



October 2024 Climate Summary

Sunrise in Western Kansas, Photo Courtesy of Gannon Rush

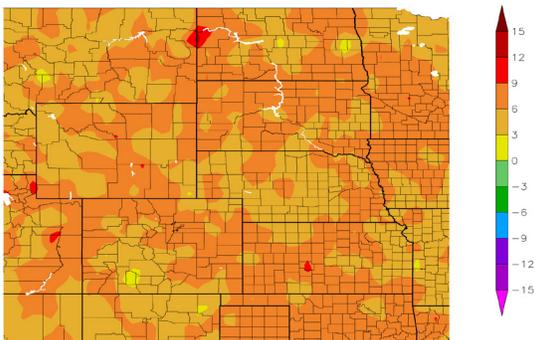
Regional Breakdown

The drought that has taken hold in the region has had widespread impacts this month, with warmer temperatures and overall dryness exacerbating the situation. Numerous fires flared up across multiple states, while agricultural conditions have degraded significantly this fall. A late shot of rain in the final days of October provided minor relief, however, it was still insufficient to make up for the growing deficits.

The lack of rain has taken a toll on soil moisture across the High Plains, with the amount rated as short to very short alarmingly high in some states. Over 75 percent of topsoil and subsoil in Kansas, Nebraska, South Dakota, and Wyoming is rated short to very short. Several states reported double-digit increases in the percentage of soil rated very short, due to the unusual warmth and lacking precipitation. Pasture conditions are also abysmal, with the percentage rated poor to very poor above 40 percent in Kansas, Nebraska, and the Dakotas. Despite winter wheat being recently planted, 20 percent is rated poor to very poor in Kansas.

Temperature and Precipitation Overview

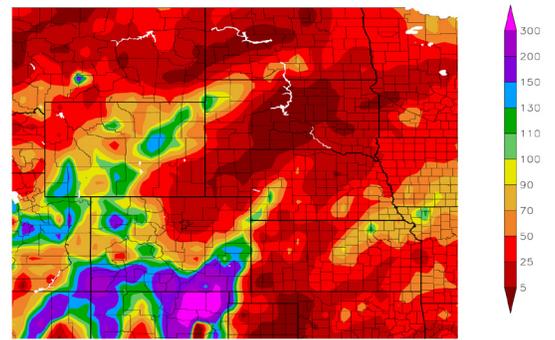
Departure from Normal Temperature (F)
10/1/2024 - 10/31/2024



Generated 11/10/2024 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
10/1/2024 - 10/31/2024



Generated 11/10/2024 at HPRCC using provisional data.

NOAA Regional Climate Centers

Above: Departure from 1991-2020 normal temperature (left) and percent of normal precipitation (right) for October 2024 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

October was yet another dry month, with large portions receiving below 0.10 inches (2.54 mm) of precipitation. Southern Colorado, particularly near Telluride, received well above normal precipitation this month which helped minimize drought in the area.

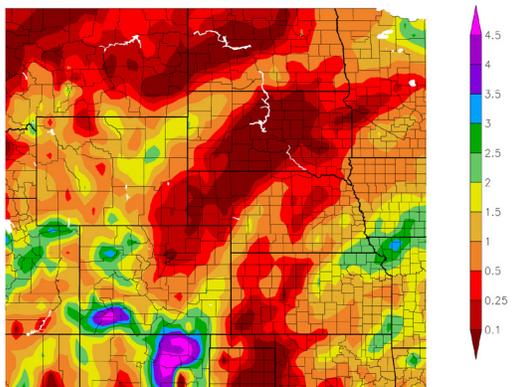
A stretch from northwestern Nebraska into central South Dakota was bone dry, with less than two percent of their normal precipitation. Several locations in that area did not report any precipitation in October, exacerbating the existing dryness. Others received minimal precipitation, with numerous dryness records broken. The same area has been dry since the beginning of August. Norfolk, Nebraska only received 1.98 inches (5.03 cm) of precipitation since then, while Ainsworth was even lower with 1.32 inches (3.35 cm). Drought has rapidly taken hold and intensified in the area, creating concerns heading towards winter.

Southwestern Colorado was the winner this month, with over 5 inches (12.7 cm) of rain in some areas. Record to near-record warmth limited most of the snowfall, however, a number of places received anywhere from several inches to over a foot (30.48 cm) of snow. Drought crept back into the area early in the month but was rapidly eliminated by the beginning of November.

