



June 2022 Climate Summary

Yellowstone National Park, Photo Courtesy of Rezaul Mahmood

Warm and Dry Conditions Prevailed

Summer-like conditions took hold in the High Plains towards the middle of the month, with above-normal temperatures and below-normal precipitation across the region. Drought conditions initially were improving towards the beginning of the month due to cool temperatures and above-normal precipitation, however, the prevailing hot and dry conditions led to intensification at the end of the month.

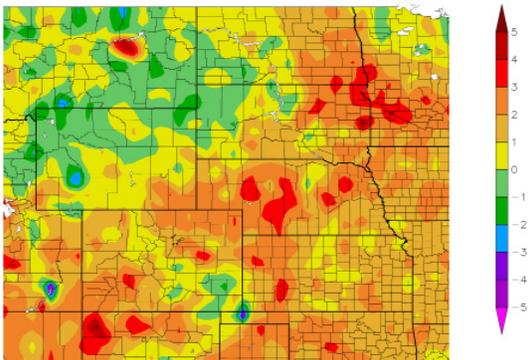
Temperatures were extremely hot in western Kansas this month, which led to many cattle deaths. A rapid increase in temperatures from 80 degrees F (26.7 degrees C) on the 9th to 104 degrees F (40 degrees C) on the 11th led over 2,000 cattle to perish. This extreme swing combined with other factors such as high overnight temperatures and minimal wind did not give time for cattle to adjust to conditions or to cool off.

Hailstorms were an issue for Nebraska this month, with the state having several destructive storms early in the month. Crops have been ravaged by the storms, while millions of dollars in damage has been caused to homes and vehicles. Two towns in the central part of the state have nearly 90 to 100 percent of homes significantly damaged. The most damaging storm was on the 14th when 115 mph (185 km/h) wind-driven hail of 1 to 3 inches impacted cities across the eastern portions of the state.

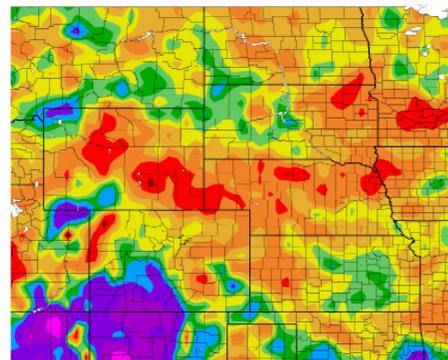
Heavy precipitation in northern Wyoming and the rapid melting of snowpack led to record flooding in Yellowstone National Park. Bridges and roads were washed out, while several homes were swept away by the waters. The damage caused the park to close for over a week, with only the southern entrances reopened by the end of the month.

Temperature and Precipitation Overview

Departure from Normal Temperature (F)
6/1/2022 – 6/30/2022



Percent of Normal Precipitation (%)
6/1/2022 – 6/30/2022



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

June precipitation was well below-normal for many parts of the region, most notably in Wyoming and western Nebraska. Contrary to this, the Southwest monsoon season began early this year, with much-needed precipitation in the southern and western parts of Colorado.

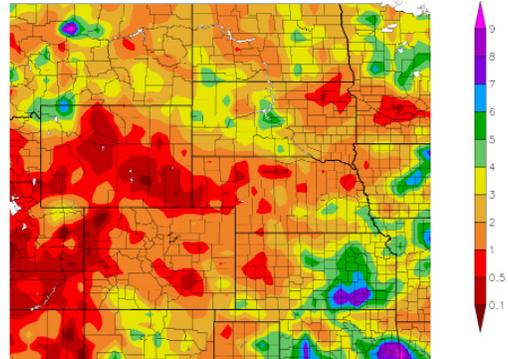
Much of Wyoming received less than an inch (25.4 mm) of precipitation this month, with the central part of the state nearly bone dry. Lander recorded trace amounts of precipitation which ties both 1956 and 1971 for driest on record. Nearby, Casper received 0.21 inches (5.34 mm) to rank 7th driest. This dryness stretched into western Nebraska, with North Platte and Chadron ranking 2nd and 3rd driest, after 0.43 and 0.84 inches (10.92 and 21.34 mm) of precipitation, respectively.

Precipitation in South Dakota was mixed, with both the top 10 driest and wettest months recorded in the state. In the northeastern part of the state, Sisseton and Aberdeen ranked 4th and 6th driest, respectively. In the central part of the state, however, Pierre observed their 6th wettest June on record, with 6.34 inches (16.10 cm) of precipitation.

