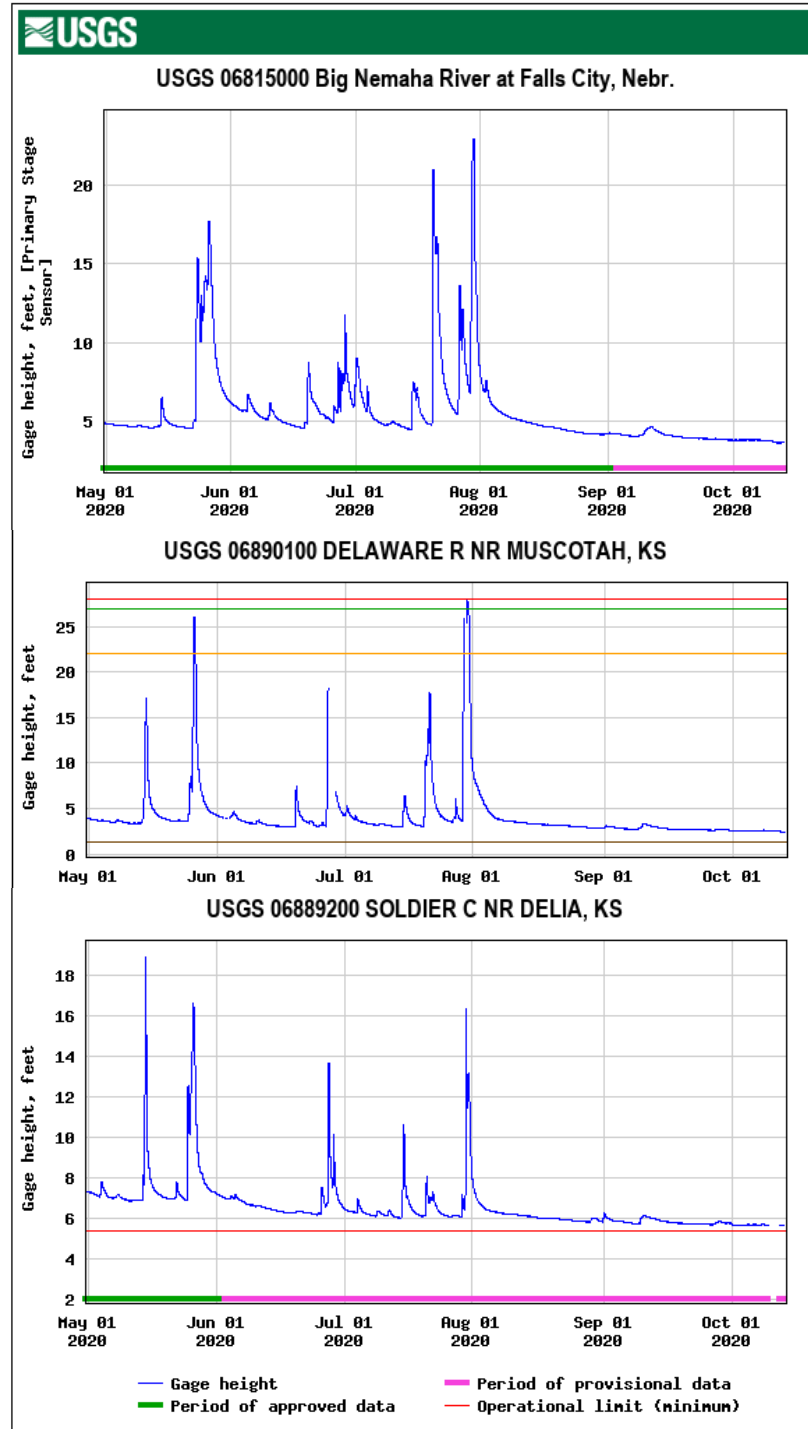


## Rivers and Streams

While the Missouri River (not shown) is and has been running at about 100% of its normal flow the entire summer and fall, the Nemaha, Delaware and Soldier Creek are now currently at their lowest points of the year. A very wet July is extremely obvious on the graph of the Delaware at Muscotah, KS where the green line at 25 feet show the water over the road. Several roads in the area were closed briefly due to moderate flooding. Since then, streamflow has been in steady decline and approaching a point on both the Delaware and Big Soldier where the stream gauges will no longer be operational due to the rivers' height.



