021. Drought conditions deteriorated over parts of northwest, southwest, and eastern Iowa. Rainfall was below normal for much of the state, especially in northwest Iowa, and temperatures were above normal for the month. June is the wettest month of the year for Iowa, so this monthly shortfall is concerning. Streamflow and soil moisture show a pattern similar to the US Drought Monitor – driest in northwest Iowa. For the year to date, some parts of northwest Iowa are short more than eight inches of precipitation, which is leading to the observed streamflow, shallow groundwater, and soil moisture conditions.

DROUGHT MONITOR

The improvement of conditions seen in the past few months reversed itself in June, as the US Drought Monitor indicated a worsening of conditions last month. June started with only a small area of D2 Severe Drought in northwest Iowa, and more than 70 percent of Iowa free from dryness and drought. By the end of June, however, half the state is shown in dryness or drought, with an expanding area of D3 Extreme Drought in Woodbury, Plymouth, and Cherokee Counties in northwest Iowa. D2 conditions extend as far east as central Palo Alto County, and cover another five percent of Iowa. Pockets of D0 Abnormally Dry conditions are shown in southwest and southeast Iowa, and cover more than one third of the state.

To the west of Iowa, conditions have improved significantly in the Dakotas and eastern Nebraska and eastern Kansas over the spring months, with North Dakota now completely free from dryness or drought. These conditions should help the Missouri River improve its runoff in 2022.

JUNE PRECIPITATION AND TEMPERATURE

While isolated pockets of above-average rainfall were reported in central and eastern Iowa, a majority of the state measured below-average totals with areas of northwestern Iowa three inches short of moisture the month. For June, the statewide preliminary average precipitation totaled 3.75 inches, or 1.51 inches below normal, with a drier June occurring just last year. Monthly precipitation totals ranged from 0.59 inches at Cherokee to 10.11" in Independence.

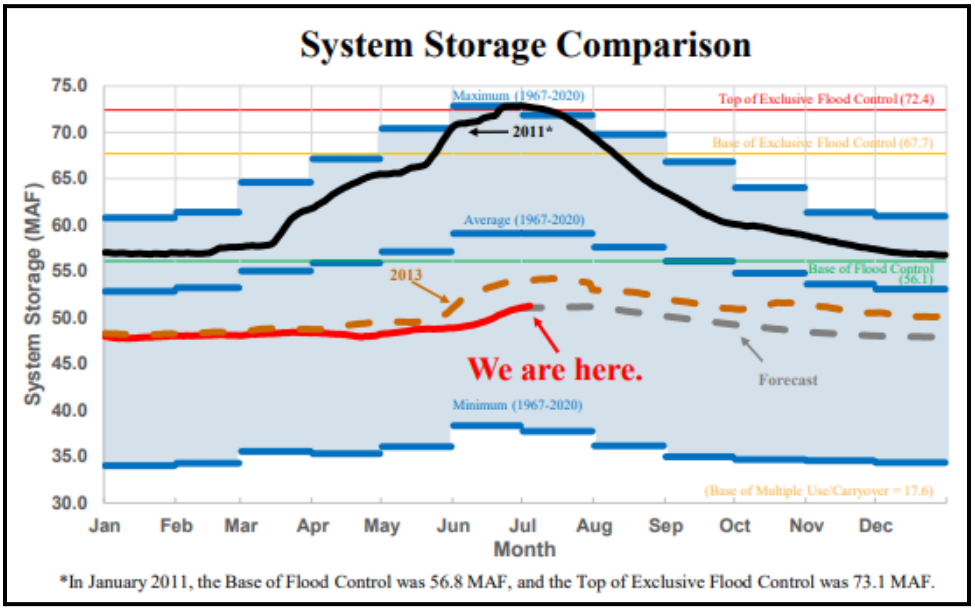
The month started with near-normal to slightly cooler than average temperatures with widespread rainfall. Around the middle on the month, unseasonably hot temperatures locked into the Midwest and persisted through the end of June. The statewide preliminary average temperature was 71.7 degrees, 1.8 degrees warmer than normal. A warmer June occurred just last year, which was the 13th warmest on record. Little Sioux reported the month's high temperature of 102 degrees on the 13th. Cherokee and Sioux Rapids reported the month's low temperature of 40 degrees on the 2nd.