Streamflow at the end of October was above normal across eastern Kansas due to late rains. On the other hand, streamflow was much below normal to record lows in Colorado, Nebraska, and western Kansas.

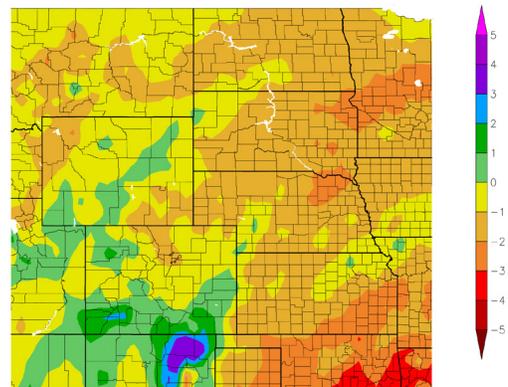
Regional Precipitation

Precipitation (in)
10/1/2024 – 10/31/2024



Generated 11/10/2024 at HPRCC using provisional data. NOAA Regional Climate Centers

Departure from Normal Precipitation (in)
10/1/2024 – 10/31/2024



Generated 11/10/2024 at HPRCC using provisional data. NOAA Regional Climate Centers

Above: Total precipitation in inches (left) and departure from normal precipitation in inches (right) for October 2024. These maps are produced by HPRCC and can be found on the Current Climate Summary Maps page at: <http://hprcc.unl.edu/maps/current>.

Temperatures

The scorching temperatures from September carried over into October, with much of the region over 6 degrees F (3.3 degrees C) above normal. Numerous long-term stations observed both record monthly and two-month warmth across the region.

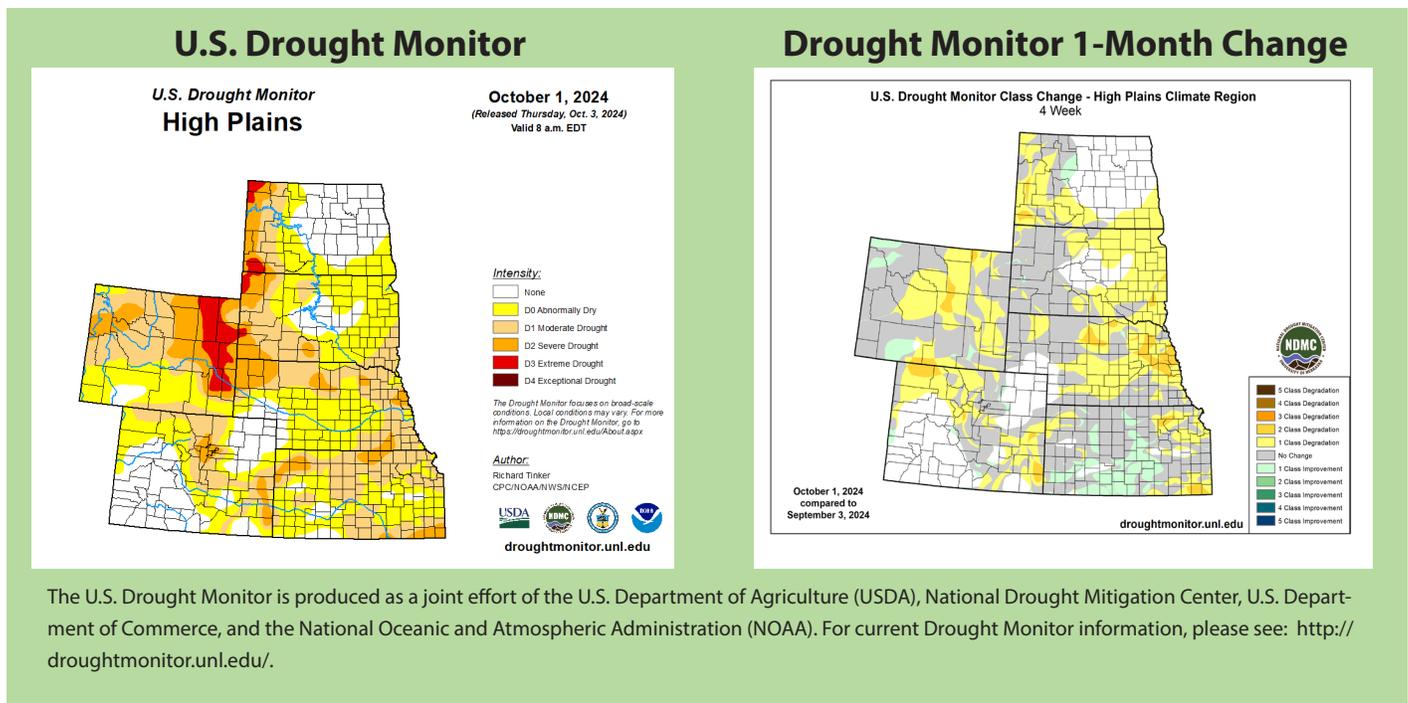
The upper elevations of the Rockies were exceptionally warm, with popular skiing locations in Colorado such as Steamboat Springs and Vail recording their warmest October. Other locations in the west just narrowly missed their record and ranked second, including Rawlins and Cheyenne in Wyoming and Akron and Denver in Colorado.