USGS Data Generated Oct. 14, 2020 at <https://waterdata.usgs.gov/>

## Tribal Climate Dashboard

One of the major challenges in climate resiliency in Indian Country is obtaining data that is relevant to communities that are often remote, scattered, small and lack the instrumentation needed to make meaningful observations. The High Plains Regional Climate Center's [Decision Dashboard for Climate and Drought Monitoring](https://hprcc.unl.edu/tribal-dashboards/dashboard.php) or <https://hprcc.unl.edu/tribal-dashboards/dashboard.php> is a one-stop shop for data that can enhance our ability to understand climate change and make decisions that will benefit our people. The website is tailored to the regions of Northeast Nebraska, Northeast Kansas and Iowa. Anyone can then begin to select topics from a menu that includes: current conditions, water supply, data and graphs, summaries and forecasts and outlooks. The site is also always looking to increase its ease of use and operability. All the data in this summary and those in the past can be accessed through the dashboard and we would like to invite you to give it a try. We will also be hosting a training on some of the ways that you can navigate the dashboard and find the information you want on **November 10, 2020 from 10 am until 11:30**. The training will be held via Zoom and if you would like to register for the free session you can e-mail [mark.junker@sacoxenviro.org](mailto:mark.junker@sacoxenviro.org) for a link to the session.



### Derecho (cont. from page 1)

- 12:28 pm** – 130 mph winds at Cedar Rapids, IA.
- 2:25 pm** – 110 mph winds at Princeton, IL.
- 3:34 pm** – Tornado touched down just outside Chicago in Midlothian.
- 4:00 pm** – Numerous reports of downed trees in Wrigleyville in Chicago.
- 5:40 pm** – EF1 Tornado confirmed in Elkhart, IN.
- 6:45 pm** – Fatality: A woman was killed when her mobile home was blown over in Allen, IN.

Compiled from Storm Prediction Center Reports August 10, 2020

[mark.junker@sacoxenviro.org](mailto:mark.junker@sacoxenviro.org)

## 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.

### Inside this Issue

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### What is a derecho?

Derechos are large straight -line windstorms that typically occur in the Midwest and eastern parts of the United States. Nebraska, Iowa and Kansas can expect to experience one about every other year. To be classed as a derecho the storm must cover 240 miles and have winds in excess of 58 mph.

### Tribal and Other Impacts

- 8:14 am** – Reports of large downed trees due to high winds arrive from the Omaha Reservation near Pender and Winnebago. Winds of 77 mph recorded.
- 10:04 am** – Semi blown over in Minden, IA
- 11:00 am** – 100+ cars have windows blown out in Marshalltown, IA.
- 11:36 am** – Brief tornado near Marshalltown in cropland.
- 11:52 am** – 106 mph winds west of Tama, IA.
- 12:01 am** – Tornado near Tama. No damage reported.

