



October 2016 Climate Summary

Sunrise over Bowling Lake in Lincoln, Nebraska. - Photo courtesy Crystal Stiles

<http://hprcc.unl.edu>

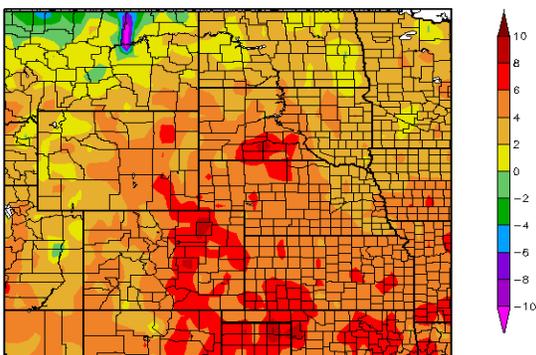
Warm and Dry

The warmth of September continued into October across the High Plains, as average temperatures were at least 2.0 degrees F (1.1 degrees C) above normal in most areas. The warmest locations included eastern Colorado and southwestern Kansas where departures were greater than 6.0 degrees F (3.3 degrees C) above normal. Many locations ranked in the top 10 for warmest October on record. Dry conditions accompanied the warmth, especially in eastern Colorado and southwestern Kansas where the greatest temperature departures occurred. For instance, Colorado Springs, Colorado and Garden City, Kansas had their 2nd warmest and 3rd warmest Octobers on record respectively, and they both tied for their driest Octobers on record (Colorado Springs period of record 1895-2016, Garden City period of record 1947-2016). These conditions caused soils to dry out quickly and wildfires to spread easily, which prompted the expansion of abnormal dryness and moderate drought to these areas by authors of the U.S. Drought Monitor. Meanwhile, record precipitation in Montana and above-normal precipitation in northern Wyoming relieved drought conditions and improved streamflows in the Upper Missouri River Basin.

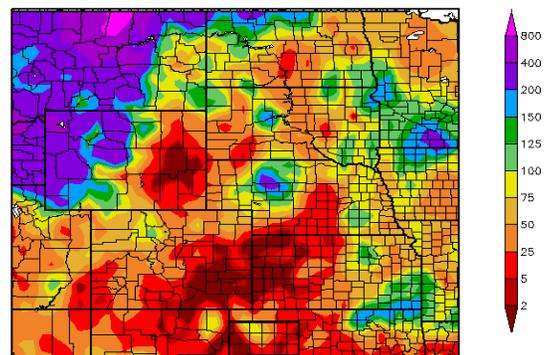
It was quite an interesting month for weather across the U.S. One of the biggest highlights of October was the impacts of a major hurricane along the U.S. East Coast. The first week of October, Hurricane Matthew ravaged Haiti and the Bahamas, then skirted up the coast of Florida, Georgia, and South Carolina before turning out to sea. Although Matthew only made a brief landfall in South Carolina as a Category 1 hurricane, it was a Category 3 when it moved parallel to the Florida coastline. Flooding was widespread throughout the Southeast and, according to the Southeast Regional Climate Center, at least 49 people died as a result of Matthew, over half of which occurred in North Carolina due to drowning. Another highlight of the weather in October was the rare occurrence of two tornadoes in northwest Oregon. According to the NWS Portland, the last time there were multiple tornadoes in one day in their area was November 12, 1991.

Temperature and Precipitation Overview

Departure from Normal Temperature (F)
10/1/2016 - 10/31/2016



Percent of Normal Precipitation (%)
10/1/2016 - 10/31/2016



Above: Departure from 1981-2010 normal temperature (left) and percent of normal precipitation (right) for October 2016 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

It was quite dry throughout much of the High Plains in October. The driest areas included eastern Wyoming, as well as a swath from eastern Colorado through western Kansas and central Nebraska where precipitation was no more than 25 percent of normal for the month. The following locations experienced a top 5 driest October on record: Colorado Springs, CO (tied for driest); Garden City, KS (tied for driest); Pueblo, CO (tied for 2nd driest); Laramie, WY (2nd driest); Casper, WY (tied for 4th driest); and Chadron, NE (5th driest). Three of these locations - Colorado Springs, Garden City, and Pueblo - only received a trace of precipitation.

