



May 2023 Climate Summary



Sunset at Lake McConaughy outside of Ogallala, Nebraska, Photo Courtesy of Gannon Rush

Regional Breakdown

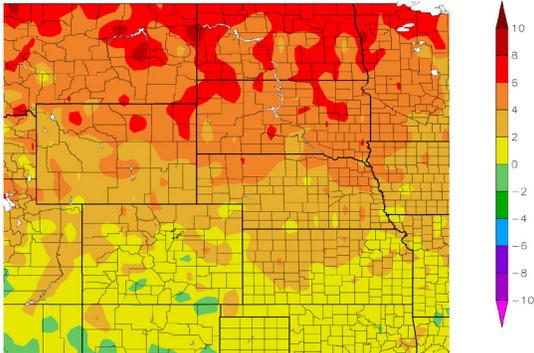
The phrase, “when it rains, it pours” would describe the month of May for north-western Kansas and southwestern Nebraska. Parts of the area had gone nearly 290 days without over 0.5 inches (12.7 mm) of precipitation in a day to nearly 7.5 inches (19.05 cm) in a single day. Other places in the region like eastern Nebraska, have not been as fortunate, with near-record dryness this month and the entire spring.

The town of Culbertson in southwestern Nebraska recorded its driest year on record in 2022, with a meager 10.87 inches of precipitation (27.61 cm). In the month of May, they recorded nearly the same amount as the whole year of 2022, with 10.65 inches of precipitation (27.05 cm). While the complete reversal has greatly improved drought conditions, long-term drought impacts still plague the area. These rains are also too late to improve winter wheat yields for the year, with yields projected to be among the worst in the past 60 years.

This spring was incredibly dry across eastern Nebraska, with corn struggling to emerge. Widespread irrigation is taking place rather early in the season, due to insufficient precipitation. This dryness is not short-term, with multiple locations recording their driest past 12 months.

Temperature and Precipitation Overview

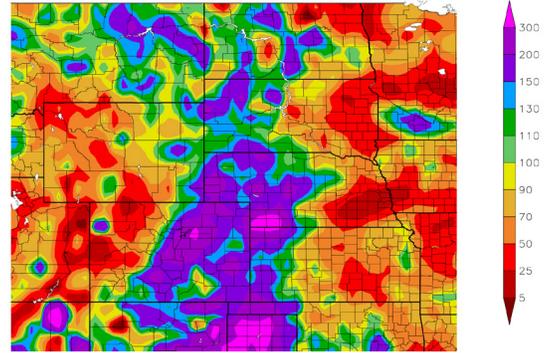
Departure from Normal Temperature (F)
5/1/2023 – 5/31/2023



Generated 6/20/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
5/1/2023 – 5/31/2023



Generated 6/20/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Above: Departure from 1991-2020 normal temperature (left) and percent of normal precipitation (right) for May 2023 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 and Water Resources

May precipitation was above normal for eastern Colorado, western Kansas and Nebraska, and parts of the Dakotas. The eastern part of the region was bone dry, with places 25 percent below normal.

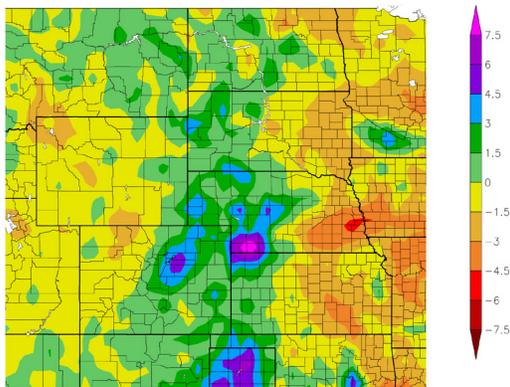
Eastern Nebraska was dry not only this past month but the entire Spring. For the month of May, Omaha was the driest on record with only 0.17 inches (4.06 mm) of precipitation. This has broken the previous low of 0.55 inches (13.97 mm) set in 1989 and 1925 by a large margin. Lincoln was 0.02 inches (0.51 mm) from ranking driest, with only 0.51 inches this past month. Looking further back, Norfolk observed their driest spring with 2.41 inches (6.12 cm) of precipitation. Hastings and Lincoln were not far behind, ranking 3rd. The dryness plaguing the area also stretches much further back, with Hastings, Lincoln, and Norfolk all having their driest past 12 months.