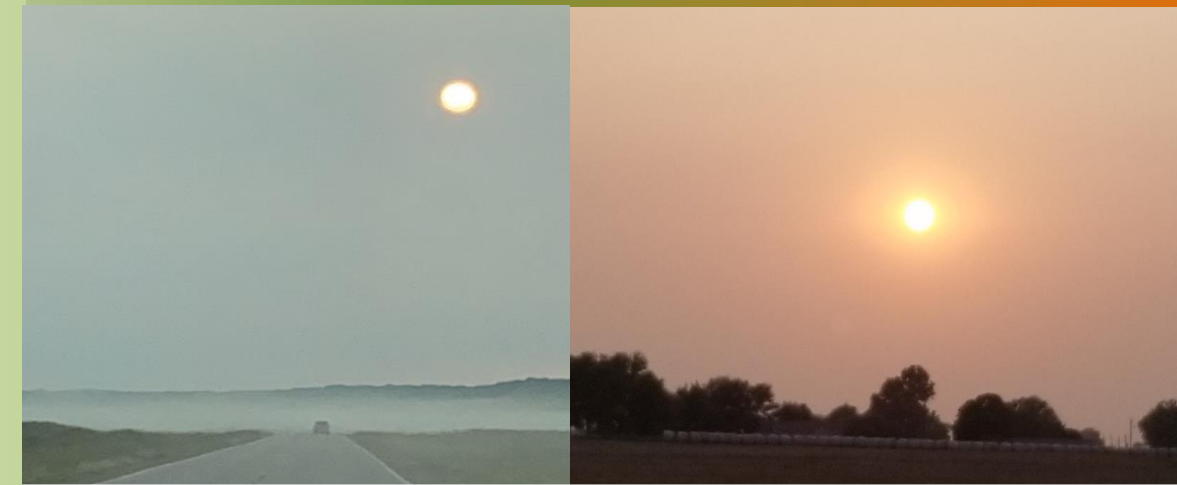
Continued on page 4

# 4 Kansas Tribes Climate Summary

Volume 2, Issue 4

Summer/Fall 2020

## The Summer of 2020



Dawn and dusk in mid-September were shrouded in haze from western fires. On the right the Missouri River Valley is shrouded in smoke near Santee, NE. (Photo: Alsiha Bartling) On the left is a Sac and Fox sunset colored in the hues of burning forests. (Photo: Mark Junker)

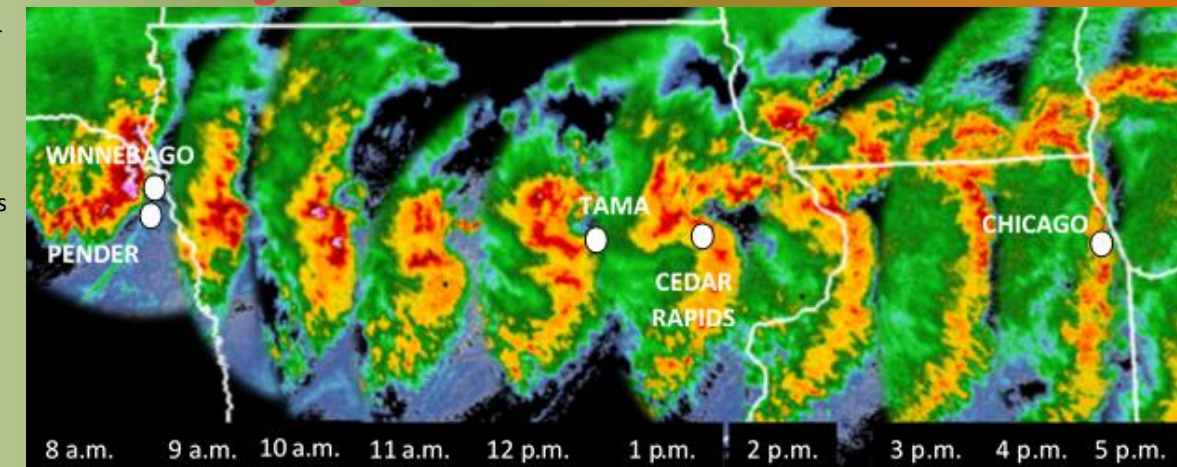
Pow wows, little league and family vacations were all undone not by weather events but by the pandemic. The climate itself was actually conducive to outdoor events. Many areas in the region flirted with drought and a devastating Derecho impacted hundreds of people on the Meskwaki settlement. And while many areas went nearly a month without precipitation, Southeast Nebraska and Northeast Kansas had its third (Falls City) or fourth (Horton wettest July ever recorded. By mid-October signs of drought were very evident.

### A Culture of Consumption...

We do indeed stand at the crossroads. Scientific evidence tells us we are close to the tipping point of climate change, the end of fossil fuels, the beginning of resource depletion. Ecologists estimate that we would need seven planets to sustain the lifeways we have created.

— Dr. Robin Wall Kimmerer  
Citizen Potawatomi

## Climate Highlights: DERECHO

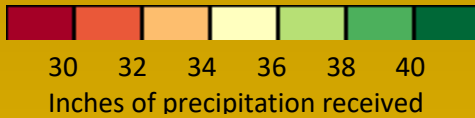


Created by the Sac and Fox Environmental Department

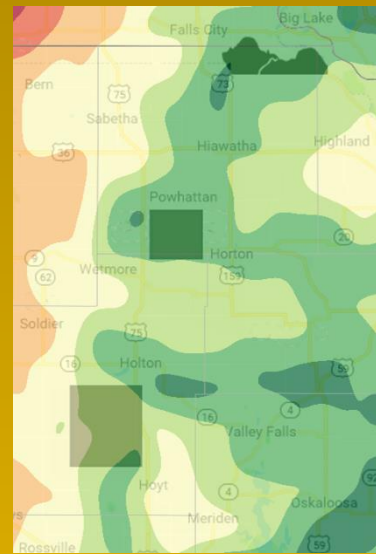
### Precipitation Summary

In the last August 15 – October 14 most areas in the region saw significantly less precipitation than usual for this time of year:

