



# August 2022 Climate Summary



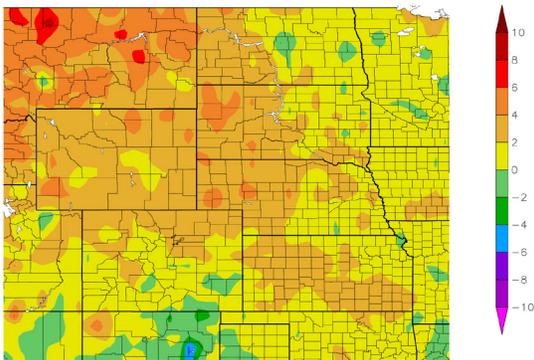
## A Hot and Dry end to Summer

The summer of 2022 ended much like it began, with hot and dry conditions throughout the region. The resulting drought from these conditions and their effects has finally become clear, with numerous impacts on agriculture, livestock, and water resources. Kansas and Nebraska have taken the brunt of the drought, with conditions being as bad as 2012 in some places.

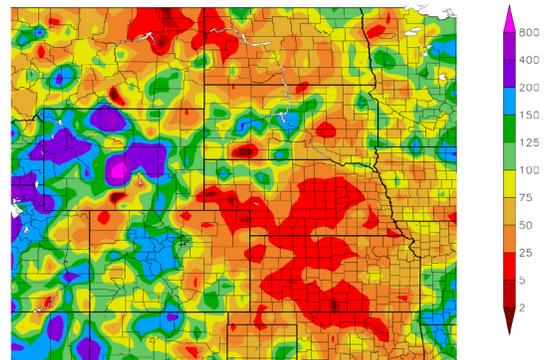
Agricultural conditions have steadily deteriorated over the summer in Kansas and Nebraska, particularly in the western parts of both states. According to the USDA National Agricultural Statistics Service, corn that was rated poor to very poor reached 50 percent in Kansas and 34 percent in Nebraska. This marked a 17 and 12 percent increase since the end of July. Fields across western Kansas are being cut for silage or filed for crop insurance as a result of the poor conditions. Even drought-resistant sorghum was impacted, with over 50 percent of fields in both states rated as poor to very poor. Nearly 78 percent of pastures in Nebraska and 65 percent in Kansas are rated poor to very poor. With such poor grasses, farmers have struggled to find feed for their cattle, and feedlots in western Kansas have been importing silage from over 50 miles away.

## Temperature and Precipitation Overview

Departure from Normal Temperature (F)  
8/1/2022 – 8/31/2022



Percent of Normal Precipitation (%)  
8/1/2022 – 8/31/2022



Above: Departure from 1991-2020 normal temperature (left) and percent of normal precipitation (right) for August 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>.

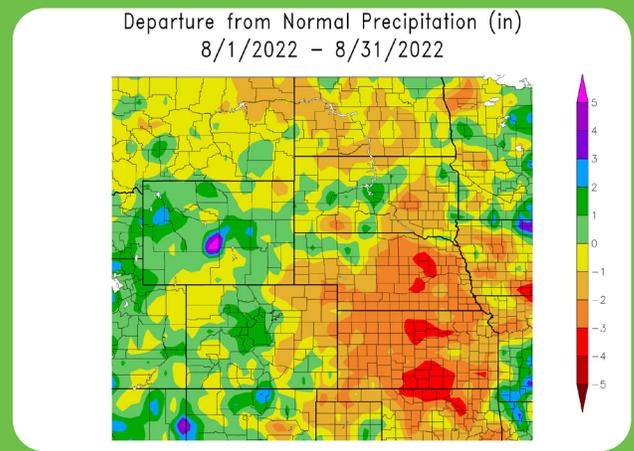
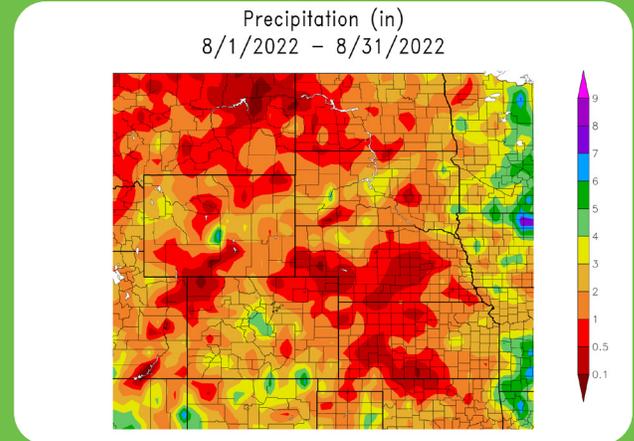
## Precipitation

Outside of the monsoon in the west, precipitation was spotty at best in August. The majority of Kansas and Nebraska were well below-normal this past month, further exacerbating the dire drought situation in both states.

