



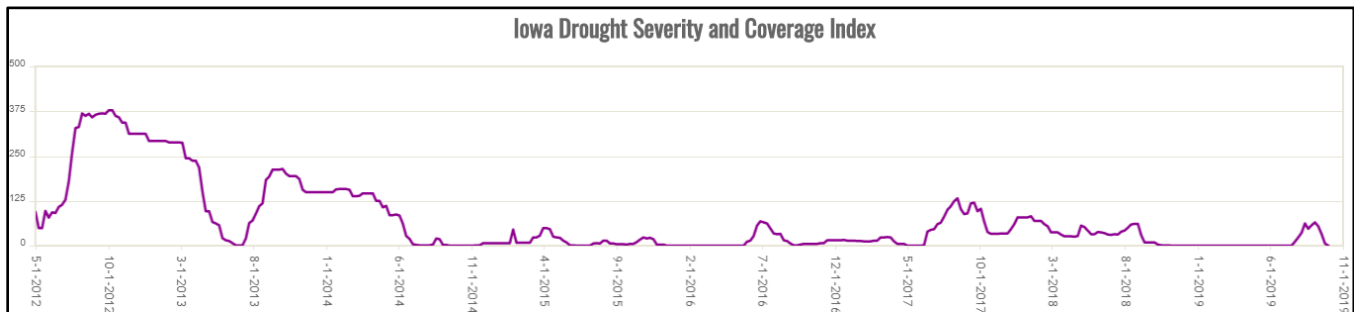
WATER SUMMARY UPDATE

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WATER SUMMARY UPDATE – ISSUE NO. 100

This issue marks the 100th edition of the Water Summary Update. The first WSU was published on April 6, 2012. At that time the state of Iowa was moving into a significant period of drought. Conditions were at their worst for the 15th edition of the WSU published on October 4, 2012. While 2012 was by far the worst drought conditions the state has experienced over the past seven years, there have been other stretches of localized dry conditions that have come and gone. The graph below uses a summary measure developed by the National Drought Mitigation Center called the Drought Severity and Coverage Index (DSCI) which combines the various drought rankings with their respective areas of coverage to provide a single index number to define drought conditions between states and regions. The highest DSCI for Iowa during this time frame was 378 in October 2012. For comparison, in October of 2011 the DSCI for Texas was 484, indicating far worse conditions for that state.

This graph shows conditions in Iowa, including the very dry period of 2012 until 2014, and periods of dryness over the next five years. None of these more recent periods, however, have approached the conditions of 2012 and 2013.



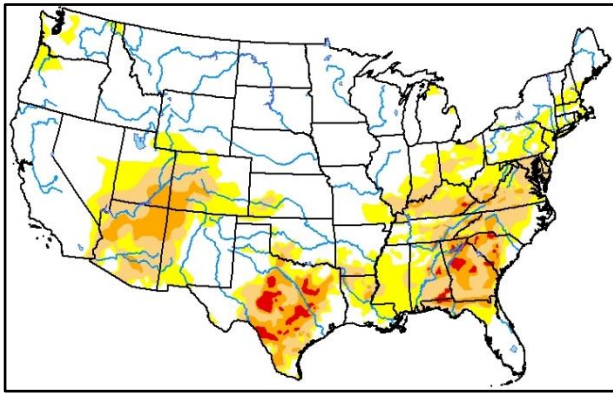
A snapshot of water resource trends for September 2019

SUMMARY

The pattern of wet weather returned to Iowa in September, with last month ranking as the 15th wettest September on record – after somewhat drier summer months. This wetness has resulted in all drought designations being removed from the state, and shallow groundwater conditions becoming favorable statewide. Stream flow has moved into above normal conditions along the east and west sides of the state, with the balance of the state showing normal flow levels for this time of year. While these conditions are good for the overall water supply as Iowa heads into the winter, the continued saturated soils continue to make the state vulnerable to flooding conditions should fall rains become more pronounced.

