



# October 2022 Climate Summary



Struggling Corn in Western Kansas, Photo Courtesy of Kevin Rush

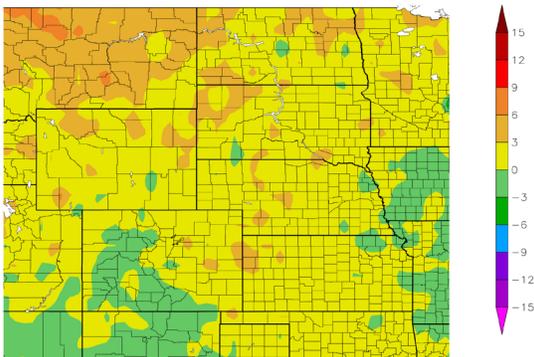
## Warm and Dry Start to Fall

October was a month with flavor of every season, with everything from severe storms to heavy snow across the region. Drought-stricken Kansas was nearly bone-dry, while western Colorado observed above-normal precipitation and up to 22 inches (56 cm) of snow in some places. Temperatures were above normal for much of the region throughout the month.

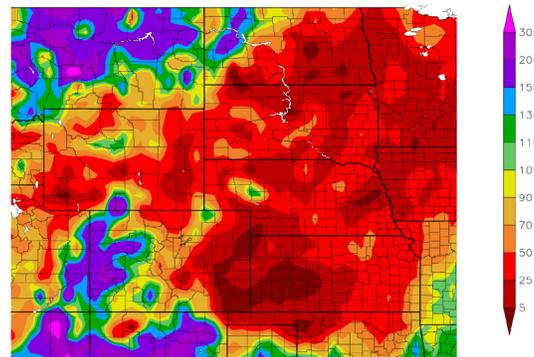
A vigorous low-pressure system trekked across the region on the 23rd, causing numerous impacts in multiple states. Severe storms impacted northeastern Nebraska and southeastern South Dakota, with 2-inch hail and 70 miles per hour (113 km/h) winds reported. Simultaneously, snow fell in western parts of the Dakotas and Wyoming. High winds also wreaked havoc in the southern part of the region. With ample fuel available, these winds sparked several large fires in Kansas and Nebraska. Several towns were evacuated in Nebraska due to the danger, with a large fire raging just south of Lincoln. The western parts of both states also experienced large amounts of blowing dust. The winds, unfortunately, led to two deaths in Colorado after their kayak flipped over due to the high waves.

