IOWA DEPARTMENT OF NATURAL RESOURCES

WATER SUMMARY UPDATE

Published Date November 21, 2019 | Issue 101

2019 Water Year Summary

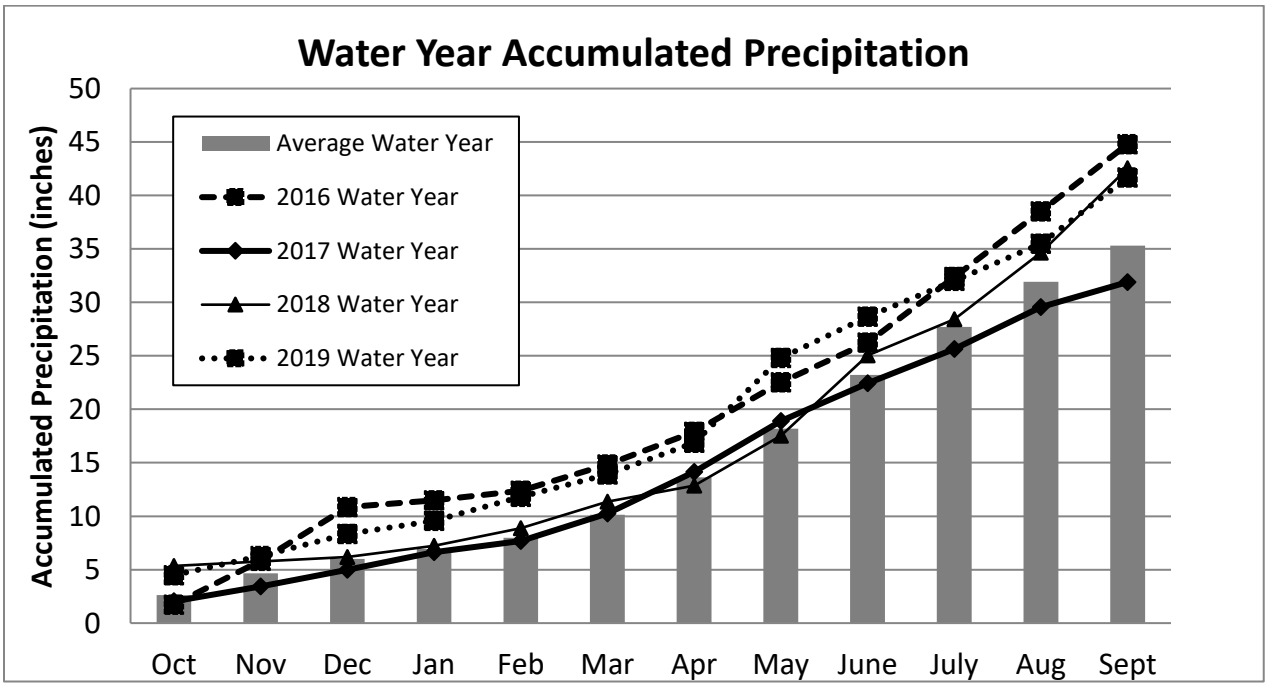
OVERVIEW – ANOTHER WET YEAR

WATER YEAR ENDS ABOVE NORMAL FOR RAINFALL AND NORMAL FOR TEMPERATURE

The "Water Year" is defined as the period between October 1st and September 30th. This period of time is used because accumulating snow is the primary source of water runoff into streams during the next calendar year for many parts of the United States.

