



# March 2024 Climate Summary

Stormy sunrise over Lincoln, Nebraska, Photo Courtesy of Gannon Rush

## Regional Breakdown

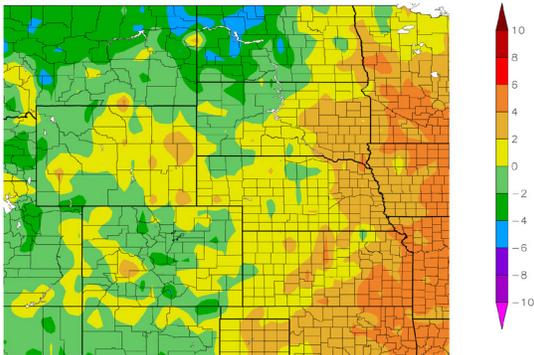
A late winter storm impacted the region at the end of March, bringing blizzard conditions and severe weather. Despite the significant storm, much of the region received below normal precipitation this month.

In a typical display of the unpredictability and whiplash of the plains, parts of western Kansas were under both tornado and blizzard warnings at the same time. Several tornadoes touched down, followed by up to 6 inches (15.24 cm) of snow and wind gusts of 40 mph (64 km/h). A brief EF-1 tornado with 90 mph (145 km/h) winds hit the town of Garden City, causing minor damage.

The winter weather associated with the system wreaked havoc in nearly every state in the region. Major interstates were closed, with poor road conditions stretching from Kansas to North Dakota. The hardest hit states were Colorado and South Dakota, with reports of up to 12 inches (30.48 cm) of snow. Strong winds led to whiteout conditions, leading to a rash of wrecks.

## Temperature and Precipitation Overview

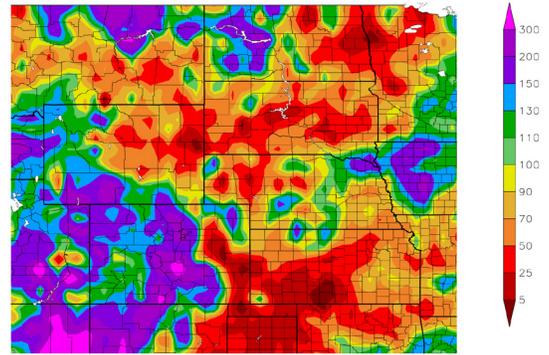
Departure from Normal Temperature (F)  
3/1/2024 – 3/31/2024



Generated 4/10/2024 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)  
3/1/2024 – 3/31/2024



Generated 4/10/2024 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

Precipitation was spotty throughout the region except for Colorado. Parts of the state experienced record wetness, while parts of south-central Kansas reported trace to no precipitation.

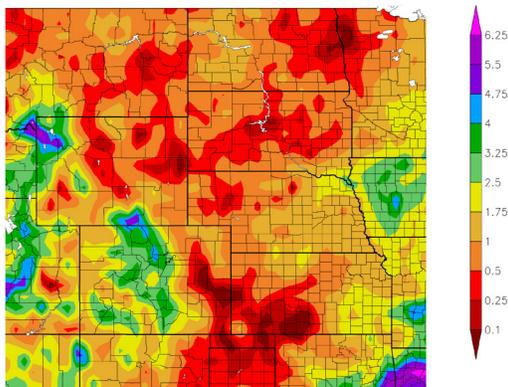
Much of the precipitation in Colorado this month was snow, falling from a significant storm in the middle of the month. Highways were closed across the state and over 800 flights were canceled at Denver International Airport. The snow was extremely heavy, leading to branches breaking and causing scattered power outages. Over 60 inches (152.4 cm) fell in parts of the Rockies, while portions of the foothills received over 12 inches (30.48 cm) this month. Canon City and Fruita crushed their precipitation records by over an inch (2.54 cm) due to the exceptional wetness.

While much of Nebraska was dry, a record-setting snowstorm impacted North Platte early this month. In the city, 15.3 inches (38.86 cm) of snow fell on the 7th and set a new single-day record. The snow was extremely heavy at times, with up to 3 inches (7.62 cm) falling per hour. This narrow band stretched to the Broken Bow area; however, snowfall totals were much lower elsewhere.

Despite most of Colorado being wet, the eastern plains were very dry. Minimal amounts of precipitation were reported around Campo and Lamar, with some areas receiving less than 0.10 inches (2.54 mm). Just across the border in Kansas, areas between Dodge City and Wichita received similar amounts resulting in drought expansion.