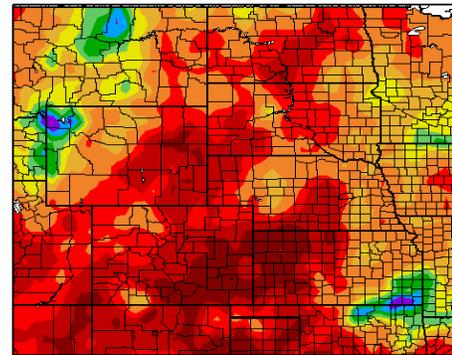
Although the fall season is generally a drier time of year in the High Plains, the combination of heat and excessive dryness caused some impacts, such as increased wildfire activity and rapidly drying soils. The Junkins Fire near Pueblo, Colorado and the Cottonwood Fire in the Black Hills region of South Dakota were notable for their spatial extents, as thousands of acres were burned. As for soil moisture, both topsoil and subsoil moisture declined considerably during October in Colorado and Kansas, which contributed to the expansion of abnormal dryness and moderate drought by authors of the U.S. Drought Monitor.

Despite the dry conditions, there were some severe weather and snow events in the region. Severe weather was reported on the 4th and the 6th in southeastern Nebraska and eastern Kansas, which included large hail, high winds, and even tornadoes in Kansas. While severe weather was occurring in southeastern Nebraska on the 6th, it was snowing in the north-central part of the state. Valentine, Nebraska received 3.0 inches (8 cm) of snow that day. This dichotomy is not uncommon in the Plains during fall and spring - severe weather and winter weather sometimes occur in close proximity to one another!

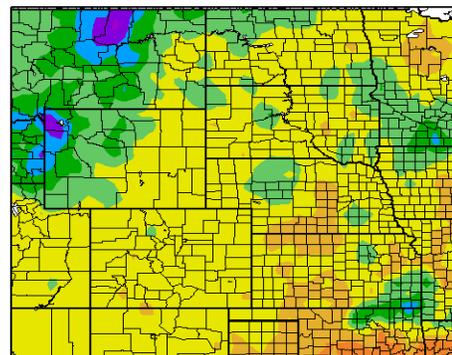
Unusually high atmospheric moisture and late-season wetness impacted harvest in a few locations during October. In the eastern High Plains, a warmup in the middle part of the month was accompanied by high relative humidity and dense fog in some areas. These conditions slowed the corn and soybean harvest in South Dakota and Nebraska. In North Dakota, the sugar beet harvest was well behind the 5-year average in early October due to wet conditions, but drier weather the rest of the month allowed for harvest progress.

Regional Precipitation

Precipitation (in)
10/1/2016 - 10/31/2016



Departure from Normal Precipitation (in)
10/1/2016 - 10/31/2016



Above: Total precipitation in inches (top) and departure from normal precipitation in inches (bottom) for October 2016. These maps are produced by HPRCC and can be found on the Current Climate Summary Maps page at: <http://hprcc.unl.edu/maps/current>.

Streamflow Update

The general pattern of lower streamflows in the Upper Missouri Basin and higher streamflows in the Lower Missouri Basin continued in October. However, streamflows vastly improved in the Upper Basin due to above-normal precipitation. A large area that includes the western two-thirds of Montana and northwestern Wyoming received more than 200 percent of normal precipitation during October, which relieved drought conditions and helped streamflows recover in these areas. In fact, flooding occurred in parts of Montana. Streamflows in the eastern High Plains, such as eastern North Dakota, eastern Nebraska, and southeastern Kansas, continued to run above normal. On the contrary, a very warm and dry month caused streamflows to decline across Colorado, especially in the central part of the state. Precipitation was abysmal, as much of the state received 50 percent of normal precipitation, at best.

Temperatures

Temperatures were quite warm across the High Plains in October. Departures of 2.0-6.0 degrees F (1.1-3.3 degrees C) above normal were widespread, with higher departures in localized areas. Top 10 records for warmest October were common across the region, but records were especially impressive in Colorado, Kansas, western Nebraska, and eastern Wyoming. While there are too many records to mention, the most notable ones occurred in the following locations: Akron, CO (2nd warmest); Colorado Springs, CO (2nd warmest); Cheyenne, WY (2nd warmest); Garden City, KS (3rd warmest); and Salina, KS (3rd warmest).