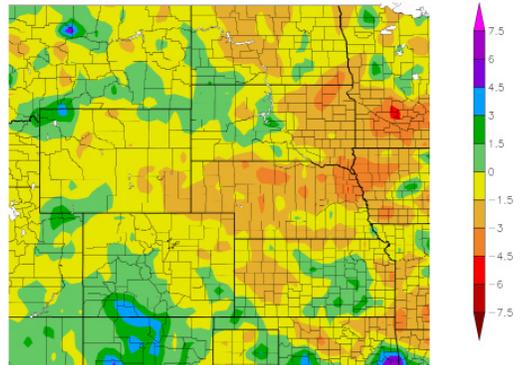
Severe weather was near normal to slightly above average for the region in terms of warnings issued by the National Weather Service. Large hail was observed on numerous days across the region, with several days having reports of 4 inch (10.16 cm) plus diameter hail. A dangerous storm in Nebraska on the 11th dropped extremely large hailstones in the 5-inch (12.7 cm) range.

Regional Precipitation

Precipitation (in)
6/1/2022 – 6/30/2022



Departure from Normal Precipitation (in)
6/1/2022 – 6/30/2022



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

Upper Missouri River Basin mountain snowpack completely melted in June. The U.S. Army Corps of Engineers Missouri River Water Management Division announced that they will increase the navigation flow level, with the releases from Gavins Point being adjusted. Streamflows in drought-afflicted areas such as western Kansas and Nebraska were near record lows. However, streamflows fared much better in North Dakota and the eastern portions of South Dakota and Kansas, where precipitation has been more plentiful.

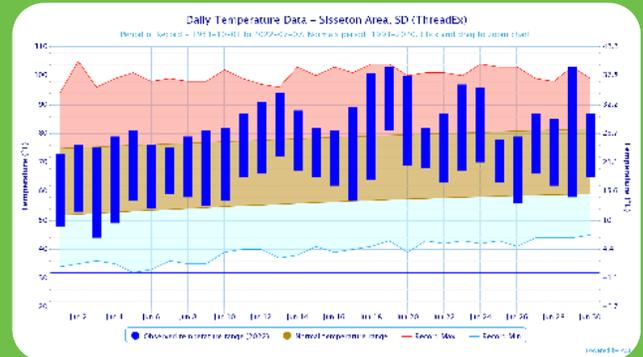
Temperatures

June was warm for much of the region, with several locations observing their top 10 warmest months on record. This was particularly noticeable during the middle of the month when numerous temperature records were broken across the region. Towards the beginning of the month, several daily low records were broken in the western part of the region.

Temperatures were well above-normal in eastern South Dakota this past month. Sisseton recorded its 3rd warmest month with temperatures averaging 73.6 degrees F (23.1 degrees C), while Sioux Falls ranked 10th with an average temperature of 72.5 degrees F (22.5 degrees C). In western Nebraska, McCook and North Platte ranked in the top 10 with numerous warm days.

The heat wave in the middle of the month led to scorching hot temperatures. Atwood, Kansas observed a high temperature of 111 degrees F (43.9 degrees C) while McCook, Nebraska recorded a high of 109 degrees F (42.8 degrees C) on the 14th. Several locations in western Kansas observed over ten days of 100-degree F (37.8 degrees C) plus temperatures.

Station Spotlight: Sisseton, SD

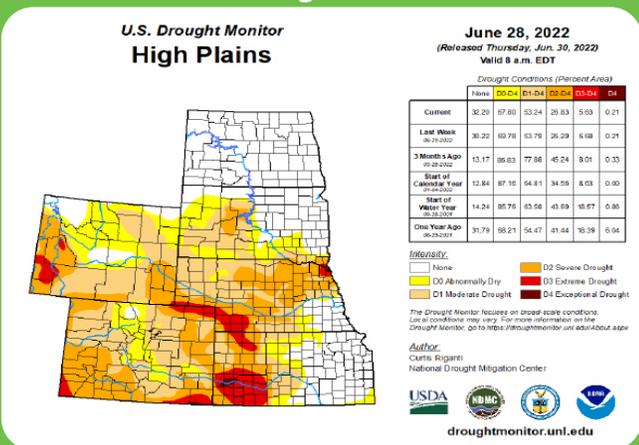


Above: Daily temperatures for June 2022, along with extremes and normals values in Sisseton, South Dakota.

Drought Conditions

A wet start to the month led to improvements, however, dry and windy conditions prevailed towards the end. The High Plains region observed a 6 percent decrease in moderate to exceptional (D1-D4) drought in June. North Dakota remained drought-free the entire month.

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/>.

