



# May 2019 Climate Summary

Water over a road near Tyndall, South Dakota. Photo courtesy Sara Bauder.  
<http://hprcc.unl.edu>

## Flooding, Delayed Crop Progress Continue after Cool, Wet May

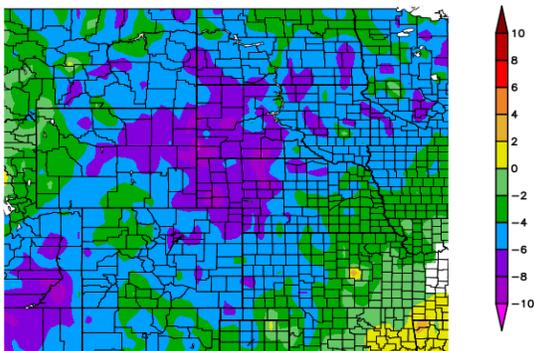
May 2019 was one for the record books, with extremely wet conditions causing more flooding issues and negatively impacting the growing season. Both Kansas and Nebraska had their wettest May on record, according to the National Centers for Environmental Information (NCEI). These wet conditions have been ongoing for the past 12 months as South Dakota, Nebraska, and Kansas each had their record wettest June to May period.

Active weather in May brought heavy precipitation to these areas, further exacerbating flooding and compounding impacts. Dozens of river gauges experienced record crests from unprecedented snowmelt and spring precipitation, and many roads continued to be closed. The flooding has also done extensive damage to farmland, as fields were either still under water or contained large amounts of silt, sand, and/or debris deposits. However, the wetness has kept drought from being an issue in the region, and conditions have vastly improved in drought-stricken areas. In fact, for the first time since the inception of the U.S. Drought Monitor in 2000, no areas in the state of Colorado were experiencing drought or abnormal dryness by the end of May.

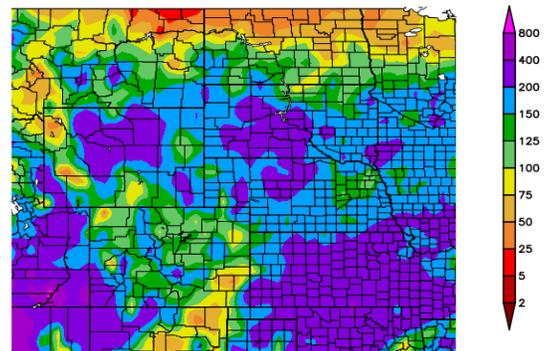
In addition to flooding, the cool and wet conditions this spring delayed planting and crop progress. As of the end of May, it was the slowest corn planting season on record for the U.S., with only 58 percent of the crop planted as of May 26th. Meanwhile, it was the 2nd slowest soybean planting season, with only 29 percent of the crop planted (records for both corn and soybeans go back to 1995). Not surprisingly, crop emergence was also far behind the five-year average for corn and soybeans. Unfortunately, the situation was similar for other row crops as well. Prevent plant was on the minds of many producers in the eastern High Plains, as crop insurance final planting dates for corn have already passed and are fast approaching for soybeans.

### Temperature and Precipitation Overview

Departure from Normal Temperature (F)  
5/1/2019 – 5/31/2019



Percent of Normal Precipitation (%)  
5/1/2019 – 5/31/2019



Above: Departure from 1981-2010 normal temperature (left) and percent of normal precipitation (right) for May 2019 in the High Plains region. Maps produced by the High Plains Regional Climate Center and are available at: <http://hprcc.unl.edu/maps/current>.

## Precipitation

May was quite wet across the High Plains, with nearly the entire region experiencing above-normal precipitation for the month. Several areas, including much of Kansas, northern and central Wyoming, and an area extending from central South Dakota southward through northern Nebraska, received more than double their normal May precipitation. Several locations ranked among the top 10 of wettest Mays, including Wichita, Kansas, Pierre, South Dakota, and Rapid City, South Dakota, which all had their 2nd wettest on record. The only sizeable area of the region that experienced below-normal precipitation was northern North Dakota, where precipitation was less than 50 percent of normal.

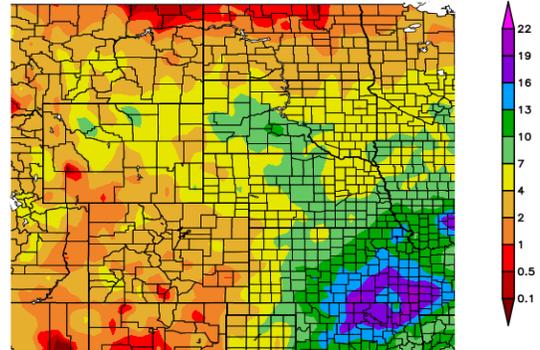
There was no shortage of impactful weather throughout the High Plains in May, as flooding, severe weather, and even snowstorms impacted the region. Winter lingered in portions of Colorado and Wyoming, as a strong, late-season storm produced snowfall and impacted travel the 19th-21st. Cheyenne, Wyoming received 9.9 inches (25 cm) of snow from this system, bringing the monthly total to 12.4 inches (31 cm), which was 10.1 inches (26 cm) above normal. In Colorado, Alamosa and Colorado Springs were hit with a couple of snowstorms during the month, and both locations had their 7th snowiest May on record.