The southwest monsoon brought beneficial precipitation to the western states, with locations such as Casper, Wyoming, and Alamosa, Colorado ranking in the top 5 wettest months on record. Sioux Falls, South Dakota, recorded their 8th wettest month with 6.88 inches (17.48 cm) of precipitation, with a large portion of this occurring during a record-breaking storm on the 7th. An incredible 5.44 inches (13.82 cm) of precipitation fell, setting a new daily precipitation record for August.

Nebraska was particularly dry, with numerous locations ranking in the top 10 driest. Omaha, Lincoln, Hastings, and Scottsbluff ranked in the top 10, with Grand Island and McCook placing 2nd driest. Not only was August dry for these locations, but also the entire summer. McCook observed their 2nd driest summer on record, with 3.37 inches (8.56 cm) of precipitation, which was slightly above the record of 3.31 inches (8.41 cm) set in 2012. Elsewhere in Nebraska, Norfolk and Scottsbluff recorded their 4th driest summers, with a dismal 1.98 inches (5.03 cm) of precipitation falling in Scottsbluff. Precipitation deficits continue to grow across the state, areas over 10 inches below-normal since January 1st.

### Regional Precipitation



Above: Total precipitation in inches (top) and departure from normal precipitation in inches (bottom) for August 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>.

## Streamflow Update

Outside the areas impacted by drought, streamflow throughout the region was generally in good shape. Flooding continues along the James River in South Dakota resulted from heavy precipitation in previous months. Conditions in southwestern Nebraska and western Kansas continued to be much below normal. August runoff north of Sioux City was 62% of normal due to the long-term effects of drought.

## Temperatures

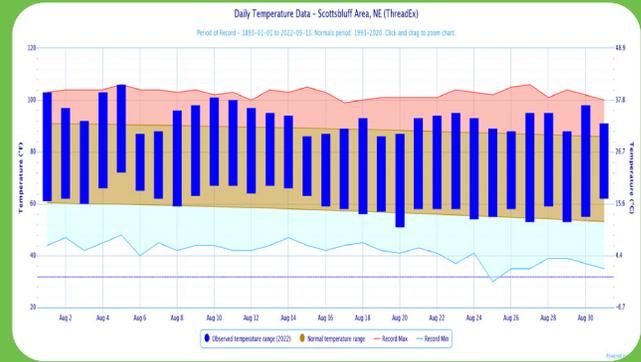
Temperatures were above normal throughout not only August, but the entire summer. Much of the region was 2 to 4 °F (1.1 and 2.2 °C) above normal in August. Overall, most of the region was 2 to 3 °F (1.1 and 1.7 °C) above normal this summer. Numerous locations across the region ranked in the top 10 warmest Augusts and summers.

Much above-normal temperatures were present in Wyoming and western Nebraska in August. Scottsbluff, Nebraska observed its warmest month on record, with an average temperature of 77 °F (25 °C). Nearby Chadron ranked second, as did both Cheyenne and Rawlins in Wyoming. Also in Wyoming, Sheridan and Laramie ranked 3rd warmest on record.

The same area also recorded among the warmest summers on record. Cheyenne experienced its hottest summer on record, with an average temperature of 70.6 °F (21.4 °C). Scottsbluff ranked 2nd and Laramie ranked 3rd warmest. The oppressive heat this summer was not limited to just this area, however, with several locations in Colorado and Nebraska also observing their 3rd warmest summer on record.

This past summer had some extremely warm temperatures, which is reflected in the number of heat advisories issued by the National Weather Service. Kansas led the way, with 103 advisories issued throughout the state this summer.