### Regional Precipitation

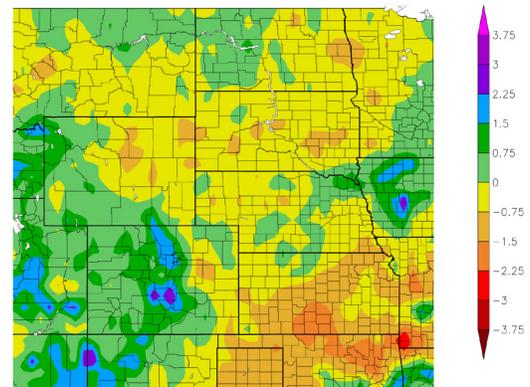
Precipitation (in)  
3/1/2024 – 3/31/2024



Generated 4/10/2024 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Precipitation (in)  
3/1/2024 – 3/31/2024



Generated 4/10/2024 at HPRCC using provisional data.

NOAA Regional Climate Centers

Above: Total precipitation in inches (left) and departure from normal precipitation in inches (right) for March 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

March brought cooler temperatures for parts of the west, while the eastern portions of the region remained warm. The system that pushed through the region in late March led to a cool-down for many.

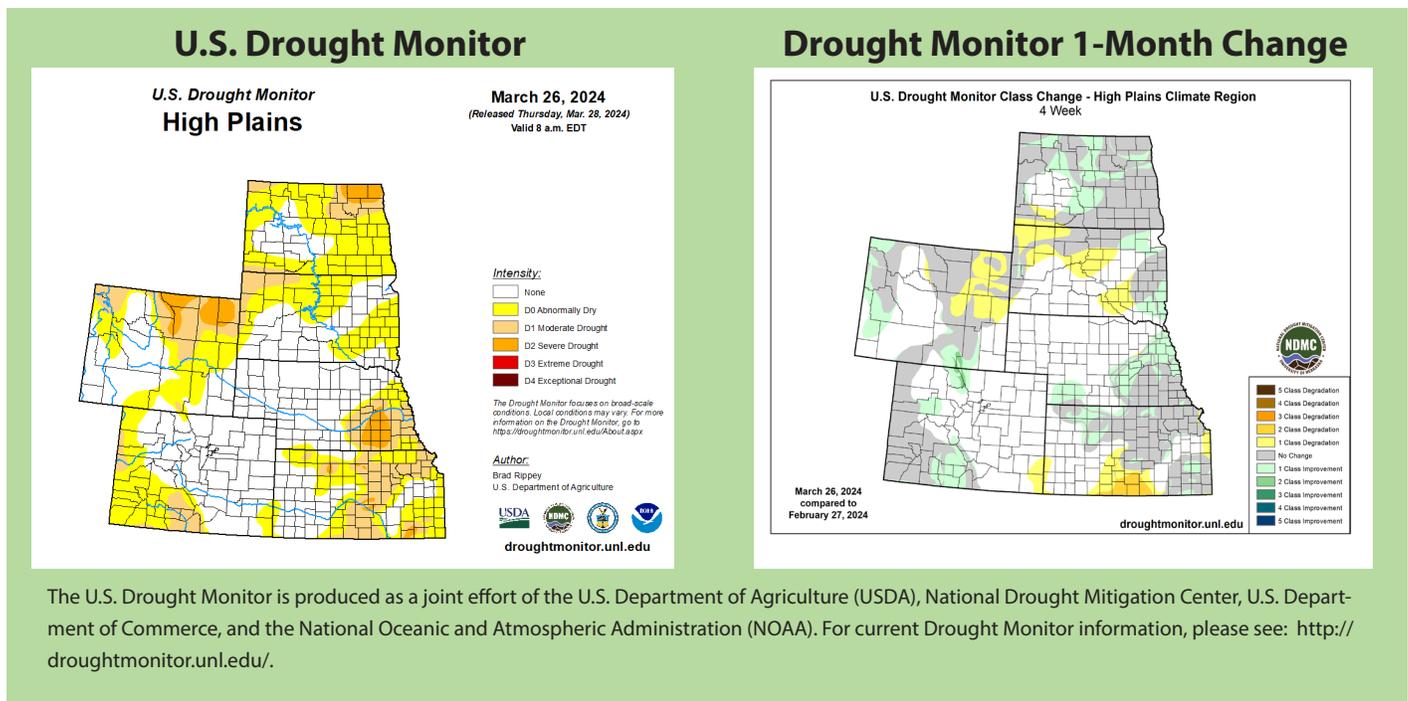
While temperatures for the month were on both ends of the spectrum, nothing was out of the ordinary. The only major location to rank in the top 10 warmest or coldest was Laramie, Wyoming. The city ranked as the 8th warmest with an average temperature of 35.3 degrees F (1.8 degrees C), while surrounding locations such as Cheyenne or Rawlins were just outside the top 10.