The severe weather season ramped up in May, and numerous reports of tornadoes, large hail, and damaging winds occurred throughout the month, particularly in Kansas and Nebraska. For instance, a tornado touched down in the southwestern part of Lincoln, Nebraska on the 5th. Rated an EF-2 on the Enhanced Fujita scale, the tornado damaged several homes and businesses. A stronger, more impactful tornado touched down in Linwood, Kansas on the 28th, causing 18 injuries but luckily no fatalities. This tornado was rated an EF-4, as it completely leveled homes and other sound structures.

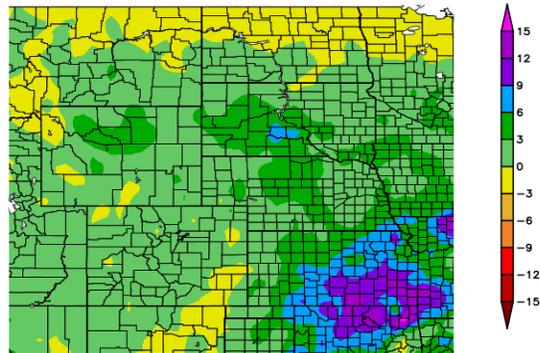
The spring season ended up quite wet for most of the High Plains, but especially throughout South Dakota and Kansas. The following locations ranked among the top 10 for wettest spring: Pierre, SD and Sioux Falls, SD (wettest); Rapid City, SD and Wichita, KS (3rd wettest); Grand Junction, CO (4th wettest); Lander, WY and Valentine, NE (6th wettest); Cheyenne, WY and Huron, SD (7th wettest); Alamosa, CO and Casper, WY (8th wettest); and Chadron, NE and Topeka, KS (9th wettest).

### Regional Precipitation

Precipitation (in)  
5/1/2019 – 5/31/2019



Departure from Normal Precipitation (in)  
5/1/2019 – 5/31/2019



Above: Total precipitation in inches (top) and departure from normal precipitation in inches (bottom) for May 2019. These maps are produced by HPRCC and can be found on the Current Climate Summary Maps page at: <http://hprcc.unl.edu/maps/current>.

## Snowpack and Runoff Update

Despite below-normal temperatures and a slight bump in mountain snowpack in May, the meltout process was well underway. By early June, Snow Water Equivalent (SWE) above Fort Peck Reservoir was at 98 percent of average, with 29 percent of this year's peak remaining. Meanwhile, SWE between Fort Peck and Garrison Reservoirs was at 105 percent of average, with 51 percent of this year's peak remaining. Due to snow falling so late in the snowpack season, mountain snowpack was well above normal in both Colorado and Wyoming by early June. On average, streamflows were near to slightly below normal in these areas in May. However, the continuation of above-normal precipitation during the spring in eastern portions of the region caused streamflows to run high, especially throughout South Dakota, Nebraska, and Kansas where flooding was ongoing.

## Temperatures

The temperature pattern flipped back to the cool side in May, with temperature departures ranging from approximately 2.0-8.0 degrees F (1.1-4.4 degrees C) below normal throughout the region. The greatest departures occurred in eastern Wyoming, western South Dakota, and the Nebraska Panhandle, where numerous locations ranked in the top 10 coolest Mays on record. In fact, Casper, Wyoming, Chadron, Nebraska, and Rapid City, South Dakota had their coolest Mays on record.

Given the below-normal temperatures throughout the High Plains in March, the spring season was quite cool for the region as well. Widespread departures of 2.0-4.0 degrees F (1.1-2.2 degrees C) below normal were evident from March-May, with departures exceeding 6.0 degrees F (3.3 degrees C) below normal in some areas. The following locations ranked among the top 10 for coolest spring:

Sisseton, SD (coolest); McCook, NE (3rd coolest); Pierre, SD and Chadron, NE (4th coolest); Casper, WY (7th coolest); Aberdeen, SD, Mobridge, SD, and Scottsbluff, NE (8th coolest); and Hastings, NE (10th coolest).

The late arrival of spring in the High Plains delayed planting and crop progress across the region. For instance, as of early June, only 13 percent of corn planted in South Dakota had emerged, which was 67 percent behind the five-year average, according to the USDA Weekly Weather and Crop Bulletin. With below-normal temperatures forecast for the region during the summer months (see page 4), producers are concerned that crops will progress and mature too slowly, which could potentially put them at a higher risk for freeze damage in the fall.

## Drought Conditions

Improvements in drought conditions continued for most of the High Plains during May, given the heavy precipitation that fell over much of the region. According to the U.S. Drought Monitor, just over four percent of the High Plains region was experiencing abnormally dry or drought conditions (D0-D4) by the end of the month,

