



February 2022 Climate Summary

Western Kansas Pastures, Photo Courtesy of Gannon Rush

Drought Continued to Expand Across the Region

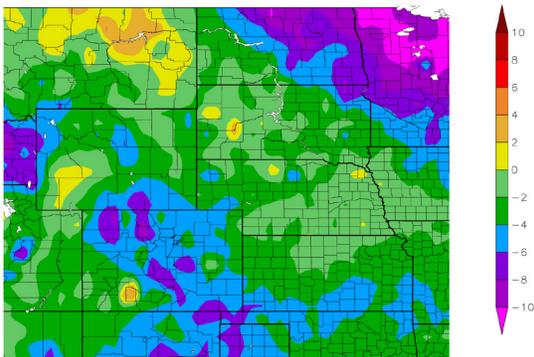
February was a very dry month for most of the High Plains, which led to the expansion of drought across the region. Currently, 78 percent of the region is now engulfed in drought conditions. Kansas and Nebraska have been significantly impacted by the extreme dryness that was present not only in February, but throughout the winter. Agricultural producers and resource managers are being forced to make decisions based on the current situation to prepare for potential issues in the coming months.

Despite below normal temperatures throughout most of the region, temperatures fluctuated greatly throughout the month. This swing from above normal to below normal temperatures has created issues for many different sectors, particularly recreation. Ice fishing is down in areas due to lakes not having proper time to freeze over, while ski resorts had issues with creating snow.

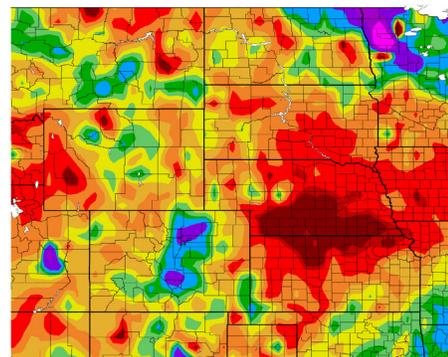
In eastern North Dakota, cold temperatures and an above-normal number of blizzards have occurred recently. Since the beginning of 2022, 10 blizzard warnings have been issued by the National Weather Service office in Grand Forks. This has already tied the full-year record, which was set in 2014. As a result, snow has continued to accumulate, which has created the potential to create challenges during the upcoming planting season and has an increased risk of flooding this spring. Many areas along the Red River near Fargo and Grand Forks have a 50% or greater chance of exceeding flood levels this spring as a result of the accumulating snow.

Temperature and Precipitation Overview

Departure from Normal Temperature (F)
2/1/2022 - 2/28/2022



Percent of Normal Precipitation (%)
2/1/2022 - 2/28/2022



Above: Departure from 1991-2020 normal temperature (left) and percent of normal precipitation (right) for February 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 dryness continued to grip the southeastern part of the High Plains in February. Kansas and Nebraska were among the driest for not only the month but for the entire winter season. In contrast, eastern North Dakota and central Colorado recorded above-normal precipitation for the month and season.

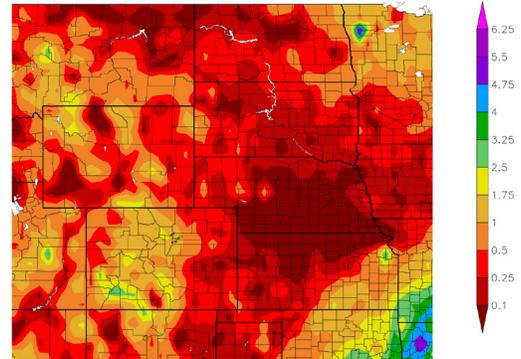
Several locations within Nebraska and northern Kansas observed their driest February on record. McCook, Nebraska, observed their 2nd driest month on record, with only trace amounts of precipitation recorded. To the north, North Platte observed 0.03 inches (0.76 mm) of precipitation, leading to their 4th driest February. Grand Island tied with 1904 for the record driest, with only 0.01 inches (0.25 mm) of precipitation observed. Hastings and Lincoln both recorded their 3rd driest February on record with 0.01 and 0.03 inches (0.25 and 0.76 mm), respectively, of precipitation.

This dryness was not only prevalent during the month, but also throughout the winter in Nebraska. Lincoln and Hastings both observed their 2nd driest winters on record, while Norfolk and Grand Island observed their 3rd driest winters. Other locations that were extremely dry included Concordia, Kansas, and Pierre, South Dakota, which recorded their 3rd and 4th driest winters, respectively.

