# November 2022 Climate Summary

Regional Breakdown

November brought relief from the continued above-normal temperatures; however, precipitation was still below-normal for much of the region. Drought conditions will likely continue through the winter, which will affect agricultural production.

A lone bright spot in agriculture was the optimal weather conditions allowed for a rapid harvest this year. Minimal precipitation and favorable temperatures allowed farmers to harvest unimpeded this year. These conditions, however, were not helpful for the early stages of winter wheat production. At the end of November, winter wheat was in the worst condition in the past 20 years. Nearly 40 percent is rated poor to very poor in Colorado, Kansas, and Nebraska. The continued dryness this fall has amplified the need for snow cover and moisture, or winter wheat will struggle again in 2023.

The first significant winter storm impacted the northern part of the region starting on November 9th, with heavy snow in North Dakota and an ice storm in South Dakota. Much of North Dakota shut down after a foot of snow impacted parts of the state. Bismarck received 17 inches (43.18 cm) on the 10th, the second-highest daily snowfall amount on record. In South Dakota, ice was a significant problem with places receiving up to 0.75 inches. The cooler temperatures that followed for much of the month allowed the ice to linger until Thanksgiving week.
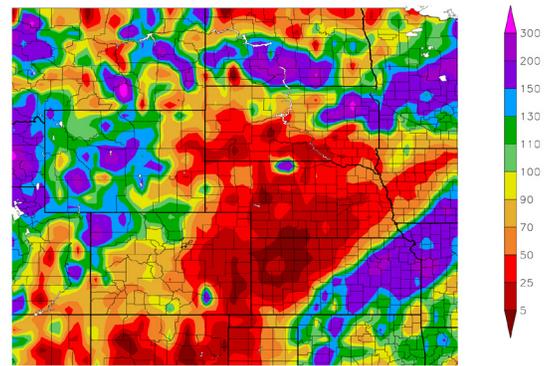
Temperature and Precipitation Overview
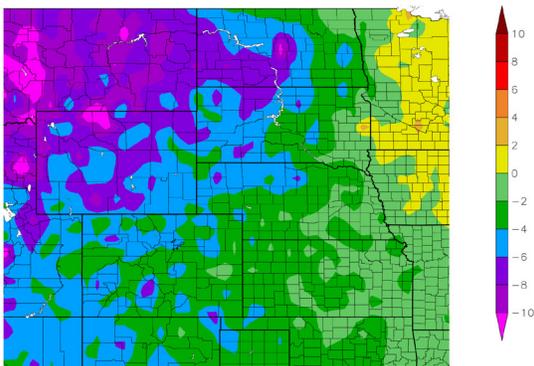
Above: Departure from 1991-2020 normal temperature (left) and percent of normal precipitation (right) for November 2022 in the High Plains region.
Maps produced by the High Plains Regional Climate Center and are available at: http://hprcc.unl.edu/maps/current .

Precipitation and Water Resources

Precipitation was spotty this past month, with pockets of well-above-normal precipitation present and much below-normal. Parts of North Dakota and Kansas received much-needed-precipitation, which helped improve drought conditions.
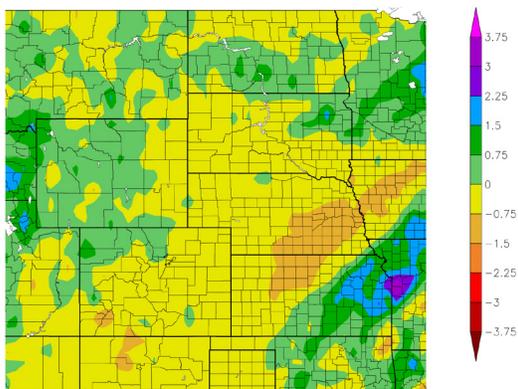
Western Kansas and the front range of Colorado were incredibly dry this past month, with much of the area recording less than 0.10 inches (2.54 mm) of precipitation. Akron, Colorado tied for its 3rd driest November on record, with a meager 0.02 inches (0.51 mm) of precipitation. Goodland, Kansas also ranked 10th driest, with only 0.03 inches (0.76 mm) observed.

With the end of meteorological fall, many locations ranked in the top 10 driest falls. The Dakotas were among the driest of all locations. Grand Forks and Fargo, North Dakota ranked 4th driest on record, with both locations observing less than 1.50 inches (3.81 cm) of precipitation. In South Dakota, Huron, Aberdeen, and Rapid City ranked in the top 4, with only Rapid City recording more than 1 inch (2.54 cm) of precipitation this fall. Nebraska was also very dry, with Chadron, Grand Island, Lincoln, and Omaha ranking in the top 10 driest.