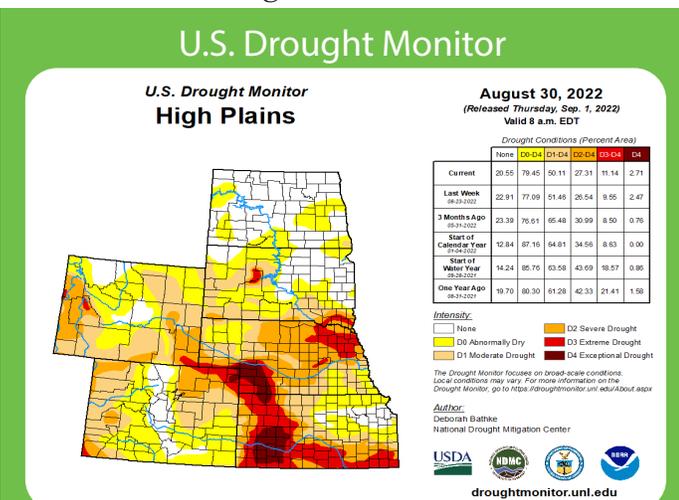
### Station Spotlight: Scottsbluff, Nebraska



Above: Daily temperatures for August 2022, along with extremes and normals values in Scottsbluff, Nebraska.

## Drought Conditions

The southwest monsoon brought drought relief to Colorado and parts of Wyoming, while the rest of the region continued the trend of dryness and above-normal temperatures. Overall, there was a 7 percent increase in moderate to exceptional (D1-D4) drought in August. After several months of being drought-free, D1 was re-introduced in North Dakota.



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/>.

After an entire summer of near-record heat and dry weather, extreme to exceptional (D3-D4) conditions have become entrenched across southwestern Nebraska and western Kansas. This has taken a significant toll on agriculture, with poor crop conditions and impacts on livestock. In the eastern parts of both states, drought conditions were introduced and slowly began to spread. On the other hand, an above-normal amount of precipitation due to the southwest monsoon improved drought conditions in Colorado with D1-D4 reduced by 33 percent compared to the beginning of the month. According to the Climate Prediction Center's U.S. Monthly Drought Outlook for September, drought development is likely across parts of Kansas, Nebraska, and the Dakotas.

# August 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 high probability of Minor Flooding in northeastern South Dakota through November. According to the National Inter-agency Fire Center (NIFC), fire potential will be limited across the region through December.

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 across the majority of the United States. Equal chances of above-, below-, and near-normal are present in North Dakota, otherwise above-normal temperatures are favored.

### 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 June 30th indicates drought conditions are expected to improve in southern Colorado and Kansas. Opposite of this, drought development is likely in parts of Nebraska, the Dakotas, and northern Kansas.

### Temperature Outlook

Seasonal Temperature Outlook  
Valid: Oct-Nov-Dec 2022  
Issued: September 15, 2022

Precipitation Outlook

Seasonal Precipitation Outlook  
Valid: Oct-Nov-Dec 2022  
Issued: September 15, 2022

### Drought Outlook

U.S. Seasonal Drought Outlook  
Drought Tendency During the Valid Period  
Valid for September 15 - December 31, 2022  
Released September 15

Author: Yun-Fai  
NOAA/NWS/NCEP/Climate Prediction Center

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 areas (priorities 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	89.1	61.2	75.1	2.6	97	08/05	55	08/19	1.11	-1.25	47
Alamosa San Luis Airport	80.6	48.4	64.5	1.3	86	08/14	39	08/29	3.80	2.51	295
Colorado Springs Municipal Airport	85.1	58.4	71.7	1.6	93	08/14	52	08/24	1.82	-1.14	61
Denver International Airport	90.3	61.9	76.1	3.2	101	08/05	55	08/20	1.45	-0.13	92
Grand Junction Walker Field Airport	92.7	65.0	78.9	2.6	100	08/11	55	08/27	0.43	-0.49	47
Pueblo Memorial Airport	93.3	60.6	77.0	2.2	102	08/05	52	08/24	0.64	-1.47	30

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	93.3	66.2	79.8	3.4	104	08/13	58	08/09	0.71	-2.78	20
Dodge City Regional Airport	95.8	65.8	80.8	2.7	105	08/03	57	08/18	0.32	-2.67	11
Goodland Renner Field	92.3	60.5	76.4	2.8	101	08/14	49	08/24	0.58	-2.48	19
Topeka Municipal Airport	91.5	67.3	79.4	1.5	101	08/02	59	08/31	3.44	-1.11	76
Wichita Mid-Continent Airport	96.2	69.1	82.7	2.8	106	08/03	61	08/23	1.04	-3.26	24