Drought Monitor - Conditions as of October 8, 2019

National Drought Mitigation Center and partners

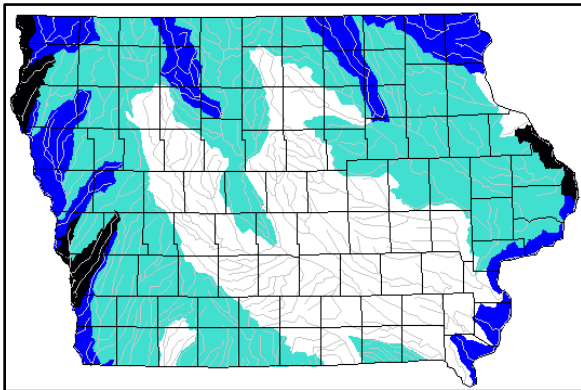


Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

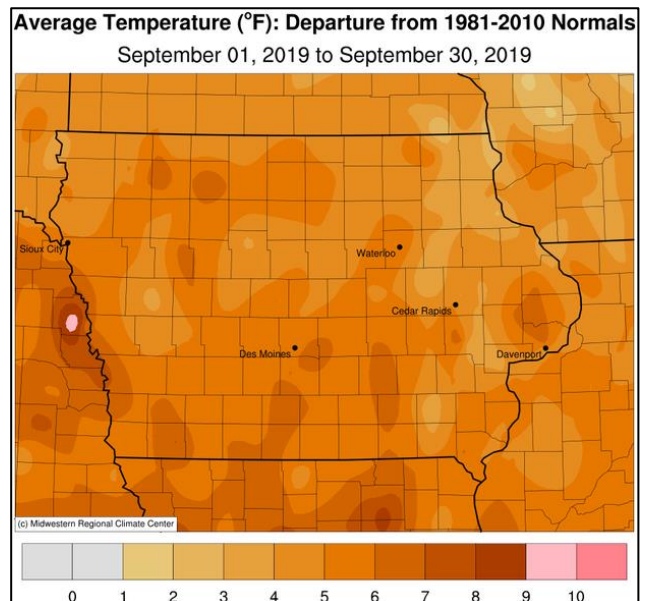
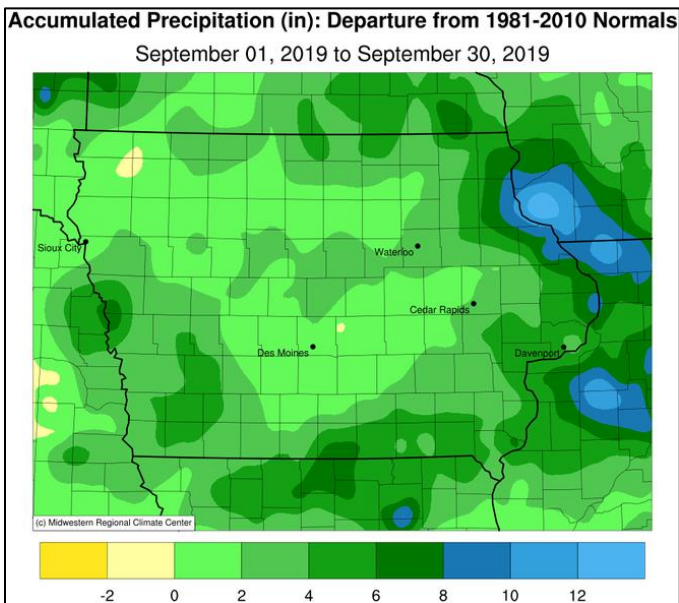
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Stream Flow – September 2019



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

Precipitation and Temperature – September 2019



RECENT DEVELOPMENTS AND CHANGES

CURRENT DROUGHT MONITOR

Abnormally Dry (D0) conditions peaked during the first week of September, covering 41% of the state. Moderate Drought (D1) conditions also covered the largest aerial extent at 12%, concentrating in central and eastern Iowa. As the rainfall totals increased across the state through the month, D0 conditions continued to shrink from west to east; D1 also followed this pattern and were completely removed during the week of September 24th. As of October 2nd, D0 conditions were completely removed from Iowa.

SEPTEMBER PRECIPITATION AND TEMPERATURE

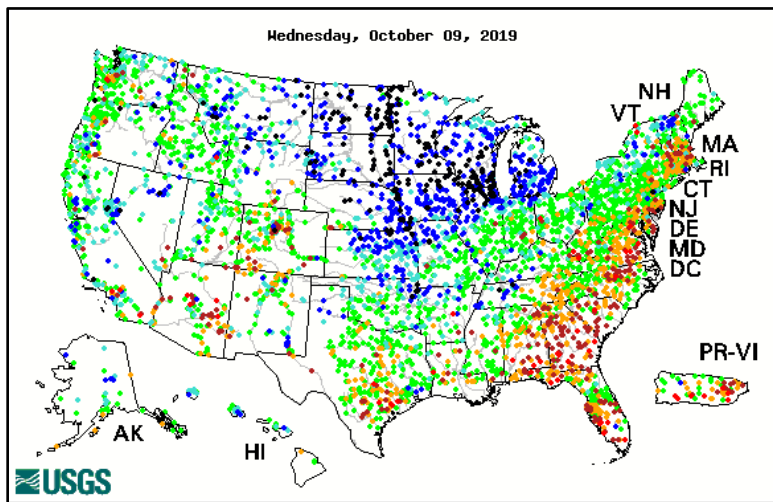
Statewide average rainfall totaled 6.17" or 2.79" above normal. This was the 15th wettest September on record, tying 1887, with a wetter one occurring last year. With the exception of a few stations, Iowa experienced above normal precipitation - with eastern Iowa reporting totals four to eight inches above normal. Much of the rest of Iowa were between one to three inches. Precipitation totals for the month varied from 2.44 inches at Sheldon to nearly 14 inches in Dubuque.

Iowa temperatures averaged 68.2 degrees or 5.0 degrees above normal ranking September as the 9th warmest on record with a warmer one last occurring in 2015. Unseasonable warmth persisted across Iowa for 23 days in September. Departures from normal were in the range of four to six degrees above average. While daytime highs were up to four degrees warmer than expected, statewide overnight lows were six to nine degrees above average. September 20th was the warmest day of the month with the statewide average high of 85 degrees, 11 degrees above normal. The month's high temperature of 93 degrees was reported at multiple stations in south-central Iowa. Estherville (Emmet County) reported the month's low temperature of 41 degrees on the 28th, two degrees below normal.