Part of the reason for the impressive October temperature records was because of a huge warmup around the middle part of the month. Many daily maximum temperature records were set on the 16th and 17th across parts of Colorado, Kansas, and Nebraska. On the 17th, the temperature reached a whopping 101.0 degrees F (38.3 degrees C) in Dodge City, Kansas! This became the highest October temperature on record for Dodge City, and it was the first 100.0 degrees F (37.8 degrees C) temperature ever recorded in Dodge City in October (period of record 1874-2016). It was also the latest 100.0 degrees F (37.8 degrees C) temperature recorded in the season - before that, the latest occurrence was September 23, 1984.

Despite the warmth of October, the majority of the region had their first freeze (32.0 degrees F / 0.0 degrees C) of the season. The freezes occurred close to the median date of the first fall freeze, with some locations reaching the freezing mark slightly later. In the High Plains, only southern and eastern Kansas had yet to experience a freeze this season.

Drought Conditions

Areas in drought saw improvement but dryness developed and expanded to new locations throughout the High Plains in October. Overall, the percent area in severe, extreme, or exceptional drought (D2-D4) was reduced by nearly 2 percent, but the area experiencing any level of drought or abnormal dryness (D0-D4) increased from about 29 percent to over 38 percent since late September.

U.S. Drought Monitor

U.S. Drought Monitor
High Plains

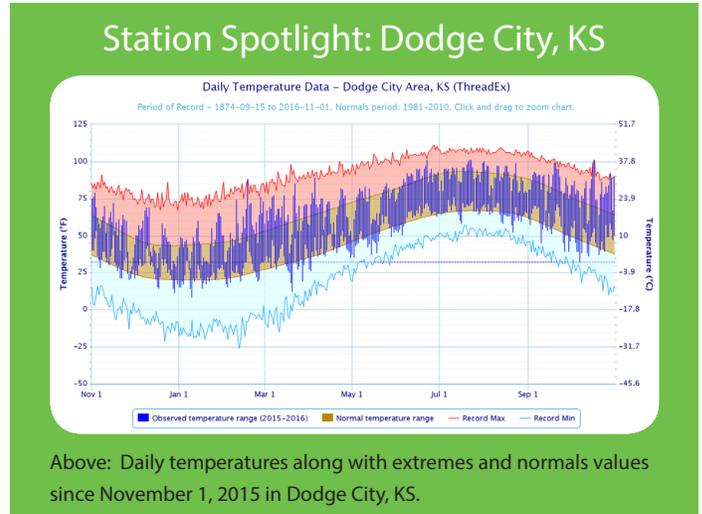
October 25, 2016
(Released Thursday, Oct. 27, 2016)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	61.59	38.41	8.74	0.56	0.00	0.00
Last Week	67.71	32.29	6.50	0.56	0.00	0.00
3 Months Ago	64.83	35.17	13.26	4.13	1.70	0.00
Start of Calendar Year	70.82	21.18	1.58	0.00	0.00	0.00
Start of Water Year	70.86	29.14	8.66	2.68	0.17	0.00
One Year Ago	59.12	40.88	3.95	0.00	0.00	0.00

Intensity:
■ D0 Abnormally Dry ■ D3 Extreme Drought
■ D1 Moderate Drought ■ D4 Exceptional Drought
■ D2 Severe Drought

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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/>.



A significant reduction in drought occurred in Wyoming this month. Heavy precipitation brought much-needed drought relief, and as a result the percent area in drought (D1-D4) was reduced from over 24 percent to over 9 percent. Areas experiencing severe drought (D2) and extreme drought (D3) in the Black Hills region of South Dakota also received some relief.

However, prolonged dryness brought about the development and expansion of abnormal dryness (D0) and moderate drought (D1) across South Dakota, Colorado, and Kansas. Recent dryness prompted the expansion of D1 in southwestern South Dakota, and a new area of D1 was introduced to the northeastern part of the state where agriculture- and wildfire-related impacts were reported. In eastern Colorado, a broad expansion of D0 occurred where several impacts were noted, such as well-above-normal temperatures, blowing dust, dry soils, brown grass, and a delay in the emergence of winter wheat. Similar conditions were reported in western Kansas, so D0 was expanded into the region and a small area of D1 was introduced.