JUNE STREAM FLOW

During the month of June, streamflow conditions remained normal for the majority of the state. In northwest Iowa, portions of the Floyd, West Fork Ditch, Maple, Soldier, and Monona-Harrison Ditch remain in below normal condition. The Turkey and Nishnabotna Rivers have moved into above normal condition, and the Wapsipinicon remains in the above normal condition, where it was for last month's water summary update.

MISSOURI RIVER BASIN CONDITIONS

The 2022 calendar year forecast for runoff in the basin, updated on July 1, is 20 Million Acre Feet (MAF), which is an increase of 1.7 MAF, over the estimate of one month ago. If realized, this would be 78% of average flow for the year. Mountain snowpack in the basin has now completely melted. The total volume of water stored in the Missouri River reservoir system is now 53.1 MAF, an increase of 2.2 MAF since the start of June. This storage volume is remains below the 57 MAF normally stored at this time of the year. USACE is projecting that the volume of water stored will remain close to this level until the fall, when the volume of stored water decreases moving into the winter months. The graph below shows the total volume of water stored in the Missouri River reservoir system in 2022 compared to average volume as well as the flood year of 2011.

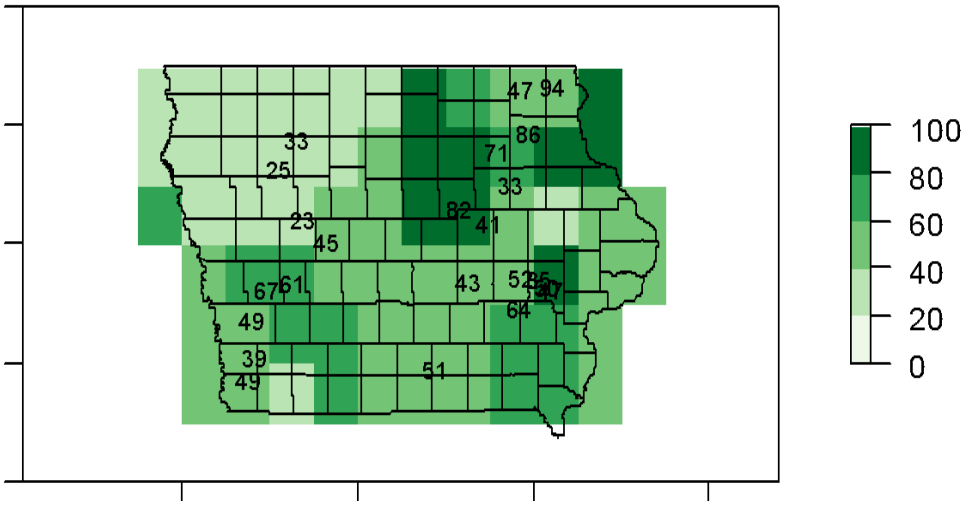


JUNE SHALLOW GROUNDWATER

June shallow groundwater level conditions were statistically normal across much of the state, but with some areas showing increased water stress and vulnerability to declining groundwater levels. Stream baseflow trends are used as an indicator of water level changes in shallow aquifers and during June below normal baseflow was observed in three general areas. These include parts of northwest Iowa (around the Floyd River, Lower Little Sioux and Maple Rivers), north-central Iowa (around the Upper Des Moines River) and parts of east-central to southeast Iowa (around the Lower Iowa and Cedar Rivers). There are also other locations showing stress mainly located along the margins of the areas highlighted above. Two USGS drought wells exhibited statistically below normal groundwater levels, and one well along the Missouri River in Monona County exhibited a much below normal level. Future precipitation will have a significant impact on aquifer level recovery rates.

JUNE SOIL MOISTURE

The Iowa Flood Center map shows soil wetness in percentage, at the 20-inch depth for the last day of June. The figure indicates that the lowest soil moistures are located primarily in the northwest part of the state. This is consistent with the July 5 US Department of Agriculture's National Agricultural Statistics Service (NASS) report that shows 61 percent of topsoil and 48 percent of subsoil rated as short or very short of soil moisture. In southeast Iowa 65 percent of topsoil and 56 percent of subsoil is rated as short or very short of soil moisture.



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