A continuous onslaught of storms impacted the Front Range into the western parts of Kansas and Nebraska. McCook, Nebraska observed not only their wettest May, but also their wettest month on record with 10.94 inches (27.79 cm). Nearby CoCoRaHS observers reported amounts up to 14 inches (35.56 cm), much more than they received in 2022. Nearby North Platte ranked 3rd wettest, while Chadron ranked 5th. In Colorado, Denver ranked 4th, and Colorado Springs ranked 6th wettest.

Severe weather was active at the beginning of the month before calming down. Multiple days featured several tornadoes and 4+ inch (10.16 cm) hail, with the peak on the 12th of the month in Nebraska. 19 tornadoes were reported, with three being rated EF-2, with one having an estimated width of a mile (1.61 km). Numerous hailstone events were also reported that day. The largest hailstone with a size around 4.5 inches (11.43 cm) was reported near the town of Pawnee.

Regional Precipitation

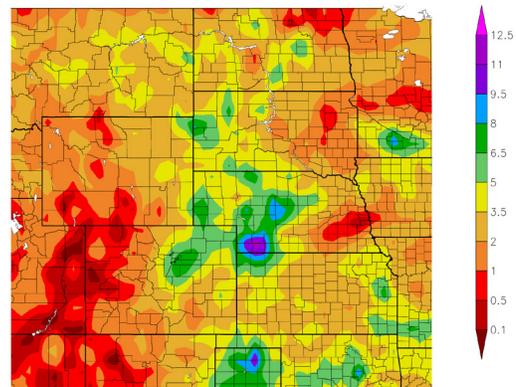
Departure from Normal Precipitation (in)
5/1/2023 – 5/31/2023



Generated 6/20/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Precipitation (in)
5/1/2023 – 5/31/2023



Generated 6/20/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Above: Total precipitation in inches (left) and departure from normal precipitation in inches (right) for May 2023. 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

Temperatures were above-to-well above-normal for the region, with departures over 8 degrees F (4.4 degrees C) above-normal in parts of the Dakotas. Many locations ranked in the top 5 warmest after the unseasonably warm temperatures.

The Dakotas were unusually warm, with many locations observing near-record warmth this month. In North Dakota, Grand Forks and Fargo were the 2nd warmest on record while Williston and Dickinson both tied for 6th. Grand Forks surpassed 80 degrees F (26.7 degrees C) for the first time in 241 days on May 13th, marking the end of the cooler temperatures in the state. South Dakota had Sisseton, Mobridge, and Sioux Falls all rank in the top 5 warmest.

Parts of Wyoming and western Nebraska were also warmer this month, with Laramie and Cheyenne in the top 5 warmest. Portions of Yellowstone National Park reached nearly 90 degrees F (32.2 degrees C), which is their record high temperature for May. Nearby Nebraska had Chadron and Scottsbluff in the top 10 warmest this past month.

Drought Conditions

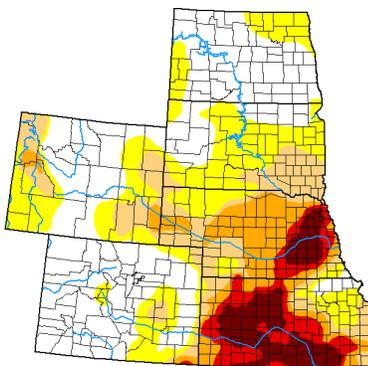
The region, for the most part, experienced improvements up to 3 classes this month thanks to constant precipitation. The areas that were dry observed up to a 2-class degradation such as eastern Nebraska and Kansas. Overall, moderate to exceptional drought (D1-D4) was reduced by 12 percent for the High Plains.