### U.S. Drought Monitor

**U.S. Drought Monitor  
High Plains**

**May 28, 2019**  
(Released Thursday, May, 30, 2019)  
Valid 8 a.m. EDT

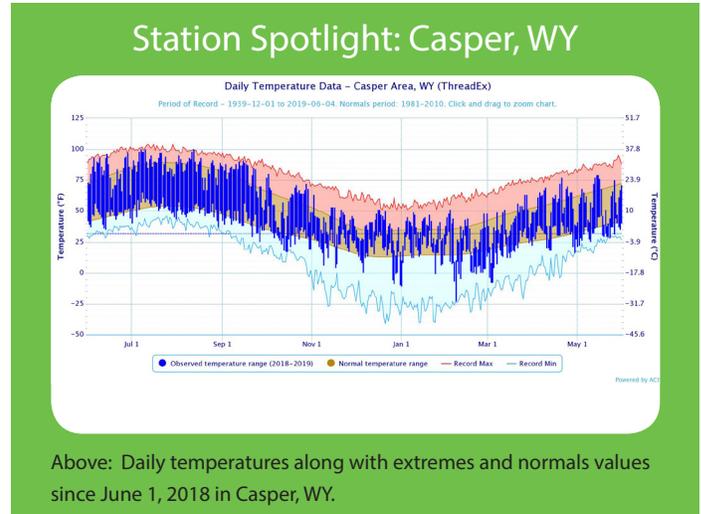
	Drought Conditions (Percent Area)				
	None	D0-D4	D1-D4	D2-D4	D3-D4
<b>Current</b>	95.76	4.22	0.00	0.00	0.00
<b>Last Week</b> (05-21-2019)	94.14	5.86	0.34	0.00	0.00
<b>3 Month Ago</b> (03-28-2019)	69.26	30.74	14.07	7.21	0.12
<b>Start of Calendar Year</b> (01-01-2019)	70.74	29.26	18.27	11.85	5.54
<b>Start of Water Year</b> (09-01-2018)	52.20	47.80	28.48	18.28	11.05
<b>One Year Ago</b> (05-28-2018)	47.84	52.16	36.18	19.70	9.44

**Intensity:**  
■ D0 Abnormally Dry    ■ D3 Extreme Drought  
■ D1 Moderate Drought    ■ D4 Exceptional Drought  
■ D2 Severe Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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NCEI/NOAA

The U.S. Drought Monitor is produced as a joint effort of the U.S. Department of Agriculture (USDA), National Drought Mitigation Center, U.S. Department of Commerce, and the National Oceanic and Atmospheric Administration (NOAA). For current Drought Monitor information, please see: <http://droughtmonitor.unl.edu/>.



compared to approximately nine percent at the end of April. In fact, drought conditions (D1-D4) were completely eliminated across the region in May, leaving the High Plains states drought free on the U.S. Drought Monitor for the first time since June 16, 2009.

The last bit of moderate drought (D1) that remained in the Bighorn Mountains of north-central Wyoming was removed, and abnormally dry conditions (D0) were reduced in the western part of the state as well. D0 was completely eliminated from Colorado and Kansas. Areas experiencing drought or abnormal dryness in these three states received 150-400 percent of normal precipitation in May. While there are likely to be lingering impacts, from a meteorological standpoint, the drought in Colorado ended, which had been present since late 2017.

The only degradations in drought conditions during May occurred in North Dakota. While the rest of the High Plains experienced wet conditions, northern portions of North Dakota were dry, receiving less than 50 percent of normal precipitation. As a result, D0 expanded across the northern part of the state.

## Climate Outlooks

According to the Climate Prediction Center, El Niño conditions are present in the Pacific and an El Niño Advisory is in effect. El Niño is expected to continue through the summer and fall. For more information about ENSO, check out the ENSO blog here: <https://www.climate.gov/news-features/departments/enso-blog>. To learn more about how El Niño may affect the Missouri Basin region, see this El Niño briefing: <https://www.drought.gov/drought/documents/el-nino-impacts-and-outlook-missouri-river-basin-october-2018>.

According to the National Weather Service's long-range flood outlook, moderate to major flooding is expected to continue in eastern areas of the Missouri River Basin through August. In the High Plains, this includes eastern portions of South Dakota, Nebraska, and Kansas, particularly along the James and Missouri Rivers. The seasonal temperature and precipitation outlooks below combine the effects of long-term trends, soil moisture, and when applicable, the El Niño Southern Oscillation cycle (ENSO). To learn more about these outlooks, please see: <http://www.cpc.ncep.noaa.gov>.

