WATER SUMMARY UPDATE

No. 59

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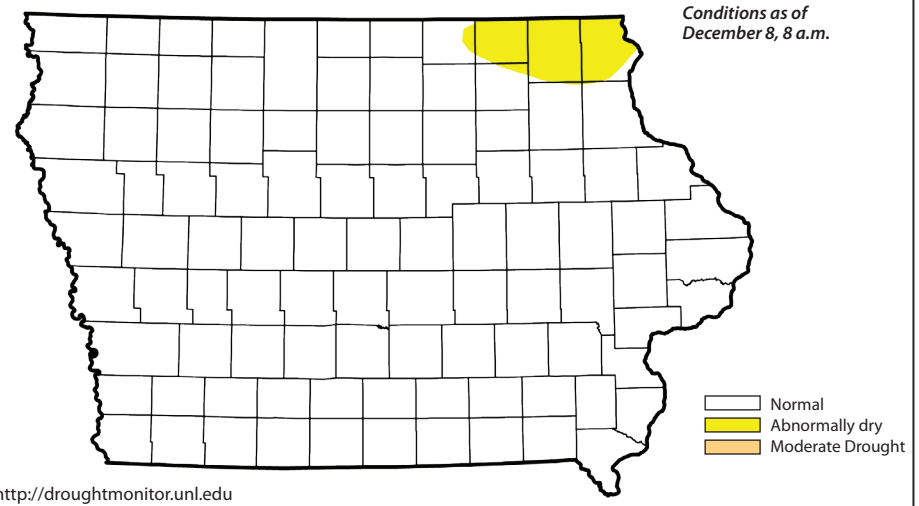
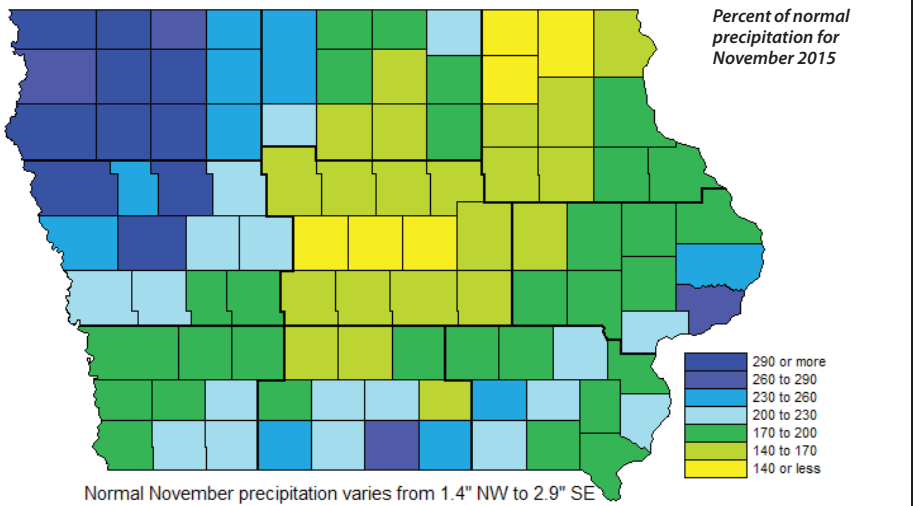
Drought Monitor

