



# May 2022 Climate Summary

Struggling Kansas Winter Wheat, Photo Courtesy of Gerry Tally

## Drought Finally Began to Improve

May ended on a high note for many places in the High Plains, with much-needed precipitation arriving.

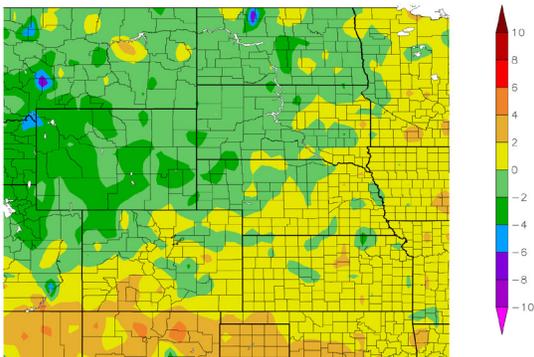
Another derecho impacted the region on the 12th of May, with 67 reports of 75+ mph (121 km/h). This surpassed the event on December 15th of last year and broke the record for the most significant wind gusts in one day. Notable impacts include a 105 mph (169 km/h) wind gust recorded near Tripp, South Dakota and 13 tornadoes in the state. Unfortunately, there were three deaths from this event.

On the same day, a very rare haboob crossed through Nebraska and South Dakota. Haboobs are walls of dust in front of thunderstorms resulting from high downdraft speeds. This led to low visibility and near black-out conditions. A state of emergency was declared in South Dakota to help those impacted by the storms.

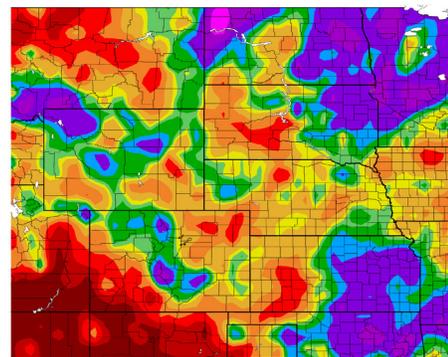
Despite temperatures near normal for the region, an unseasonable heat wave led to many broken daily records. Between May 8th and 14th, 267 high maximum temperature and 453 high minimum temperature records were broken, for a total of 720 records (minimum of 30 years of data). Every state recorded at least one record, with Colorado, Kansas, and Nebraska primarily impacted.

## Temperature and Precipitation Overview

Departure from Normal Temperature (F)  
5/1/2022 – 5/31/2022



Percent of Normal Precipitation (%)  
5/1/2022 – 5/31/2022



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

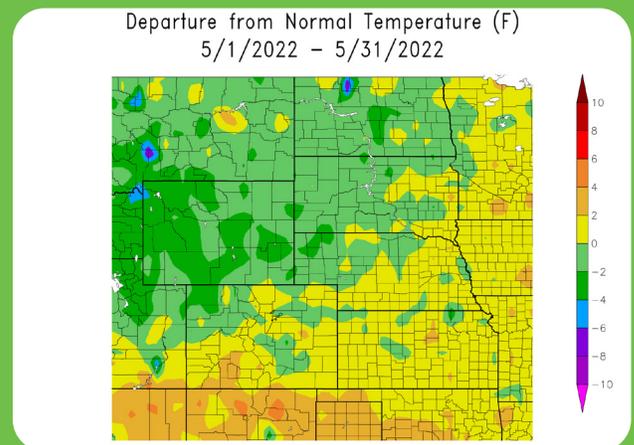
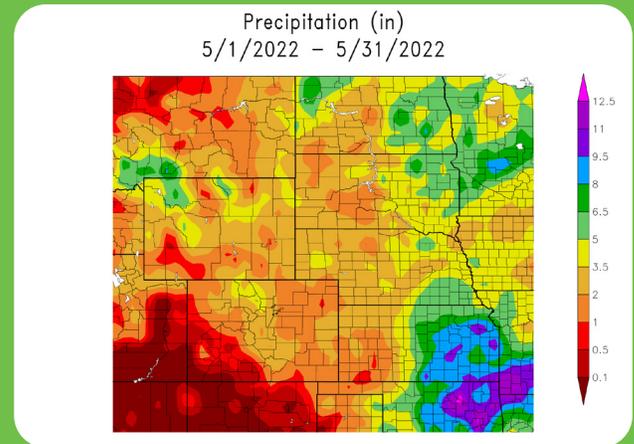
## Precipitation

Precipitation for the region was mixed. Some parts of the region such as eastern Kansas were well above-normal, while areas such as southwest South Dakota were well below-normal. Several locations in Kansas, North Dakota, and South Dakota observed their top 10 wettest months on record.