### Temperature

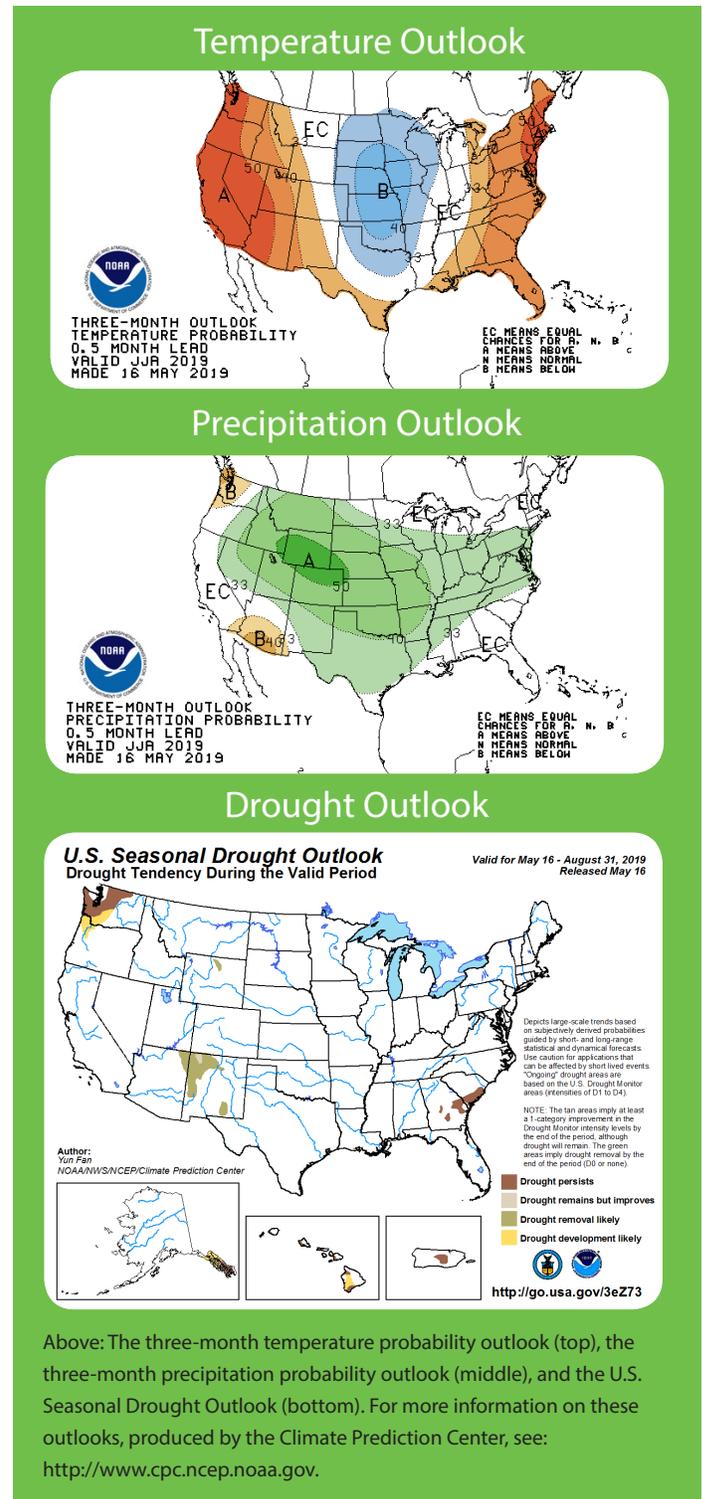
The June–August temperature outlook indicates an increased chance of above-normal temperatures for the western and eastern thirds of the contiguous U.S. In the High Plains, this includes western portions of Wyoming and Colorado. Below-normal temperatures are expected throughout the Plains and parts of the Midwest. In the High Plains, this includes Kansas, Nebraska, South Dakota, most of North Dakota, eastern Colorado, and extreme eastern Wyoming. Elsewhere, there are equal chances for above-, below-, and near-normal temperatures during the June–August period.

### Precipitation

The precipitation outlook for the next three months calls for a higher probability of above-normal precipitation across a large portion of the contiguous U.S., including the Interior West, the Plains, the Midwest, and the Mid-Atlantic. In the High Plains, this includes Colorado, Wyoming, Kansas, Nebraska, South Dakota, and most of North Dakota. Below-normal precipitation is expected in portions of the Pacific Northwest and the Southwest. Elsewhere, there are equal chances for above-, below-, and near-normal precipitation during the June–August period.

### Drought

The May 16th U.S. Seasonal Drought Outlook indicates that drought is expected to persist across parts of the Southeast, with persistence and further development anticipated in the Pacific Northwest. Drought may improve or be removed in portions of the West. In the High Plains, this includes a pocket of drought in northern Wyoming. Given the continued wetness indicated by the summer outlooks, drought development is not anticipated in the High Plains through August, although it is worth noting that moderate drought was introduced in North Dakota on the June 4th U.S. Drought Monitor map.



Above: The three-month temperature probability outlook (top), the three-month precipitation probability outlook (middle), and the U.S. Seasonal Drought Outlook (bottom). For more information on these outlooks, produced by the Climate Prediction Center, see: <http://www.cpc.ncep.noaa.gov>.

## Station Summaries: By the Numbers

Colorado	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Akron Washington County Airport	64.4	38.7	51.5	-5.6	89	05/16	26	05/02	2.87	-0.05	98
Alamosa San Luis Airport	64.2	30.9	47.5	-3.7	75	05/26+	25	05/24+	0.93	0.35	160
Colorado Springs Municipal Airport	63.8	39.3	51.5	-4.4	82	05/15	32	05/21+	2.49	0.46	123
Denver International Airport	63.9	39.2	51.6	-5.5	83	05/15	30	05/22+	3.23	1.11	152
Grand Junction Walker Field Airport	69.8	43.6	56.7	-4.9	85	05/14	32	05/03+	0.79	-0.09	90
Pueblo Memorial Airport	71.8	40.7	56.3	-4.1	90	05/15	32	05/19	2.17	0.66	144

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	72.3	52.7	62.5	-0.6	93	05/16	39	05/10	8.76	4.60	211
Dodge City Regional Airport	71.9	49.6	60.8	-3.4	89	05/16	36	05/10	8.42	5.57	295
Goodland Renner Field	66.9	43.0	55.0	-4.4	91	05/16	32	05/02	5.10	2.15	173
Topeka Municipal Airport	73.7	54.3	64.0	-1.0	92	05/16	37	05/10	9.99	5.08	203
Wichita Mid-Continent Airport	74.3	55.3	64.8	-1.2	89	05/16	43	05/10	12.64	8.07	277