The monsoon season began in the southwest towards the end of the month, leading to improvements in Colorado. Severe drought (D2) was reduced by 12 percent due to this beneficial precipitation. South Dakota and Wyoming observed a 25 percent reduction to D1 after receiving above-normal precipitation. Conditions improved slightly in southwestern Kansas, however, D4 remained entrenched in the area. A large swath of extreme drought (D3) was introduced at the end of the month along the Colorado and Nebraska border. Elsewhere in the region, other improvements and degradation were observed. According to the Climate Prediction Center's U.S. Monthly Drought Outlook for July, drought conditions are likely to develop in parts of Colorado, Kansas, Nebraska, and South Dakota.

June 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

The National Weather Service's long-range flood outlook through July indicates a high chance of Major Flooding in northeastern South Dakota through August. According to the National Interagency Fire Center (NIFC), fire potential will be limited through October.

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. The entire High Plains region has increased chances of above-normal temperatures, with Kansas and parts of Nebraska notably favored.

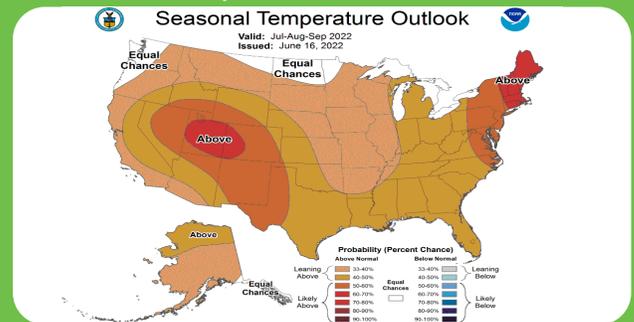
Precipitation

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 Colorado, the Dakotas, and Wyoming. The rest of the region has increased chances of below-normal precipitation.

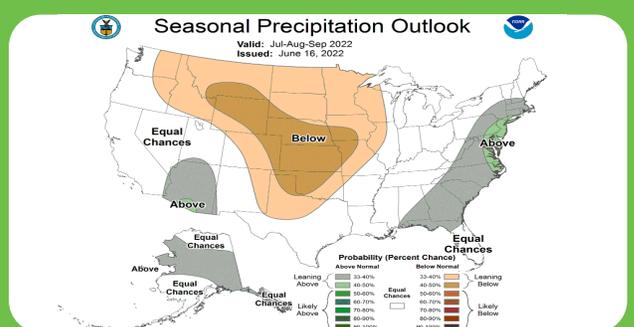
Drought

The U.S. Seasonal Drought Outlook released on June 30th indicates drought conditions are expected to remain with development likely in parts of Colorado, Kansas, Nebraska, and South Dakota.

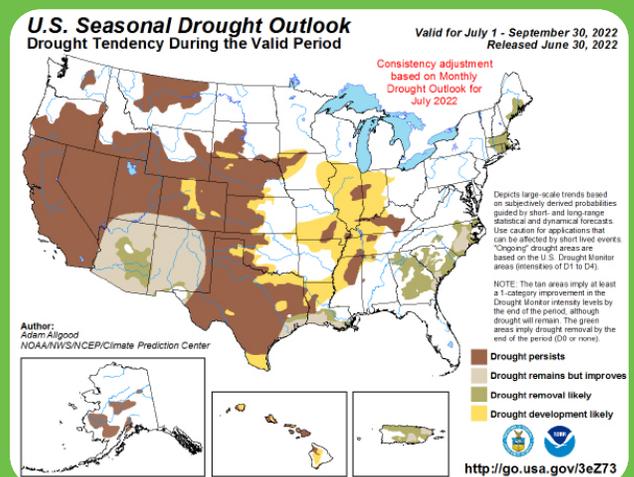
Temperature Outlook



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	86.4	55.8	71.1	2.9	100	06/29	41	06/01	1.45	-0.79	65
Alamosa San Luis Airport	81.1	43.3	62.2	1.6	92	06/11	32	06/02	1.27	0.84	295
Colorado Springs Municipal Airport	82.5	54.5	68.5	1.3	96	06/11	42	06/01	1.37	-0.90	60
Denver International Airport	86.0	54.3	70.2	2.0	100	06/11	39	06/01	0.58	-1.36	30
Grand Junction Walker Field Airport	90.8	57.9	74.4	1.4	102	06/11	45	06/15	0.19	-0.22	46
Pueblo Memorial Airport	89.1	56.7	72.9	1.1	102	06/13	45	06/01	0.31	-0.97	24

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	90.1	66.1	78.1	3.7	105	06/13	47	06/02	2.65	-1.18	69
Dodge City Regional Airport	91.2	64.1	77.7	2.6	106	06/24	46	06/02	1.18	-2.11	36
Goodland Renner Field	88.3	58.1	73.2	2.5	103	06/13	43	06/03	1.35	-1.61	46
Topeka Municipal Airport	88.5	67	77.8	2.3	100	06/21	52	06/02	2.28	-2.64	46
Wichita Mid-Continent Airport	88.7	66.9	77.8	0.9	100	06/24	52	06/02	4.31	-0.62	87