Out on the Plains, several notable places in Kansas and Nebraska recorded their warmest October. In Kansas, Hays and Hutchinson broke their record while Goodland and Wichita ranked in the top five. To the north in Nebraska, Kearney and Sidney ranked warmest. Scottsbluff ranked second, falling short of the record set in 1963.

Drought Conditions

Another month of record-breaking heat and dryness took its toll, with an explosion of drought conditions across the High Plains. The central part of the region experienced a rapid intensification, particularly in Nebraska and South Dakota. Overall, the region observed an increase of 10 percent in abnormally dry to exceptional drought conditions (D0 to D4) and nearly 90 percent of the High Plains are in some category of drought.

The percentage of Nebraska in severe to exceptional drought (D2 to D4) skyrocketed this month, increasing over 62 percent due to multiple months of dryness and the continuation of warmer temperatures. South Dakota was equally as shocking, with a 51 percent increase in D2 to D4. Nearby Wyoming is even more alarming, with the entirety of the state engulfed in moderate to exceptional drought (D1 to D4) for the first time since August 2004.



Climate Outlooks

According to the Climate Prediction Center, ENSO-neutral conditions are present. A La Niña watch 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 indicates minimal chances of flooding along the Missouri River through January. According to the National Interagency Fire Center (NIFC), fire potential will be near normal through February.

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

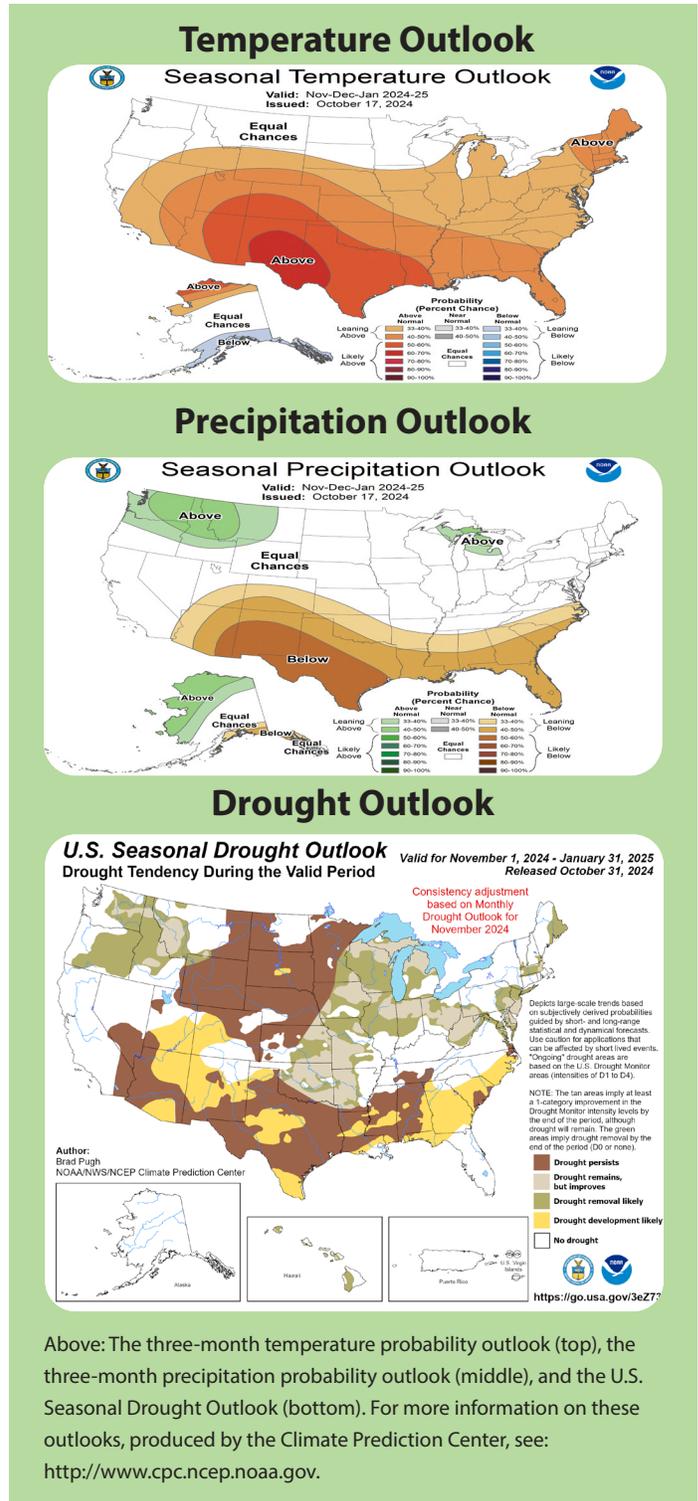
The three-month temperature outlook shows an increased chance of above-normal temperatures across the much of the United States. Above-normal temperatures are possible across most of the High Plains, except for the Dakotas.

