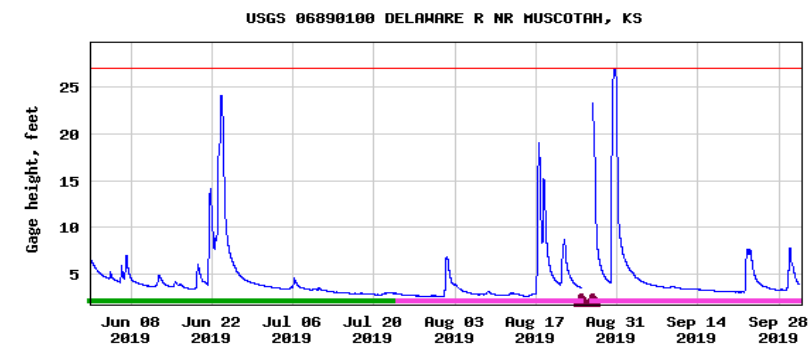
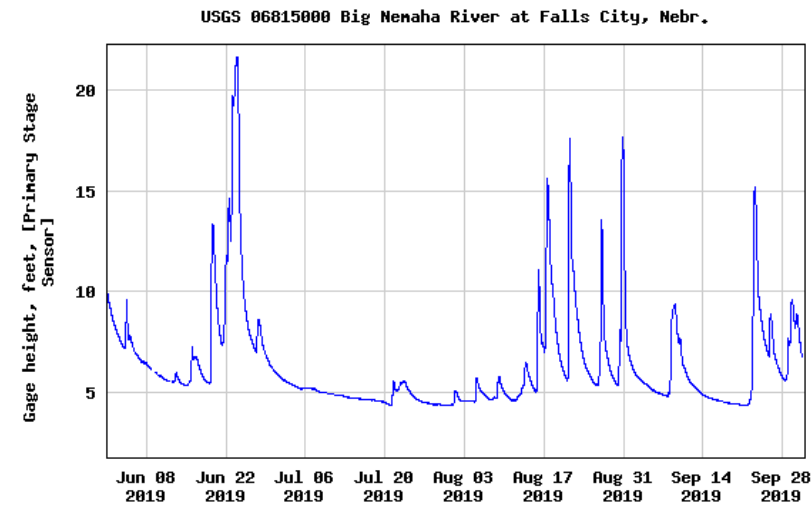
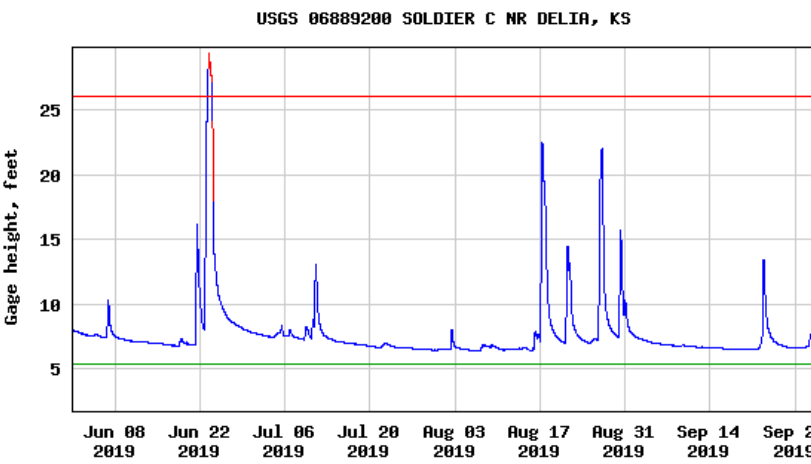


Rivers and Streams

All three of the gauged streams got a pretty good work out during the spring and then again in mid-August. A relatively dry period from late June and most of July saw river levels in the Nemaha and Delaware drop below 5'. Even with the decreased flow the streams never really took on the distinctive braided look that they show in the late summer. Soldier Creek crested at nearly 30' on July 22 and has maintained a depth above 6' for the entire summer and early fall.



— Gage height
 — Period of approved data
 ▲ Value affected by equipment malfunction.
 — Period of provisional data
 — Flood Stage



Data Generated Oct. 1, 2019 at <https://waterdata.usgs.gov/>



On September 17 logs floating downstream began piling up along the mouth of the Nemaha River. A long neck excavator was used to move the jam into the main current and break it up. Photo by Brian Kirkendall, Richardson County Emergency Manager.

Winter is Coming



It seemed to snow a heck of a lot more back in the day. Prairie Band Potawatomie Water Quality Coordinator, Verna Potts offers this visual proof from 6-mile Rd. from back in 1979.