CURRENT STREAM FLOW

Streamflow conditions across the state increased over the month of September. Many streams and rivers that had normal streamflow conditions at the beginning of the month now have above normal streamflow. There are a few areas that remain in the much above normal and high condition. Along both the Missouri and Mississippi rivers on the western and eastern borders of Iowa many streams have much above normal or high flows.

Nationally, the map below shows the very wet conditions that currently exist in the central part of the United States. Each dot represents a stream flow measurement point, with red and tan showing locations with lower than normal flows, green showing areas with normal flows, and blue and black showing those locations with above normal or high flow. This map clearly shows the area of high stream flow in Iowa and to our north, including much of the Missouri and Mississippi River basins. These conditions are in contrast to the areas east and south of the Appalachian Mountains, which show below or much below normal flow at most locations.



Current streamflow compared to historical streamflow.

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

SHALLOW GROUNDWATER

As a result of the ongoing weather, and the diminished demands for water, shallow groundwater conditions are in good shape across all of Iowa. From a groundwater perspective, the conditions over the last month have been ideal for filling shallow aquifers going into the winter months.

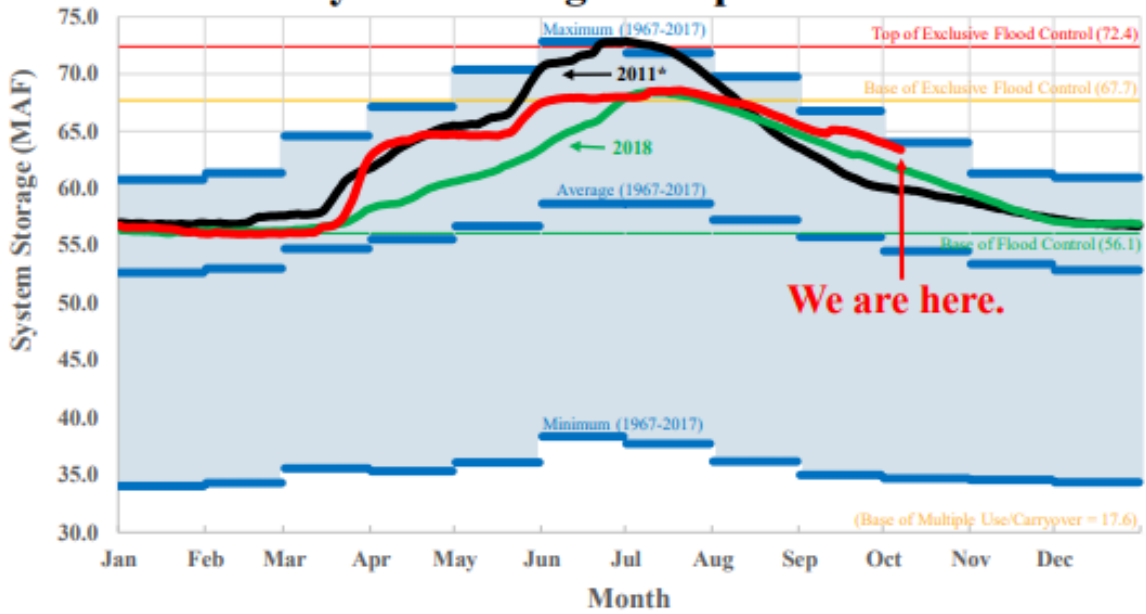
MISSOURI RIVER BASIN

Missouri River flows continue to be much higher than normal as the US Army Corps of Engineers continues to work to drain flood water from its reservoirs. While adequate storage remains in the system for any fall rain, the Corps will be discharging water from their reservoirs at the high rate of 80,000 cubic feet per second (cfs) for much of the fall, with the goal of having all flood storage capacity available on January 1 for the 2020 runoff season. Currently there are 7.3 million acre feet (MAF) of 2019 flood water that needs to be discharge before this year is over.

The Corps tracks the total runoff from the Missouri River Basin, and projects what the total volume will be for each year. The current forecast for the upper Missouri River Basin above Sioux City, updated on October 1, is 61.0 MAF. This is almost 2.5 times the average runoff, and would equal the previous record set in 2011. It is also worth noting that these runoff figure do not include the significant spring runoff from the Platte River.

Gavins Point reservoir is currently releasing 80,000 cfs., and the Corps predicts that this elevated release level will continue for at least the next several weeks. The following figure shows the total amount of water stored in the Missouri River reservoirs. The red line is for the 2019 storage, while the black and green lines are for 2011 and 2018 respectively. The graph shows a significantly greater quantity of water in storage this year when compared to 2011 and 2018. The Corps will be working to bring flood water storage down to match the other lines by January 1.

System Storage Comparison



*In January 2011, the Base of Flood Control was 56.8 MAF, and the Top of Exclusive Flood Control was 73.1 MAF.

ADDITIONAL INFORMATION

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