Precipitation

The outlook for the next three months indicates below-normal precipitation across the south-central United States, while above-normal is possible in the northwest and northeast. Below-normal precipitation is possible in Colorado and Kansas.

Drought

The U.S Seasonal Drought Outlook released on October 31st indicates that drought development is likely in Colorado.



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	72.7	41.7	57.2	7.0	90	10/02	27	10/31+	0.34	-0.65	34
Alamosa San Luis Airport	68.4	29.0	48.7	4.9	80	10/02+	13	10/31	1.59	0.94	245
Colorado Springs Municipal Airport	72.5	41.9	57.2	6.5	88	10/05+	27	10/31	0.68	-0.09	88
Denver International Airport	75.1	43.2	59.1	8.0	89	10/02	24	10/31	0.11	-0.88	11
Grand Junction Walker Field Airport	75.5	48.6	62.0	8.8	89	10/02	36	10/31	0.91	-0.08	92
Pueblo Memorial Airport	78.0	40.7	59.3	6.5	94	10/02	22	10/31	0.31	-0.45	41

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	77.5	48.5	63.0	7.4	98	10/05	27	10/16	1.72	-0.26	87
Dodge City Regional Airport	78.7	47.0	62.8	6.0	94	10/05	29	10/16	0.24	-1.78	12
Goodland Renner Field	75.9	41.5	58.7	6.9	98	10/05	31	10/31	0.33	-1.08	23
Topeka Municipal Airport	78.7	47.0	62.8	5.8	94	10/05+	28	10/16	2.86	0.01	100
Wichita Mid-Continent Airport	80.1	51.1	65.6	6.6	95	10/03	30	10/16	0.82	-2.03	29

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	72.4	35.0	53.7	5.6	90	10/10	22	10/25	0.05	-1.23	4
Grand Island Airport	73.6	43.4	58.5	5.4	88	10/10	30	10/16+	0.56	-1.43	28
Lincoln Municipal Airport	76.5	43.8	60.1	6.3	97	10/05	23	10/16	1.08	-1.06	50
Norfolk Karl Stefan Airfield	73.8	42.5	58.2	7.4	87	10/10	26	10/16	0.21	-1.94	10
North Platte Regional Airport	73.2	37.7	55.4	5.2	92	10/02	27	10/14	0.92	-0.73	56
Omaha Eppley Airport	74.2	45.5	59.9	5.5	96	10/05	30	10/26+	0.98	-1.34	42
Valentine Miller Field	71.3	37.5	54.4	5.1	89	10/02	24	10/25	0.07	-1.35	5

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	66.7	34.7	50.7	5.9	89	10/10	21	10/31	0.62	-0.81	43
Fargo International Airport	64.3	40.4	52.3	6.8	86	10/10	21	10/15	0.35	-1.82	16
Grand Forks International Airport	63.5	37.5	50.5	7.3	87	10/10	20	10/31	0.61	-1.27	32
Theodore Roosevelt Airport	66.4	33.7	50.0	6.2	87	10/09	19	10/31	0.10	-1.07	9
Williston International Airport	64.3	35.8	50.1	6.9	83	10/09	24	10/30	0.25	-0.69	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>.

