October 2017 Climate Summary

Early-season snowfall in the Rockies of Colorado. - Photo by Mike Kvackay/Instagram, courtesy Washington Post

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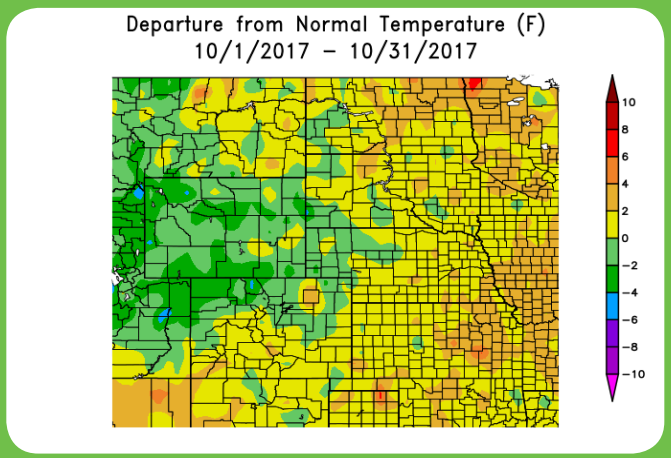
Wet Conditions Cause Issues for Harvest

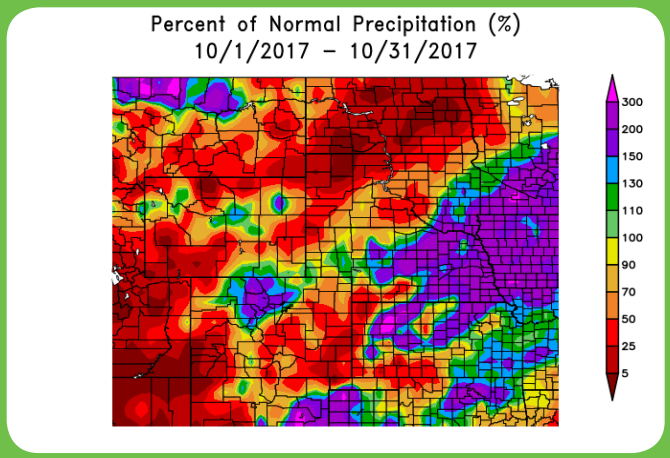
A stark contrast in precipitation patterns existed across the High Plains during October, with wet conditions occurring early in the month in the southern and eastern parts of the region and mostly dry conditions elsewhere. Precipitation records were set on both sides of the spectrum, as there were locations that ranked among the top 10 wettest and top 10 driest Octobers on record. The wetness presented problems for producers harvesting their crops, as well as those planting winter wheat. Temperatures were largely near normal, and most of the region experienced a hard freeze in October, which ended the growing season. Drought conditions remained but continued to improve in some parts of the Northern Plains, particularly in areas of Montana that received heavy precipitation early in the month.

While it is not uncommon for snowstorms to occur in the High Plains in October, a snowstorm in the Rockies set records for early snowfall. Havre, Montana was hit particularly hard with a snowstorm on October 2-3. The Havre Airport reported a 2-day snowfall total of 13.0 inches (33 cm), which not only was the highest 2-day total snowfall on record for October, but it was also the snowiest October on record for Havre (period of record 1961-2017). The snowstorm knocked out power to thousands of homes and damaged trees and structures in the area. Missoula, Montana received 0.1 inches (0.3 cm) of snowfall on the 2nd, which was its earliest snowfall since 1983 (period of record 1948-2017).

While not in the High Plains region, it is worth noting that climate conditions contributed to deadly wildfires in California in October. Wildfires are a common occurrence in California during the fall, but they were made particularly worse this year due to last winter's record-setting precipitation, record-breaking summer heat, and the presence of fierce winds. The wet winter caused desert wildflowers to bloom, then the summer heat turned much of the vegetation to tinder, which provided plenty of fuel for the fires. Excessively high winds spread fires so rapidly that there was little time to evacuate, which led to the deaths of dozens of people.

