



# February 2023 Climate Summary



Mountains of eastern Wyoming, Photo Courtesy of Gannon Rush

## Regional Breakdown

February in the High Plains had it all. From severe weather to snowstorms, nothing was off the table.

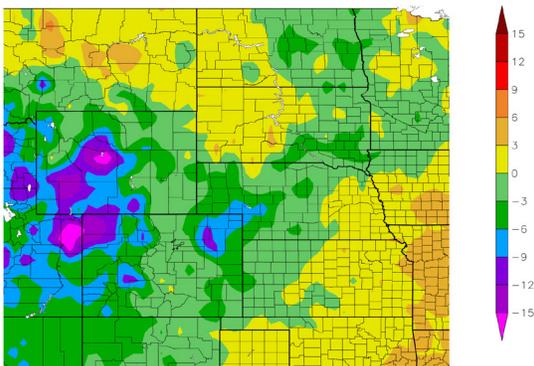
Snow continued to pile up in the Dakotas, Wyoming, and parts of Nebraska, leading to numerous impacts. Much of South Dakota was shut down due to the storm in late February, with up to 16 inches (40.64 cm) reported in Huron and 44 mph (71 km/h) wind gusts in Sioux Falls.

Towards the end of the month, the first severe weather outbreak of the year occurred in parts of southern and eastern Kansas. A tornado occurred on the 26th, with a weak EF-0 causing damage to the town of Liberal. With the same storm system, the winds were exceptionally strong. A wind gust of 97 mph (156 km/h) was recorded near the town of Hodgeman, with numerous reports of wind damage that day.

While temperatures were close to normal for the southern part of the region in part to a cold start, the rest of the month was predominantly above-normal. This has led plants to begin blooming much earlier than expected. The plants that have bloomed are highly susceptible to freezing temperatures that may still occur.

## Temperature and Precipitation Overview

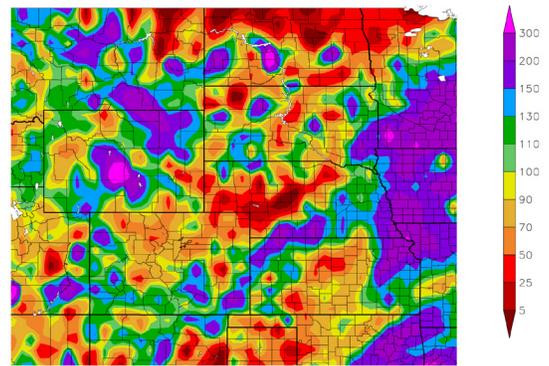
Departure from Normal Temperature (F)  
2/1/2023 - 2/28/2023



Generated 3/4/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)  
2/1/2023 - 2/28/2023



Generated 3/4/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

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

Precipitation was spotty this past month, however, the precipitation that did occur was well above-normal. Both ends of the spectrum occurred this month with near-record dryness and wetness. Despite still being meteorological winter, severe weather was present this month.

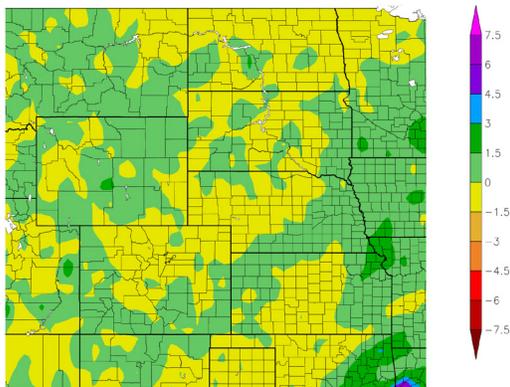
Winter storms continued to impact the northern parts of the region, with Wyoming and the Dakotas significantly impacted. Rawlins, Wyoming, recorded their 2nd wettest month with 1.67 inches (42.42 cm). Although the official station does not track snowfall, a nearby station reported over 34 inches (86.36 cm) of snow in February. Bismarck, North Dakota, and Huron, South Dakota, ranked 8th snowiest with over 15 inches (38.10 cm) in both locations. Opposite of this wetness, Akron, Colorado, was bone dry, recording a mere trace of precipitation this month to tie for the driest.