Water Planning and Management

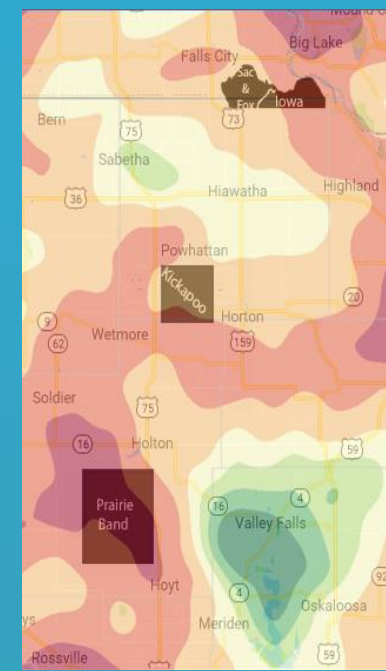
Understanding & using our resources

- Looking at our climate seasonally.
- Analyzing trends.
- Preparing for the future.
- Adapting to changes in the climate.
- Anticipating the future.
- Becoming Resilient

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Precipitation (inches) from Mar. 1, 2019 – Sept. 24, 2019



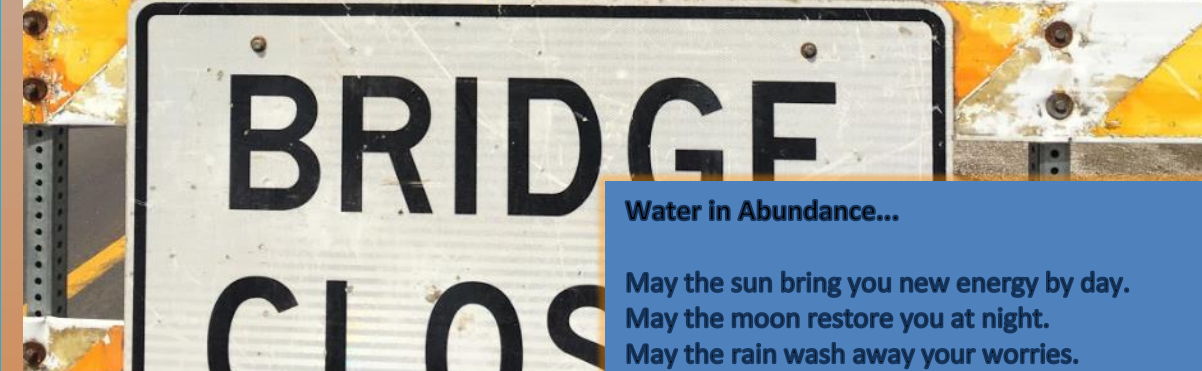
38 40 42 44 46 48 50

<http://scacis.rcc-acis.org/>

4 Kansas Tribes Climate Summary

Volume 2, Issue 1 Summer/Fall 2019

The Floods of 2019



June 5, 2019 saw a major flood event closed even more roads around the Sac and Fox Reservation. Three people were rescued from the car shown above east of Falls City on HWY 159.

Water in Abundance...

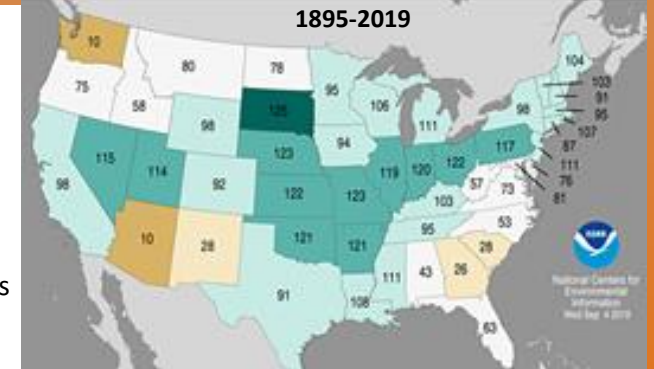
May the sun bring you new energy by day.
 May the moon restore you at night.
 May the rain wash away your worries.
 May the breeze blow strength into your being.
 May you walk gently through the world
 And know it

-Apache Blessing

Climate Highlights

Road closures, flash floods, US Army Corps of Engineers' releases from Gavin's Point Dam, late planting and cool weather were the trademarks of the spring and summer months in northeast Kansas and southeast Nebraska. However, the one word that really stands out is wet. In the 125 years since the US Weather Service has been documenting rainfall totals, this year is truly remarkable. This is the 2nd wettest summer in Nebraska and the 3rd for Kansas. The entire Midwest is above normal and only five states in the entire country are below normal. South Dakota had its wettest summer ever and all of this continues to worsen flood conditions and keep roads across the Missouri River closed.

