



Rosebud Sioux Tribe Climate and Drought Summary



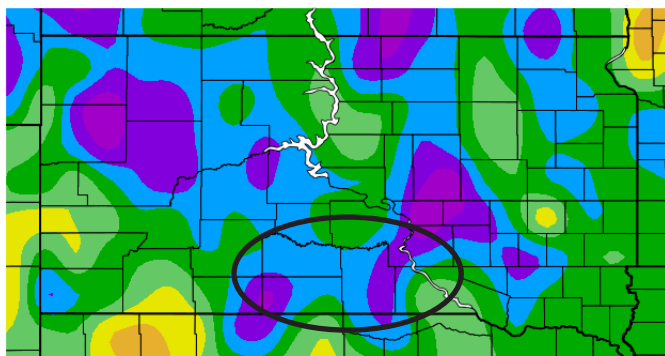
Spring Events & Summer Outlook 2018

Spring Started Cold And Snowy, Ended Warm And Dry

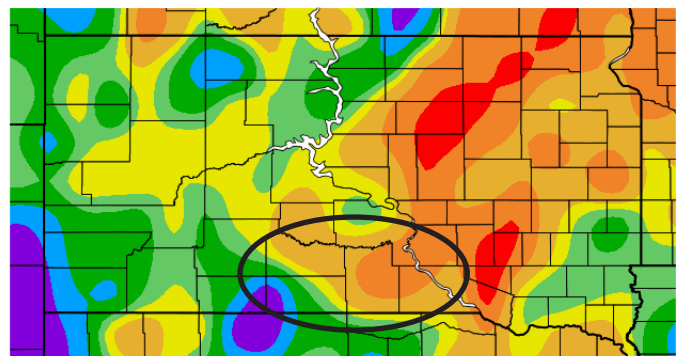
The spring season brought a range of conditions to the Rosebud Sioux Tribe Lands and surrounding area, but on the whole, spring was cold and snowy. Temperatures were approximately 2-4°F below normal across the region (see map below left). The Wood COOP station had its 9th coldest spring on record. As for precipitation, there was a tight gradient across the region, as precipitation ranged from 50 percent of normal in the northeast to 200 percent of normal across the southwest (see map below right). It was a snowy spring for the region, as the following stations in and around the reservation reported impressive snow totals that made the top 10 of snowiest springs: Winner (5th snowiest), Wood (7th snowiest), and Mission 14S (tied for 7th snowiest). (For more spring temperature and precipitation data from local stations, please see the data table on page 2.)

Breaking down the season by month, March was slightly on the cool side, with wet conditions in the southwestern part of the region and dryness to the northeast. April brought record cold to the region, as the Mission 14S, Murdo, Winner, and Wood stations each had their coldest April on record. Most of the snow received this spring fell during a mid-April blizzard, which contributed to Winner tying for its 2nd snowiest April on record, while Mission 14S and Wood had their 3rd snowiest. Then, a pattern change brought warmer and drier conditions to the region in May. It was the 6th warmest May on record for Mission 14S and 7th warmest for Murdo. The pattern change was welcomed by producers, as the late start to spring delayed planting across much of the Northern Plains.

Departure from Normal Temperature (°F)
March 1, 2018 - May 31, 2018



Percent of Normal Precipitation (%)
March 1, 2018 - May 31, 2018

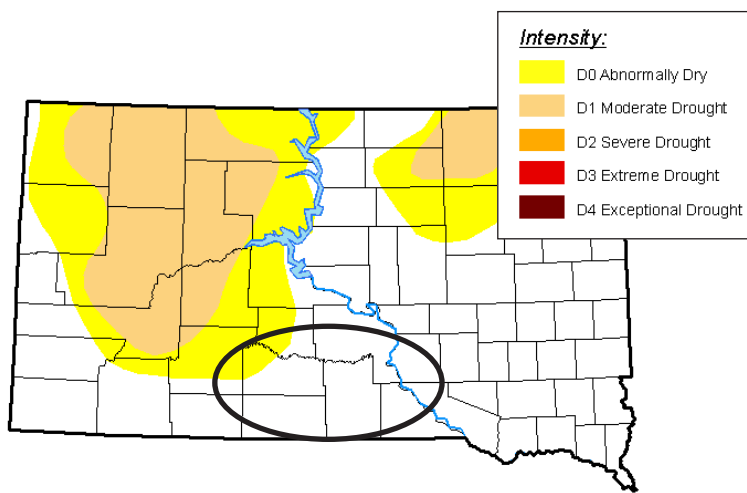


Maps produced by the High Plains Regional Climate Center and are available at: <http://www.hprcc.unl.edu/maps/current>

Drought Conditions Improve During Spring

Timely precipitation brought drought relief to much of South Dakota during the spring, including the Rosebud Sioux Tribe Lands and surrounding area. At the end of February, much of this area was experiencing abnormally dry conditions (D0) or moderate drought (D1), according to the U.S. Drought Monitor. However, above-normal precipitation fell across the southern portion of this region in March, allowing for gradual improvement. Then, the mid-April blizzard brought beneficial moisture to a large portion of the Northern Plains, including the region in and around the reservation, as the area experiencing D1 or D0 conditions was reduced. Although May was dry, drought conditions changed very little across this area, with only the northwestern portion of the region experiencing D0 conditions by the end of the month (see map below).