With the conclusion of February, the meteorological winter has ended. In a complete turn-around from last year, many places recorded near-record precipitation and snowfall. Multiple locations in Nebraska and Wyoming recorded their wettest and snowiest winters. Valentine, Nebraska crushed its previous snow record by nearly 14 inches (35.56 cm), with 56.4 inches (143.26 cm) observed.

As of March 1st, mountain snowpack continued to be in great shape. Most basins are slightly above normal, outside the South Platte Basin in Wyoming and the Arkansas River Basin in Colorado. Snowpack is deep for spring runoff, which is beneficial to the current drought conditions.

### Regional Precipitation

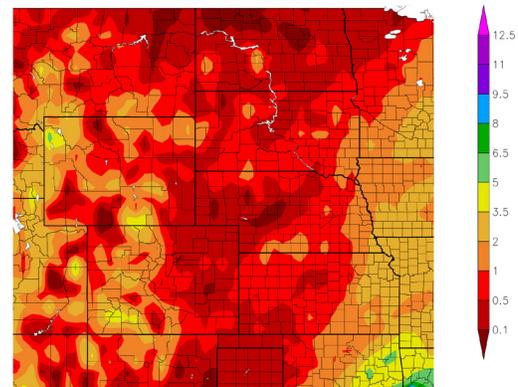
Departure from Normal Precipitation (in)  
2/1/2023 – 2/28/2023



Generated 3/4/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Precipitation (in)  
2/1/2023 – 2/28/2023



Generated 3/4/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Above: Total precipitation in inches (left) and departure from normal precipitation in inches (right) for February 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 this past month were, for the most part, near to below normal for the region. Parts of western Wyoming and northwestern Colorado were 9 degrees F (5 degrees C) or more below normal.

Temperatures were well below normal across parts of Wyoming, with Rawlins and Lander ranking as the 10th coldest on record. The town of Farson had a brutal month, with an average temperature of 1.6 degrees F (-16.9 degrees C). The high temperature only surpassed 32 degrees F (0 degrees C) in only two days in February.

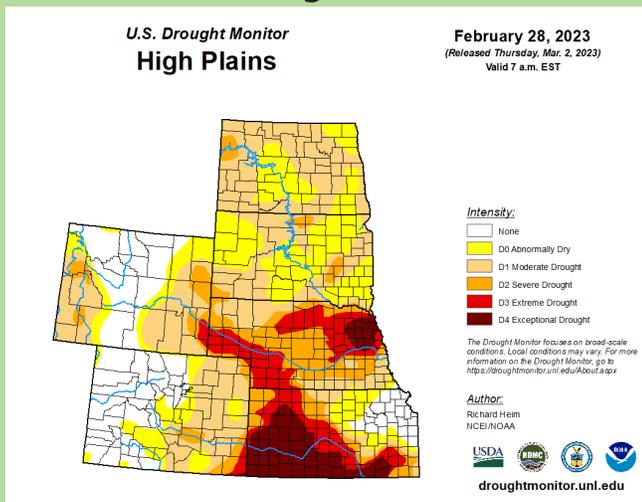
While temperatures were chilly in Wyoming, Kansas had milder temperatures. Many locations recorded ten or more days of 60 degrees F (15.6 degrees C), while the town of Lakin reached 80 degrees F (26.7 degrees C) on the 27th.