October 2024 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	68.4	36.9	52.7	6.4	87	10/10+	23	10/31	0.07	-2.07	3
Huron Regional Airport	69.0	38.5	53.7	5.8	87	10/02	21	10/15	0.11	-1.84	6
Pierre Regional Airport	70.4	38.5	54.3	5.8	90	10/17	25	10/15	0.01	-1.68	1
Rapid City Regional Airport	71.0	38.9	55.0	7.9	88	10/16	28	10/25	0.36	-1.05	26
Sioux Falls Joe Foss Field Airport	69.9	41.6	55.8	6.2	85	10/10	25	10/16	0.53	-1.83	22

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	68.2	31.8	50.0	4.7	85	10/04+	21	10/23	1.51	0.32	127
Cheyenne Municipal Airport	67.5	38.8	53.2	6.7	85	10/02	25	10/31	0.12	-0.88	12
Lander Hunt Field Airport	67.1	38.2	52.7	7.3	85	10/04	16	10/31	1.45	0.05	104
Laramie Regional Airport	67.6	35.3	51.5	9.6	81	10/04+	25	10/30	0.23	-0.60	28
Rawlins Municipal Airport	65.9	34.8	50.3	6.7	80	10/04	22	10/25	0.97	0.29	143
Sheridan County Airport	71.6	34.5	53.1	7.7	89	10/04	22	10/31	1.31	-0.26	83

October 2024 Highlights

Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

Temperature	Temperature / Ranking	Record / Year	Period of Record
Grand Junction, Colorado	62.0 / Warmest	61.3 / 1963	
Denver, Colorado	59.1 / 2nd Warmest	59.9 / 1950	
Akron, Colorado	57.2 / 2nd Warmest	59.0 / 1963	
Rawlins, Wyoming	50.3 / 2nd Warmest	50.8 / 2015	
Cheyenne, Wyoming	53.2 / 2nd Warmest	54.4 / 1963	
Scottsbluff, Nebraska	55.3 / 2nd Warmest	57.4 / 1963	
Sheridan, Wyoming	53.1 / 3rd Warmest	54.6 / 1963	
Lander, Wyoming	52.7 / 3rd Warmest	53.6 / 1963	
Mobridge, South Dakota	55.0 / 3rd Warmest	58.7 / 1963	
Rapid City, South Dakota	55.0 / 4th Warmest	59.4 / 1963	
Pueblo, Colorado	59.3 / 4th Warmest	61.0 / 1963	
Alamosa, Colorado	48.7 / 4th Warmest	49.5 / 1950	
Dickinson, North Dakota	50.0 / 4th Warmest	56.7 / 1963	
Precipitation	Precipitation / Ranking	Record / Year	Period of Record
Scottsbluff, Nebraska	0.04 / 3rd Driest (tied with 1956+)	Trace / 1933 and 1934	
Huron, South Dakota	0.11 / 6th Driest	Trace / 1952	

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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

The screenshot shows the cover page of a report titled "Missouri River Basin Quarterly Climate Impacts and Outlook" for September-October 2014. It features a map of the basin, a table of contents, and several sections of text and graphics. Key sections include "National - Significant Events for September - November 2014", "Regional - Impacts for September - November 2014", "Regional - Climate Overview for September - November 2014", "Drought Co-Occurrence", "3 Month Precipitation and Temperature Outlooks", and "Soil Moisture Conditions".

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

The screenshot shows a video player for a webinar titled "20141120 Monthly Climate and Drought Webinar". The main content is a map titled "Forecast Precipitation Amounts (7 day)" showing precipitation forecasts for the Midwest and Great Plains regions. The map uses a color scale from blue (low) to red (high). A play button is visible in the center of the map.

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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