Statewide Precipitation Ranks March-August 2019



Record Driest (1) Much Below Average Below Average Near Average Above Average Record Wettest (125)

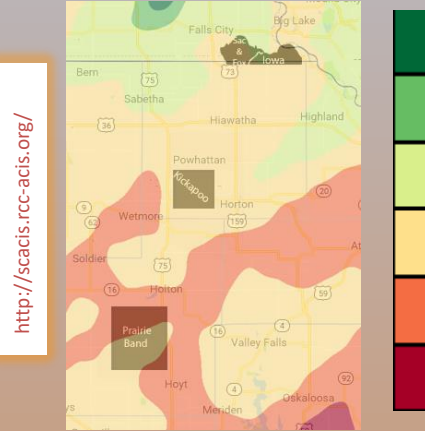
Precipitation Summary

Every station in the Four Tribe area is reporting precipitation well above their average for the past 180 days. Going from north to south:

- Salem, NE is +13.13
- Falls City is + 6.06
- Horton, KS is +11.09
- Holton, KS is +13.92

The peak period for rainfall occurred between May 16 and June 4, 2019 when 12" of rain fell just north of Falls City and pushed the Nemaha and Muddy Rivers over its banks. Most of the area received well over 9" but the southern part of the region only received 5". Higher than average precipitation is expected in most of the region for early October.

On May 22, flash flooding events raised havoc throughout northeast Kansas. Nohart's Creek left its banks at Stateline Rd. at the Sac and Fox and Iowa Tribe boundary and access was limited for several days.



Total Precipitation - May 16, 2019 through June 4, 2019

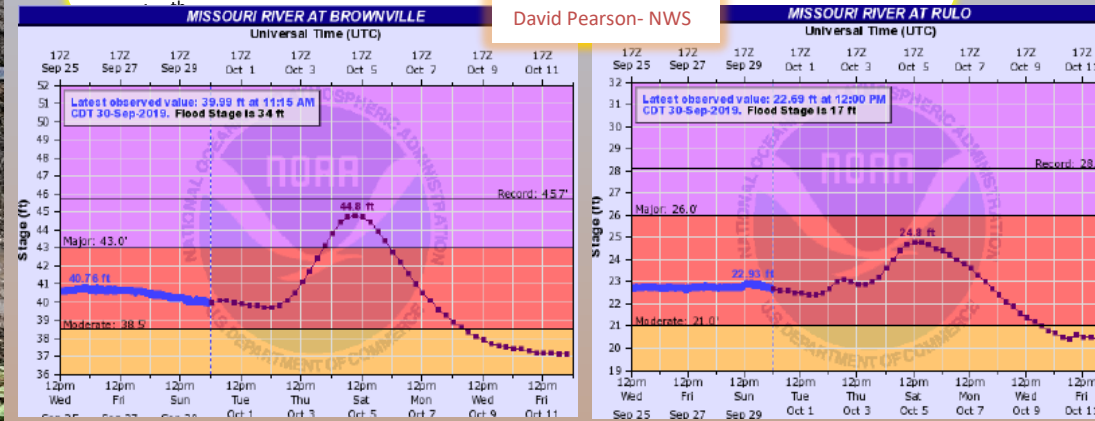
Wetlands Training in Topeka



Jessica Raley from Kickapoo works on creating a soil profile during September's Wetlands Delineation Training hosted by EPA Region 7. The event is part of national wetlands condition assessment for 2020-2021.

Flooding

The National Weather Service continues to issue daily flood advisories for the Missouri River Basin from Gavin's Point Dam to Rulo, NE. The current discharge from the dam is 80,000 cubic feet per second and is not expected to change in the next month. Brownville and Rulo continue to be the most impacted sites and the bridge closures continue. Heavy rain in the lower basin will result in moderate to major flooding peaking sometime around October 5th

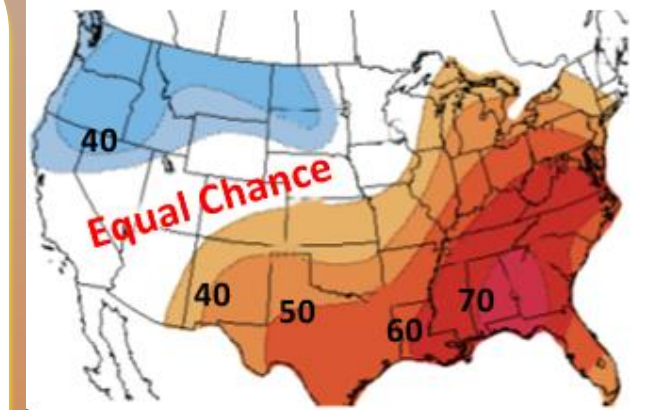


Iowa Tribal Historic Preservation Officer, Lance Foster, documented flooding on the Iowa Reservation in March. Kansas Highway 7 was closed both north and south of Whitecloud. Landslides in September along the bluffs now threaten the same stretch of road.

