



January 2019 Climate Summary

Boiling water freezes instantly in Fargo, ND, with an air temperature of -33 degrees F. Photo courtesy Tanya Akyuz. <http://hprcc.unl.edu>

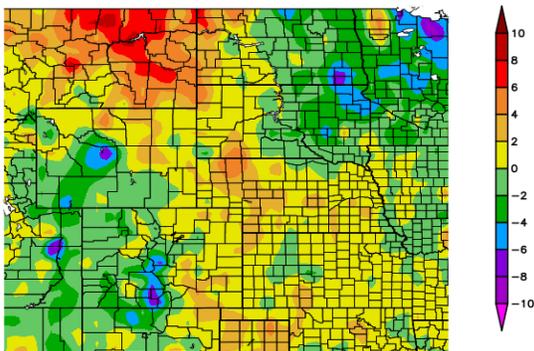
Extreme Cold to End the Month

Despite near normal temperatures for the month on the whole, a significant cold event impacted the Northern Plains and Midwest at the end of January. On the 29th-30th, an Arctic air mass settled over the region, and bitterly cold temperatures were observed. Gusty winds created dangerous wind chills, particularly throughout the eastern Dakotas, Minnesota, Wisconsin, and northern portions of Iowa and Illinois. The extreme wind chills prompted the widespread closure of schools, universities, and state and local governments, and the U.S. Postal Service even suspended mail delivery for many areas. Numerous shelters were opened in communities so that people could take refuge from the cold. Unfortunately, several fatalities occurred. In Chicago, warming buses were used to support grounds crew at the airports, and Amtrak cancelled train service to and from the city for two days. The presence of snow and gusty winds created blowing snow that lowered visibility, impeding travel in many areas. Numerous traffic accidents were reported, causing injuries and a few fatalities. In northeastern North Dakota, the North Dakota Highway Patrol issued a No Travel Advisory due to blowing snow.

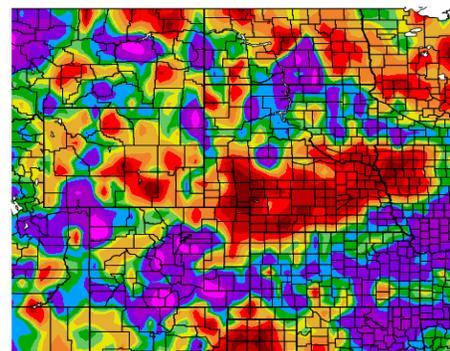
Other than the extreme cold, the other big story of the month was January precipitation helped boost snowpack in Colorado. Ski resorts were enjoying extra business this year, especially compared to last year when the lack of snow caused many resorts to close. According to the Telluride Daily Planet, the Telluride Ski Resort has reported 181.0 inches (460 cm) of snowfall so far this ski season. While many people feel like the drought is over in Colorado, it is important to remember that there are many lingering impacts. For instance, while the snowpack season has been plentiful so far, dry soils are likely to absorb a lot of moisture when the snow melts, which may decrease spring runoff. Decreased spring runoff has negative implications for water supply, as reservoirs are severely depleted from the drought and will take a lot of water to be replenished. Suffice it to say, lasting drought impacts may not be realized in Colorado until this spring.

Temperature and Precipitation Overview

Departure from Normal Temperature (F)
1/1/2019 - 1/31/2019



Percent of Normal Precipitation (%)
1/1/2019 - 1/31/2019



Above: Departure from 1981-2010 normal temperature (left) and percent of normal precipitation (right) for January 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

Both wet and dry conditions could be found throughout the High Plains in January. Wet areas included portions of Colorado and Kansas, where precipitation exceeded 150 percent of normal. It was especially wet in Alamosa, Colorado, where 1.17 inches (30 mm) of liquid equivalent precipitation fell, resulting in its 2nd wettest January on record. Meanwhile, dryness was present throughout much of Nebraska and portions of Wyoming, where precipitation was less than 50 percent of normal. It was extremely dry in western Nebraska, as Hastings and McCook both had their 9th driest Januarys on record. McCook only recorded a trace of precipitation, while Hastings only received 0.07 inch of liquid equivalent precipitation (2 mm).