Climate Outlooks

According to the Climate Prediction Center, ENSO-neutral conditions are present in the Pacific. However, equatorial sea surface temperatures are below average in the central and east-central Pacific Ocean. Conditions are looking favorable again for the development of La Niña this fall, with approximately a 55 percent chance that it will persist during winter 2016-17. As a result, the La Niña Watch has been reissued. If you want to keep up to date on the status of ENSO and the possibility of a developing La Niña, check out the ENSO blog here: <https://www.climate.gov/news-features/department/8443/all>.

The seasonal temperature and precipitation outlooks 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 see: <http://www.cpc.ncep.noaa.gov>.

Temperature

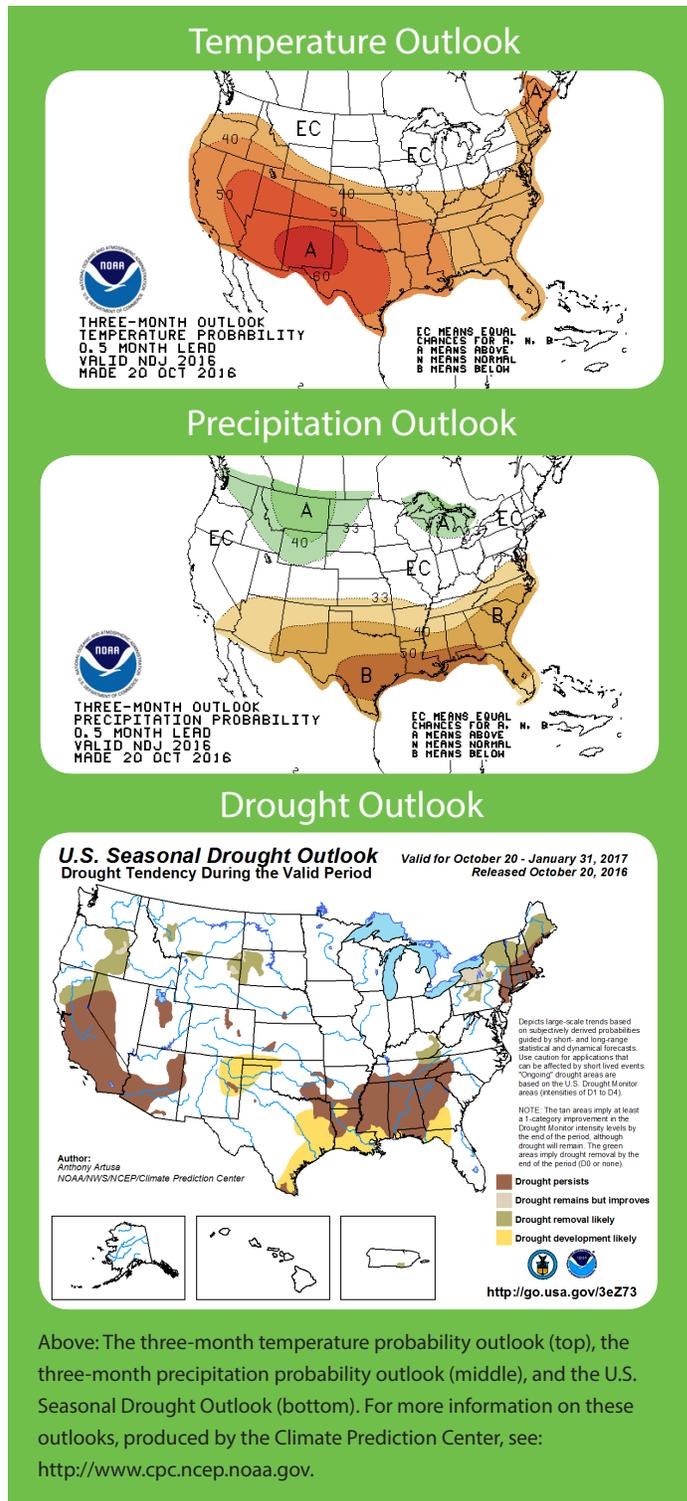
The November-January temperature outlook indicates an increased chance of above-normal temperatures for the southern two-thirds of the U.S., as well as New England. This includes Colorado, Kansas, and the southern halves of Wyoming and Nebraska in the High Plains region. There are no areas of the contiguous U.S. with an increased chance for below-normal temperatures. There is an equal chance for above-, below-, or near-normal temperatures in the northern U.S. during the November-January period, which includes North Dakota, South Dakota, and the northern halves of Wyoming and Nebraska in the High Plains.