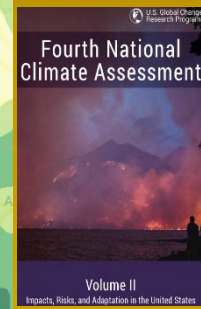
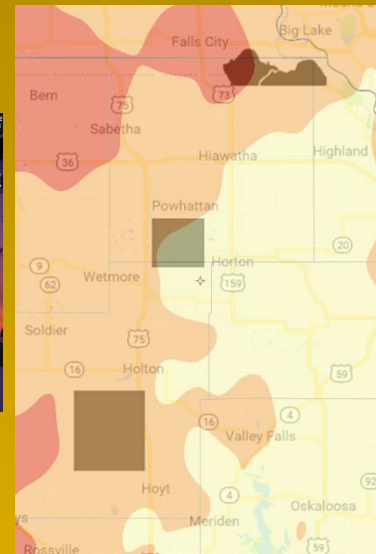
Salem, NE (5SW)	-4.36
Falls City, NE (Brenner)	-4.34
Horton, KS	-3.18
Holton, KS	-4.50
Perry Lake, KS	-0.87



**Total Precipitation for past Water Year from Oct 1, 2019 – Sep 30, 2020**

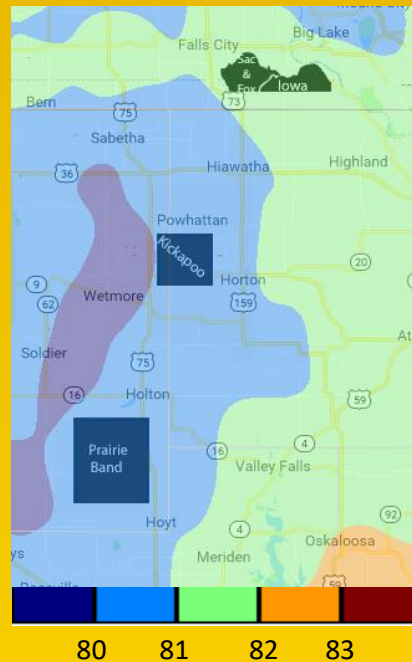


**Average Precipitation for past Water Years from Oct 1, 2010 – Sep 30, 2019**



For the most part the Four Tribes' Region was a bit wetter than an average water year. A few locations east of the Potawatomi Reservation recorded over 40 inches of precipitation from October 1, 2019 through September 30, 2020. This is about a 10% increase from what could usually be expected. The Norwest corner of the region was the driest sector and this is currently in moderate drought as reported by the US Drought Monitor on October 8, 2020. Even so the amount of rain received on the Sac and Fox Reservation and further west is pretty typical on average. What makes the situation a little different is the timing of the precipitation. Reserve, KS recorded its wettest July on record but has only received 1.5 inches since then. This correlates with some predictions made in the 2018 Fourth National Climate Assessment ([NCA2018.globalchange.gov](http://NCA2018.globalchange.gov)) which forecast a slight increase in precipitation for the near future but occurring on fewer occasions.

**Mean Maximum Temperature from May 1 – October 14, 2020**



### Temperature

It is difficult to describe numerically a perfect fall and pleasant summer. However, a key element is temperature and while we did witness some very warm days none of our usual weather stations recorded a 100-degree day over the summer. Humidity and dew point are also key components of comfort during the summer and these were very high at times and there were several days when the area was in a heat advisory which made outside activities difficult and increased air conditioner use. We did also have a 50-degree change in temperature over the course of about 36 hours. On September 6, Falls City recorded a high of 96 and by the 8<sup>th</sup> had dropped down to 46. Several frost advisories have been issued just north of our area but a hard freeze has yet to occur.