The front that pushed through late in the month provided some relief to the eastern parts of the region. While no records were broken, it did lead temperatures to drop below freezing for some and created potential issues for blooming plants.

## Drought Conditions

Drought conditions within the region are in decent shape at the end of March. Expansion and intensification were sporadic, but not serious. Overall, the region observed a slight increase of less than a percent of D0 to D4 (abnormally dry to exceptional drought conditions).

The drought that has plagued central and eastern Nebraska has slowly improved over the past few months, with a pocket of D2 (severe drought) remaining between Lincoln and Grand Island. This is a significant improvement over the previous year, when D4 was present within the state.



# March 2024 Climate Summary

## Climate Outlooks

According to the Climate Prediction Center, El Niño conditions are likely to continue but transition towards ENSO-neutral in mid to late Spring. An El Niño advisory and 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](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 elevated chances of Minor and Moderate Flooding in the eastern parts of Kansas through the end of June. According to the National Interagency Fire Center (NIFC), fire potential will be elevated in South Dakota, eastern Colorado, and western Kansas in 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

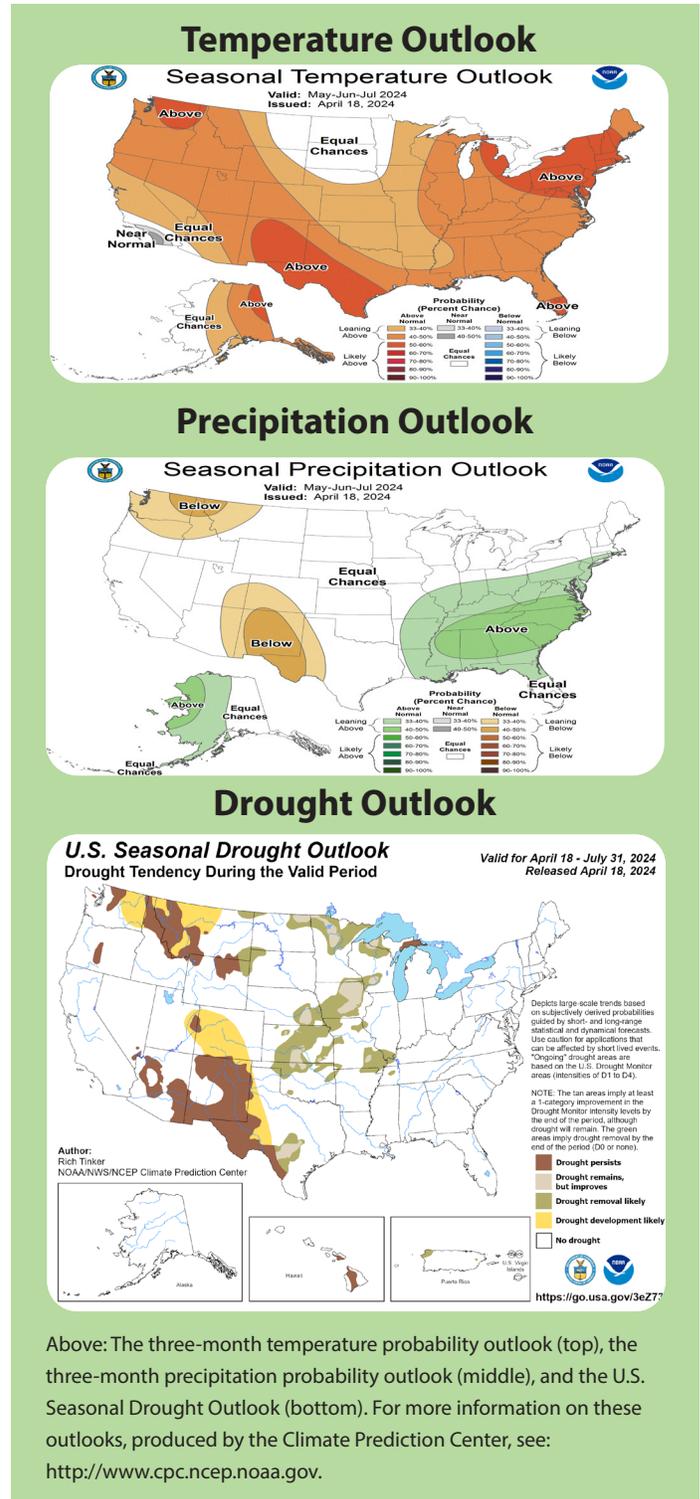
The three-month temperature outlook shows an increased chance of above-normal temperatures across the much of the United States. Above-normal temperatures are slightly favored across the eastern parts of the region and Colorado.

### Precipitation

The outlook for the next three months indicates below-normal precipitation across the Pacific Northwest and the Southwest, while above-normal precipitation is favored for the southeastern United State and into the plains. Above-normal precipitation is slightly favored in Kansas, Nebraska, South Dakota, and Wyoming.