While it is still early into the season, the mountain snowpack is in good shape. The majority of the basins are at or near average. This is favorable for improving streamflow conditions, as they are incredibly low throughout the drought-stricken southern Plains. The Corps of Engineers announced that releases from Gavins Point Dam will reach wintertime levels by mid-December.

Regional Precipitation

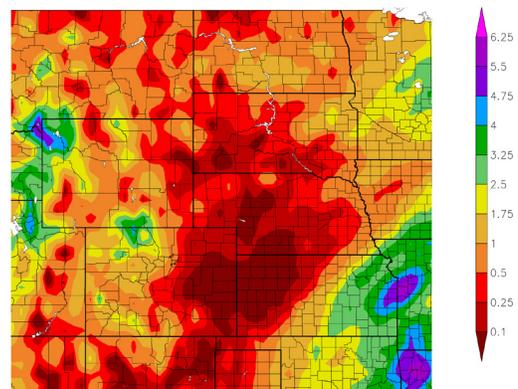Above: Total precipitation in inches (left) and departure from normal precipitation in inches (right) for November 2022. These maps are produced by HPRCC and can be found on the Current Climate Summary Maps page at: http://hprcc.unl.edu/maps/current.

Temperatures

After multiple months of warm temperatures, the region finally cooled off. Much of the region was near to slightly below normal, while the northwestern portion was well below normal. Parts of Wyoming were nearly 10 degrees F (5.6 degrees C) below normal this past month.

Despite the overall cooler temperatures, warm temperatures lingered into the beginning of the month. Temperatures eclipsed 80 degrees F (26.7 degrees C) in Kansas several days during the beginning of the month, only to rapidly cool down. Departures rapidly went from over 20 degrees F above normal, to 20 degrees below normal. The dramatic swings were limited to the first half of the month, with the back half of November near normal temperatures.

On the opposite end of the spectrum parts of Yellowstone National Park in Wyoming dropped to −30 degrees F (-34.4 degrees C) on the 19th. Multiple days this month reached −20 degrees F (-28.9 degrees C) in Yellowstone.
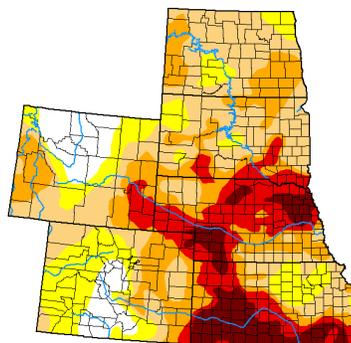
Drought Conditions

Cooler temperatures this past month helped limit the overall expansion of drought conditions. While precipitation was below normal in many places, the areas that did receive some greatly benefited from it. Overall, the region observed a 2 percent decrease in D0 to D4 (abnormally dry to exceptional drought conditions).

With the meteorological fall coming to an end, the drought situation remains dire in the region. November offered some relief for parts of Kansas and the Dakotas, however, conditions further deteriorated in Nebraska. Over 85 percent of the state is currently experiencing D2-D4 (severe to exceptional drought). The dry conditions plaguing the state have led to a 25 percent increase since the beginning of September. While extreme drought (D3) conditions have doubled in the state since the beginning of October, with nearly 60 percent of the state under these conditions. Elsewhere in the region, other improvements and degradation were observed.

U.S. Drought Monitor

Drought Monitor 1-Month Change

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/.

Climate Outlooks

According to the Climate Prediction Center, La Niña conditions are likely to continue through the end of the year. A La Niña advisory is currently in effect. For more information, visit https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

The National Weather Service's long-range flood outlook indicates a low probability of Minor Flooding in eastern Kansas through February. According to the National Interagency Fire Center (NIFC), fire potential will be limited across the region through next year.

The seasonal temperature and precipitation outlooks presented 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 visit http://www.cpc.ncep.noaa.gov.

Temperature

The three-month temperature outlook shows an increased chance of above-normal temperatures in the southern part of the United States, while below normal temperatures are favored in the northwestern part. Across the High Plains there are equal chances of above-, below-, and near-normal temperatures across much of the region. The Dakotas and parts of Wyoming have increased chances of below-normal temperatures.

Precipitation

The outlook for the next three months indicates below-normal precipitation across central parts of the United States. Across the High Plains there are equal chances of above-, below-, and near-normal precipitation in North Dakota. The rest of the region has increased chances of below-normal precipitation.

Drought

The U.S Seasonal Drought Outlook released on December 15th indicates that drought conditions will likely improve across the northern part of the region. Opposite of this, development is likely in southern Colorado.