Eastern Kansas was extremely wet in May, with multiple rounds of storms occurring. Wichita observed its 2nd wettest month on record, with 12.95 inches (32.89 cm) of precipitation. Topeka observed their 3rd wettest, and Salina recorded their 4th wettest month on record, with 11.68 and 8.72 inches (29.67 cm and 22.15 cm), respectively. In North Dakota, Williston and Grand Forks observed the 3rd and 5th wettest on record. Aberdeen, South Dakota also ranked in the top 10 wettest. Back-to-back months of above-normal precipitation have led to serious flooding issues along the Red River in North Dakota. Near the Canadian border, river levels crested at 52.27 feet (15.93 meters) on May 8th. This was well above the flood stage of 39 feet (11.89 meters) for that location. The flooding and heavy precipitation have led to significant issues for agriculture, with planting well behind the normal schedule.

Overall, severe weather was less active than normal throughout the region, except for South Dakota. During May, there were 108 more than the average (2002-2022) severe thunderstorm and tornado warnings issued in South Dakota. In contrast, Kansas was 155 warnings below the average for May. There were numerous reports of large hail this month, but a storm on the 29th was particularly dangerous. In central Nebraska, a storm over Loup County had several reports of 5-inch (12.7 cm) hail with unconfirmed reports of hailstones in the 6-inch (15.24 cm) range.

### Regional Precipitation



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

## Snowpack Update

Upper Missouri River Basin mountains began to melt in May. According to the U.S. Army Corps of Engineers, as of May 30, Snow Water Equivalent (SWE) above Fort Peck Reservoir is currently at 8.1 inches (20.57 cm) which is 60% of the average (1981-2010). The reach between Fort Peck and Garrison Reservoirs is currently 9.0 inches (22.86 cm) which is 67% of the average (1981-2010). SWE was near or above median in most Wyoming basins. In Colorado, SWE was nearly melted in the southwest.

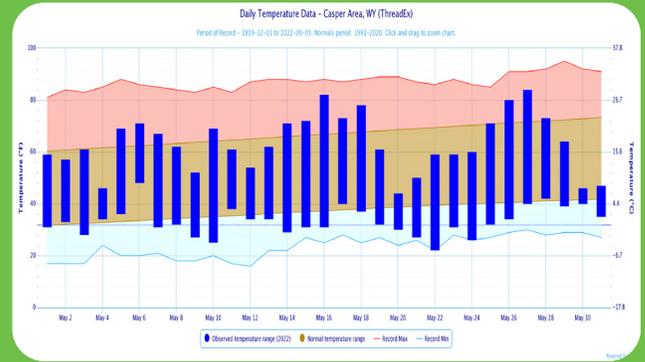
# Temperatures

Temperatures for the month of May were near-normal throughout the region, with pockets of below-normal observed in Wyoming. Despite the near-normal temperatures, there were large swings present during the month. Hundreds of daily high and low temperatures were broke during the heat wave in Mid-May. Every state in the region broke either a high maximum temperature or high minimum temperature. On the opposite end of the spectrum, Wyoming broke 73 low maximum or low minimum temperature records during this period.

Below-normal temperatures in Wyoming led to one location to rank in the top 10 coldest on record. The city of Casper observed their 8th coldest month on record, with an average temperature of 48.3 degrees F (9.1 degrees C). Several other locations in Wyoming came close to being in the top 10 due to the cooler temperatures this month.

The near normal to cooler than normal temperatures have also been beneficial in the prevention of intensifying drought conditions. Many areas in eastern Wyoming and southwestern South Dakota observed well below normal precipitation this month, however, the temperatures helped prevent a significant expansion of drought conditions.