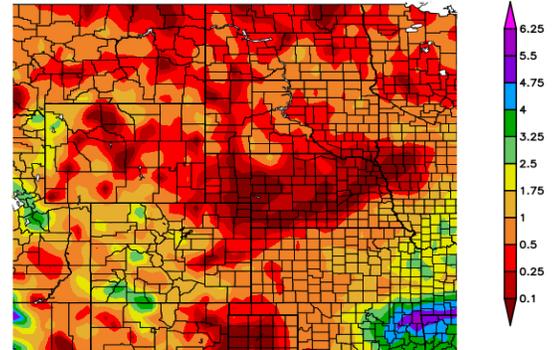
It was a snowy January for some parts of the region. In addition to having its 2nd wettest January on record, Alamosa, Colorado also had its 2nd snowiest January on record. Alamosa received 19.0 inches (48 cm) of snowfall, which was 15.0 inches (38 cm) above normal for the month. On the 11th, 7.6 inches (19 cm) of snow fell, which was the highest 1-day total snowfall ever recorded at Alamosa in January. It was also quite snowy in Concordia, Kansas in January. Concordia received more than double its normal snowfall and had its 8th snowiest January on record. Concordia also tied for its 6th highest 1-day total snowfall on record for January, with 6.4 inches (16 cm) falling on the 22nd.

It has also been a snowy season for several locations thus far. In addition to having its 2nd snowiest January, season-to-date snowfall for Alamosa, Colorado ranked 8th among the snowiest July-January periods. Lincoln, Nebraska has also had a snowy season. By the end of January, Lincoln had received 26.0 inches (66 cm) of snowfall, which was its 4th snowiest July-January period. Lincoln has already surpassed its annual normal snowfall of 25.9 inches (66 cm), with plenty of the snow season left to go. Even with the ample snowfall, though,

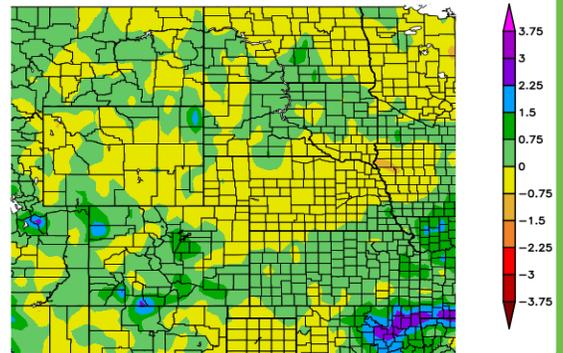
this does not necessarily mean that new records will be broken, as Lincoln still has a long way to go to reach the top 10 of snowiest seasons! Interestingly enough, Norfolk, Nebraska, which is approximately 120 miles northwest of Lincoln, only received 11.8 inches (30 cm) of snowfall from July-January, which was 5.5 inches (14 cm) below normal. There was a stark contrast in snowfall between the two locations in January as well, as Lincoln's snowfall was 3.1 inches (8 cm) above normal, while Norfolk's snowfall was 4.7 inches (12 cm) below normal.

Regional Precipitation

Precipitation (in)
1/1/2019 - 1/31/2019



Departure from Normal Precipitation (in)
1/1/2019 - 1/31/2019



Above: Total precipitation in inches (top) and departure from normal precipitation in inches (bottom) for January 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 Update

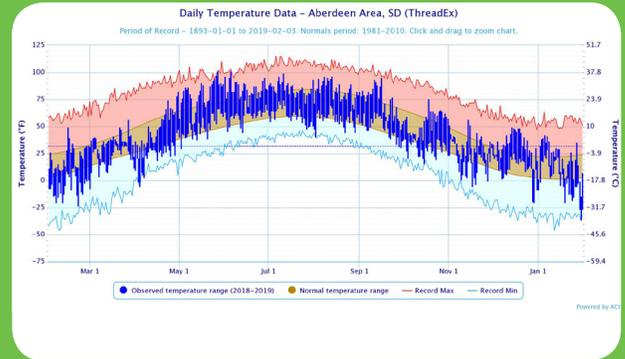
Cold and snowy conditions helped build mountain snowpack in Wyoming and Colorado in January. By the end of the month, Snow Water Equivalent (SWE) was above normal in most Colorado basins with the exception of the southwestern portion of the state, although it is worth noting that snowpack was improving in these areas. Above-normal snowpack was present throughout most of Wyoming except for in the Wind River Range. In the Upper Missouri Basin, mountain SWE above Fort Peck Reservoir and between Fort Peck and Garrison Reservoirs improved to 88 percent of average and 89 percent of average, respectively, by the end of January. As for Plains snowpack, much of the Dakotas and southeastern Nebraska were blanketed with snow, thanks to below-normal temperatures and frequent storm systems that crossed the region during the latter part of the month.