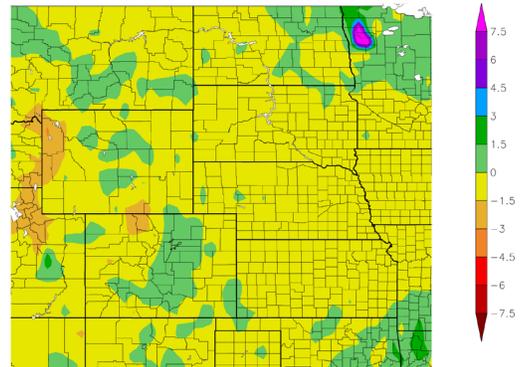
In contrast to this dryness, several locations recorded above-normal precipitation. Sisseton, South Dakota observed their 5th wettest and 6th most snowfall for the winter. Grand Forks, North Dakota was also unusually wet, recording their 4th most snowfall and 10th wettest winter on record. Snowfall was also above-normal in Cheyenne, Wyoming, and Fargo, North Dakota, where the 7th and 10th most winter snowfall, respectively, was observed.

Regional Precipitation

Precipitation (in)
2/1/2022 - 2/28/2022



Departure from Normal Precipitation (in)
2/1/2022 - 2/28/2022



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

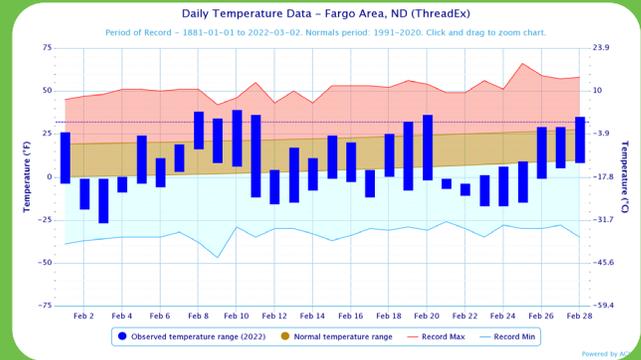
Snowpack Update

Snowpack for the end of winter remained just below normal for the Upper Missouri River Basin mountains. According to the U.S. Army Corps of Engineers, as of March 2, Snow Water Equivalent (SWE) above Fort Peck Reservoir is currently at 13.3 inches (33.78 cm) which is 82% of the average (1981-2010). The reach between Fort Peck and Garrison Reservoirs is currently 11.4 inches (28.96 cm) which are 80% of the average (1981-2010). In the Plains, areas with snow on the ground at the end of January were observed in North Dakota and a portion of South Dakota. Meanwhile, warm and dry conditions resulted in snow-free areas across the remainder of the plains.

Temperatures

Across the entirety of the region, temperature departures were below normal for February, aside from a few small areas. In northeastern North Dakota and the Rockies, temperatures were as much as 10 degrees F (5.6 C) below normal for February. Despite the below normal temperature departures in the High Plains, temperatures fluctuated throughout the month. In Topeka, KS, temperatures dropped from a high temperature of 70 degrees F (21.1 degrees C) on the 21st to 19 degrees F (-7.2 degrees C) on the 23rd, a decrease of 51 degrees F (28.3 C). These temperature fluctuations created many impacts in the region. For example, soil in the region was not able to freeze fully, which is a concern for farmers as the planting season approaches. Sandhill crane migrations for this year also started to arrive earlier than average from the south due to the unseasonably warm temperatures throughout the winter.

Station Spotlight: Fargo, ND



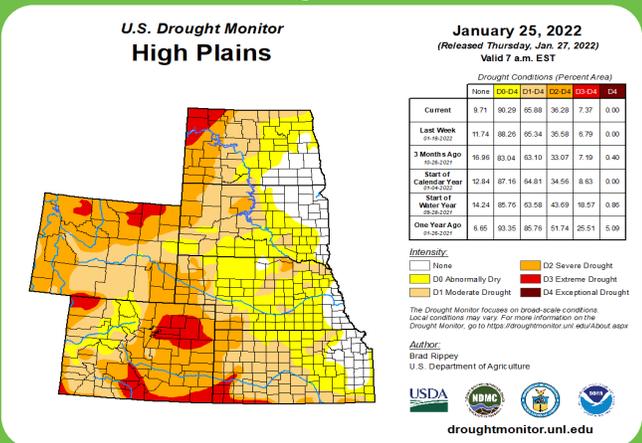
Above: Daily temperatures for February 2022, along with extremes and normals values in Fargo, North Dakota.