Temperature Outlook

Precipitation Outlook
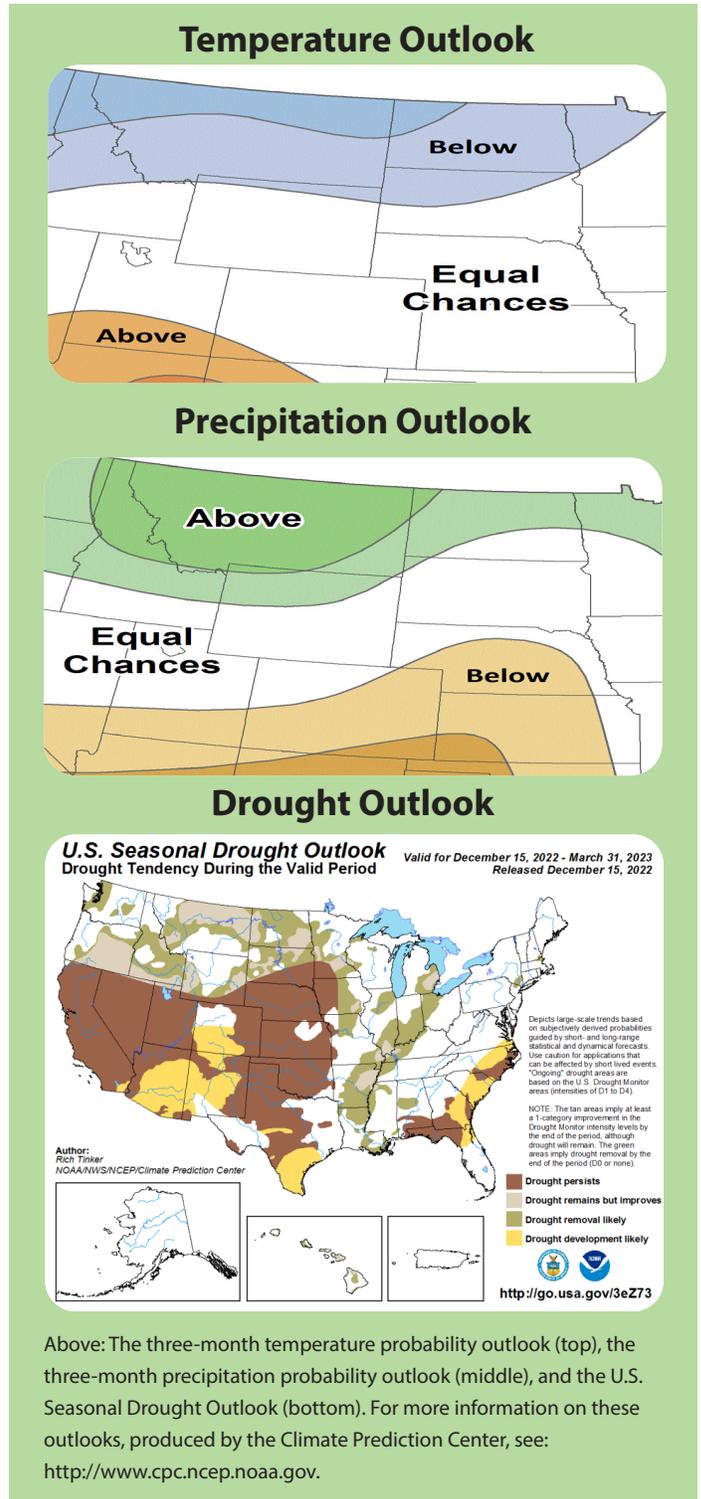
Drought Outlook

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	48.5	19.7	34.1	-4.2	76	11/08	1	11/18	0.02	-0.40	5
Alamosa San Luis Airport	45.7	8.6	27.2	-3.1	64	11/08	-4	11/17	0.34	-0.03	92
Colorado Springs Municipal Airport	50.3	22.9	36.6	-2.9	74	11/09	7	11/29	0.24	-0.13	65
Denver International Airport	48.7	22.5	35.6	-3.8	75	11/01	4	11/30	0.47	-0.17	73
Grand Junction Walker Field Airport	47.9	26.7	37.3	-2.3	69	11/07	16	11/20	0.58	-0.03	95
Pueblo Memorial Airport	54.7	18.9	36.8	-3.7	79	11/08	1	11/29	0.19	-0.28	40