## Temperature and Precipitation Overview

Departure from Normal Temperature (F)  
10/1/2022 – 10/31/2022



Percent of Normal Precipitation (%)  
10/1/2022 – 10/31/2022



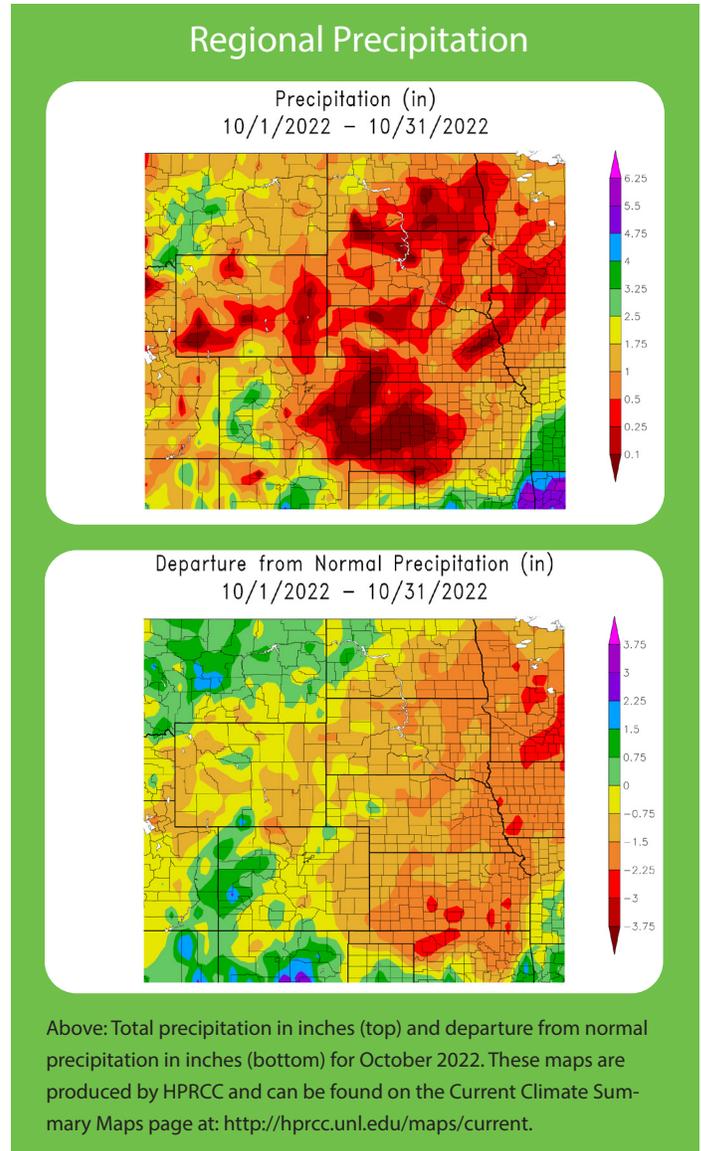
Above: Departure from 1991-2020 normal temperature (left) and percent of normal precipitation (right) for October 2022 in the High Plains region. Maps produced by the High Plains Regional Climate Center and are available at: <http://hprcc.unl.edu/maps/current>.

## Precipitation

The region was extremely dry this past month, with large portions receiving less than 0.10 inches (2.54 mm) of precipitation. The western parts of Colorado and North Dakota received above-normal precipitation, however, the drought-afflicted areas in the region were bone dry.

Precipitation has been very hard to come by in southwestern Kansas this year, and October did no favors. Dodge City tied their driest month on record, with only trace precipitation. Through the end of October, Dodge City is nearly 9 inches below its normal precipitation. Many locations across Kansas and Nebraska currently rank in the top 10 driest through the end of October. Norfolk, Nebraska, recorded its driest January-October, with this year being over 0.50 inches (12.70 mm) drier than in 2012.

In South Dakota, Aberdeen recorded back-to-back top 10 driest months. Only 0.21 inches (5.34 mm) of precipitation has occurred, ranking 2nd driest for September-October. The lack of precipitation and warmer temperatures have led to a rapid expansion of drought conditions in that part of the state.



## Streamflow Update

Streamflow across much of Kansas and Nebraska was below-normal at the end of the month. Runoff north of Sioux City was 60% of normal at the end of October due to the long-term effects of drought. Mountain snowpack is near normal throughout the Rockies except for southeastern Wyoming.

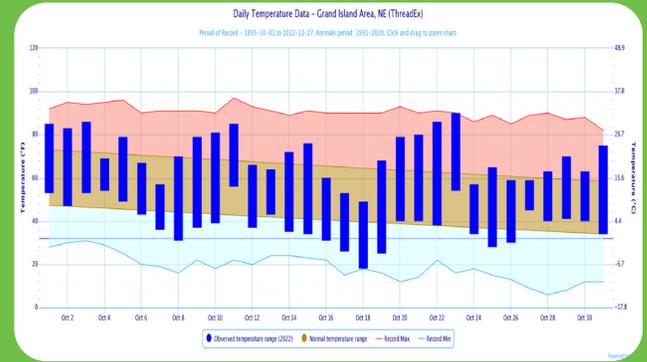
## Temperatures

Overall, October was unusually warm throughout the region. Much of the region was above normal, with places up to 6 degrees F (3.3 C) above their normal temperature.