## Drought Conditions

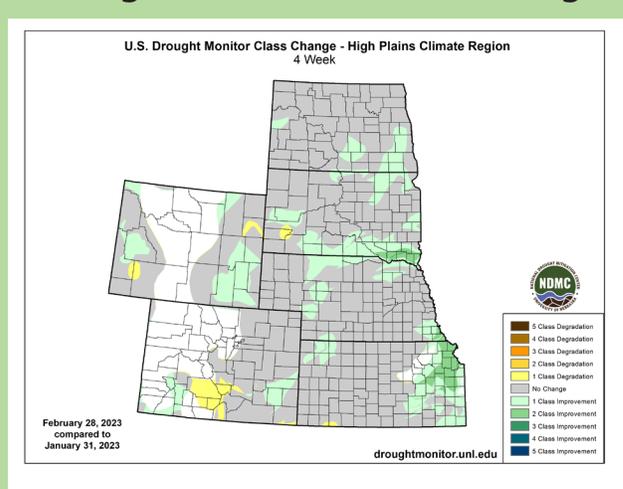
Drought improvement continued into February in response to the significant wetness this winter. While conditions did slightly deteriorate this past month, it was very isolated. Overall, there was a 2.4 percent decrease in D0 to D4 (abnormally dry to exceptional drought conditions).

The continuous onslaught of winter storms has greatly improved the drought situation across the central and northern parts of the region. Both South Dakota and Wyoming observed a nearly 11 percent decrease in D2 to D4 (severe to exceptional drought) this past month, while Kansas experienced an 11 percent reduction in D0-D4. Elsewhere in the region, other improvements and degradation were observed. According to the Climate Prediction Center's U.S. Monthly Drought Outlook for March, drought conditions will improve in eastern South Dakota and western Wyoming.

### U.S. Drought Monitor



### Drought Monitor 1-Month Change



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/>.

## February 2023 Climate Summary

# Climate Outlooks

According to the Climate Prediction Center, La Niña conditions are likely to weaken and transition into ENSO-neutral this spring. 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](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 Moderate Flooding in the eastern parts of Kansas, Nebraska, and South Dakota through the end of May. According to the National Interagency Fire Center (NIFC), fire potential will be limited across the region through June.

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

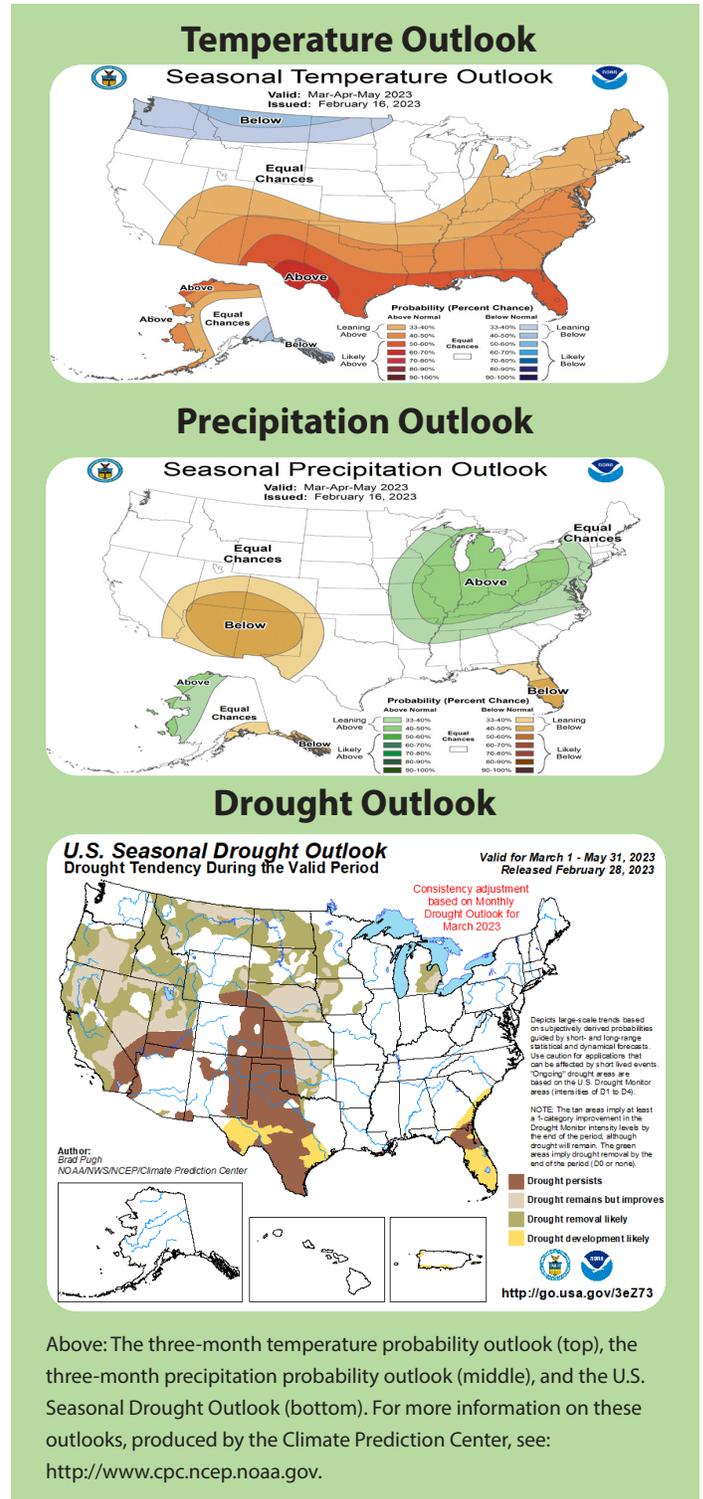
The three-month temperature outlook shows an increased chance of below-normal temperatures across the northern United States, while above-normal temperatures are favored for the southern and eastern states. Increased chances of below-normal temperatures are present in North Dakota, while above-normal temperatures are slightly favored in Colorado.