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	85.7	50.9	68.3	1.3	104	06/29	38	06/15	0.84	-1.62	34
Grand Island Airport	88.5	62.6	75.6	2.8	103	06/13	45	06/02	2.41	-1.60	60
Lincoln Municipal Airport	87.3	62.7	75.0	1.3	104	06/13	42	06/02	3.73	-0.75	83
Norfolk Karl Stefan Airfield	87.8	60.3	74.1	3.7	102	06/13	37	06/02	1.57	-2.80	36
North Platte Regional Airport	90.2	57.6	73.9	4.2	108	06/13	38	06/02	0.43	-3.11	12
Omaha Eppley Airport	86.5	63.5	75.0	1.1	101	06/13	45	06/02	2.95	-1.49	66
Valentine Miller Field	85.5	56.0	70.7	1.7	104	06/29	41	06/02	1.53	-2.43	39

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	81.5	52.5	67.0	1.6	101	06/18	35	06/03	1.21	-2.15	36
Fargo International Airport	81.3	55.5	68.4	1.6	101	06/19	37	06/03	2.27	-2.02	53
Grand Forks International Airport	80.0	53.5	66.8	2.2	100	06/19	37	06/03	2.16	-1.61	57
Theodore Roosevelt Airport	74.5	50.1	62.3	-0.2	92	06/18	34	06/03	2.02	-1.03	66
Williston International Airport	74.7	51.8	63.3	-0.2	93	06/18	40	06/01	2.44	-0.20	94

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>.

June 2022 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	83.7	57.7	70.7	3.1	101	06/19	42	06/01	0.92	-2.84	24
Huron Regional Airport	83.2	58.5	70.9	2.6	105	06/29	38	06/03	1.36	-2.53	35
Pierre Regional Airport	82.0	55.8	68.9	1.1	100	06/29	39	06/01	6.34	2.65	172
Rapid City Regional Airport	79.8	50.2	65.0	0.4	102	06/29	39	06/01	2.27	-0.60	79
Sioux Falls Joe Foss Field Airport	84.5	60.5	72.5	2.6	100	06/20	44	06/03	1.95	-2.28	46

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	80.6	44.2	62.4	-0.1	97	06/17	33	06/16	0.21	-1.13	16
Cheyenne Municipal Airport	82.2	51.2	66.7	3.6	95	06/11	37	06/02	0.35	-1.81	16
Lander Hunt Field Airport	79.1	47.7	63.4	0.6	92	06/28	34	06/15	Trace	-	-
Laramie Regional Airport	77.1	43.6	60.4	2.4	90	06/12	30	06/02	0.8	-0.69	54
Rawlins Municipal Airport	79.0	44.2	61.6	1.7	93	06/17	33	06/08	0.36	-0.51	41
Sheridan County Airport	78.1	46.5	62.3	0.5	94	06/29	32	06/01	1.48	0.50	75

June 2022 Highlights

Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

Precipitation	Precipitation / Ranking	Record / Year	Period of Record
Lander, Wyoming	Trace / DRIEST (tied with 1956 & 1971)	N/A	1891-2022
North Platte, Nebraska	0.43 / 2nd Driest (tied with 2017)	0.33 / 1952	1874-2022
Chadron, Nebraska	0.84 / 3rd Driest	0.35 / 2017	1941-2022
Sisseton, South Dakota	0.74 / 4th Driest	0.55 / 1974	1931-2022
Aberdeen, South Dakota	0.92 / 6th Driest	0.07 / 1929	1893-2022
Casper, Wyoming	0.21 / 7th Driest	0.03 / 1956	1939-2022
Pierre, South Dakota	6.34 / 6th Wettest	8.30 / 2011	1893-2022
Alamosa, Colorado	1.27 / 6th Wettest	2.58 / 1969	1906-2022
Temperature	Temperature / Ranking	Record / Year	Period of Record
Sisseton, South Dakota	73.6 / 3rd Warmest	75.4 / 1933	1931-2022
Akron, Colorado	71.1 / 9th Warmest (tied with 1959)	75.7 / 2012	1937-2022
Cheyenne, Wyoming	66.7 / 9th Warmest	68.0 / 2006	1871-2022
McCook, Nebraska	75.5 / 10th Warmest	81.6 / 1933	1894-2022
North Platte, Nebraska	73.9 / 10th Warmest	77.0 / 1933	1874-2022
Sioux Falls, South Dakota	72.5 / 10th Warmest	76.3 / 1988	1893-2022

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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

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