An unseasonably warm period impacted the region on October 21-23. Many locations set daily records, with some places reaching their warmest temperature on record through the end of the year. A total of 232 daily temperature records were broken during this period throughout the region. In Nebraska, Lincoln and Grand Island tied their warmest temperature on record for this late in the year. Another notable statistic about this heat wave is the number of 80 degrees (26.7 degrees C) plus days that Lincoln has observed this year.

A whopping 142 days this year have reached that temperature, which is the most on record. Further south in Kansas, Russell reached 93 degrees F (33.9 degrees C) on the 23rd, surpassing their previous warmest temperature for the rest of the year by 4 degrees F (2.2 degrees C).

### Station Spotlight: Grand Island, Nebraska



Above: Daily temperatures for October 2022, along with extremes and normals values in Grand Island, Nebraska.

## Drought Conditions

Drought conditions rapidly expanded this past month, with nearly 76 percent of the region experiencing moderate to exceptional (D1-D4) conditions. The Dakotas observed the largest increases in drought coverage, with both states increasing by over 20 percent.

### U.S. Drought Monitor

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

**November 1, 2022**  
*(Released Thursday, Nov. 3, 2022)*  
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D1	D2-D3	D4	D5	D6
Current	6.16	50.84	76.17	45.63	20.59	7.93
Last Week	6.48	53.52	73.76	40.79	20.33	7.45
3 Months Ago	25.77	74.23	63.17	26.52	6.38	1.31
Start of Calendar Year	12.84	67.16	64.81	34.56	8.63	0.00
Start of Water Year	7.60	62.40	66.34	33.68	15.17	5.92
One Year Ago	21.08	78.92	59.09	28.60	5.60	0.00

**Intensity:**

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/about.aspx>

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droughtmonitor.unl.edu

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/>.

As the year is nearly over, Kansas and Nebraska are in rough shape heading toward winter. In just October alone, Nebraska experienced a 21 percent increase in extreme drought (D3), and Kansas recorded nearly a 13 percent increase in exceptional drought (D4). Both states are in large precipitation deficits and will likely not see much improvement over the winter. In the meantime, not only did drought rapidly expanded in the Dakotas, but it also intensified quickly, with both states recording a 25 percent increase in severe drought (D2). Elsewhere in the region, other improvements and degradation were observed. According to the Climate Prediction Center's U.S. Monthly Drought Outlook for November, drought improvement is likely in eastern Kansas.

# October 2022 Climate Summary

## 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](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 January. 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