Southwestern Nebraska experienced the most improvement this month, with some areas going from extreme drought (D3) to abnormally dry (D0). The eastern part of the state observed a large increase to both D3 and D4, in response to the dryness since the beginning of the year. Elsewhere in the region, other localized improvements and degradations were observed.

U.S. Drought Monitor

U.S. Drought Monitor
High Plains

May 30, 2023
(Released Thursday, Jun. 1, 2023)
Valid 8 a.m. EDT



Intensity:
 None
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

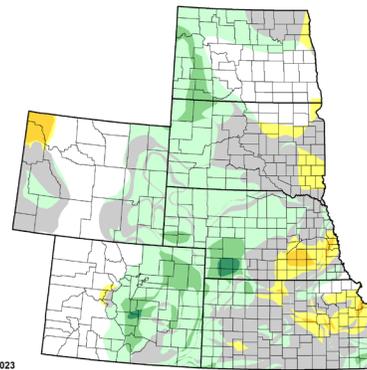
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
Richard Heim
NCEI/NOAA



Drought Monitor 1-Month Change

U.S. Drought Monitor Class Change - High Plains Climate Region
4 Week



May 30, 2023
compared to
May 2, 2023

droughtmonitor.unl.edu



5 Class Degradation
 4 Class Degradation
 3 Class Degradation
 2 Class Degradation
 1 Class Degradation
 No Change
 1 Class Improvement
 2 Class Improvement
 3 Class Improvement
 4 Class Improvement
 5 Class Improvement

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/>.

May 2023 Climate Summary

Climate Outlooks

According to the Climate Prediction Center, La Niña conditions have ended and transitioned to ENSO-neutral. An El Niño Watch was issued on May 11th, with conditions likely to form early this summer. 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 increased chances of Major Flooding in central South Dakota. According to the National Interagency Fire Center (NIFC), fire potential will be limited across the region through September.

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

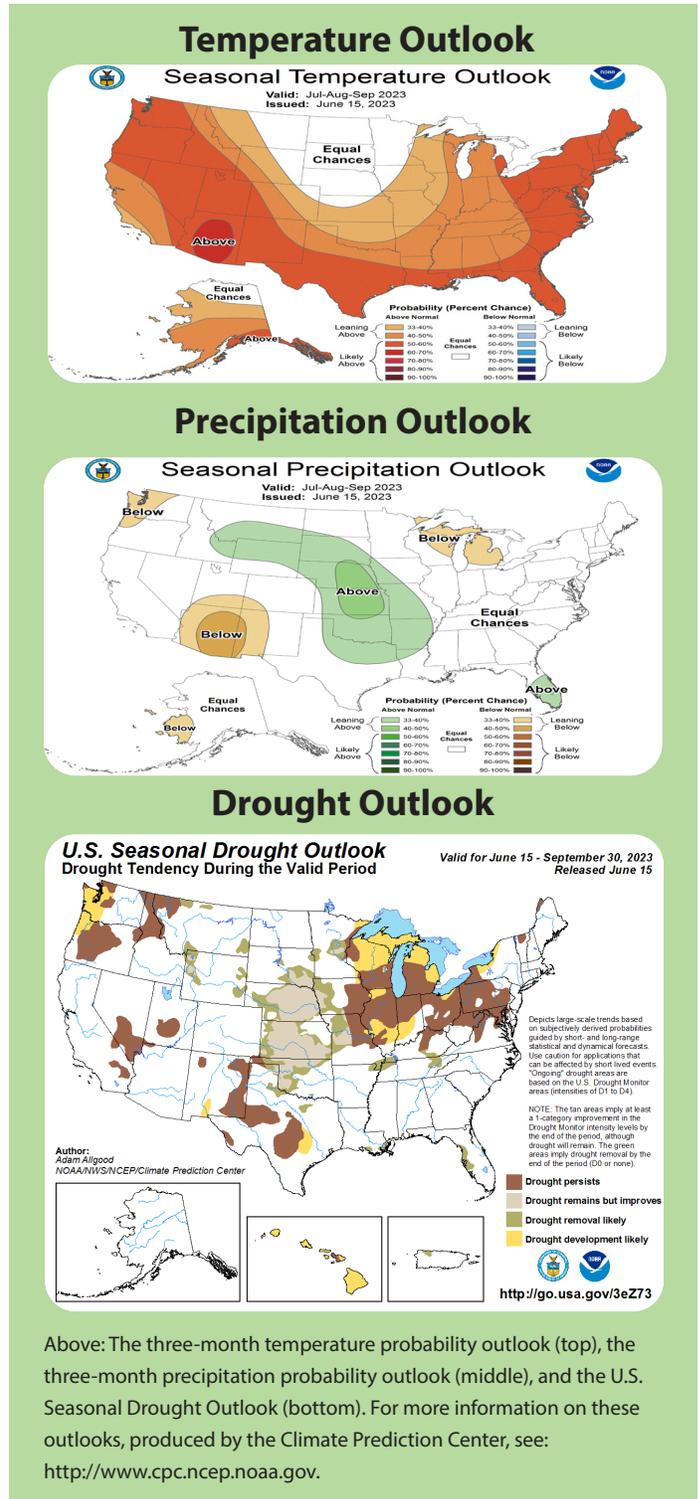
The three-month temperature outlook shows an increased chance of above-normal temperatures across much of the United States. Increased chances of above-normal temperatures are present in Colorado, Kansas, and Wyoming.