Despite the varying temperatures over the course of the 2021-2022 winter season, some areas ranked in the top 10 warmest winters on record. Lander, WY observed their 8th warmest winter on record, with a season average of 27.2 degrees F (-2.7 degrees C), while the record is 30.9 degrees F (-0.6 degrees C) in 1993-1934. In Colorado Springs, CO, the season-average temperature was 34.4 degrees F (1.3 degrees C) tying with the 1975-1976 season for the 9th warmest winter on record, the record being 37.6 degrees F (3.1 degrees C) from 1933 to 1934.

Drought Conditions

Dryness continued in Nebraska and Kansas, which led to widespread expansion of drought conditions. Meanwhile, drought conditions improved in North Dakota and northeastern Colorado. The region has remained free of exceptional drought (D4) conditions since November of 2021.

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/>.

Drought significantly expanded across Nebraska as a result of extremely dry conditions. The state began the month with 38 percent in D1 (moderate drought) to D4 (exceptional drought), and ended with 91 percent of the state in D1 to D4. The lack of precipitation South Dakota and Kansas both observed increases of 22 and 10 percent, respectively, to D1 to D4 conditions. Contrary to this dryness, Colorado observed an 11 percent decrease to extreme drought (D3) conditions after the eastern part of the state received above normal precipitation. Drought conditions also improved after beneficial precipitation in central and northern North Dakota. Throughout the rest of the region, other improvements and degradations were observed. According to the Climate Prediction Center's U.S. Monthly Drought Outlook for March, drought development is likely in northern Nebraska and western Colorado.

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Climate Outlooks

According to the Climate Prediction Center, La Niña conditions are likely to continue throughout the spring season. A La Niña advisory is 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 May indicates an increased chance of minor flooding in eastern South Dakota and the lower basin. The chance of flooding throughout that portion of the region, for March, remain above 20% with some areas greater than 80%. This will decrease over the next 3 months with the chance of minor flooding less than 20% in May. According to the National Interagency Fire Center (NIFC), in the High Plains, western Kansas and Eastern Colorado have above-normal wildland fire potential and is expected to remain at this level through April.

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

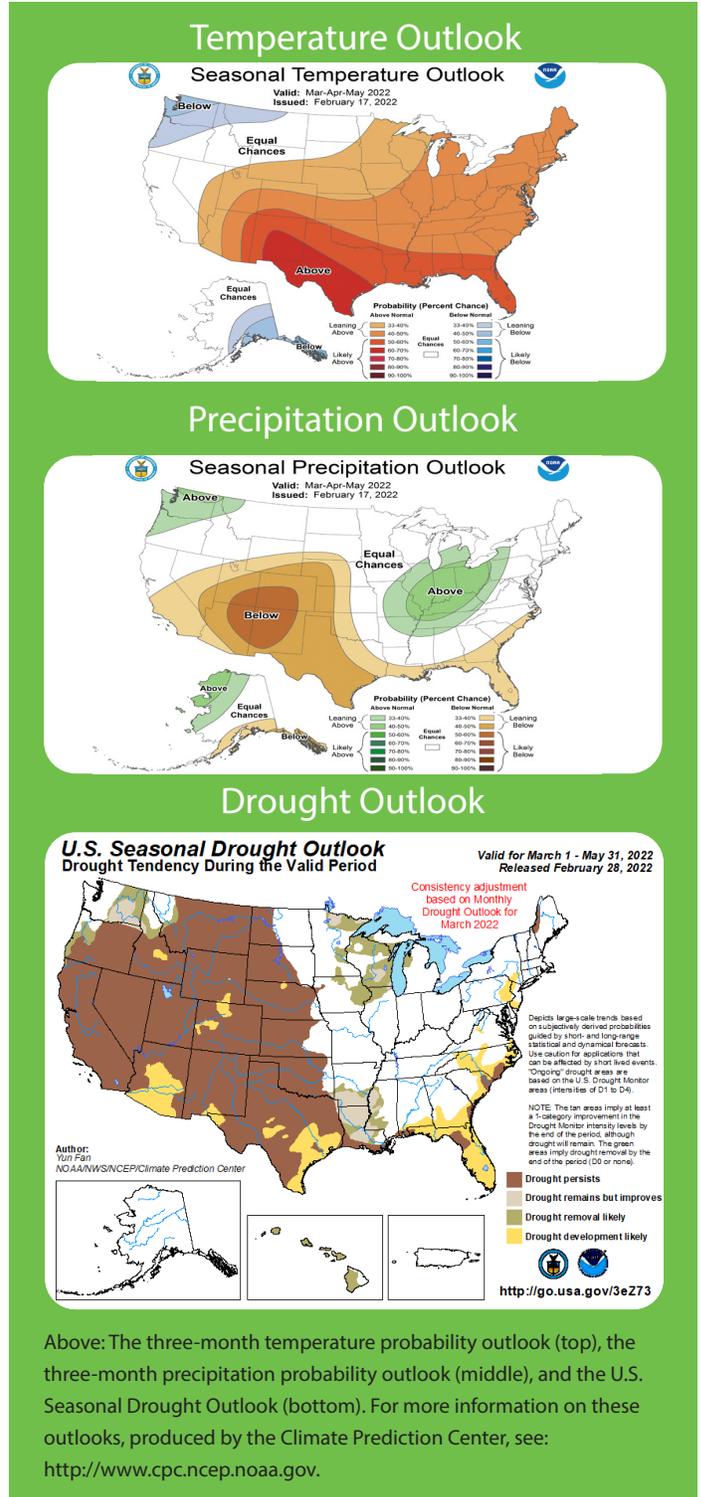
The three-month temperature outlook shows an increased chance of above-normal temperatures across the eastern United States. The highest chances of below-normal temperatures can be observed in the Northwestern United States. In the High Plains, North Dakota and the northern parts of Wyoming and South Dakota have equal chances of above-, below-, and near-normal temperatures. Meanwhile, the rest of the region has increased chances of above-normal temperatures.