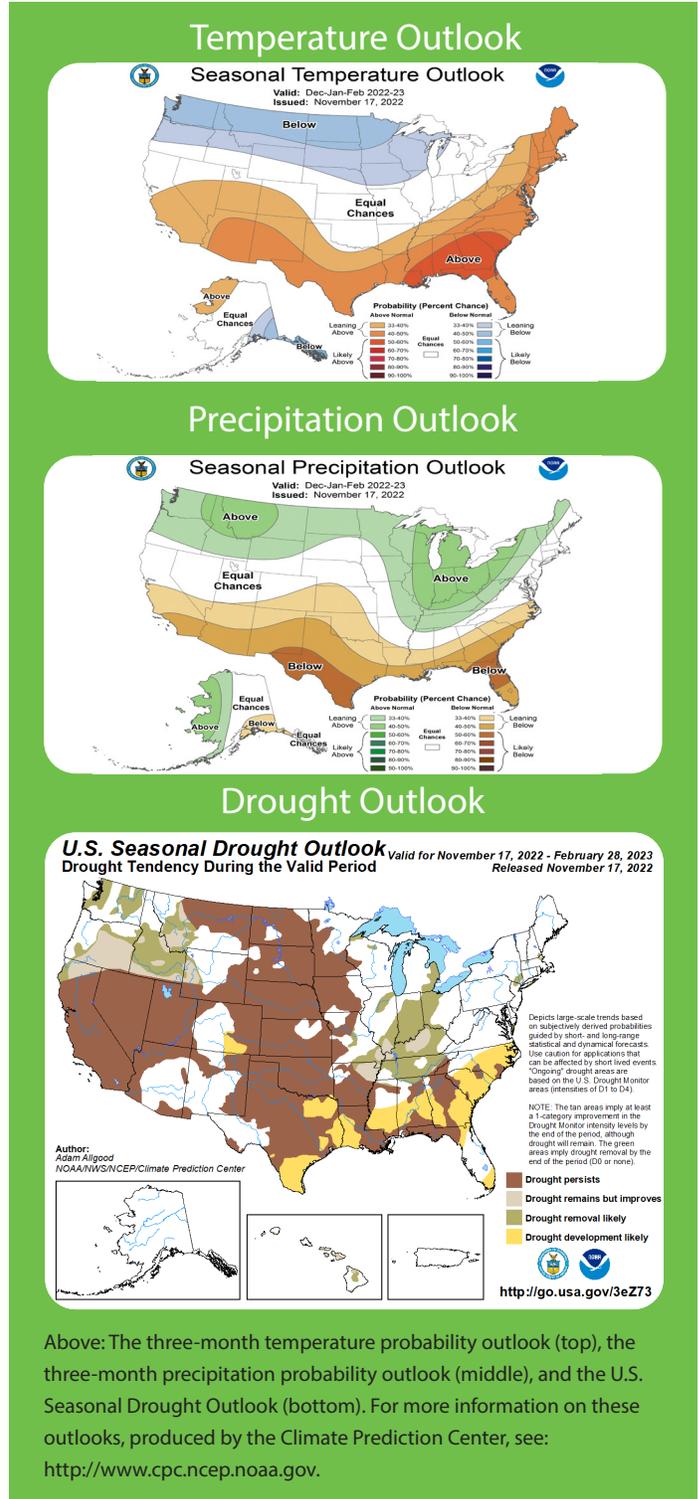
The three-month temperature outlook shows an increased chance of below-normal temperatures across the northern United States, while above-normal temperatures are favored for the southern states. Increased chances of below-normal temperatures are present in the Dakotas and the northern portions of Wyoming and Nebraska. Above-normal temperatures are slightly favored in western Colorado.

### Precipitation

The outlook for the next three months indicates below-normal precipitation across the southern parts of the United States and above-normal chances across the northern portions. Above-normal precipitation is slightly favored in parts of the Dakotas and Wyoming. Drought-stricken western Kansas and southern Colorado slightly lean towards below-normal precipitation.

### Drought

The U.S. Seasonal Drought Outlook released on November 17th indicates that improvements will occur in western Wyoming, while development should occur in southern Colorado. Drought should remain entrenched throughout much of the region through winter.



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>.

Throughout much of the region through winter.

## 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	67.1	37.0	52.1	1.9	79	10/20	26	10/24	0.15	-0.84	15
Alamosa San Luis Airport	61.9	24.5	43.2	-0.6	71	10/01	09	10/29	0.42	-0.45	54
Colorado Springs Municipal Airport	66.6	38.2	52.4	1.7	78	10/19	24	10/28	0.15	-0.62	19
Denver International Airport	67.3	40.3	53.8	2.7	79	10/20	30	10/28	0.46	-0.53	46
Grand Junction Walker Field Airport	66.4	41.1	53.7	0.5	77	10/11	29	10/24	1.79	0.80	181
Pueblo Memorial Airport	71.5	37.3	54.4	1.6	84	10/11	22	10/25	0.18	-0.58	24

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	73.6	43.9	58.8	3.2	87	10/23	25	10/19	1.62	-0.36	82
Dodge City Regional Airport	74.9	42.7	58.8	2.0	89	10/23	29	10/18	Trace	-2.02	0
Goodland Renner Field	73.8	39.4	56.6	4.8	86	10/02	26	10/18	0.11	-1.30	8
Topeka Municipal Airport	74.5	42.8	58.6	1.6	90	10/21	22	10/19	1.27	-1.58	45
Wichita Mid-Continent Airport	75.6	46.4	61.0	2.0	88	10/21	26	10/19	0.79	2.06	28