U.S. Drought Monitor of South Dakota - May 29, 2018
Released May 31, 2018 Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	57.12	42.88	21.17	0.00	0.00	0.00
Last Week <i>05-22-2018</i>	61.00	39.00	16.45	0.00	0.00	0.00
3 Months Ago <i>02-27-2018</i>	10.85	89.15	56.73	16.01	0.00	0.00
Start of Calendar Year <i>01-02-2018</i>	6.68	93.32	52.84	18.64	5.92	0.00
Start of Water Year <i>09-26-2017</i>	19.56	80.44	59.35	32.30	5.62	0.00
One Year Ago <i>05-30-2017</i>	41.69	58.31	20.42	0.00	0.00	0.00

The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC-UNL. For more information on the U.S. Drought Monitor, go to: <http://droughtmonitor.unl.edu>

Summary Of Station Data (March 2018 - May 2018)

Station	Average Temp. (°F)	Dep. from Normal Temp. (°F)	Temp. Rank	Total Precip. (in.)	Dep. from Normal Precip. (in.)	Percent of Normal Precip.	Precip. Rank	Period of Record
Hamill (SD Mesonet)	44.9	-	-	-	-	-	-	2008-2018
Kilgore 1 NE	43.0*	-3.4	-	11.15*	3.84	153	-	1998-2018
Magpie Creek SD	45.1	-	-	-	-	-	-	1987-2018
Martin 19.6 ENE	-	-	-	-	-	-	-	2007-2018
Mission 14 S	42.6	-2.4	-	7.17	0.13	102	near normal	1951-2018
Murdo	44.0	-2.5	-	5.09	-1.85	73	near normal	1907-2018
Norris 2.0 SSW	-	-	-	6.24	-	-	-	2008-2018
Olsonville 4.5 SE	-	-	-	7.48*	-	-	-	2013-2018
Rosebud (SD Mesonet)	-	-	-	-	-	-	-	2018-2018
Winner	-	-	-	-	-	-	-	1910-2018
Wood	43.9	-2.2	9th coldest	5.80	-1.06	85	near normal	1913-2018

A dash (-) indicates insufficient data for calculation. An asterisk (*) indicates some missing data for this period. All data are preliminary and subject to change. Unless noted otherwise, data were retrieved from the Applied Climate Information System (ACIS): rcc-acis.org

Spring Blizzard Brings Record-Breaking Snowfall To The Region

A powerful storm system brought heavy snow and blizzard conditions to the Northern Plains April 13-15, including the Rosebud Sioux Tribe Lands and surrounding area. Blowing snow reduced visibilities, making travel nearly impossible and forcing the closure of numerous highways. Snowfall totals were quite impressive from this storm, especially for this late in the season. On the 14th, the Wood COOP station received 15.0 inches of snowfall and tied for its 2nd highest 1-day total snowfall on record for April, while the Mission 14S COOP station received 12.0 inches of snowfall, tying for 3rd highest 1-day total snowfall in April. On the 15th, the Winner COOP station recorded an astounding 20.0 inches of snowfall, but it was only the 2nd highest 1-day total snowfall on record for April as it could not beat the 28.0 inches of snowfall Winner received on April 18, 1995.



Rosebud, South Dakota

Photo by Toni Lynne Long, courtesy NWS Rapid City



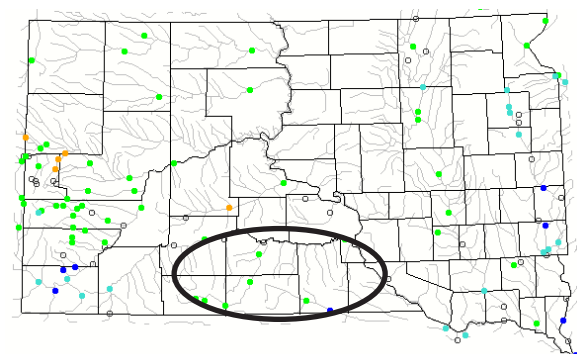
Winner, South Dakota

Photo by Samantha Navotny, courtesy NWS Rapid City

Snowy Spring Causes Above-Normal Streamflows

Streamflows were above normal throughout March and April across the Rosebud Sioux Tribe Lands and surrounding area, with most streams returning to normal flow in May. Abundant snowfall and subsequent melting were largely responsible for higher streamflows during the first two-thirds of the spring season. However, cool and wet conditions were quickly replaced by warmth and dryness in May, and with water demand by crops and plants increasing, streamflows declined and eventually returned to normal for most of the region.