Precipitation

The precipitation outlook for the next three months calls for a higher probability of above-normal precipitation across the northern Rockies and the Great Lakes. In the High Plains region, this includes most of Wyoming, the western two-thirds of North Dakota, and western South Dakota. Below-normal precipitation is favored across the Southwest, the southern Plains, and the Southeast, which includes southern Colorado and southern Kansas. The remainder of the contiguous U.S. has equal chances for above-, below-, or near-normal precipitation.

Drought

The October 20th U.S. Seasonal Drought Outlook shows that drought is expected to persist across portions of the West, the Plains, the Southeast, and the Northeast. In the High Plains region, this includes small pockets of drought in Colorado, Nebraska, and Kansas. Drought may improve or be removed in the Pacific Northwest, the northern Rockies, the Northeast, and eastern Kentucky/Tennessee. In the High Plains region, this includes the Black Hills region of South Dakota extending west into northeastern Wyoming, as well as northwestern Wyoming. Drought development is likely in the Southeast and the southern Plains, including a small area of southeastern Colorado and southwestern Kansas in the High Plains 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	73.9	40.2	57.1	6.9	84	10/16+	28	10/20	0.46	-0.65	41
Alamosa San Luis Airport	68.9	26.5	47.7	4.6	78	10/15	11	10/20	0.02	-0.66	3
Colorado Springs Municipal Airport	73.6	42.3	58.0	8.6	86	10/17+	30	10/07	T	-0.82	0
Denver International Airport	74.5	41.2	57.8	6.9	86	10/16	25	10/20	0.26	-0.76	25
Grand Junction Walker Field Airport	71.5	44.0	57.7	4.7	82	10/15	31	10/04	0.36	-0.70	34
Pueblo Memorial Airport	78.6	39.8	59.2	7.4	90	10/16+	28	10/21	T	-0.72	0

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	74.2	46.8	60.5	5.1	89	10/17	29	10/13	1.00	-0.92	52
Dodge City Regional Airport	80.2	46.9	63.5	6.9	101	10/17	32	10/07	0.09	-1.65	5
Goodland Renner Field	76.4	41.0	58.7	6.8	92	10/16	29	10/24	0.04	-1.33	3
Topeka Municipal Airport	73.8	50.3	62.1	5.5	89	10/17	36	10/21+	1.32	-1.71	44
Wichita Mid-Continent Airport	77.4	53.0	65.2	6.9	91	10/17	36	10/21	2.04	-0.74	73

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	72.2	36.7	54.5	6.9	87	10/10	24	10/12	0.16	-1.15	12
Grand Island Airport	70.7	42.6	56.7	4.5	83	10/27	29	10/13	0.12	-1.74	6
Lincoln Municipal Airport	71.5	44.9	58.2	5.0	84	10/17	28	10/13	1.86	-0.11	94
Norfolk Karl Stefan Airfield	67.9	40.8	54.3	3.3	82	10/28+	24	10/13	2.34	0.27	113
North Platte Regional Airport	72.5	38.6	55.5	6.4	83	10/28+	30	10/22+	1.54	-0.01	99
Omaha Eppley Airport	70.0	47.9	58.9	5.7	85	10/17	32	10/13	1.66	-0.49	77
Valentine Miller Field	71.2	40.7	56.0	7.5	89	10/14	24	10/07	1.90	0.65	152

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismark Municipal Airport	59.9	36.3	48.1	3.3	78	10/03	21	10/13	0.24	-1.01	19
Fargo International Airport	58.8	39.9	49.3	3.8	79	10/03+	27	10/24	2.39	0.24	111
Grand Forks International Airport	56.5	37.4	47.0	3.9	78	10/03+	25	10/24	1.10	-0.87	56
Theodore Roosevelt Airport	57.1	34.0	45.5	1.7	77	10/01	21	10/13	0.93	-0.30	76
Williston International Airport	55.9	36.1	46.0	3.0	77	10/01	19	10/13	1.06	0.14	115

All data are preliminary and subject to change. + indicates multiple dates, latest date listed.