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



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

### Upcoming Events

- Brown County LEPC at Horton, KS Oct 28 at 3:30 PM
- Kansas Governors Water Conference Nov 9 and 10
- Tribal Climate Decision Dashboard Training, Nov 10 at 10:00 AM
- Tribal GIS (Virtual Workshop) Nov 16 - 19



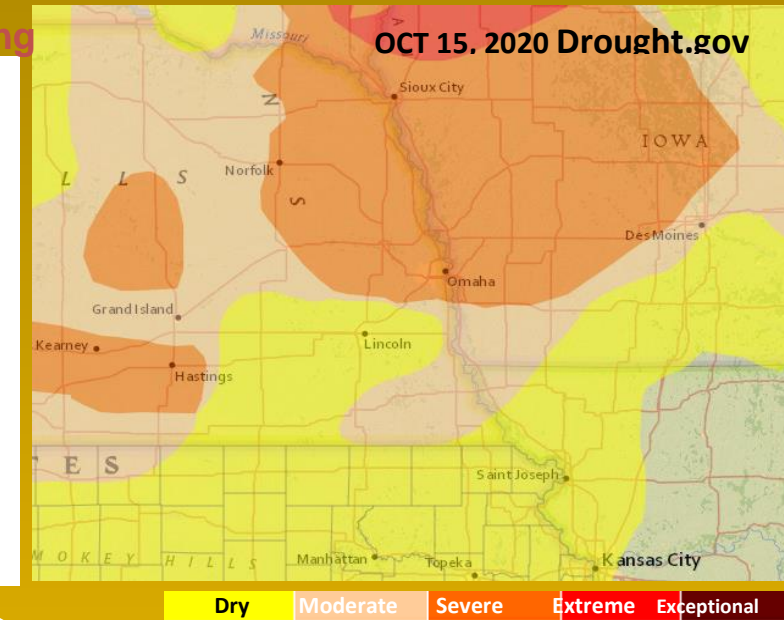
### Frosty Weather Horton, KS (Since 1891)

The frost is usually on the pumpkin by October 18 each year but it's not rare for the first freeze of the year to occur any time during the 100 days from September 20 until November 12. But if you had to pick one day to bet on a first frost you might choose one of the following dates. The day is listed along side the number of times the first frost (less than 30°) fell on that date as well as the last time it happened.

	Date	Occurrences
1	Oct-25, 2019	6
2	Oct-27, 2017	5
3	Oct-22, 1996	5
4	Oct-28, 2010	4
5	Oct-20, 1961	4
6	Oct-19, 2013	4
7	Oct-16, 2001	4
8	Oct-09, 1964	4

### Drought Outlook and Monitoring

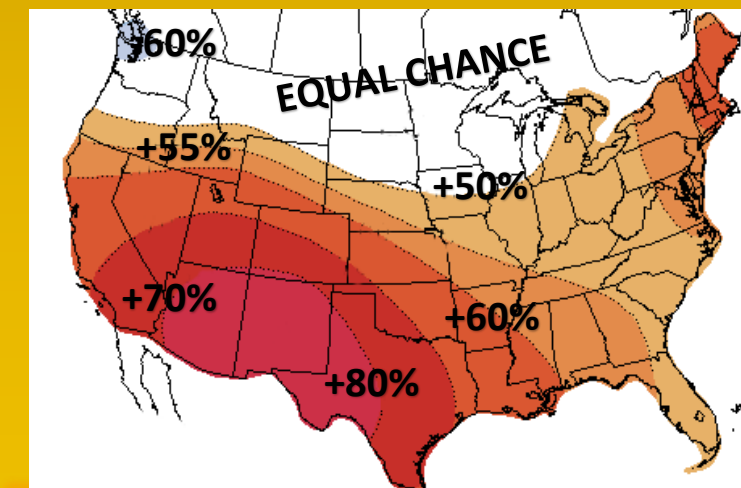
Throughout the year the region has flirted with abnormally dry conditions and moderate drought and we are now moving towards a situation where we will be experiencing moderate to severe drought in the next few weeks. The impacts from the lack of rainfall will not be extremely damaging and may allow crops to be harvested without any additional drying required. Evaporative stress has been nominal since mid-July and the Vegetation Drought Response Index is rebounding from pre-drought stress to a near normal condition in northeast Kansas. The most severe drought conditions are impacting the Omaha, Winnebago, Santee and Ponca Tribes while the Meskwaki, Iowa and Sac and Fox are experiencing moderate drought conditions. Abnormally dry conditions persist in around the Kickapoo and Pottawatomie Reservations.