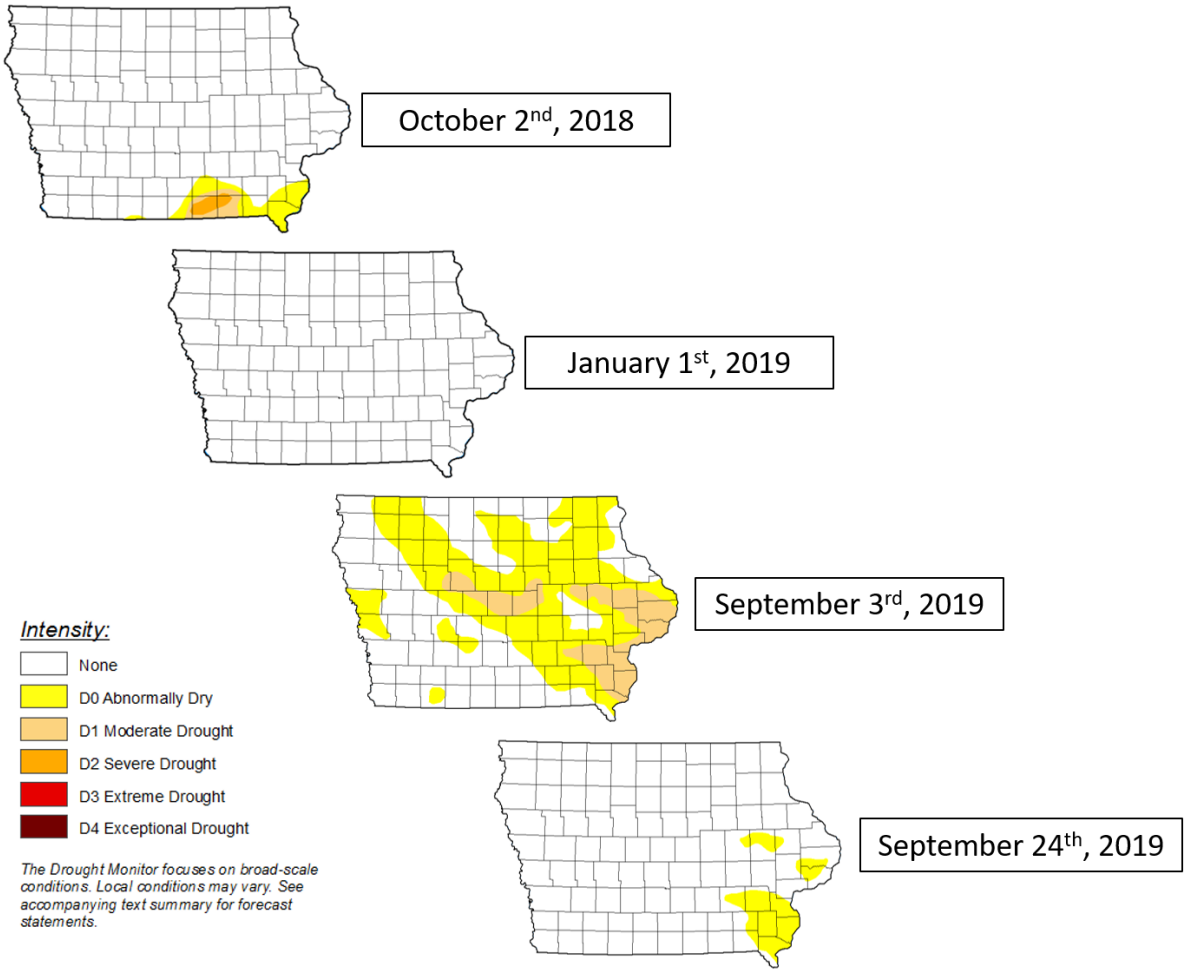
The 2019 Water Year averaged 42.58 inches, 7.31 inches above the statewide 30-year climatological normal. Temperatures averaged 46.6 degrees, which is 1.80 degrees below normal. This was the 7th wettest and 45th warmest Water Year among 147 years of Iowa observational records. September 2019 had a statewide average temperature of 68.2 degrees, five degrees above normal, making it the 9th warmest on record. For the previous 24 months, or the back-to-back water years of 2018 and 2019 , Iowa's precipitation was more than 20 inches above normal, making the last two years the 3rd wettest on record. Temperatures for this same 24 month time period have been near normal.

2017 water year is the only one of the four years shown where precipitation was lower than normal. The 2016, 2018, and 2019 water years all show between five and ten inches more precipitation than normal.