### Drought

The U.S Seasonal Drought Outlook released on March 31st indicates that improvements to drought conditions will occur across the region except for northern North 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	53.5	26.2	39.8	-0.7	71	03/02	8	03/26	0.73	0.02	103
Alamosa San Luis Airport	50.4	21.3	35.8	0.6	61	03/30	8	03/27	1.22	0.68	226
Colorado Springs Municipal Airport	54.9	29.0	42.0	0.9	69	03/31	16	03/26	1.50	0.71	190
Denver International Airport	55.4	27.5	41.4	-0.2	69	03/02	16	03/26	1.65	0.79	192
Grand Junction Walker Field Airport	57.8	34.5	46.2	1.2	70	03/21	25	03/09	0.94	0.14	118
Pueblo Memorial Airport	60.3	28.5	44.4	0.5	76	03/31	16	03/09	1.89	1.07	230

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	60.0	34.0	47.0	3.5	77	03/29	19	03/27	0.77	-0.76	50
Dodge City Regional Airport	64.1	32.4	48.2	2.8	82	03/02	17	03/26	0.25	-1.10	19
Goodland Renner Field	57.7	26.7	42.2	0.8	73	03/02	12	03/26	0.69	-0.19	78
Topeka Municipal Airport	63.6	36.4	50.0	4.4	83	03/31	21	03/27	1.05	-1.20	47
Wichita Mid-Continent Airport	63.1	37.8	50.5	3.1	80	03/03	26	03/27	1.64	-0.66	71

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	52.3	21.9	37.1	-0.8	72	03/02	6	03/26	0.62	-0.19	77
Grand Island Airport	55.1	29.1	42.1	1.4	76	03/11	13	03/18	1.95	0.56	140
Lincoln Municipal Airport	57.7	29.8	43.7	2.5	77	03/11	15	03/27	1.09	-0.46	70
Norfolk Karl Stefan Airfield	54.5	27.7	41.1	3.3	79	03/11	17	03/18	1.58	0.14	110
North Platte Regional Airport	54.0	23.9	39.0	-0.6	74	03/01	7	03/09	1.70	0.70	170
Omaha Eppley Airport	55.7	29.6	42.7	1.7	75	03/11	16	03/18	2.14	0.35	120
Valentine Miller Field	51.2	23.7	37.4	-0.2	71	03/01	5	03/18	1.02	0.01	101

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	38.7	18.4	28.5	-1.6	65	03/18	2	03/27	0.83	-0.01	99
Fargo International Airport	41.7	22.3	32.0	4.8	70	03/11	11	03/23	0.48	-0.77	38
Grand Forks International Airport	36.9	18.1	27.5	3.1	57	03/11	6	03/23	0.17	-0.74	19
Theodore Roosevelt Airport	36.5	16.1	26.3	-4.0	68	03/18	-9	03/26	0.19	-0.37	34
Williston International Airport	33.2	14.3	23.8	-5.0	64	03/18	-8	03/07	1.29	0.66	205

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>.

# March 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	45.4	20.4	32.9	2.4	72	03/11	0	03/23	0.60	-0.29	67
Huron Regional Airport	48.0	23.2	35.6	2.7	73	03/11	4	03/27	0.40	-0.75	35
Pierre Regional Airport	46.9	23.0	34.9	0.6	69	03/01	4	03/27	0.54	-0.42	56
Rapid City Regional Airport	48.8	22.3	35.5	0.1	68	03/19	3	03/26	0.78	-0.13	86
Sioux Falls Joe Foss Field Airport	51.0	26.1	38.5	3.8	80	03/11	10	03/27	1.09	-0.51	68

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	48.7	23.3	36.0	0.2	63	03/18	13	03/25	0.57	-0.27	68
Cheyenne Municipal Airport	49.1	26.2	37.6	0.5	64	03/21	13	03/26	1.10	0.14	115
Lander Hunt Field Airport	47.7	25.8	36.8	0.8	62	03/23	12	03/05	1.37	0.08	106
Laramie Regional Airport	46.5	24.1	35.3	3.5	59	03/21	6	03/09	1.09	0.61	227
Rawlins Municipal Airport	44.3	23.8	34.0	0.4	59	03/21	10	03/05	0.90	0.24	136
Sheridan County Airport	49.5	24.4	36.9	1.2	70	03/18	7	03/25	0.81	-0.21	79

## March 2024 Highlights

### Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

Temperature	Temperature / Ranking	Record / Year	Period of Record
Precipitation	Precipitation / Ranking	Record / Year	Period of Record

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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](http://www.hprcc.unl.edu/webinars.php)

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