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	53.3	30.2	41.8	-0.3	81	11/01	12	11/18	0.80	-0.36	69
Dodge City Regional Airport	55.1	28.0	41.6	-2.1	78	11/02	11	11/12	0.30	-0.50	38
Goodland Renner Field	51.5	21.5	36.5	-3.1	77	11/02	3	11/18	0.03	-0.51	6
Topeka Municipal Airport	55.8	30.8	43.3	-0.9	82	11/01	15	11/20	2.78	1.00	156
Wichita Mid-Continent Airport	55.0	32.4	43.7	-2.1	79	11/01	15	11/19	2.95	1.59	217

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	45.4	15.3	30.4	-5.0	77	11/01	-2	11/30	0.24	-0.16	60
Grand Island Airport	51.6	24.9	38.3	-1.3	78	11/02	8	11/18	0.20	-0.90	18
Lincoln Municipal Airport	51.9	24.6	38.3	-1.5	79	11/01	6	11/13	0.26	-1.04	20
Norfolk Karl Stefan Airfield	48.5	21.8	35.2	-1.6	78	11/02	7	11/13	0.30	-0.92	25
North Platte Regional Airport	52.1	17.2	34.7	-2.3	79	11/01	-4	11/30	0.25	-0.24	51
Omaha Eppley Airport	49.2	25.9	37.6	-2.6	78	11/01	11	11/18	0.57	-0.88	39
Valentine Miller Field	45.3	14.1	29.7	-6.5	79	11/01	-9	11/30	0.26	-0.31	46

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	33.3	13.6	23.4	-6.5	77	11/02	-6	11/12	1.44	0.75	209
Fargo International Airport	33.6	19.1	26.3	-3.2	70	11/01	1	11/18	0.74	-0.23	76
Grand Forks International Airport	33.7	17.5	25.6	-1.1	69	11/01	-1	11/30	0.52	-0.40	57
Theodore Roosevelt Airport	31.2	13.2	22.2	-8.1	73	11/01	-11	11/12	T	0.47	0
Williston International Airport	28.7	12.6	20.7	-7.1	66	11/01	-7	11/12	0.48	-0.19	72

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South Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Aberdeen Regional Airport	38.6	18.0	28.3	-2.6	75	11/01	5	11/16	0.68	-0.06	92
Huron Regional Airport	41.1	19.9	30.5	-2.6	73	11/01	6	11/18	0.50	-0.32	61
Pierre Regional Airport	41.3	19.6	30.4	-3.7	79	11/02	7	11/12	0.49	-0.28	64
Rapid City Regional Airport	42.6	15.1	28.8	-5.8	75	11/02	-9	11/18	0.16	-0.31	34
Sioux Falls Joe Foss Field Airport	44.6	23.7	34.2	-0.6	78	11/01	9	11/30	0.81	-0.41	66

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	39.0	16.1	27.6	-6.4	63	11/02	-11	11/17	1.15	0.51	180
Cheyenne Municipal Airport	43.7	18.9	31.3	-4.8	68	11/08	-9	11/18	0.96	0.35	157
Lander Hunt Field Airport	38.4	15.2	26.8	-5.3	66	11/01	-3	11/30	1.07	0.29	137
Laramie Regional Airport	39.2	12.4	25.8	-4.4	62	11/09	-9	11/19	0.42	0.00	100
Rawlins Municipal Airport	36.2	14.8	25.5	-5.8	58	11/08	-14	11/18	0.44	-0.03	94
Sheridan County Airport	37.7	14.1	25.9	-7.4	67	11/02	-7	11/18	1.11	0.35	146

November 2022 Highlights

Monthly Rankings
Temperature in degrees Fahrenheit, Precipitation in inches

Precipitation	Precipitation/ Ranking	Record / Year	Period of Record
Akron, Colorado	0.02 / 3rd Driest (tied with 1989+)	Trace / 2006 and 1939	1937-2022
Goodland, Kansas	0.03 / 10th Driest	0.00 / 1939	1895-2022
Bismarck, North Dakota	21.3 / 6th Snowiest	31.0 / 1896	1886-2022
Temperature	**Temperature / Ranking**	**Record / Year**	**Period of Record**
Dickinson, North Dakota	22.2 / 7th Coldest	15.7 / 1955	1938-2022
Casper, Wyoming	27.6 / 7th Coldest	20.2 / 1985	1939-2022
Chadron, Nebraska	30.4 / 7th Coldest (1978+)	19.0 / 1985	1941-2022
Rawlins, Wyoming	25.5 / 7th Coldest	16.7 / 2000	1951-2022
Sheridan, Wyoming	25.9 / 8th Coldest	15.4 / 1985	1907-2022
Rapid City, South Dakota	28.8 / 9th Coldest	16.0 / 1985	1942-2022

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.

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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