### Precipitation

The outlook for the next three months indicates below-normal precipitation across the southwestern parts of the United States and above-normal chances across the northeastern and midwestern portions. The majority of Colorado slightly leans towards below-normal precipitation, while the rest of the region has equal chances.

### Drought

The U.S. Seasonal Drought Outlook released on February 28th indicates that improvements to drought conditions will continue across the majority 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     | 33.2                     | 14.2 | 23.4 | -7.9   | 48       | 2/26 | -15 | 2/23 | T                      | -      | -      |
| Alamosa San Luis Airport            | 41.7                     | 3.9  | 22.8 | -1.5   | 54       | 2/5  | -24 | 2/17 | 0.38                   | 0.10   | 136    |
| Colorado Springs Municipal Airport  | 49.0                     | 19.9 | 34.4 | 1.0    | 65       | 2/25 | -2  | 2/23 | 0.48                   | 0.16   | 150    |
| Denver International Airport        | 43.3                     | 19.0 | 31.1 | -1.6   | 62       | 2/26 | -11 | 2/23 | 0.25                   | -0.16  | 61     |
| Grand Junction Walker Field Airport | 41.7                     | 21.3 | 31.5 | -3.8   | 53       | 2/12 | 1   | 2/16 | 0.63                   | 0.10   | 119    |
| Pueblo Memorial Airport             | 53.0                     | 14.5 | 33.7 | -1.4   | 70       | 2/21 | -3  | 2/17 | 0.46                   | 0.14   | 144    |

| Kansas                        | Temperatures (degrees F) |      |      |        |          |       |     |      | Precipitation (inches) |        |        |
|-------------------------------|--------------------------|------|------|--------|----------|-------|-----|------|------------------------|--------|--------|
|                               | Averages                 |      |      |        | Extremes |       |     |      | Totals                 |        |        |
|                               | Max                      | Min  | Mean | Depart | High     | Date  | Low | Date | Obs                    | Depart | % Norm |
| Concordia Municipal Airport   | 49.8                     | 23.4 | 36.6 | 3.8    | 65       | 2/26  | 4   | 2/23 | 0.59                   | -0.27  | 69     |
| Dodge City Regional Airport   | 53.6                     | 21.0 | 37.3 | 1.1    | 74       | 2/26+ | 3   | 2/23 | 0.30                   | -0.32  | 48     |
| Goodland Renner Field         | 44.0                     | 18.6 | 31.3 | -1.0   | 69       | 2/26  | -4  | 2/23 | 0.58                   | 0.11   | 123    |
| Topeka Municipal Airport      | 53.2                     | 23.8 | 38.5 | 3.6    | 71       | 2/6   | 8   | 2/3  | 2.86                   | 1.55   | 218    |
| Wichita Mid-Continent Airport | 53.0                     | 24.4 | 39.7 | 1.1    | 68       | 2/28+ | 11  | 2/23 | 1.28                   | 0.08   | 107    |