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 2016 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	62.5	37.6	50.1	4.9	82	10/03	23	10/12	1.81	-0.18	91
Huron Regional Airport	64.3	40.3	52.3	4.4	80	10/28+	26	10/24	1.05	-0.74	59
Pierre Regional Airport	66.6	40.9	53.8	5.1	86	10/02	26	10/12	0.82	-0.83	50
Rapid City Regional Airport	67.8	36.6	52.2	4.5	84	10/27+	23	10/12+	0.46	-0.96	32
Sioux Falls Joe Foss Field Airport	63.3	41.7	52.5	4.6	78	10/28	31	10/24+	3.09	0.92	142

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	66.6	34.5	50.6	5.4	77	10/14+	15	10/12	0.16	-0.95	14
Cheyenne Municipal Airport	67.9	37.7	52.8	6.5	80	10/15	26	10/20	0.27	-0.66	29
Lander Hunt Field Airport	63.6	35.9	49.8	4.2	78	10/01	24	10/20	0.98	-0.31	76
Laramie Regional Airport	63.0	32.0	47.5	5.7	74	10/14	14	10/20	0.04	-0.76	5
Rawlins Municipal Airport	62.4	33.0	47.7	4.4	73	10/02	14	10/12	0.37	-0.38	49
Sheridan County Airport	63.2	34.1	48.6	3.1	83	10/01	15	10/12	1.45	0.04	103

October 2016 Highlights

Monthly Rankings

Temperature in degrees F / Precipitation in inches

Warmest / Coolest	Temperature / Ranking	Record / Year	Period of Record
Akron, CO	57.1 / 2nd warmest	59.0 / 1963	1937-2016
Colorado Springs, CO	58.0 / 2nd warmest	58.2 / 1963	1895-2016
Cheyenne, WY	52.8 / 2nd warmest	54.4 / 1963	1873-2016
Garden City, KS	62.2 / 3rd warmest	64.2 / 1963	1947-2016
Salina, KS	63.3 / 3rd warmest	67.5 / 1963	1949-2016
Scottsbluff, NE	54.9 / 4th warmest	57.4 / 1963	1893-2016
Pierre, SD	53.8 / 10th warmest	59.2 / 1938	1933-2016
Wettest / Driest	Precipitation / Ranking	Record / Year	Period of Record
Colorado Springs, CO	Trace / DRIEST	tie / 1934	1895-2016
Pueblo, CO	Trace / 2nd driest (tie, 1995+)	0.00 / 1933	1888-2016
Garden City, KS	Trace / DRIEST	tie / 1955	1947-2016
Laramie, WY	0.04 / 2nd driest	Trace / 1964	1948-2016
Casper, WY	0.16 / 4th driest (tie, 1953)	Trace / 1965	1940-2016
Chadron, NE	0.16 / 5th driest	0.04 / 1960	1941-2016

All data are preliminary and subject to change. + indicates multiple dates, latest date listed. - indicates insufficient data.
 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>.

North Dakota Monthly Climate Summary

Adnan Akyuz - State Climatologist
North Dakota State Climate Office, North Dakota State University
For more information: www.ndsu.edu/ndsco or www.ndawn.ndsu.nodak.edu



Precipitation:

Based on the National Centers for Environmental Information (NCEI), statewide total October precipitation was 1.24", 0.08" less than the last year, 0.16" greater than the 1981-2010 average, making it the 39th wettest October in the 122-year period of record. It was the wettest October since 2015, and the driest October since 2014. Above-average precipitation was observed in northwestern parts of the state while the rest of the state stayed on the drier side (Figure 1). The greatest monthly accumulation was 3.94" recorded in Northgate, Burke County by an FAA automated weather station. The least amount of monthly accumulation was 0.22" recorded in Hazelton, Emmons County by another FAA automated weather station. The greatest 24-hr rainfall was 2.87" and was recorded in Northgate, Burke County on October 3. The highest 24-hr snowfall of 2" was recorded in Garrison, McLean County. Based on historical records, statewide October precipitation showed an increasing trend of 0.05" per decade since 1895. The highest and the lowest October precipitation for the state ranged from 4.61" in 1982 to 0.09" in 1952.