National Drought Mitigation Center and partners



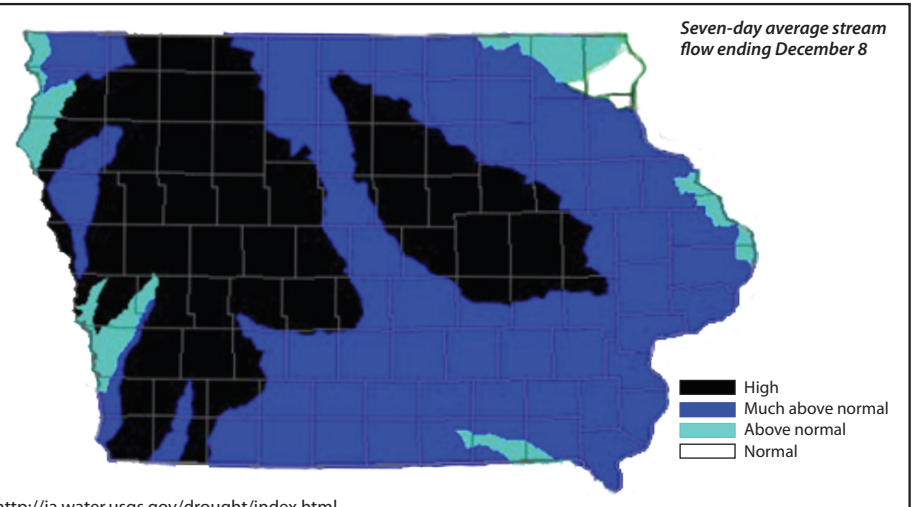
Precipitation

State Climatologist



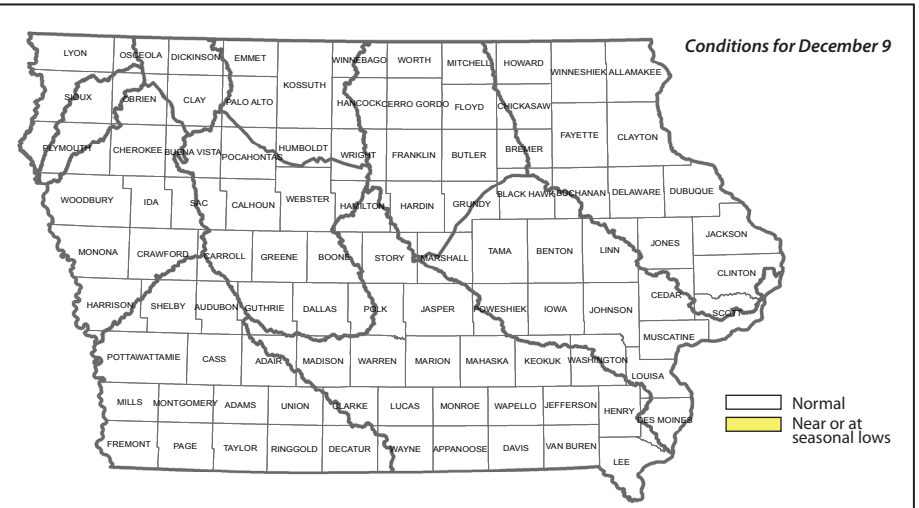
Stream Flow

US Geological Survey



Shallow Groundwater

Iowa DNR and IIHR-Hydroscience and Engineering



Recent Developments and Changes

Summary:
Overall conditions in Iowa remain stable as the state moves from fall into winter conditions. Precipitation for 2015 is now running more than 5 inches above normal, thanks in part to a very wet November. The wet fall has helped to replenish groundwater supplies across the state. Streamflow is now running above normal across much of the state. As we head into the three driest months of the year, streamflow levels should fall.

Precipitation:
November 2015 was unusually warm and wet across Iowa. Temperatures averaged more than 5 degrees above normal while precipitation totaled 4.08 inches, or double the normal. This ranks as the tenth warmest and seventh wettest November among 143 years of records. Five major storms brought widespread precipitation beginning on Veteran's Day and at about four day intervals through the remainder of the month. Every reporting point in the state recorded above normal precipitation with monthly totals varying from 2.52 inches at Glenwood to 7.56 inches at Eldridge. Numerous locations across far northwest Iowa established record high November precipitation totals. Soils remained thawed throughout the month in most areas. Soil moisture levels are well above seasonal normals across most of the state.

Groundwater:
Above normal precipitation across most of Iowa has improved shallow groundwater conditions statewide. Parts of northeast and southeast Iowa that were previously classified as being under slight drought have been reclassified as normal. The wet fall conditions have provided tremendous groundwater recharge to Iowa's shallow alluvial and bedrock aquifers. Local reports from northwest Iowa indicate that tile lines are flowing full, and that the soil is fully saturated.

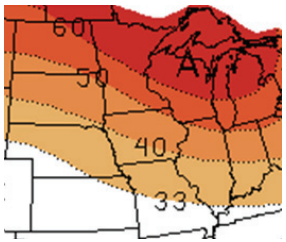
Streamflow:
Streamflow conditions are above normal for much of the state. Since the last water summary update, streamflow conditions across the state have increased in most locations. As a result of the ongoing high water, USGS field crews have been making several additional streamflow measurements to verify stage-discharge relations at many streamgages. Streams remain ice free.

Drought Monitor:
The US Drought Monitor indicates that a small area of northeast Iowa is abnormally dry, and this is part of a small area of dryness in northeast Iowa, southeast Minnesota, and southwest Wisconsin. Larger areas of dryness exist in North Dakota, Kansas, and Indiana, but overall the central plains area has good moisture levels.

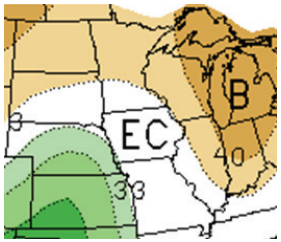
Soil Temperatures and Frost:
Normally, there would be some ground frost by this time of year, however this season's warmer than normal temperatures have delayed the onset of frost. Soil temperatures are in Iowa range from the upper 30s to 40 degrees, with no frost in the ground at any of the reporting stations. This year set the record for the latest freezing air temperature recorded in Des Moines on November 13th when the low temperature reached 31 degrees.

Winter Outlook:
There have been many news stories this fall about the strong El Nino pattern in the Pacific Ocean, and we are seeing the anticipated above normal temperatures across Iowa. The Climate Prediction Center of the National Oceanic and Atmospheric Administration (NOAA) indicates that in Iowa:

- The meaningful impacts in are most common from fall through spring.
- Moderate to strong El Niño's increase the probability for warmer conditions during the winter with the best threat in northern Iowa.
- Moderate to strong El Niño's increase the probability for wetter conditions in the fall and to a lesser extent into the winter.
- Moderate to strong El Niño's have a greater chance of seeing dry conditions during the spring.



Temperature *probability for December thru February. This outlook shows that there is a 40 to 50% chance of above normal temperatures for much of Iowa during this time period.*



Precipitation *probability for December thru February. This outlook shows that there are equal chances (EC) of above normal and below normal precipitation in Iowa during this time period.*

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Prepared by the Iowa DNR in collaboration with the Iowa Department of Agriculture and Land Stewardship, the U.S. Geological Survey, IIHR–Hydroscience and Engineering and The Iowa Homeland Security and Emergency Management Department.