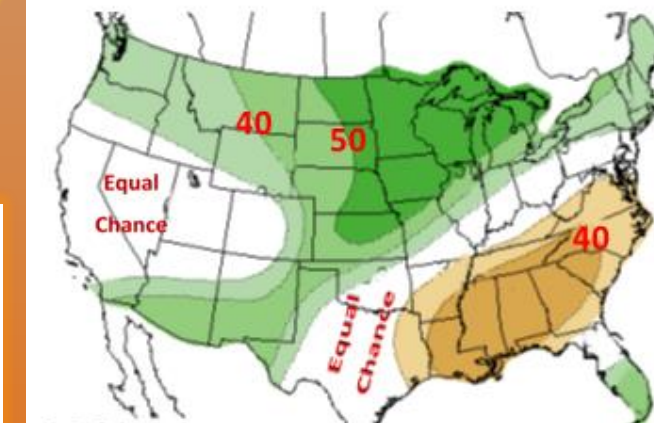
Fall Outlook

The two maps to the right look at potential temperature and precipitation trends for the next three months. "Equal Chance" means that there is 33 percent chance that temperatures will be above normal, normal or below normal. This is true for the precipitation map as well. There are areas where above normal temperatures are thought to have 40, 50, 60 or even 70% chance of occurring. We are also near the line marking the division of the 50% chance of higher than normal precipitation. The chart below looks at a 30-year period from 1981-2019 and displays average precipitation for October, November and December in Horton, KS. While 3" rainfall totals are not uncommon in October it can be expected that the months of November and December will be drier. The Climate Prediction Center anticipates a wetter than average October for our region.

One Month Temperature Outlook for October 2019.



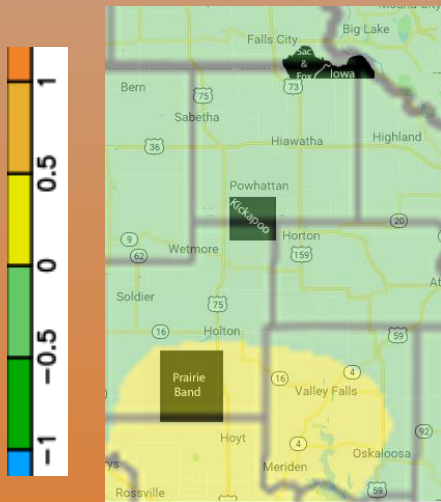
One Month Precipitation Outlook for October 2019



Monthly Fall Climate Outlook (1981-2010) Horton, KS



Variation from Normal Temperatures in Degrees

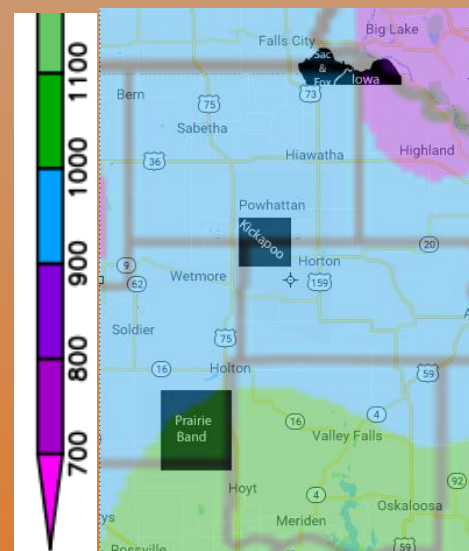


http://hprcc.org

Temperature

Temperatures from June 1, – August 31, 2019 were generally about 0.5° cooler than normal. However, the Prairie Band Reservation experienced more normal temperatures for the three-month period. Degree cooling days for the period ranged from 700 in the north to 1100 in the south. The number represents how often a person would have to run their air conditioner to keep their home or office at 65 degrees

Degree Cooling Days (65) June 1 – August 31, 2019



http://scacis.rcc-acis.org/

Upcoming Events

- ROTC at Winnebago (Sloan, IA) Oct 22-25
- Trunk or Treat at Iowa Tribe, Oct 26
- Drought Early Warning Workshop, Nov 13-14 at Santee
- Tribal GIS Workshop, Albuquerque, NM Nov 18-22
- National Brownfields Conference, Los Angeles, CA, Dec 9-13



In 1951, the Horton, KS station recorded 62.64 inches of precipitation for the year. As of October 1, 2019, it has received 43.4 inches since the beginning of the year.

http://scacis.rcc-acis.org/

NOAA.gov

In 1938 the first frost of the season hit Horton, KS on Sept. 19.