Temperature:

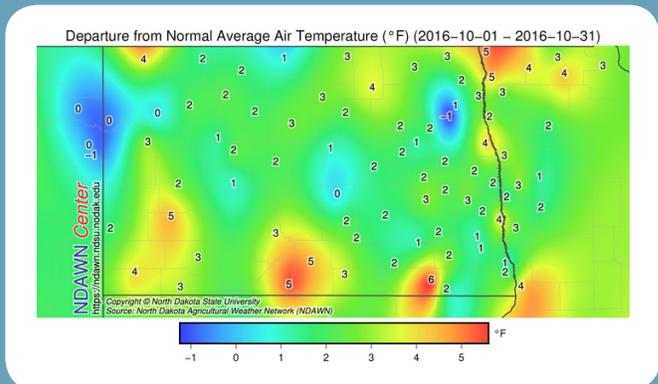
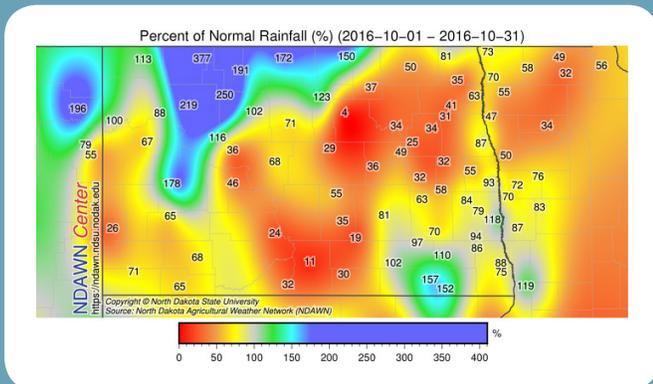
The official state average October temperature was 45.9°F, 1.9° cooler than the last year, but 1.9° warmer than the 1981-2010 average, making it the 34th warmest October in the 122-year period of record. It was the warmest October since 2015 and the coolest October since 2013. Above-average temperatures were observed all across the state except for a few localized small pockets where near normal or slight below-average temperatures were observed. (Fig. 2). The state's highest and lowest daily temperatures ranged from 83° on October 2 at Hettinger Experiment Station in Adams County to 16° on October 14 in Ashley, McIntosh County. Based on historical records, the state average October temperature showed an increasing trend of 0.11°F per decade since 1895. The highest and the lowest monthly state October average temperatures ranged from 54.8° in 1963 to 32.5° in 1925.

Drought and other notable impacts:

Based on the Drought Monitor (DM) by the end of the month (October 25, 2016), less than 1% of the state was under a drought designation. Counties in the moderate drought areas on October 25: Bowman and Adams in the southwest; Sargent and Dickey in the southeast. NWS Storm Prediction Center reported no significant storm incidents. NDAWN's highest peak gust in October was 56 mph recorded at the Linton weather station on October 5, 2016. Based on the data among stations with at least 30 years of history, there were 20 highest minimum temperatures, one lowest minimum temperature, and 14 records were broken for the highest 24-hr precipitation totals.

Persistent and heavy rains in the eastern North Dakota slowed the harvest process according to the ND Ag Statistical Service October 30 report. Based on the report, corn harvested was 52% which was behind normal. However, soybean harvested was 97% (near average). The North American Land Data Assimilation System (NL-DAS) total column soil moisture anomalies across the state indicate excess soil moisture in northern ND while slightly below normal in the central region and near normal soil moistures elsewhere by the end of the month.

Temperature and Precipitation Overview



Above: Percent of normal precipitation (left, figure 1) and departure from normal average temperature (right, figure 2) for October 2016 in North Dakota. Both figures produced by NDAWN.