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	61.1	38.0	49.5	-6.3	86	05/15	27	05/02	4.81	2.05	174
Grand Island Airport	68.9	47.6	58.3	-2.9	93	05/16	32	05/02	6.68	2.27	151
Lincoln Municipal Airport	70.8	49.6	60.2	-2.1	94	05/16	35	05/10	7.29	3.00	170
Norfolk Karl Stefan Airfield	67.7	46.7*	57.4*	-3.1*	91	05/16	34	05/10+	4.92	0.99	125
North Platte Regional Airport	66.8	40.8	53.8	-4.1	89	05/16	22	05/02	6.19	2.91	189
Omaha Eppley Airport	71.3	52.6	62.0	-0.3	95	05/16	40	05/10+	7.65	2.89	161
Valentine Miller Field	65.5	42.0	53.7	-3.9	90	05/15	24	05/02	7.35	4.22	235

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	63.3	41.2	52.2	-3.3	88	05/30	23	05/02	3.25	0.85	135
Fargo International Airport	64.1	40.8	52.4	-4.7	91	05/30	24	05/07	2.90	0.09	103
Grand Forks International Airport	64.1	38.3	51.2	-3.6	93	05/30	22	05/07	1.72	-0.96	64
Theodore Roosevelt Airport	59.7	36.4	48.0	-5.1	83	05/15	24	05/07	3.01	0.69	130
Williston International Airport	64.7	37.0	50.9	-3.2	87	05/29	25	05/09	1.11	-0.81	58

All data are preliminary and subject to change. + indicates multiple dates, latest date listed. \* indicates some missing data for the period. Data are retrieved through the Applied Climate Information System (ACIS) and are available online through the CLIMOD system. For more information please contact us: <http://www.hprcc.unl.edu/contact.php>.

# May 2019 Climate Summary

South Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Aberdeen Regional Airport	64.4	41.1	52.8	-3.6	89	05/30	24	05/07	4.15	1.04	133
Huron Regional Airport	63.7	44.4	54.1	-4.0	85	05/31	31	05/10+	5.73	2.62	184
Pierre Regional Airport	62.6	41.9	52.3	-5.6	87	05/15	23	05/02	6.78	3.63	215
Rapid City Regional Airport	58.2	36.6	47.4	-7.6	85	05/15	21	05/02	7.80	4.58	242
Sioux Falls Joe Foss Field Airport	65.5	44.9	55.2	-2.8	85	05/31	30	05/10	6.62	3.22	195

Wyoming	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Casper Natrona County International AP	58.7	33.5	46.1	-6.1	79	05/15+	21	05/01	3.62	1.60	179
Cheyenne Municipal Airport	58.0	36.2	47.1	-5.3	79	05/16	28	05/21	5.19	2.85	222
Lander Hunt Field Airport	57.9	36.3	47.1	-6.2	78	05/15	25	05/02	5.49	3.29	250
Laramie Regional Airport	55.2	30.8	43.0	-4.6	74	05/15	22	05/02	2.40	0.71	142
Rawlins Municipal Airport	58.1	33.4	45.7	-3.7	75	05/16+	22	05/10	1.23	-0.18	87
Sheridan County Airport	60.2	36.0	48.1	-4.4	81	05/14	23	05/01	6.34	3.99	270

## May 2019 Highlights

### Monthly Rankings

Temperature in degrees F, Precipitation in inches

<b>Coolest</b>	<b>Temperature / Ranking</b>	<b>Record / Year</b>	<b>Period of Record</b>
Casper, WY	46.1 / COOLEST	46.2 / 1950	1939-2019
Chadron, NE	49.5 / COOLEST	50.8 / 1967	1941-2019
Rapid City, SD	47.4 / COOLEST	49.8 / 1967	1942-2019
Dickinson, ND	48.0 / 2nd coolest (tie, 2002)	47.1 / 1967	1938-2019
Pierre, SD	52.3 / 3rd coolest	51.4 / 1967	1893-2019
Akron, CO	51.5 / 3rd coolest (tie, 1943)	49.3 / 1995	1937-2019
Sheridan, WY	48.1 / 3rd coolest (tie, 2010)	47.4 / 1907	1907-2019
McCook, NE	56.0 / 4th coolest	54.0 / 1924	1894-2019
Scottsbluff, NE	50.9 / 4th coolest (tie, 1995)	50.1 / 1907	1893-2019
<b>Wettest</b>	<b>Precipitation / Ranking</b>	<b>Record / Year</b>	<b>Period of Record</b>
Wichita, KS	12.64 / 2nd wettest	13.14 / 2008	1888-2019
Pierre, SD	6.78 / 2nd wettest	7.24 / 1982	1893-2019
Rapid City, SD	7.80 / 2nd wettest	8.18 / 1996	1942-2019
Salina, KS	8.72 / 3rd wettest	15.96 / 2007	1948-2019
Valentine, NE	7.35 / 3rd wettest	8.96 / 1962	1889-2019
Hastings, NE	7.78 / 4th wettest	12.47 / 1965	1894-2019
Sheridan, WY	6.34 / 4th wettest	6.82 / 1938	1907-2019
Dodge City, KS	8.42 / 5th wettest	12.82 / 1881	1874-2019