| Nebraska                      | Temperatures (degrees F) |      |      |        |          |       |     |      | Precipitation (inches) |        |        |
|-------------------------------|--------------------------|------|------|--------|----------|-------|-----|------|------------------------|--------|--------|
|                               | Averages                 |      |      |        | Extremes |       |     |      | Totals                 |        |        |
|                               | Max                      | Min  | Mean | Depart | High     | Date  | Low | Date | Obs                    | Depart | % Norm |
| Chadron Municipal Airport     | 40.1                     | 14.7 | 27.4 | -0.5   | 55       | 2/21  | -19 | 2/23 | 0.55                   | 0.26   | 190    |
| Grand Island Airport          | 43.2                     | 19.3 | 31.3 | 1.6    | 59       | 2/13  | -2  | 2/24 | 0.88                   | 0.14   | 119    |
| Lincoln Municipal Airport     | 45.2                     | 16.1 | 30.6 | 1.1    | 62       | 2/13  | -9  | 2/17 | 1.29                   | 0.40   | 145    |
| Norfolk Karl Stefan Airfield  | 38.7                     | 17.2 | 28.0 | 1.7    | 57       | 2/13  | -4  | 2/23 | 0.97                   | 0.17   | 121    |
| North Platte Regional Airport | 40.0                     | 14.6 | 27.3 | -2.1   | 58       | 2/26  | -7  | 2/23 | 0.07                   | -0.50  | 12     |
| Omaha Eppley Airport          | 42.4                     | 18.0 | 30.2 | 1.3    | 61       | 2/13  | 0   | 2/17 | 1.81                   | 0.86   | 191    |
| Valentine Miller Field        | 34.9                     | 10.7 | 22.8 | -4.8   | 47       | 2/26+ | -14 | 2/23 | 0.41                   | -0.20  | 67     |

| North Dakota                      | Temperatures (degrees F) |      |      |        |          |       |     |      | Precipitation (inches) |        |        |
|-----------------------------------|--------------------------|------|------|--------|----------|-------|-----|------|------------------------|--------|--------|
|                                   | Averages                 |      |      |        | Extremes |       |     |      | Totals                 |        |        |
|                                   | Max                      | Min  | Mean | Depart | High     | Date  | Low | Date | Obs                    | Depart | % Norm |
| Bismarck Municipal Airport        | 29.9                     | 5.0  | 17.5 | 0.0    | 54       | 2/3   | -29 | 2/24 | 0.83                   | 0.31   | 160    |
| Fargo International Airport       | 21.3                     | 0.0  | 10.6 | -2.8   | 36       | 2/13+ | -21 | 2/24 | 0.36                   | -0.33  | 52     |
| Grand Forks International Airport | 21.3                     | -2.4 | 9.5  | -1.1   | 39       | 2/11  | -26 | 2/2  | 0.28                   | -0.23  | 55     |
| Theodore Roosevelt Airport        | 30.4                     | 10.9 | 20.7 | 1.1    | 49       | 2/13  | -24 | 2/24 | T                      | -      | -      |
| Williston International Airport   | 26.0                     | 7.9  | 16.9 | 0.8    | 41       | 2/13  | -21 | 2/24 | 0.16                   | -0.32  | 33     |

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>.