Kansas Climate Summary

Mary Knapp - Service Climatologist
 Kansas Weather Data Library, Kansas State University
 For more information: www.ksre.ksu.edu/wdl



Record warmth

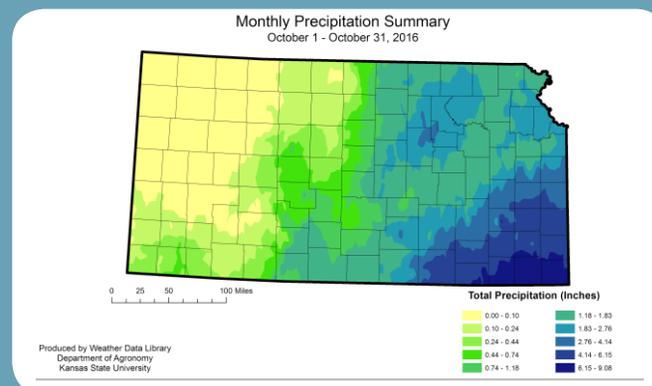
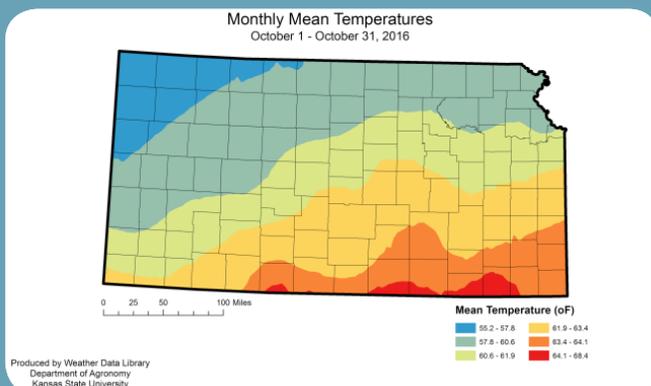
Temperatures continued the warmer than normal pattern through much of October. The state-wide average temperature was 60.9 oF, or 5.6 degrees warmer than normal. This was the 8th warmest since 1896. The Northeast Division was closest to normal for the month. Their average was 59.8 oF, or 4.8 degrees warmer than normal. The division with the greatest departure was the Southwest Division where the average temperature was 62.3 oF or 6.7 degrees warmer than normal. There were 102 new daily record high temperatures set in the month, of those 12 set new record highs for October. Ashland, in Clark County, had the highest reading for the month, with 102 oF reported on both the 17th and the 18th. In contrast, there were no new record low maximum temperatures or minimum temperatures set. There were 58 new record warm minimum temperatures set. The coldest temperature recorded for the month was 25 oF at Brewster 4W, Thomas County, on the 8th and Tribune 1W, Greeley County, on the 7th.

State-wide average rainfall for October was well below normal; however the distribution was quite skewed. The state-wide average was 1.35 inches or 45 percent of normal. The western three divisions all averaged less than 10 percent of the normal October precipitation. The Northwest Division missed out on most of the rainfall. The divisional average was just 0.02 inches, or one percent of normal. The Southwest Division was the wettest of the western areas, and averaged just 0.14 inches of precipitation. That is just 9 percent of normal. In contrast, the Southeastern Division averaged 4.50 inches or 120 percent of normal. This October ranks as the 34th driest in the 122 years of record. The wettest October on record occurred in 1941, when the statewide average total was 5.99 inches. The driest October occurred in 1973 when the state-wide average was just 0.02 inches. Despite the dry pattern there were 35 new record daily rainfall totals. The greatest 24 hour total recorded at a Co-CoRaHS station was 6.69 inches at Beaumont 6.6 SSW, Butler County, on the 7th. The greatest 24 hour report for a National Weather Service station was 6.44 inches at Parsons Tri City AP, Labette County, on the 6th. The greatest monthly totals: 9.91 inches at Independence, Montgomery County (NWS) and 7.27 inches at Beaumont 6.6 SSW, Butler County (CoCoRaHS).

Severe weather was also a factor with an unusual tornado outbreak on the 7th of October. There were 16 tornadoes reported during the event, with storms in Allen, Clay, Cowley, Dickinson and Labette counties. Fortunately there were no deaths or injuries reported with the storms. There were a total of 33 hail reports and 17 damaging wind reports in the month.

Above normal temperatures coupled with below normal precipitation resulted in the return of moderate drought in Southwestern KS, with an expansion of abnormally dry conditions across much of the western divisions. The continued dry pattern, coupled with the outlook for warmer than normal conditions in November, is likely to result in further expansion of both categories.

Temperature and Precipitation Overview



Above: October 2016 monthly mean temperatures (left) and total precipitation (right) in Kansas. Maps produced by Weather Data Library, Department of Agronomy, Kansas State University.

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

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