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# North Dakota Climate Summary

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## Precipitation:

Based on the National Centers for Environmental Information (NCEI), the statewide average May precipitation was 2.29 inches, which was 1.12 inch more than last month, 0.33 inch more than in May 2018 but 0.24 inch less than the 1981-2010 average, making it the 65th driest May in the 125-year period of record. It was the driest May since 2018. The numbers less than 100 in Figure 1 below are shaded in yellow, orange and red to depict the region with below-average rainfall. In contrast, the numbers that are greater than 100 in the same figure are shaded in green, blue and purple to depict the region with above-average rainfall in May. The greatest monthly precipitation accumulation was 5.38 inches, recorded in Pretty Rock, Grant County. The greatest 24-hour precipitation was 1.08 inches, recorded in Reeder, Adams County, on May 17. The greatest monthly snowfall accumulation was 4.7 inches, recorded in Bowman, Bowman County. The greatest 24-hour snowfall was 2 inches, recorded in Dunn Center, Dunn County on May 18. Based on historical records, statewide May precipitation showed a positive long-term trend of 0.33 inch per decade since 1895. The highest and lowest May precipitation for the state ranged from 5.96 inches in 1927 to 0.23 inch in 1901.

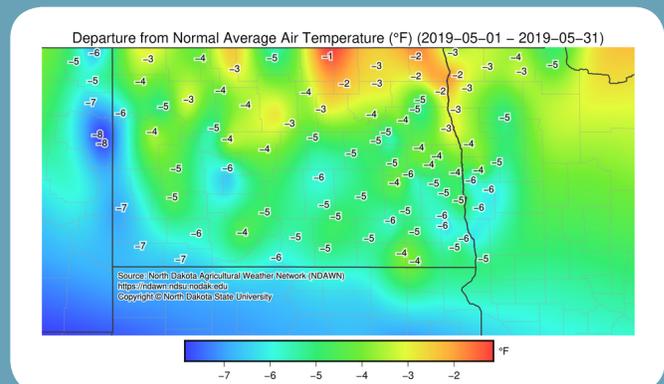
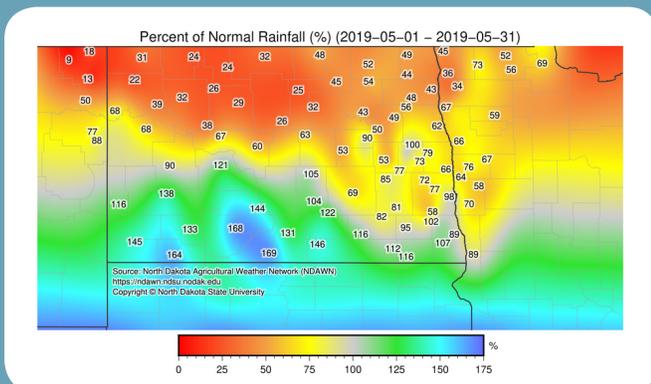
## Temperature:

The official state average May temperature was 49.5 F, which is 7.8 F warmer than last month but 10.7 F warmer than in May 2018. The average May temperature was 4.6 F cooler than the 1981-2010 average, which made it the 11th coolest May in the 125-year period of record. It was the coolest May since 2002. The negative numbers in Figure 2 are shaded in green and blue to depict the region with cooler than average temperatures in May. The state's highest and lowest daily temperatures ranged from 93 F on May 31 in Petersburg, Nelson County, to 19 F on May 7 in Hetinger, Adams County. Based on the historical records, the state average May temperature showed a slight positive long-term trend of 0.1 F per decade since 1895. The highest and lowest monthly state May average temperatures ranged from 63.5 F in 1934 to 44.4 F in 1907.

## Drought and other notable impacts:

NDAWN's highest 10-meter peak gust in May was 48 mph, recorded at the Bowman weather station in Bowman County on May 2, 2019. The NOAA Storm Report reported a total of 35 significant storm events in May. Across the observation network of weather stations with at least 30 years of history, a total of two daily high and 36 daily low-temperature-related records were set or tied. A total of 17 highest daily precipitation-related records were set or tied.

## Temperature and Precipitation Overview



Above: Percent of normal precipitation (left, figure 1) and departure from normal average temperature (right, figure 2) for May 2019 in North Dakota. Both figures produced by NDAWN.

# Kansas Climate Summary

Mary Knapp - Service Climatologist  
Kansas Weather Data Library, Kansas State University  
For more information: [www.ksre.ksu.edu/wdl](http://www.ksre.ksu.edu/wdl)