Temperatures

Average temperatures in January varied across the region, with below-normal temperatures present across the eastern Dakotas and western areas of Wyoming and Colorado, and above-normal temperatures elsewhere. For the most part, monthly average temperatures were only slightly above or below normal and did not produce widespread temperature records, although Chadron, Nebraska had its 6th warmest January on record. However, average temperatures masked the extremes experienced by much of the region, as the first part of January was quite warm, while the month ended with extreme cold.

An extreme cold event occurred across portions of the Northern Plains and Midwest on January 29-30. An arctic air mass settled over the region and, combined with gusty winds, produced dangerous wind chills and a life-threatening situation for these areas. In the High Plains, the eastern Dakotas were most impacted by this event, although the bitter cold was experienced in other areas as well. Minimum temperatures bottomed out in the -40s with wind chills as low as -62.0 degrees F (-52.2 degrees C), which was observed at the airport in Grafton, North Dakota. Numerous locations set new daily records for both lowest maximum and lowest minimum temperatures. For instance, on the 30th, the high temperature in Bottineau, North Dakota was -26.0 degrees F (-32.2 degrees C) and the low temperature was -44.0 degrees F (-42.2 degrees C), which became the new record cold high and record low for this day. Aberdeen, South Dakota got down to -37.0 degrees F (-38.3 degrees C) on the 30th, which was its 6th coldest January temperature on record and 16th lowest temperature on record for any month. Aberdeen also had a record cold high that day of -15.0 degrees F (-26.1 degrees C).

Station Spotlight: Aberdeen, SD

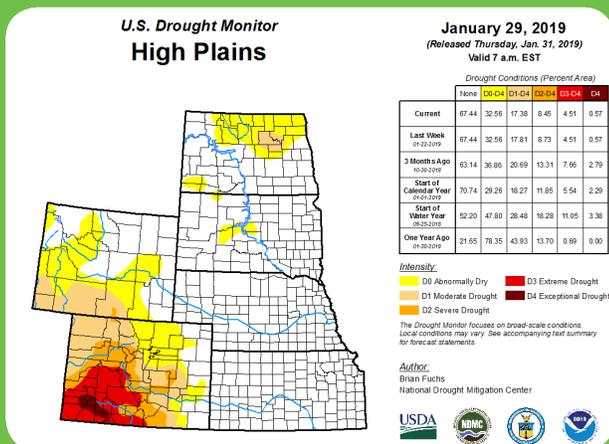


Above: Daily temperatures along with extremes and normals values since February 1, 2018 in Aberdeen, SD.

Drought Conditions

Both improvements and degradations in drought conditions occurred throughout the High Plains in January. According to the U.S. Drought Monitor, the area experiencing conditions ranging from abnormally dry to exceptional drought (D0-D4) increased slightly from 32 percent to 33 percent, while the area experiencing drought (D1-D4) decreased slightly from 18 percent to 17 percent. The region-wide values can be somewhat misleading, however, as there were several notable improvements and degradations in drought conditions across the region.

U.S. Drought Monitor



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/>.

Snowpack continued to build in Colorado, which prompted the reduction of exceptional drought (D4) in southwestern basins that have been suffering the most. Severe drought (D2) was also reduced in an area of northwestern Colorado stretching north into southern Wyoming. After a reassessment of conditions, moderate drought (D1) was reduced in north-central North Dakota. Areas of abnormally dry conditions (D0) along the southern fringes of Kansas were removed, thanks to a continuation of above-normal precipitation in these areas. With the entire state now drought free, the Governor of Kansas removed all counties from drought watch, drought warning, and drought emergency status.

Areas that experienced a degradation in drought conditions included portions of Wyoming. D0 and D1 conditions were expanded due to persistent dryness and below-average snowpack in areas such as the Wind River Range.