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	67.2	32.2	49.7	1.6	83	10/20	18	10/28	0.26	-1.02	20
Grand Island Airport	70.8	39.1	54.9	1.8	90	10/23	18	10/18	0.54	-1.45	27
Lincoln Municipal Airport	72.3	37.9	55.1	1.3	89	10/23	16	10/19	0.61	-1.53	29
Norfolk Karl Stefan Airfield	68.6	36.6	52.6	1.8	83	10/23	15	10/19	0.65	-1.50	30
North Platte Regional Airport	71.1	33.1	52.1	1.9	89	10/02	21	10/25	0.57	-1.08	35
Omaha Eppley Airport	69.1	39.3	54.2	-0.2	87	10/23	16	10/18	0.56	-1.76	24
Valentine Miller Field	67.3	32.4	49.8	0.5	88	10/02	16	10/18	0.21	-1.21	15

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	62.3	33.3	47.8	3.0	81	10/20	17	10/07	0.46	-0.97	32
Fargo International Airport	60.2	35.0	47.6	2.1	77	10/23	10	10/18	0.18	-1.99	8
Grand Forks International Airport	60.0	33.3	46.7	3.5	79	10/05	9	10/18	0.17	-1.71	9
Theodore Roosevelt Airport	59.9	34.5	47.2	3.4	76	10/20	21	10/16	0.20	-0.97	17
Williston International Airport	56.4	35.9	46.1	2.9	73	10/19	23	10/16	1.34	0.40	143

All data are preliminary and subject to change. + indicates multiple dates, latest date listed. \* indicates some missing data for the period. \*\* indicates value is under evaluation. 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>.

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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	64.2	32.1	48.1	1.8	82	10/11	13	10/18	0.10	-2.04	5
Huron Regional Airport	65.7	34.3	50.0	2.1	85	10/11	9	10/18	0.29	-1.66	15
Pierre Regional Airport	64.9	36.8	50.9	2.4	82	10/01	17	10/18	0.57	-1.12	34
Rapid City Regional Airport	64.6	34.9	49.8	2.7	81	10/20	21	10/26	0.50	-0.91	35
Sioux Falls Joe Foss Field Airport	65.8	37.9	51.9	2.3	85	10/23	17	10/18	0.29	-2.07	12

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	63.3	30.3	46.8	1.5	76	10/20	15	10/27	0.27	-0.92	23
Cheyenne Municipal Airport	62.7	35.4	49.1	2.6	76	10/20	20	10/28	0.11	-0.89	11
Lander Hunt Field Airport	62.4	34.7	48.6	3.2	76	10/20	19	10/26	0.31	-1.09	22
Laramie Regional Airport	58.8	27.6	43.2	1.3	71	10/20	13	10/28	0.06	-0.77	7
Rawlins Municipal Airport	58.6	30.7	44.7	1.1	70	10/19	22	10/26	0.67	-0.01	99
Sheridan County Airport	64.0	33.5	48.7	3.3	83	10/20	19	10/28	1.04	-0.53	66

## October 2022 Highlights

### Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

Precipitation	Precipitation / Ranking	Record / Year	Period of Record
Dodge City, Kansas	Trace / Driest (tied with 1952 & 1879)		1874-2022
Laramie, Wyoming	0.06 / 5th Driest	Trace / 2020 & 1964	1931-2022
Aberdeen, South Dakota	0.10 / 7th Driest (tied with 1935)	Trace / 1964 & 1952	1893-2022
Mobridge, South Dakota	0.12 / 8th Driest	Trace / 1952 & 1945	1911-2022
Denver, Colorado	0.08 / 8th Driest (tied with 2003+)	Trace / 1934	1872-2022
Grand Forks, North Dakota	0.17 / 8th Driest (tied with 1989)	0.02 / 1952	1893-2022
Chadron, Nebraska	0.26 / 9th Driest (tied with 1977+)	0.04 / 1960	1941-2022
Casper, Wyoming	0.27 / 10th Driest (tied with 1960+)	Trace / 1965	1939-2022

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# 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](http://www.hprcc.unl.edu/webinars.php)

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