## Station Spotlight: Casper, WY

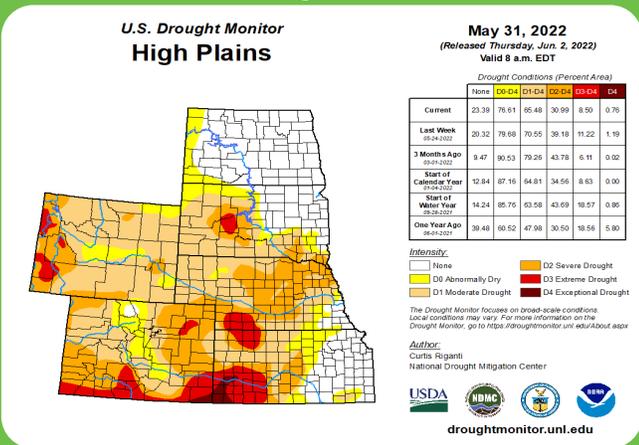


Above: Daily temperatures for May 2022, along with extremes and normals values in Casper, Wyoming.

# Drought Conditions

Across the region, drought conditions improved in May as a result of beneficial precipitation. The High Plains region observed a 14 percent decrease in severe to exceptional (D2-D4) drought, there was also a 10 percent increase in areas that are not in any drought or abnormally dry conditions.

## 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/>.

After back-to-back months of well above-normal precipitation, North Dakota is now drought-free. Currently, only 12 percent of the state is in abnormally dry (D0) conditions. Conditions in South Dakota and Wyoming also improved significantly, with extreme drought (D3) and D2 reduced by 30 and 36 percent, respectively. While eastern Kansas is nearly free of drought, the western part of the state observed a 12 percent increase in D3 and D4 conditions. Colorado also recorded an 11 percent increase in D3-D4 conditions. Elsewhere in the region, other improvements and degradation were observed. According to the Climate Prediction Center's U.S. Monthly Drought Outlook for June, improvements in drought conditions are likely across South Dakota, northern Wyoming, eastern Nebraska, and central Kansas.

# May 2022 Climate Summary

## Climate Outlooks

According to the Climate Prediction Center, La Niña conditions are likely to continue into the summer. 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 through July indicates a high chance of minor flooding across eastern South Dakota and the lower basin in June. This will decrease over the next three months. There is a high risk of Major Flooding in northeastern South Dakota. According to the National Interagency Fire Center (NIFC), fire potential will be limited in June but expand across the entire region in July and August.

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. In the High Plains, North Dakota and northeastern South Dakota have equal chances of above-, below-, and near-normal temperatures. Meanwhile, the rest of the region has increased chances of above-normal temperatures with Colorado heavily favored.

### Precipitation

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

### Drought

The U.S. Seasonal Drought Outlook released on May 31st indicates drought conditions are expected to remain with development likely in eastern Nebraska, central Colorado, and eastern Wyoming.

### Temperature Outlook

### Precipitation Outlook

### Drought Outlook

**U.S. Seasonal Drought Outlook**  
Drought Tendency During the Valid Period  
Valid for June 1 - August 31, 2022  
Released May 31, 2022

Author: Adam Hartman  
NOAA/NWS/NCEP/Climate Prediction Center

<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	72.0	42.4	57.1	0.3	93	05/27	32	05/02	1.62	-1.03	61
Alamosa San Luis Airport	73.4	33.3	53.3	1.6	84	05/27	15	05/05	0.39	-0.21	65
Colorado Springs Municipal Airport	73.1	45.2	59.1	2.0	91	05/11	30	05/21	2.02	0.03	102
Denver International Airport	71.7	42.0	56.8	-0.6	90	05/11	31	05/21	2.59	0.43	120
Grand Junction Walker Field Airport	77.5	45.9	61.7	-0.3	90	05/27	29	05/21	0.34	-0.49	41
Pueblo Memorial Airport	78.1	44.3	61.2	-0.2	95	05/17	31	05/03	2.41	0.84	154