Temperature and Precipitation Overview





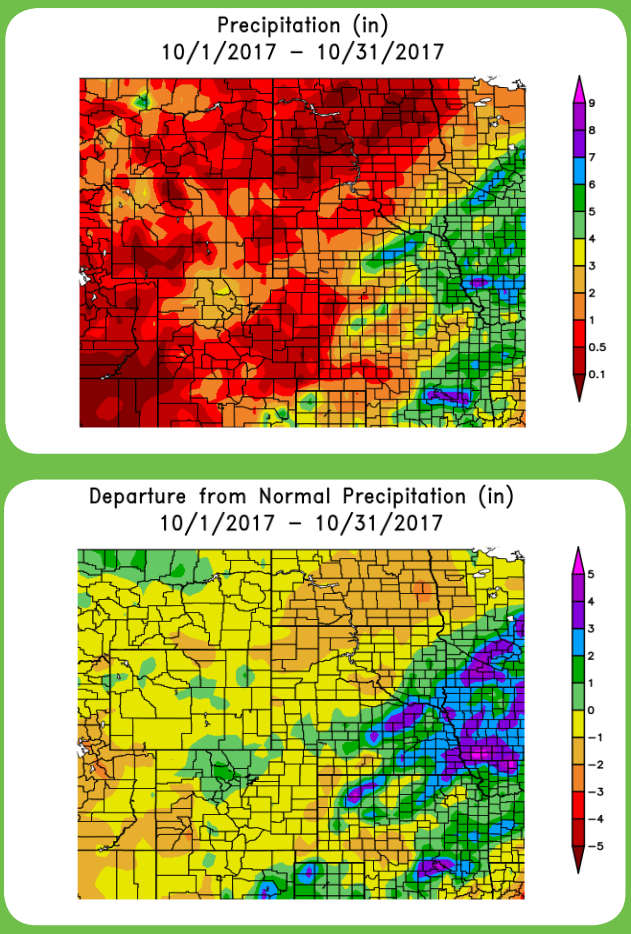
Above: Departure from 1981-2010 normal temperature (left) and percent of normal precipitation (right) for October 2017 in the High Plains region. Maps produced by the High Plains Regional Climate Center and are available at: http://hprcc.unl.edu/maps/current .

Precipitation

With several locations ranking among the top 10 wettest or driest Octobers, the High Plains region experienced both ends of the precipitation spectrum this month. Much of the High Plains were dry, with North Dakota experiencing the most extreme dryness where precipitation was less than 10 percent of normal in some areas. This resulted in Grand Forks and Dickinson having their 3rd driest and 6th driest Octobers on record, respectively. The wettest areas included extreme southeastern South Dakota, eastern Nebraska, and eastern Kansas where October precipitation ranged from 130-300 percent of normal. The most impressive records included Salina, KS (2nd wettest), Nebraska City 2NW, NE (3rd wettest), Lincoln, NE (4th wettest), Grand Island, NE (5th wettest), and Yankton, SD (5th wettest). These locations represent the western edge of a large area extending eastward to the Great Lakes that experienced excessively wet conditions in October.

While the dryness that occurred throughout much of the region caused few issues for agriculture, the wetness was quite problematic. For instance, producers in eastern Nebraska were concerned about soil compaction, which can occur when soils are particularly wet during harvest. According to Nebraska CropWatch, soil compaction increases runoff and can impede crop's roots for the next season. Also, harvest slowed down considerably across the Dakotas, Nebraska, and Kansas throughout September and October because of wet conditions. The USDA Weekly Weather and Crop Bulletin stated that as of the end of October, the amount of corn harvested was behind the 5-year average by as much as 20-30% in North Dakota, South Dakota, and Nebraska. As for soybeans, the harvest in South Dakota and Nebraska was far behind the 5-year average in mid-October, but drier weather in the latter half of the month allowed producers to catch up to the 5-year average.

Regional Precipitation



Above: Total precipitation in inches (top) and departure from normal precipitation in inches (bottom) for October 2017. These maps are produced by HPRCC and can be found on the Current Climate Summary Maps page at: http://hprcc.unl.edu/maps/current.

While row crops such as corn and soybeans are being harvested during the fall, winter wheat is being planted. This month's conditions have already negatively impacted the winter wheat crop in South Dakota, with over half the state's crop in poor to very poor condition. According to the South Dakota State Climatologist, these crop conditions were in part due to the summer drought, but poor conditions could also be attributed to intermittent rains in September that interrupted and delayed planting, causing emergence issues particularly in the western part of the state.