## February 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          | 26.8                     | 3.2  | 15.0 | -2.5   | 41       | 2/4  | -23 | 2/24  | 0.79                   | 0.17   | 127    |
| Huron Regional Airport             | 28.6                     | 8.4  | 18.5 | -2.0   | 42       | 2/12 | -23 | 2/24  | 0.93                   | 0.18   | 124    |
| Pierre Regional Airport            | 35.6                     | 12.0 | 23.8 | 0.6    | 56       | 2/13 | -19 | 2/23+ | 0.45                   | -0.29  | 61     |
| Rapid City Regional Airport        | 41.7                     | 13.3 | 27.5 | 1.4    | 65       | 2/13 | -17 | 2/23  | 0.52                   | 0.02   | 104    |
| Sioux Falls Joe Foss Field Airport | 31.8                     | 9.0  | 20.4 | -1.9   | 44       | 2/13 | -14 | 2/24  | 1.42                   | 0.59   | 171    |

| 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 | 29.9                     | 12.0 | 20.9 | -5.7   | 43       | 2/26  | -26 | 2/23  | 0.69                   | 0.13   | 123    |
| Cheyenne Municipal Airport             | 39.2                     | 17.2 | 28.2 | -1.3   | 58       | 2/11  | -19 | 2/23  | 0.37                   | -0.15  | 71     |
| Lander Hunt Field Airport              | 25.0                     | 2.1  | 13.6 | -11.4  | 47       | 2/21  | -21 | 2/24+ | 1.34                   | 0.64   | 191    |
| Laramie Regional Airport               | 35.7                     | 9.3  | 22.5 | -1.3   | 50       | 2/11+ | -23 | 2/23  | 0.09                   | -0.23  | 28     |
| Rawlins Municipal Airport              | 28.2                     | 9.7  | 18.9 | -5.3   | 39       | 2/26+ | -25 | 2/23  | 1.95                   | 1.46   | 406    |
| Sheridan County Airport                | 37.0                     | 8.7  | 22.9 | -3.1   | 51       | 2/3   | -25 | 2/24  | 1.35                   | 0.70   | 208    |

## February 2023 Highlights

### Monthly Rankings

Temperature in degrees Fahrenheit, Precipitation in inches

| Precipitation              | Precipitation/ Ranking                | Record / Year | Period of Record |
|----------------------------|---------------------------------------|---------------|------------------|
| Rawlins, Wyoming           | 1.67 / 2nd Wettest                    | 1.87 / 1959   | 1951-2023        |
| Topeka, Kansas             | 2.86 / 7th Wettest                    | 5.59 / 1911   | 1887-2023        |
| Sheridan, Wyoming          | 1.35 / 10th Wettest                   | 2.68 / 1958   | 1907-2023        |
|                            |                                       |               |                  |
| Akron, Colorado            | Trace / Driest (tied with 2017+)      |               | 1937-2023        |
| Laramie, Wyoming           | 0.09 / 10th Driest (tied with 2022+)  | 0.02 / 1999   | 1948-2023        |
|                            |                                       |               |                  |
| Snowfall                   | Snowfall/ Ranking                     | Record / Year | Period of Record |
| Bismarck, North Dakota     | 15.3 / 8th Snowiest                   | 25.6 / 1979   | 1886-2023        |
| Huron, South Dakota        | 17.0 / 8th Snowiest                   | 39.9 / 1962   | 1888-2023        |
| Colorado Springs, Colorado | 12.4 / 10th Snowiest                  | 23.2 / 1987   | 1894-2023        |
| Casper, Wyoming            | 16.4 / 10th Snowiest                  | 28.4 / 2020   | 1939-2023        |
|                            |                                       |               |                  |
| Temperature                | Temperature/ Ranking                  | Record / Year | Period of Record |
| Rawlins, Wyoming           | 18.9 / 10th Coldest                   | 14.5 / 1989   | 1951-2023        |
| Lander, Wyoming            | 13.6 / 10th Coldest (tied with 1973+) | 9.1 / 1899    | 1891-2023        |
|                            |                                       |               |                  |
|                            |                                       |               |                  |
|                            |                                       |               |                  |

All data are preliminary and subject to change. + indicates multiple dates, latest date listed. \* indicates some missing data for the period. 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>.

# 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, including "Highlights for November and October 2014", "Regional - Impacts for September - November 2014", "Regional - Outlook for January - March 2015", and "MO River Basin Partners".

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 interface 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-coded scale ranging from 0.00 to 2.00 inches.

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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