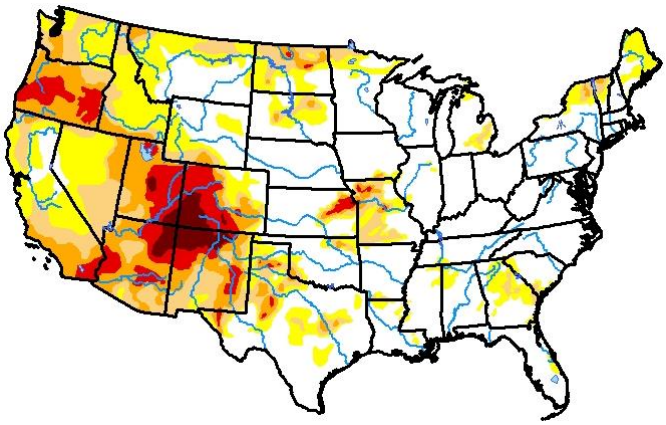


DROUGHT MONITOR

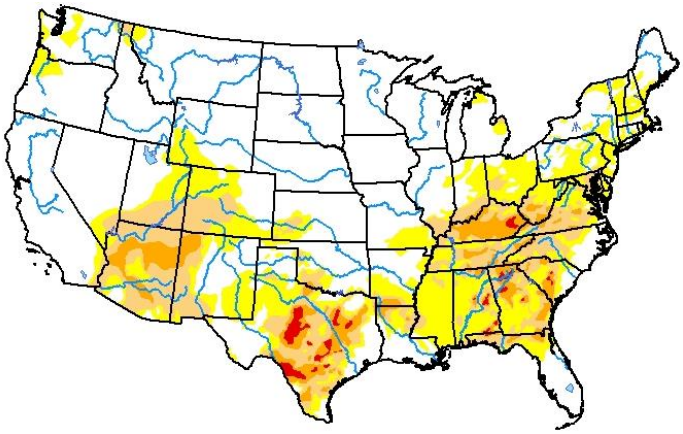
The United States Drought Monitor (USDM) provides a good way to see national, regional and statewide trends in drought conditions. At the start of the water year, Abnormally Dry (D0) and drought conditions were present across slightly over six percent of southern Iowa. Moderate (D1) to Severe (D2) Drought covered around two percent of this area, mainly in Appanoose and Davis counties. With Fall 2018 being the 3rd wettest on record, drought and abnormal dryness were completely removed during the first week of November 2018, and Iowa free from any dryness or drought more than nine months that followed. Abnormally dry returned during the week of July 23rd, 2019, when portions of eastern and southwestern Iowa received a D0 classification. With a drier than normal late summer, conditions deteriorated into the second week of August with D0 conditions expanding across 43 percent of Iowa. D1 conditions were also introduced to central and eastern Iowa. An active weather pattern through September and October 2019 eased drought conditions statewide. D1 conditions were removed during the week of September 24th, with D0 completely removed the following week.



On a national level, conditions changed significantly between the start and end of 2019 Water Year. In early October 2018 slightly less than half of the US was in some form of dryness or drought, with nearly 20 percent of the country in D2 to D4 conditions. Contrast this to a year later, in early October 2019, when under 40 percent of the country was in some form of dryness or drought, with only about six percent of the country rated in D2 to D4 conditions. During this year the impacted areas shifted predominantly the west and southwest into the east and southeastern portions of the US, as well as into Texas.