## Record Rainfall

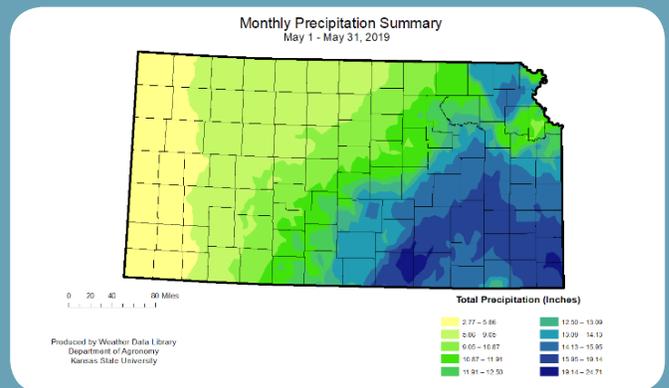
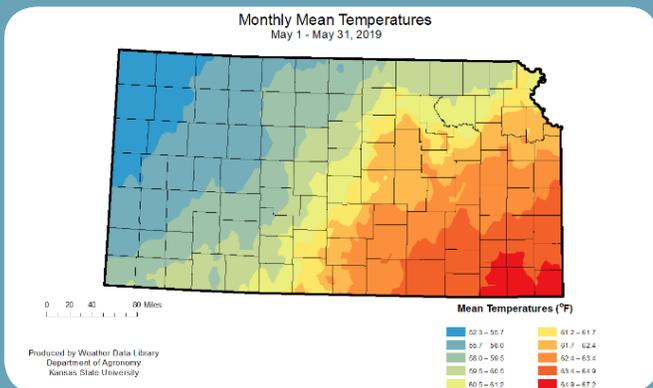
May 2019 sets the record not only for the wettest May since 1895, but also the wettest month ever. State-wide average precipitation for the month was 10.26 inches, 246 percent of normal. All divisions averaged above normal for the month. The Northwest Division was the driest, compared to normal, with an average of 5.46 inches, 158 percent of normal. In contrast, the Southeast Division averaged 17.00 inches, 294 percent of normal. The highest 24-hour rainfall total for a National Weather Service Cooperative station 9.42 inches at Horton, Brown County, on the 24th. The greatest 24-hour rainfall total for a Community Collaborative Rain, Hail and Snow network station was 9.32 inches at Rose Hill 2.7 ESE, Butler County on the 8th. The greatest monthly precipitation totals for May: 26.14 inches at Rock 3SW, Cowley County (NWS) and 30.08 inches at Rose Hill 2.7 ESE, Butler County (CoCoRaHS). Monthly snowfall was largely confined to the Northwest Division, with the highest amount reported 1.0 inches at Colby 1S, Thomas County (NWS).

May returned to the cooler-than-normal trend that has been in place since the start of the year. State-wide average temperature for the month was 60.2 oF, which is 3.3 degrees cooler than normal. This ranks as the 14th coolest on record. The Southeast Division came closest to normal with an average of 64.2 oF, 1.2 degrees cooler than normal. The Northwest Division had the largest departure with an average of 55.0 oF, 5.3 degrees cooler than normal. Despite the cooler pattern, the warmest maximum temperature was 97 oF at Tribune 14N, Greeley County, on the 17th. The coldest minimum temperature was St. Francis, Cheyenne County, on the 2nd coming in at 25 oF. Multiple warm daily records were set including four high temperatures and 95 lows. Cold daily records numbered less with only 8 high temperatures and 15 lows.

The 2019 tornado season roared into action in May. There were 81 tornadoes reported during the month. Preliminary reports indicate 18 injured and no fatalities. May 28th was the most active day when 21 tornadoes were reported. Hail and damaging wind events were also numerous. There was one fatality reported in Leavenworth County, when strong winds toppled a tree on a house, killing the occupant. In addition to the severe storms, flooding was a major concern. The National Weather Service at Wichita at one time had river flood warning for 43 river points! Some rivers reached levels not seen in over a decade or even longer. Major flood category was reached along the Neosho, Arkansas, Verdigris and Walnut rivers with numerous other rivers reaching moderate flood stage. Flooding was also reported on the Smokey Hill, Republican, Kansas, and Blue Rivers. Multiple Corps of Engineer flood control reservoirs reached over 90 percent of flood pool capacity.

The month remained drought free through its entirety thanks to record May moisture. This precipitation erased abnormally dry conditions in the southwest and northwest, returning them back to normal conditions. The June precipitation outlook favors a slightly increased chance of above normal precipitation across the state. With the limited dry conditions and the climatologically increased amounts of normal precipitation at this time of the year, drought conditions are unlikely. The temperature outlook is for cooler than normal temperature state-wide. Lingering concerns will be for flooding, particularly in the eastern parts of the state. This will especially be a concern along major rivers which will remain swollen for some time due to continued reservoir water releases.

## Temperature and Precipitation Overview



Above: May 2019 monthly mean temperatures (left) and total precipitation (right) in Kansas. Maps produced by Weather Data Library, Department of Agronomy, Kansas State University.

# Nebraska Climate Summary

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**For more information: <https://nsco.unl.edu/>**



If we were to sum up May in three words, they would be “wet,” “cool,” and “stormy.” An active weather pattern kept things interesting around Nebraska thanks to a jet stream pattern with a trough in the west and a ridge in the east. Enough moisture was in atmosphere so that systems moving across the state brought plenty of rainfall, some of that coming in heavy doses and most of that falling on already saturated soils. Temperatures were cool enough in the Panhandle such that some locations received snow, and impressive amounts. Tornado, hail and wind storm reports were plentiful and even the monthly tornado total is more than half of the typical seasonal total. Flooding continues to be widespread around Nebraska with a continuation of above-normal rains. Interstate 29 was opened for a time in May but closed again in early June due to flooding.