Precipitation

The outlook for the next three months indicates below-normal precipitation across the Southwest United States. In the Midwest and Northwest, there are increased chances of above-normal precipitation. Across the High Plains there are equal chances of above-, below-, and near-normal precipitation in the Dakotas and the eastern parts of Kansas and Nebraska. The rest of the region has increased chances of below-normal precipitation

Drought

The U.S. Seasonal Drought Outlook released on February 28th indicates drought conditions are expected to persist across the Southwest and western High Plains over the next three months. Drought conditions are expected to remain and development is likely in parts of Colorado, Wyoming, Nebraska, and South Dakota.



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	40.4	14.8	27.6	-3.7	64	02/28	-6	02/23+	0.07	-0.13	35
Alamosa San Luis Airport	40.3	0.7	20.5	-3.8	56	02/28	-27	02/04	0.36	0.08	129
Colorado Springs Municipal Airport	42.2	15.5	28.8	-4.6	67	02/15	-6	02/23	0.56	0.24	175
Denver International Airport	42.3	15.8	29.1	-3.6	65	02/28	-11	02/03	0.94	0.54	230
Grand Junction Walker Field Airport	42.7	20.5	31.6	-3.7	55	02/20+	11	02/05+	0.47	-0.06	89
Pueblo Memorial Airport	47.5	12.9	30.2	-4.9	69	02/20	-8	02/03	0.58	0.26	181

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	46.9	18.0	32.4	-0.4	69	02/20	-1	02/23	0.03	-0.83	4
Dodge City Regional Airport	48.5	16.7	32.6	-3.6	74	02/21	-2	02/23	0.34	-0.28	55
Goodland Renner Field	44.6	13.3	29.0	-3.3	67	02/28+	-10	02/23+	0.27	-0.20	58
Topeka Municipal Airport	46.4	17.9	32.1	-2.8	71	02/21	0	02/04	0.80	-0.51	53
Wichita Mid-Continent Airport	46.8	19.0	32.9	-4.7	72	02/28	2	02/04	0.87	-0.33	73

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	41.1	10.7	25.9	-2.0	63	02/10	-16	02/22	0.02	-0.27	7
Grand Island Airport	44.1	14.9	29.5	-0.2	70	02/28	-4	02/25	0.01	-0.73	1
Lincoln Municipal Airport	44.1	13.6	28.8	-0.7	69	02/28	-1	02/25+	0.03	-0.86	3
Norfolk Karl Stefan Airfield	41.0	12.1	26.6	0.3	70	02/28	-6	02/23	0.13	-0.67	16
North Platte Regional Airport	46.4	11.1	28.8	-0.6	67	02/28	-5	02/25	0.03	-0.54	6
Omaha Eppley Airport	42.2	14.4	28.3	-0.6	70	02/28	-2	02/25+	0.22	-0.73	23
Valentine Miller Field	42.7	11.9	27.3	-0.3	67	02/28	-12	02/23	0.14	-0.47	23