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	76.2	55.8	66.0	2.5	94	05/12	38	05/22	5.94	1.60	137
Dodge City Regional Airport	79.7	50.9	65.3	0.5	100	05/29	36	05/06	1.28	-1.71	43
Goodland Renner Field	74.9	44.9	59.9	0.3	97	05/11	30	05/01	2.93	0.12	104
Topeka Municipal Airport	77.7	57.9	67.8	2.1	96	05/12	42	05/22	11.68	6.51	226
Wichita Mid-Continent Airport	77.3	57.8	67.6	0.9	94	05/10	41	05/01	12.95	7.78	251

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	69.1	38.4	53.7	-2.2	95	05/27	23	05/22	3.02	0.31	111
Grand Island Airport	74.3	51.8	63.1	1.1	96	05/19	34	05/02	2.45	-2.25	52
Lincoln Municipal Airport	74.9	53.3	64.1	1.0	95	05/12	34	05/22	5.27	0.36	107
Norfolk Karl Stefan Airfield	73.6	51.0	62.3	2.2	94	05/12	33	05/22	3.90	-0.10	98
North Platte Regional Airport	74.9	44.1	59.5	2.2	94	05/12	27	05/22	2.98	-0.37	89
Omaha Eppley Airport	75.0	54.4	64.7	1.1	97	05/12	37	05/22	5.32	0.66	114
Valentine Miller Field	73.4	44.5	58.9	0.8	95	05/27	28	05/22	2.54	-0.98	72

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	67.5	42.4	55.0	-0.3	82	05/26	27	05/02	1.98	-0.52	79
Fargo International Airport	66.0	44.3	55.1	-1.5	84	05/28	28	05/21	3.18	0.09	103
Grand Forks International Airport	65.7	43.9	54.8	0.7	84	05/28	32	05/04	5.09	2.29	182
Theodore Roosevelt Airport	64.1	39.3	51.7	-1.2	79	05/27	30	05/22	2.35	-0.20	92
Williston International Airport	64.0	41.6	52.8	-1.0	79	05/26	31	05/12	5.32	3.22	253

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	69.6	44.8	57.2	-0.1	86	05/28	30	05/22	7.00	3.72	213
Huron Regional Airport	70.1	46.1	58.1	0.2	90	05/12	28	05/02	5.48	2.33	174
Pierre Regional Airport	70.2	43.3	56.8	-0.4	87	05/27	30	05/22	1.13	-2.12	35
Rapid City Regional Airport	66.6	39.3	52.9	-1.2	93	05/27	24	05/22	2.58	-0.87	75
Sioux Falls Joe Foss Field Airport	71.5	48.8	60.1	1.0	94	05/12	33	05/22	4.30	0.44	111

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	63.4	33.2	48.3	-3.7	84	05/27	22	05/22	2.61	0.40	118
Cheyenne Municipal Airport	65.2	39.3	52.2	-0.1	86	05/27	24	05/21	1.78	-0.66	73
Lander Hunt Field Airport	62.3	38.3	50.3	-2.5	81	05/26	29	05/22	4.13	1.45	154
Laramie Regional Airport	60.7	33.8	47.2	-0.3	79	05/27	18	05/21	0.94	-0.81	54
Rawlins Municipal Airport	62.6	33.8	48.2	-1.6	80	05/27	18	05/21	0.97	-0.49	66
Sheridan County Airport	63.8	37.6	50.7	-1.7	79	05/26	29	05/22	3.16	0.48	118

## May 2022 Highlights

### Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

Precipitation	Precipitation / Ranking	Record / Year	Period of Record
Wichita, Kansas	12.95 / 2nd Wettest	13.14 / 2008	1888-2022
Topeka, Kansas	11.68 / 3rd Wettest	14.10 / 1892	1887-2022
Williston, North Dakota	5.32 / 3rd Wettest	7.38 / 1965	1894-2022
Salina, Kansas	8.72 / 4th Wettest (tied with 2019)	17.34 / 1903	1900-2022
Grand Forks, North Dakota	5.09 / 5th Wettest	7.96 / 1896	1893-2022
Aberdeen, South Dakota	7.00 / 6th Wettest	12.39 / 1906	1893-2022
Temperature	Temperature / Ranking	Record / Year	Period of Record
Casper, Wyoming	48.3 / 8th Coldest (tied with 1995)	46.1 / 2019	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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