October 2, 2018

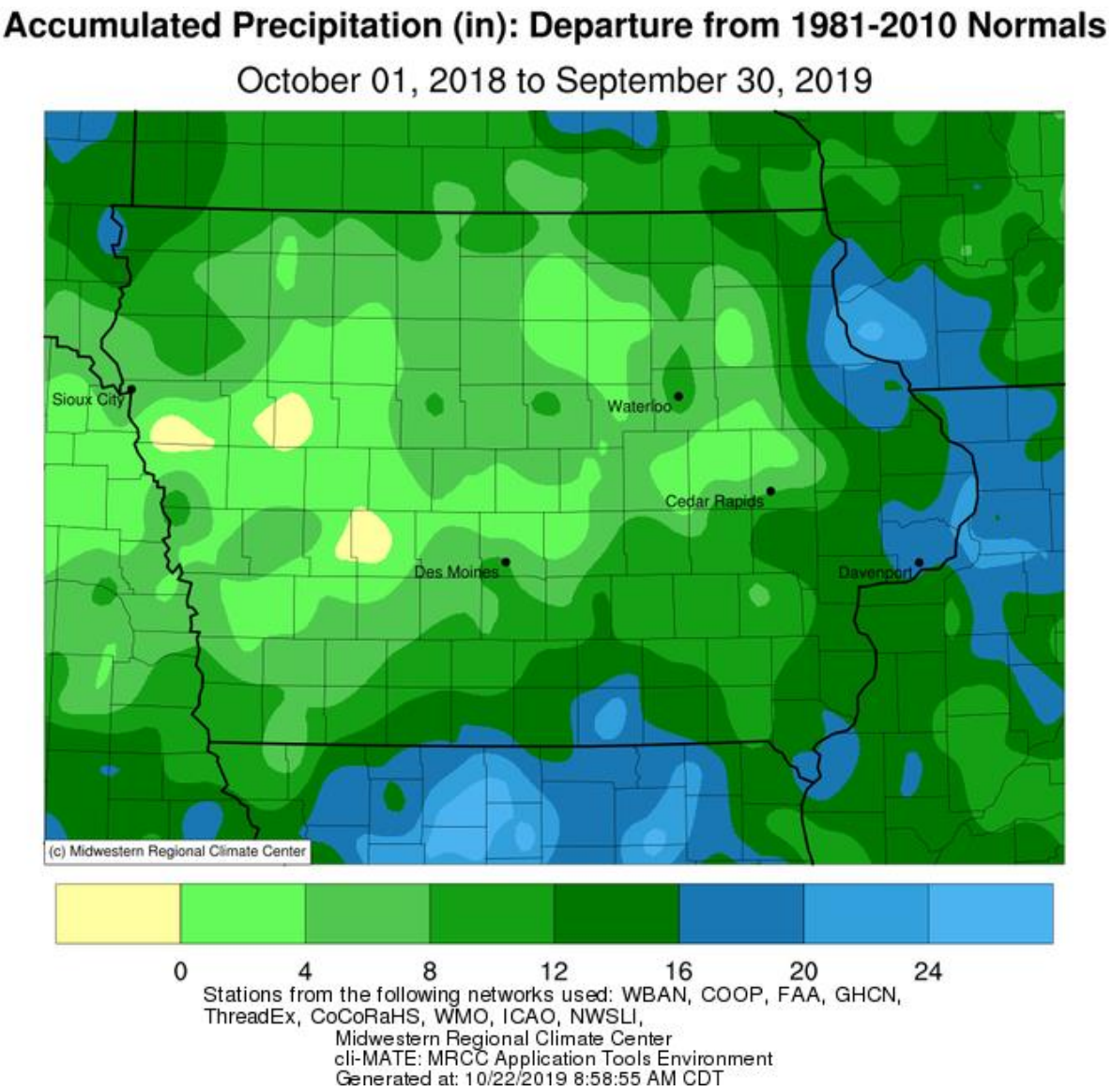


October 1, 2019

2019 WATER YEAR PRECIPITATION

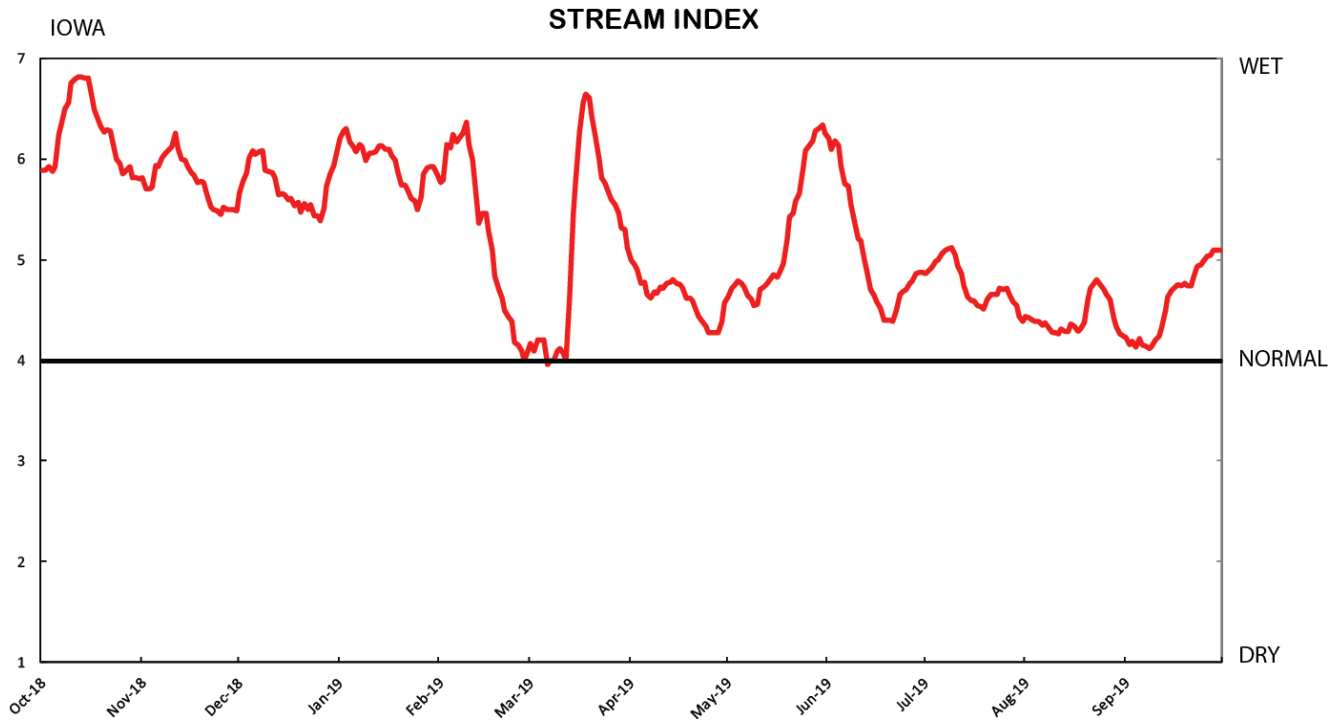
With the exception of a few locations, Iowa received above normal precipitation over the 2019 Water Year. Portions of the border region between Iowa and Illinois reported precipitation between 16 – 20 inches above normal. Many locations across eastern and southern Iowa saw accumulations between 8 – 16 inches above average. West-central Iowa observed up to four inches of above normal precipitation with a few stations reporting minor deficits to near normal conditions.

Notable months and periods during the water year include the 8th wettest October. Iowa reported a statewide average of 2.02 inches of above normal precipitation. Meteorological winter (December-January-February) was also the third wettest on record. February 2019 was the 7th wettest and snowiest February in 132 years of statewide snow records. Iowa averaged 25.6 inches of snowfall, 18.8 inches above normal. May 2019 was also the 5th wettest on record with 8.21 inches of rainfall, 3.65 inches above normal.