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	94.3	59.7	77.0	4.2	109	08/05	47	08/30	1.1	-0.17	87
Grand Island Airport	88.7	63.3	76.0	1.4	97	08/31	55	08/21	0.45	-2.75	14
Lincoln Municipal Airport	91.5	64.3	77.9	2.3	101	08/06	55	08/31	0.55	-2.77	17
Norfolk Karl Stefan Airfield	89.1	62.8	75.9	3.5	102	08/02	51	08/30	0.94	-2.56	27
North Platte Regional Airport	92.9	60.5	76.7	3.7	104	08/02	49	08/08	0.96	-1.60	38
Omaha Eppley Airport	88.3	65.1	76.7	1.0	101	08/02	56	08/30	2.67	-1.93	58
Valentine Miller Field	90.3	60.6	75.5	1.9	109	08/02	45	08/30	1.78	-0.26	87

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	87.1	60.1	73.6	4.0	103	08/04	49	08/08	1.20	-1.30	48
Fargo International Airport	79.4	57.5	68.4	-0.4	94	08/05	47	08/26	2.44	-0.16	94
Grand Forks International Airport	81.5	56.7	69.1	2.1	91	08/05	46	08/08	1.42	-1.39	51
Theodore Roosevelt Airport	86.8	57.3	72.0	3.5	102	08/04	50	08/30	2.01	0.48	131
Williston International Airport	86.7	59.1	72.9	3.9	101	08/04	50	08/29	0.64	-0.93	41

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	83.8	59.0	71.4	1.7	98	08/05	48	08/08	1.59	-0.65	71
Huron Regional Airport	85.5	60.6	73.1	1.8	100	08/02	48	08/30	1.07	-1.52	41
Pierre Regional Airport	90.0	61.4	75.7	2.7	109	08/05	51	08/08	3.51	1.56	180
Rapid City Regional Airport	90.3	58.1	74.2	3.4	103	08/11	48	08/30	2.76	1.17	174
Sioux Falls Joe Foss Field Airport	84.6	62.5	73.6	1.6	105	08/02	55	08/30	6.88	3.54	206

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	88.5	52.6	70.6	1.6	101	08/10	43	08/29	1.99	1.2	252
Cheyenne Municipal Airport	86.3	57.4	71.8	3.7	98	08/05	51	08/30	0.66	-0.86	43
Lander Hunt Field Airport	87.6	56.6	72.1	2.3	99	08/10	50	08/15	0.53	0.01	102
Laramie Regional Airport	81.9	49.9	65.9	3.1	90	08/11	43	08/11	1.69	0.55	148
Rawlins Municipal Airport	86.5	53.2	69.9	4.1	96	08/10	45	08/29	0.58	-0.15	79
Sheridan County Airport	91.6	55.5	73.6	4.5	104	08/10	46	08/29	0.55	-0.16	77

## August 2022 Highlights

### Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

Precipitation	Precipitation / Ranking	Record / Year	Period of Record
Alamosa, Colorado	3.80 / 2nd Wettest	5.40 / 1993	1906-2022
Casper, Wyoming	1.99 / 5th Wettest	2.79 / 1941	1939-2022
Temperature	Temperature / Ranking	Record / Year	Period of Record
Scottsbluff, Nebraska	77.0 / WARMEST	76.7 / 1983	1893-2022
Cheyenne, Wyoming	71.8 / 2nd Warmest	72.3 / 2020	1871-2022
Chadron, Nebraska	77.0 / 2nd Warmest	77.7 / 1983	1941-2022
Rawlins, Wyoming	69.9 / 2nd Warmest	71.0 / 2000	1951-2022
Laramie, Wyoming	65.9 / 3rd Warmest	67.0 / 2020	1948-2022
Sheridan, Wyoming	73.6 / 3rd Warmest	77.7 / 1983	1907-2022
Denver, Colorado	76.1 / 4th Warmest	77.0 / 2020+	1872-2022
Bismarck, North Dakota	73.6 / 7th Warmest	75.6 / 2003	1874-2022
Grand Junction, Colorado	78.9 / 7th Warmest (tied with 2019)	81.0 / 2020	1893-2022
Dickinson, North Dakota	72.0 / 9th Warmest	77.3 / 1983	1938-2022
Williston, North Dakota	72.9 / 10th Warmest	78.0 / 1983	1894-2022
Akron, Colorado	75.1 / 10th Warmest	77.6 / 1937	1937-2022
Alamosa, Colorado	64.5 / 10th Warmest	66.0 / 2011	1906-2022
Colorado Springs, Colorado	71.7 / 10th Warmest	74.1 / 2011	1894-2022
Pueblo, Colorado	77.0 / 10th Warmest	79.8 / 2011	1888-2022

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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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