Monthly Average Streamflow Compared to Historical Streamflow for May



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

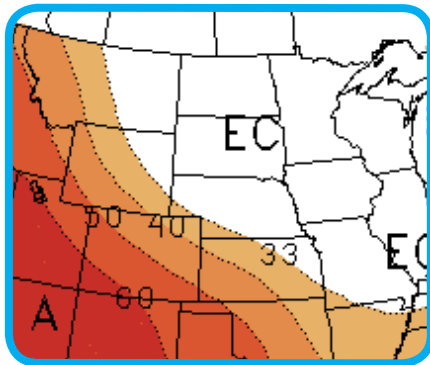
Stream Gauge	Percentile
Keya Paha River Near Keyapaha	64
Keya Paha River At Wewela	93
Lake Creek Below Refuge Near Tuthill	71
Little White River Near Martin	67
Little White River Near Rosebud	72
Little White River Near Vetel	61
Little White River Below White River	62

*NR=NotRanked. **Data are real-time. A percentile is a value on a scale of one hundred that indicates the percent of a distribution that is equal to or below it. The streamflow data and map shown represent monthly average streamflow compared to historical streamflow for that particular month (May). Streamflow data and map provided by the U.S. Geological Survey: <http://waterwatch.usgs.gov>.

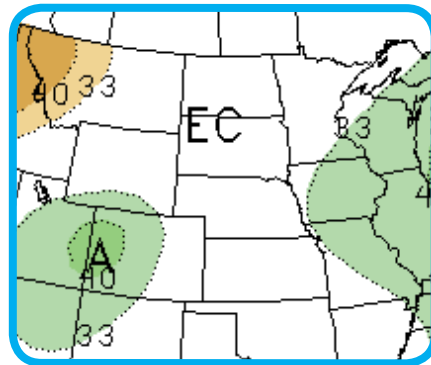
No Strong Temperature Or Precipitation Signal Detected For Summer

La Niña has ended and ENSO-neutral conditions are present, with the possibility of transitioning to El Niño by winter. The summer outlook from NOAA's Climate Prediction Center indicates equal chances for above-, near-, or below-normal temperature and precipitation for the Rosebud Sioux Tribe Lands (see maps below - left and center). The U.S. Seasonal Drought Outlook indicates that the majority of the area in drought in South Dakota should be removed, with the exception of the extreme northwestern portion of the state (see map below right). Drought development is not expected on the Rosebud Sioux Tribe Lands through the end of summer. The National Significant Wildland Fire Potential Outlook indicates that wildland fire potential is likely to be below normal through July. CPC outlooks are available at: <http://www.cpc.ncep.noaa.gov/>.

3-Month Temperature Outlook
Valid June - August 2018

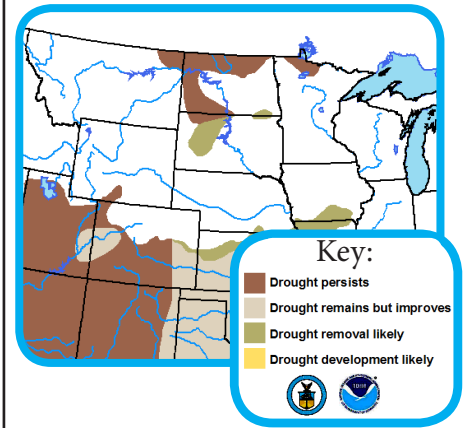


3-Month Precipitation Outlook
Valid June - August 2018



EC: Equal chances of above, near, or below normal
A: Above normal B: Below normal

U.S. Seasonal Drought Outlook
Valid May 17 - August 31, 2018



Drought Outlook explanation:

The Climate Prediction Center issues a seasonal drought outlook for the U.S. that is based on probabilities for drought development, persistence and intensification, improvement, and removal at a large scale. Local-scale changes in drought conditions may not be captured by this outlook. “On-going” drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4). The tan areas on the map imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none). The white areas imply no drought present.

Three-Month Temperature and Precipitation Outlook explanation:

Each month, the Climate Prediction Center issues a new three-month outlook for temperatures and precipitation for the lower 48 states and Alaska. These outlooks indicate the probability of temperatures and precipitation being above, near, or below normal. (“Normal” is what is expected based on average temperatures and precipitation during the period of 1981-2010.) In general, the colors on the map will indicate warmer/cooler or wetter/drier conditions. In the temperature outlook, the oranges signify above normal temperatures, while the blues signify below normal temperatures. In the precipitation outlook, the greens indicate above normal precipitation, while the browns indicate below normal precipitation. You will also see probabilities on the map (e.g. 33, 40, 50, 60, 70, and 80). For a location and season, forecasters divide the 30 observations from 1981-2010 into thirds: 1/3 is the coldest or driest, 1/3 is the warmest or wettest, and 1/3 is in between. When forecasters indicate that an area will have above normal precipitation, for example, they are saying that the probability is greater than 33 percent. The outlooks are for the 3-month period as a whole and do not indicate when certain conditions would occur or the duration and intensity of any particular event. Areas of white are marked by “EC,” which means equal chances of above, near, or below normal temperatures/precipitation. EC does not mean near normal.

Collaborators and Partners:



Contact Information: Please direct questions and feedback on this climate summary to Crystal Stiles, High Plains Regional Climate Center, 402-202-3320.