Climate Outlooks

According to the Climate Prediction Center, ENSO-neutral conditions are present in the Pacific. Equatorial sea surface temperatures are above average across most of the Pacific Ocean. El Niño is expected to develop this winter with a 65 percent chance it will continue into spring. An El Niño Watch is in effect. For more information about ENSO, check out the ENSO blog here: <https://www.climate.gov/news-features/department/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 long-range flood outlook, there is a greater than 50 percent chance of minor to moderate flooding for several streams in eastern portions of North Dakota, South Dakota, Nebraska, and Kansas through April. 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 February-April temperature outlook indicates an increased chance of above-normal temperatures for the western half of the U.S. and southern Florida. In the High Plains, this includes North Dakota, Wyoming, most of South Dakota and Colorado, the Nebraska Panhandle, and the northwestern tip of Kansas. Below-normal temperatures are expected for portions of the Ohio and Tennessee Valley regions. Elsewhere, there are equal chances for above-, below-, and near-normal temperatures during the February-April period.

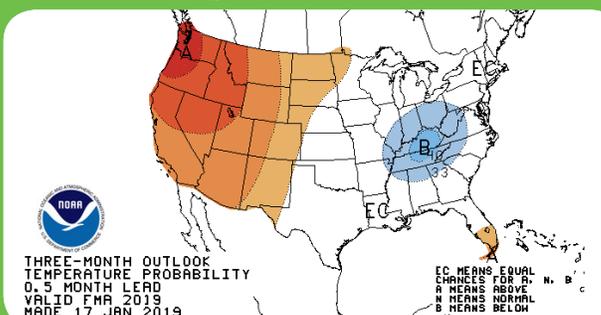
Precipitation

The precipitation outlook for the next three months calls for a higher probability of above-normal precipitation across portions of the Interior West and the Plains, as well as the Southeast. In the High Plains, this includes Colorado, southeastern Wyoming, western and central Kansas, and western Nebraska. Below-normal precipitation is expected in the Pacific Northwest and Ohio Valley regions. Elsewhere, there are equal chances for above-, below-, and near-normal precipitation in the contiguous U.S. during the February-April period.

Drought

The January 17th U.S. Seasonal Drought Outlook indicates that drought is expected to persist across parts of the West. In the High Plains, this includes southwestern Wyoming and extreme northwestern Colorado. Drought may improve or be removed in the West, the Plains, and southeastern Florida, including areas of Colorado, south-central Wyoming, and North Dakota in the High Plains. Drought development is likely in portions of the Pacific Northwest and Northern Rockies, including western Wyoming in the High Plains. Elsewhere, drought development is not anticipated through April.

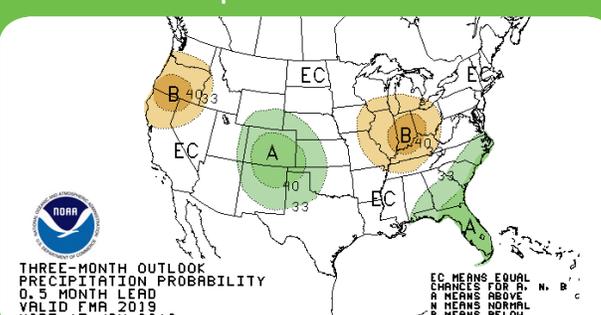
Temperature Outlook



THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID FMR 2019
MADE 17 JAN 2019

EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

Precipitation Outlook

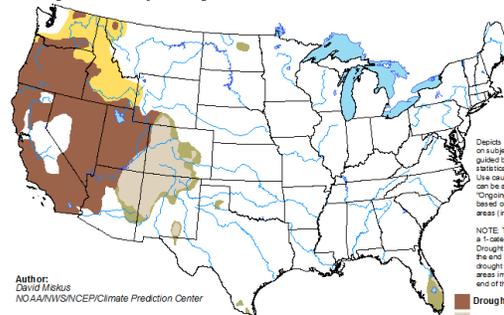


THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID FMR 2019
MADE 17 JAN 2019

EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

Drought Outlook

U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period



Author: David Miskus
NOAA/NWS/NCEP/Climate Prediction Center

Valid for January 17 - April 30, 2019
Released January 17

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short-lived events. Ongoing drought areas are based on the U.S. Drought Monitor area's (interim of D1 to D4).

NOTE: The tan areas 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).

- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely

<http://go.usa.gov/3eZ73>

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	43.7	17.7	30.7	2.1	60	01/10	-4	01/01	0.13	-0.17	43
Alamosa San Luis Airport	26.2	-8.7	8.7	-7.6	39	01/21	-26	01/30	1.17	0.91	450
Colorado Springs Municipal Airport	46.9	19.1	33.0	2.5	63	01/05	0	01/01	0.27	-0.05	84
Denver International Airport	44.6	19.5	32.0	1.3	62	01/04	-5	01/01	0.75	0.34	183
Grand Junction Walker Field Airport	36.2	17.5	26.8	-0.6	46	01/21	-4	01/02	0.44	-0.14	76
Pueblo Memorial Airport	50.0	17.0	33.5	3.0	66	01/05	-6	01/02	0.52	0.17	149

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	37.4	19.6	28.5	-0.1	61	01/05	0	01/30	0.62*	0.04	107
Dodge City Regional Airport	44.7	22.2	33.5	1.3	64	01/06	8	01/30	0.73	0.15	126
Goodland Renner Field	45.2	19.1	32.1	2.5	65	01/05	5	01/01	0.33	-0.05	87
Topeka Municipal Airport	38.8	20.4	29.6	-0.1	62	01/05	-3	01/30	1.66	0.80	193
Wichita Mid-Continent Airport	43.0	23.8	33.4	1.2	62	01/07	9	01/30	1.32	0.49	159

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	40.3	17.0	28.6	4.2	56	01/06	-8	01/01	0.08	-0.28	22
Grand Island Airport	36.4	17.5	27.0	1.9	55	01/27	-6	01/30	0.14	-0.39	26
Lincoln Municipal Airport	34.7	15.8	25.2	0.6	61	01/05	-9	01/30	0.75	0.11	117
Norfolk Karl Stefan Airfield	32.0	14.2	23.1	0.5	50	01/07	-14	01/30	0.16	-0.43	27
North Platte Regional Airport	41.5	16.3	28.9	3.9	62	01/27	1	01/30	0.13	-0.21	38
Omaha Eppley Airport	33.4	15.6	24.5	1.0	56	01/07+	-14	01/30	0.86	0.14	119
Valentine Miller Field	38.2	15.5	26.9	3.3	58	01/04	-9	01/30+	0.22	-0.04	85

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	21.9	4.0	13.0	0.2	48	01/04	-33	01/30	0.81	0.38	188
Fargo International Airport	14.6	-2.0	6.3	-3.0	40	01/03	-33	01/30	0.59	-0.11	84
Grand Forks International Airport	11.7	-7.6	2.0	-4.7	38	01/04	-35	01/30	0.58	0.03	105
Theodore Roosevelt Airport	27.2	8.5	17.8	1.5	50	01/04	-17	01/29+	0.05*	-0.25	17
Williston International Airport	25.9	7.7	16.8	5.8	45	01/04+	-17	01/24	0.54	-0.05	92

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>.

January 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	20.1	-0.3	9.9	-2.1	42	01/05	-37	01/30	1.00	0.53	213
Huron Regional Airport	23.1	4.0	13.5	-3.2	43	01/04	-30	01/30	0.79	0.29	158
Pierre Regional Airport	28.6*	10.1*	19.7*	-0.2	47	01/05+	-20	01/30	0.54	0.12	129
Rapid City Regional Airport	36.9	16.0	26.5	1.5	56	01/27	-5	01/01	0.29	-0.01	97
Sioux Falls Joe Foss Field Airport	25.9	7.6	16.7	0.1	45	01/07+	-25	01/30	0.56	0.00	100

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	35.5	18.1	26.8	2.1	49	01/09	-11	01/01	0.28	-0.23	55
Cheyenne Municipal Airport	42.4	19.4	30.9	2.1	61	01/05	-11	01/01	0.32	-0.01	97
Lander Hunt Field Airport	28.8	6.6	17.7	-4.0	48	01/27	-17	01/02	0.80	0.39	195
Laramie Regional Airport	33.4*	8.4	20.9*	-0.8	50	01/09	-20	01/02	0.13	-0.14	48
Rawlins Municipal Airport	29.6	11.7	20.7	-0.9	41	01/10+	-15	01/01	0.14	-0.22	39
Sheridan County Airport	39.3	14.7	27.0	3.2	54	01/27	-18	01/01	0.70	0.14	125