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	29.1	2.1	15.6	-1.9	52	02/19+	-23	02/23	0.29	-0.23	56
Fargo International Airport	17.9	-6.0	6.0	-7.4	39	02/10	-27	02/03	0.52	-0.17	75
Grand Forks International Airport	13.1	-10.8	1.1	-9.5	38	02/10	-31	02/03	0.88	0.37	173
Theodore Roosevelt Airport	30.8	5.4	18.1	-1.5	54	02/07	-23	02/23	T	-0.32	1
Williston International Airport	25.0	3.4	14.2	-1.9	49	02/19	-20	02/23	0.13	-0.35	27

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	30.0	1.0	15.5	-2.0	56	02/07	-22	02/23	0.39	-0.23	63
Huron Regional Airport	33.1	3.5	18.3	-2.2	61	02/28	-19	02/23	0.20	-0.55	27
Pierre Regional Airport	37.1	6.2	21.7	-1.5	64	02/28	-18	02/23	0.18	-0.56	24
Rapid City Regional Airport	38.9	9.6	24.3	-1.8	63	02/28+	-17	02/23	0.35	-0.15	70
Sioux Falls Joe Foss Field Airport	33.5	6.6	20.1	-2.2	62	02/28	-12	02/25	0.38	-0.45	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	34.3	10.6	22.5	-4.1	54	02/10	-14	02/22+	0.85	0.29	152
Cheyenne Municipal Airport	36.5	13.6	25.1	-4.4	57	02/15	-12	02/22	0.54	0.02	104
Lander Hunt Field Airport	38.2	10.8	24.5	-0.5	62	02/10	-10	02/24	0.74	0.04	106
Laramie Regional Airport	30.3	6.4	18.3	-5.5	46	02/15	-18	02/22	0.09	-0.23	28
Rawlins Municipal Airport	31.7	10.0	20.8	-3.4	48	02/14	-11	02/24	0.12	-0.36	25
Sheridan County Airport	38.9	10.6	24.8	-1.2	64	02/10+	-23	02/23	0.88	0.23	135

February 2022 Highlights

Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

Precipitation	Precipitation / Ranking	Record / Year	Period of Record
Grand Island, NE	0.01 / DRIEST (tied with 1904)		1895-2022
McCook, NE	Trace / 2nd Driest (tied with 2017+)	0.00 / 1910	1894-2022
Lincoln, NE	0.03 / 3rd Driest	0.00 / 1897	1887-2022
Hastings, NE	0.01 / 3rd Driest	Trace / 1921+	1894-2022
North Platte, NE	0.03 / 4th Driest (tied with 1998+)	0.01 / 2002+	1874-2022
Chadron, NE	0.02 / 5th Driest (tied with 2019)	Trace / 2002+	1941-2022
Concordia, KS	0.03 / 5th Driest (tied with 1977+)	Trace / 1996	1885-2022
Norfolk, NE	0.13 / 8th Driest	0.04 / 1949	1893-2022
Rawlins, WY	0.12 / 9th Driest (tied with 1981)	Trace / 2018	1951-2022
Laramie, WY	0.09 / 10th Driest (tied with 2007+)	0.02 / 1999	1948-2022
Snowfall	Snowfall / Ranking	Record / Year	Period of Record
Lincoln, NE	0.1 / 4th Lowest Snowfall	Trace / 1996+	1948-2022
Norfolk, NE	0.2 / 5th Lowest Snowfall (tied 1926)	Trace / 1931+	1893-2022
Hastings, NE	0.5 / 7th Lowest Snowfall	Trace / 1991+	1894-2022
Omaha, NE	0.5 / 8th Lowest Snowfall	0.1 / 1996+	1871-2022

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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

Author Information

For questions, comments, or suggestions, please contact:
Heleena Pettee or Gannon Rush
702 Hardin Hall, 3310 Holdrege Street
Lincoln, NE 68583-0997
402-472-8968
<https://hprcc.unl.edu/contact.php>