Precipitation

The outlook for the next three months indicates below-normal precipitation across the southwestern and northwestern United States, as well as the Great Lakes. Kansas, Nebraska, South Dakota, and Wyoming have increased chances of above-normal precipitation.

Drought

The U.S Seasonal Drought Outlook released on June 15th indicates drought will improve, but remain for much of the southern parts of the region.



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	70.4	46.9	58.7	1.8	82	05/30	34	05/01	5.24	2.59	198
Alamosa San Luis Airport	69.9	35.8	52.9	1.2	79	05/29	24	05/08	0.86	0.26	143
Colorado Springs Municipal Airport	70.3	46.5	58.4	1.3	81	05/09	38	05/01	5.22	3.23	262
Denver International Airport	71.7	47.0	59.4	2.0	82	05/29	38	05/01	5.53	3.37	256
Grand Junction Walker Field Airport	79.3	51.2	65.2	3.2	88	05/29	42	05/06	0.18	-0.65	22
Pueblo Memorial Airport	78.4	49.4	63.9	2.5	90	05/09	41	05/01	1.14	-0.43	73

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	80.7	55.8	68.3	4.8	94	05/07	37	05/01	4.08	-0.26	94
Dodge City Regional Airport	79.1	54.3	66.7	1.9	94	05/09	37	05/01	2.23	-0.76	75
Goodland Renner Field	74.9	48.5	61.7	2.1	87	05/30	31	05/01	4.09	1.28	146
Topeka Municipal Airport	81.5	55.4	68.4	2.7	98	05/06	35	05/03	4.65	-0.52	90
Wichita Mid-Continent Airport	79.8	56.5	68.2	1.5	95	05/06	35	05/03	3.14	-2.03	61

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	75.4	46.9	61.2	5.3	87	05/30	23	05/01	5.29	2.58	195
Grand Island Airport	79.4	51.7	65.5	3.5	90	05/30	28	05/02	1.78	-2.92	38
Lincoln Municipal Airport	81.3	52.5	66.9	3.8	93	05/30	30	05/03	0.51	-4.40	10
Norfolk Karl Stefan Airfield	79.6	52.1	65.8	5.7	92	05/31	30	05/03	1.43	-2.57	36
North Platte Regional Airport	74.9	48.2	61.5	3.0	84	05/30	21	05/01	7.55	4.20	225
Omaha Eppley Airport	79.5	54.1	66.8	3.2	91	05/30	34	05/03	0.17	-4.49	4
Valentine Miller Field	76.1	48.9	62.5	4.4	87	05/29	26	05/02	3.67	0.15	104