January 2019 Highlights

Monthly Rankings

Temperature in degrees F, precipitation and snowfall in inches

Warmest	Temperature / Ranking	Record / Year	Period of Record
Chadron, NE	28.6 / 6th warmest	34.5 / 2006	1941-2019
Wettest / Driest	Precipitation / Ranking	Record / Year	Period of Record
Alamosa, CO	1.17 / 2nd wettest	1.36 / 2017	1906-2019
Hastings, NE	0.07 / 9th driest	0.00 / 1986	1894-2019
McCook, NE	Trace / 9th driest (tie, 2012+)	0.00 / 1961+	1894-2019
Snowiest	Snowfall / Ranking	Record / Year	Period of Record
Alamosa, CO	19.0 / 2nd snowiest	21.9 / 2017	1906-2019
Concordia, KS	11.6 / 8th snowiest	20.7 / 1959	1885-2019

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Kansas Climate Summary

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



Wet and wintery

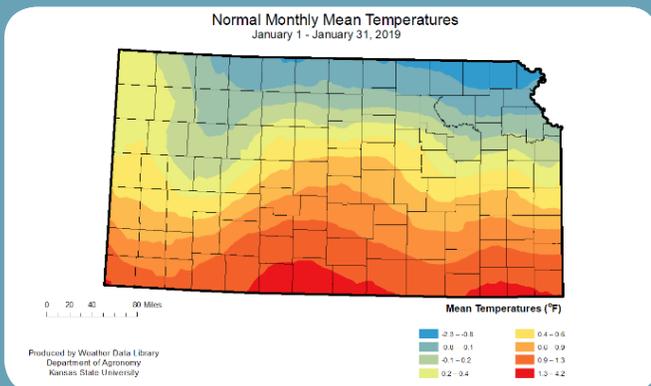
January continued the trend for wetter than normal conditions across most of the state. State-wide average precipitation for the month was 1.00 inches, 131 percent of normal. The Northwest Division was the driest with an average of 0.36 inches. That is a deficit of 0.09 inches, 80 percent of normal. The East Central Division had the greatest percent of normal at 171 percent and an average precipitation of 1.67 inches. The Southeast Division had the greatest average precipitation with 1.70 inches, 137 percent of normal. The highest 24-hour rainfall total for a National Weather Service Cooperative station was 2.03 inches at Coffeyville Water Works, Montgomery County on the 12th. The greatest 24-hour rainfall total for a Community Collaborative Rain, Hail and Snow network station was 2.21 inches at Ottawa 5.6 SW, Franklin County on the 13th. The greatest monthly precipitation totals for January: 3.77 inches at Coffeyville Water Works, Montgomery County (NWS) and 3.76 inches at Leavenworth 3.8 SSW, Leavenworth County (CoCoRaHS). Most precipitation was in the form of snow. Monthly totals ranging from trace amounts in southern Kansas to 18.3 inches at the CoCoRaHS station of Hunter 2.1 NNW in Mitchell County.

Temperatures varied wildly over the month, but averaged just slightly warmer than normal in January. State-wide average temperature for the month was 30.3 oF, which is 0.3 degrees warmer than normal. Only the Northeast Division was cooler than normal, with an average of 27.1 oF, or 0.4 degrees cooler than normal. The South Central Division was the warmest with an average of 33.3 oF or 1.1 degrees warmer than normal. The variability showed in the range of temperatures. The warmest maximum temperature was 71 oF at Ashland, Clark County, on the 7th. The coldest minimum temperature at a NWS station was recorded at Marysville, Washington County, on the 25th as -10 oF. The coldest reading at a Kansas Mesonet station was -10.0 oF recorded at the Brown County station near Hiawatha on the 31st.

Severe storm reports were limited in Kansas during January. There were no reports of hail, wind or tornadoes. Severe winter weather was the main feature for the month, with winter storm conditions across most of the state on the 13th and 25th. Sadly, there were at least 3 fatal traffic accidents due to the snowy road conditions.

With near normal temperatures, the heavier than normal precipitation meant the month ended as it started: drought free. The February precipitation outlook is neutral to the east, with increased chances of above normal precipitation across the west. Given the low normal precipitation at this time of the year, changes in condition are likely to be slow. The temperature outlook is also neutral across the state.

Temperature and Precipitation Overview



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

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

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

For an archive:
www.hprcc.unl.edu/webinars.php

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