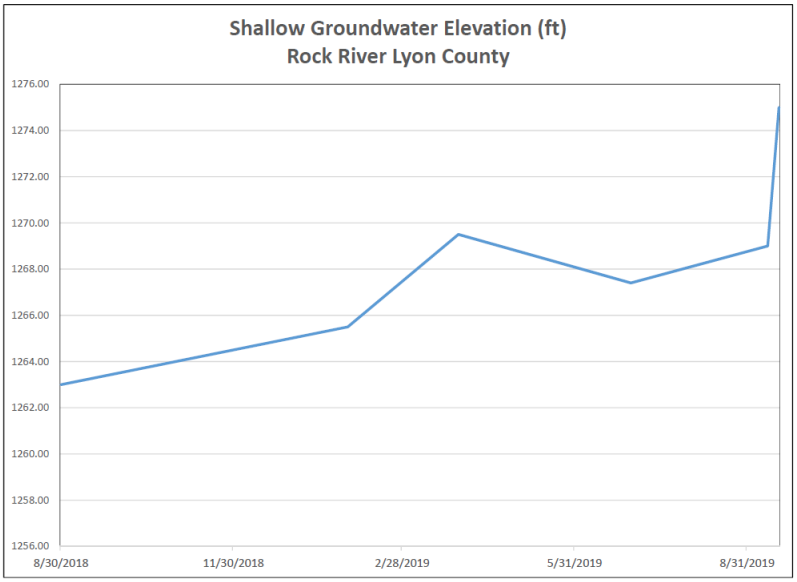
STREAMFLOW

The U.S. Geological Survey (USGS) streamflow index is an average of streamflows at all USGS streamgages across the state compared to the average streamflow at all those points at that time. Average streamflow is typically much lower in the winter than in the spring and early summer. Streamflow in Iowa spent nearly the entire water year in the above normal range, with only a brief period of lower than normal flow in March 2018. Record streamflows were recorded at several locations including on the Little Sioux and Floyd Rivers and Fourmile Creek during the water year, with 87 streamgages exceeding the National Weather Service (NWS) flood stage at least once in 2018. USGS field crews made several streamflow measurements during the high streamflow events to verify and report real-time data to the NWS, U.S. Army Corps of Engineers, and many other emergency-related agencies.



SHALLOW GROUNDWATER

Shallow groundwater conditions varied considerably across Iowa during 2019. From January to June of 2019 the entire state had normal to above normal shallow groundwater conditions. July and August were relatively dry months across parts of central and eastern Iowa, and shallow groundwater conditions deteriorated during that time. Shallow groundwater conditions in most of southwest and northwest Iowa remained normal to above normal throughout 2019 as shown, and the significant precipitation that fell throughout most of Iowa in September and October have created above normal shallow groundwater conditions statewide. This figure shows how groundwater levels along the Rock River in Lyon County (northwest Iowa) have slowly risen over the past year.



October 2019 Developments and Changes

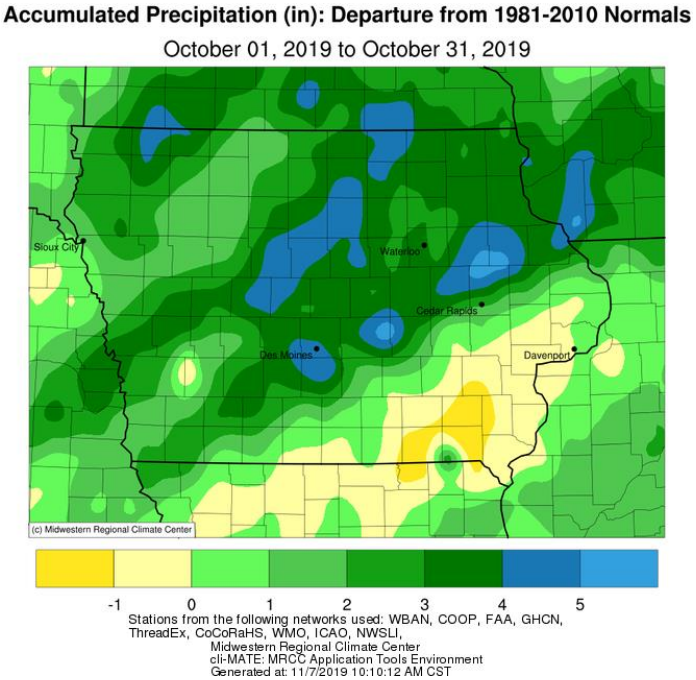
SUMMARY

The month of October continued the trend of wet fall months, with rainfall totaling two inches above normal for the month. Streamflow was generally in the normal to above normal range, and the state continues to be free from drought or dryness. The 18 months ending October 31, 2019 was the wettest period on record for the state, indicating the current regional trend toward wetter than normal conditions.