## Precipitation

As system after system rolled through Nebraska, the rain kept coming. Both the amount of rainfall during May as well as the number of rainy days were above average. The highest precipitation amounts occurred in the southeast corner of the state with more than 10 inches reported. This is nearly a third of the annual average total for this part of the state and is twice the normal for May. In the west, rainfall was also high for the region with monthly totals at or approaching 5 inches, which is about 50% above average. Central Nebraska saw rainfall amounts in the 5- to 8-inch range.

Rivers and streams are running at high or record high flows for the eastern two thirds of the state. Snowmelt is not complete in the Rockies with basins at more than twice the normal snow water equivalent for this time of year. The state’s largest reservoir, Lake McCoughney is running at 89% capacity to start the irrigation season.

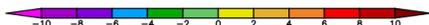
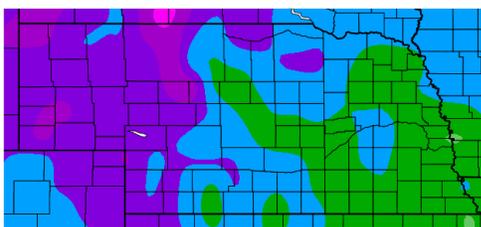
## Temperatures

Temperatures cycled quite a bit throughout the month with both warm and cool conditions. It was particularly cool with strong temperature departures during the second half of the month. Temperatures averaged in the mid to upper 40s in the Panhandle, 50s for central Nebraska, and approaching 60 degrees in the southeast. Overall May was anywhere from 4 to 8 degrees below average for eastern and western portions of Nebraska, respectively. The statewide monthly average temperature of 53.5 degrees is 5.2 degrees below average and ranks as 6th coldest since 1895. Recently, we have seen a trend toward cooler May conditions if we look at the last three decades.

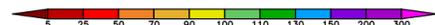
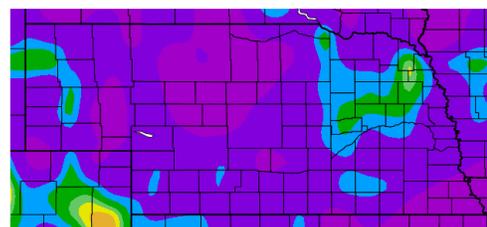
Temperatures stayed above freezing for the eastern portion of the state, while a hard freeze was observed for much of the western half of the state. This is considered a late last hard freeze for these areas. The lowest observed temperature was 17 degrees at Bridgeport, along the North Platte River in Morrill county. The Hastings airport had a record low high temperature of only 47°F on May 20. The month was not without warmth, however, as the high temperature of 95 was observed in Fremont and Omaha. Statewide, temperatures got into the mid-80s and low-90s and some record-high temperatures were reported at mid-month. On May 16, the Grand Island (93°F), Lincoln (94°F), Norfolk (94°F), Omaha (95°F), and Grand Island (93°F) airports all reported a new record-high temperature.

## Temperature and Precipitation Overview

Departure from Normal Temperature (F)  
5/1/2019 – 5/31/2019



Percent of Normal Precipitation (%)  
5/1/2019 – 5/31/2019



Above: May 2019 departure from normal temperature (left) and percent of normal precipitation (right) in Nebraska. Maps produced by the Applied Climate Information System.

# About the High Plains Regional Climate Center

The High Plains Regional Climate Center (HPRCC) is one of six NOAA Regional Climate Centers (RCCs) that has been providing timely climate data and information to the public for cost effective decision-making since 1987. The HPRCC primarily serves the six-state region of Colorado, Kansas, Nebraska, North Dakota, South Dakota, and Wyoming, but has also served people from all across the country and even throughout the world. HPRCC operates under a three-tiered structure of climate services and works closely with other organizations on the local, regional, and national levels. HPRCC staff engage with a wide range of stakeholders including K-20 education, the public, media, private industry, research, and state/tribal/federal entities, among others.

Much of the data and products found throughout this publication were built on the Applied Climate Information System (ACIS) framework. ACIS was designed to manage the complex flow of information from climate data collectors to the end users of climate data information. The main purpose of ACIS is to alleviate the burden of climate information management for people who use climate information to make management decisions.

HPRCC is involved in the ongoing development and management of ACIS. In the spring of 2014, the RCCs released a new website for ACIS. This new and improved website not only contains descriptions of ACIS and the sources of data found within, but also features real-world examples of how RCCs and external groups are using ACIS for their particular climate data needs. In addition to these examples, there is extensive documentation and tutorials on how ACIS can be used and accessed by external clients using Web Services. For more information see: <http://rcc-acis.org>.



## Additional Summary Information for the High Plains

### Missouri River Basin Quarterly Climate Impacts and Outlook

Quarterly Climate Impacts and Outlook  
Missouri River Basin  
December 2014

**National - Significant Events for September - November 2014**

**Highlights for October and the Month**

**Significant Events for November and Autumn 2014**

**Regional - Impacts for September - November 2014**

**Regional - Outlook for January - March 2015**

**MO River Basin Partners**

For more information:  
<https://www.drought.gov/drought/dews/missouri-river-basin/reports-assessments-and-outlooks>

### Midwest and Great Plains Monthly Climate and Drought Webinar

20141120 Monthly Climate and Drought Webinar

Forecast Precipitation Amounts (7 day)

To sign up for future webinars:  
<https://www.drought.gov/drought/calendar/webinars>

For an archive:  
[www.hprcc.unl.edu/webinars.php](http://www.hprcc.unl.edu/webinars.php)

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