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	75.1	47.5	61.3	6.0	89	05/23	26	05/01	3.01	0.51	120
Fargo International Airport	78.3	51.9	65.1	8.5	93	05/31	33	05/02	2.57	-0.52	83
Grand Forks International Airport	77.0	47.7	62.4	8.3	90	05/27	31	05/02	1.12	-1.68	40
Theodore Roosevelt Airport	72.2	44.9	58.6	5.7	84	05/25	26	05/01	3.00	0.45	118
Williston International Airport	72.9	48.3	60.6	6.8	86	05/23	33	05/02	3.22	1.12	153

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>.

May 2023 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	78.2	49.0	63.6	6.3	90	05/30	30	05/03	1.53	-1.75	47
Huron Regional Airport	78.5	49.3	63.9	6.0	92	05.30	25	05/02	1.30	-1.85	41
Pierre Regional Airport	77.5	47.1	62.3	5.1	88	05/30	27	05/02	1.60	-1.65	49
Rapid City Regional Airport	73.2	44.9	59.1	5.0	82	05/23	25	05/01	5.66	2.21	164
Sioux Falls Joe Foss Field Airport	78.5	52.5	65.5	6.4	91	05/31	31	05/03	1.28	-2.58	33

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	70.3	40.1	55.2	3.2	81	05/31	26	05/01	2.03	-0.18	92
Cheyenne Municipal Airport	67.7	44.5	56.1	3.8	78	05/31	34	05/01	2.76	0.32	113
Lander Hunt Field Airport	69.5	44.2	56.9	4.1	80	05/22	33	05/09	0.86	-1.82	32
Laramie Regional Airport	66.1	37.1	51.6	4.1	77	05/31	28	05/06	0.67	-1.08	38
Rawlins Municipal Airport	68.9	39.0	54.0	4.2	79	05/26	32	05/08	0.24	-1.22	16
Sheridan County Airport	71.8	43.9	57.8	5.4	83	05/22	33	05/08	2.07	-0.61	77

May 2023 Highlights

Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

Precipitation	Precipitation/ Ranking	Record / Year	Period of Record
Omaha, Nebraska	0.17 / Driest	0.55 / 1989 and 1925	1871-2023
Lincoln, Nebraska	0.51 / 2nd Driest	0.49 / 1934	1887-2023
Hastings, Nebraska	1.22 / 5th Driest	0.47 / 1934	1894-2023
McCook, Nebraska	10.94 / Wettest	7.39 / 1923	1894-2023
North Platte, Nebraska	7.55 / 3rd Wettest	8.01 / 1962	1874-2023
Denver, Colorado	5.53 / 4th Wettest	8.57 / 1876	1872-2023
Temperature	Temperature/ Ranking	Record / Year	Period of Record
Sisseton, South Dakota	65.6 / 2nd Warmest	70.3 / 1934	1931-2023
Laramie, Wyoming	51.6 / 2nd Warmest	52.0 / 1958	1948-2023
Fargo, North Dakota	65.1 / 2nd Warmest	66.5 / 1977	1881-2023
Grand Forks, North Dakota	62.4 / 2nd Warmest	66.9 / 1977	1893-2023
Chadron, Nebraska	61.2 / 3rd Warmest	63.1 / 1985	1941-2023
Mobridge, South Dakota	63.2 / 4th Warmest	65.3 / 1936	1911-2023
Sioux Falls, South Dakota	65.5 / 5th Warmest	70.4 / 1934	1893-2023

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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 video content displays a "Forecast Precipitation Amounts (7 day)" map of the Midwest and Great Plains regions, with a color scale ranging from 0.00 to 2.00 inches. The video player interface includes a play button, a progress bar at 0:00 / 54:51, and a YouTube logo.

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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