### Fall / Winter Outlook

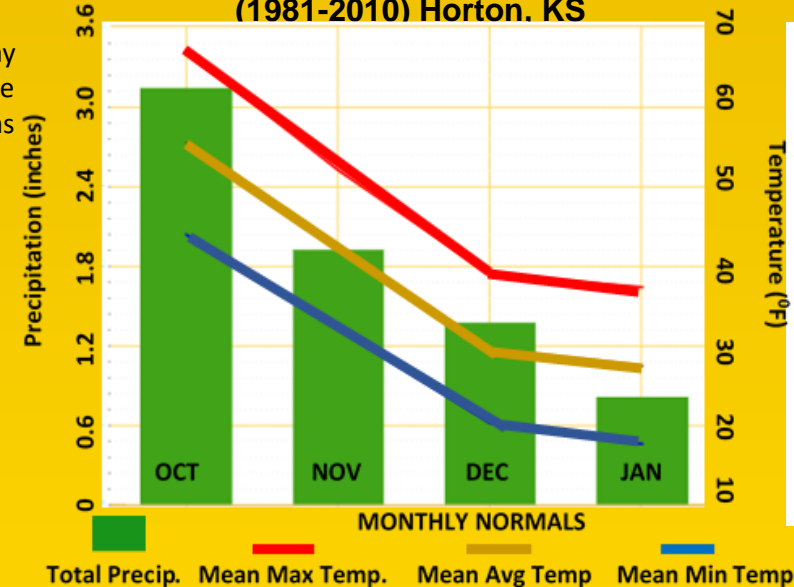
Looking ahead to the end of fall and the beginning of winter some nationwide trends will certainly impact the Tribes of Iowa, Nebraska and Kansas. With already abnormally conditions present throughout the region the coming months have a very high probability of higher than normal temperatures and lower than normal levels of precipitation. December and January are already the driest months of the year on average so soil moisture levels may drop below optimal at 30 – 70 percent. The maps to the right show that most of Iowa, Nebraska and Kansas have anywhere from a 50 – 60 percent chance of being warmer than normal and the southern part of the region has a 50 – 55 percent chance of being drier than normal while the northern half has an equal chance of being normal, slightly wetter or slightly drier over the next three months.

### November – January Temperature Outlook

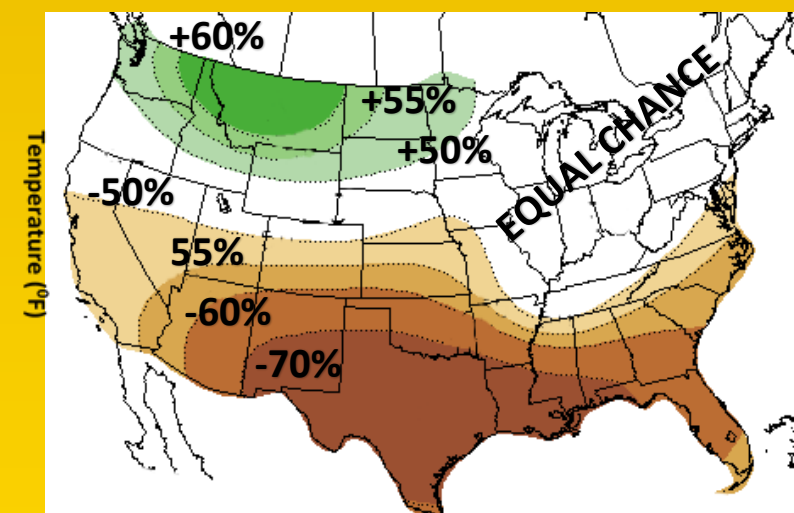


[https://www.cpc.ncep.noaa.gov/products/predictions/long\\_range/two\\_class.php](https://www.cpc.ncep.noaa.gov/products/predictions/long_range/two_class.php)

**Monthly Spring -Summer Climate Normals (1981-2010) Horton, KS**



### November - January Precipitation Outlook



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