OCTOBER PRECIPITATION AND TEMPERATURE

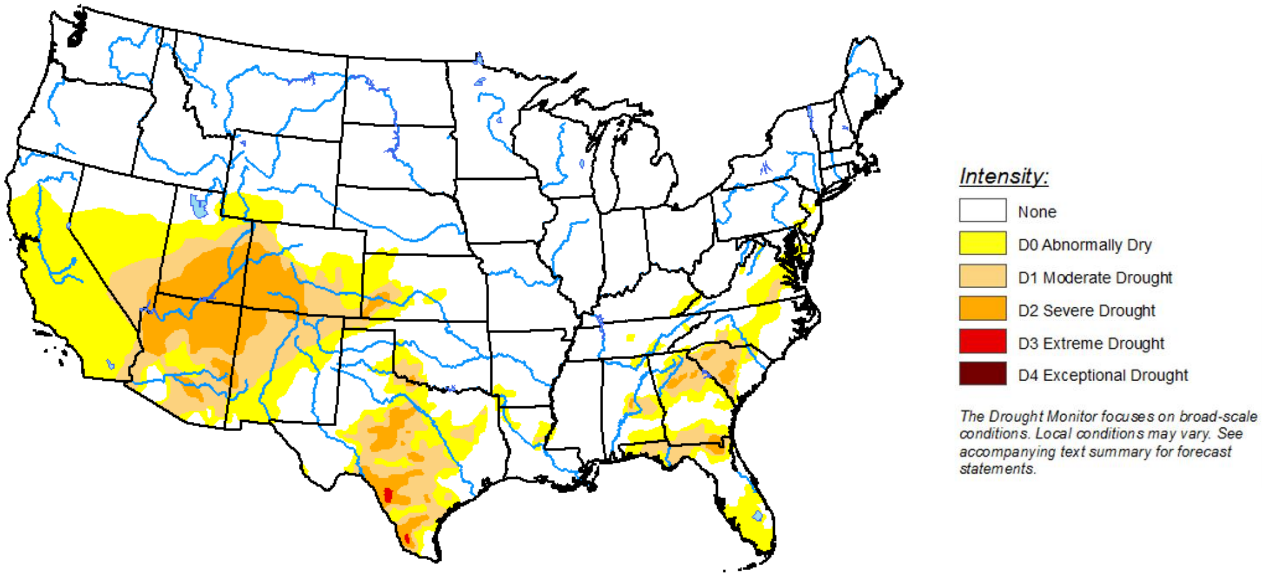
Statewide average rainfall totaled 4.65” or 2.04” above normal. This was the 8th wettest October on record, with a wetter one occurring in 2017. A majority of the state reported above average precipitation with a southwest to northeast band of three to five inch departures through the middle of Iowa. Southeastern Iowa observed near to below average precipitation. The first widespread snowfall of the season occurred during the last week of October with accumulations above five inches in eastern Iowa. The statewide average snowfall for the month was 2.30”. Monthly precipitation totals varied from 1.40 inches in Bloomfield (Lucas County) to 9.09 inches in Grinnell (Poweshiek County).

Statewide temperatures were anywhere from three to six degrees colder than expected during October. The average temperature for the state was 47.6 degrees or 3.5 degrees below normal, ranking October as the 14th coldest on record with a colder one last occurring in 2009. A majority of October days had below average temperatures with two extended stretches of unseasonably cold. Donnellson (Lee County) and Lamoni (Page County) reported the month’s high temperature of 90 degrees on the 1st. This reading was about 20 degrees warmer than expected. Sanborn (O’Brien County) observed the month’s overnight low temperature of 13 degrees on the 31st, 18 degrees below normal.



US DOUGHT MONITOR

With abnormally wet conditions during September into October, abnormally dry (D0) conditions were completely removed from Iowa as of the first week of October. Nationally, the drought map shows no dry or drought conditions surrounding Iowa. This is reflective of the wetness that the region has seen over the past 18 months.



ADDITIONAL INFORMATION

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

General Information . . . . . Tim.Hall@dnr.iowa.gov 515-725-8298
Drought Monitor. . . . . Justin.Glisan@iowaagriculture.gov 515-281-8981
Precipitation. . . . . Justin.Glisan@iowaagriculture.gov 515-281-8981
Stream Flow. . . . . Daniel Christiansen, dechrist@usgs.gov 319-358-3639
Shallow Groundwater. . . . . Michael.Anderson@dnr.iowa.gov 515-725-0336