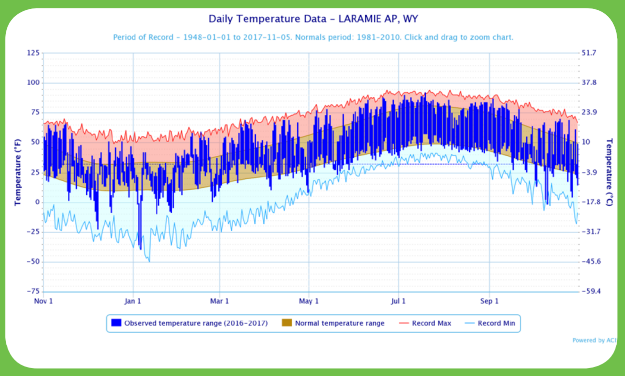
Streamflow Update

Melting snow and heavy precipitation contributed to above-normal streamflows throughout parts of the High Plains region in October. For instance, snow fell in the Rockies of Colorado and Wyoming and then quickly melted with warming temperatures, causing a rise in streams. Above-normal streamflows were noted across eastern portions of the High Plains due to heavy rainfall. Several streams were running high in eastern Nebraska as a result of receiving precipitation in excess of 200 percent of normal. Meanwhile, streams in drought-stricken areas of the Dakotas continued to rise, thanks to heavy rains in late September that brought drought relief to the region. The mountain snowpack season was just getting off to a start in October, so look for this update to transition from discussing streamflow conditions to snowpack in November.

Temperatures

Temperatures were near normal for the month of October across the majority of the High Plains, ranging from approximately 2.0 degrees F (1.1 degrees C) below normal in Wyoming and northern Colorado to about 2.0 degrees F (1.1 degrees C) above normal across parts of North Dakota and eastern Kansas. The October temperature pattern was somewhat similar to that of September, although it was slightly warmer across central Nebraska and Kansas during September and a bit cooler in Wyoming in October.

Station Spotlight: Laramie, WY



Above: Daily temperatures along with extremes and normals values since November 1, 2016 in Laramie, WY.

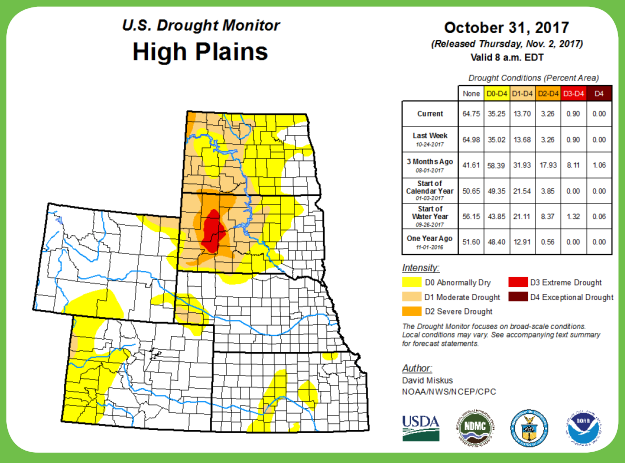
While October temperatures were not record-breaking throughout most of the region, it was cool enough in Laramie, Wyoming that this location tied for its 6th coolest October on record (period of record 1948-2017). On the 10th, the temperature dipped down to a chilly -2.0 degrees F (-18.9 degrees C), which was Laramie's 10th coldest October temperature on record and the 3rd earliest negative temperature (below 0.0 degrees F) ever recorded. Meanwhile, it got quite warm in southwestern Kansas on the 14th, as the temperature reached above 90.0 degrees F (32.2 degrees C) in Dodge City.

Nearly the entire region experienced a hard freeze (defined as 28.0 degrees F (-2.2 degrees C) or lower) during October, bringing an end to the growing season. The timing of the hard freeze was fairly typical for the High Plains, although some areas of southern Kansas received a hard freeze a little earlier than expected. A sharp drop in temperature in late October in western Kansas had winter wheat growers concerned about crop injury, according to Kansas State University Agronomy. However, warm soil temperatures may have helped buffer the crop from negative effects of cold temperatures.

Drought Conditions

Drought conditions continued to improve on the whole across the High Plains during October, aided by heavy rains in late September and reduced evaporative demand as the growing season wound down. According to the U.S. Drought Monitor, the area in drought (D1-D4) across the 6-state region declined from approximately 21 percent to 14 percent. The majority of the improvement occurred across the western Dakotas, particularly in North Dakota where extreme drought (D3) and exceptional drought (D4) conditions were removed. While drought continued to improve in parts of South Dakota, an area of D3 conditions in the west-central portion of the state persisted. In fact, drought conditions deteriorated slightly in the latter part of October across this area due to below-normal precipitation. Drought conditions vastly improved throughout Montana in October, with the large area of D4 in the north-central part of the state being removed and conditions improving elsewhere. Also, improvements in moderate drought (D1) were noted in Kansas where October rainfall was plentiful.

U.S. Drought Monitor



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/.

While dryness in the fall is not of tremendous concern (and, it is even welcomed by producers harvesting their crops), it is still important to have ample soil moisture going into winter to ensure it is adequate for spring planting. This is even more critical for areas that have recently experienced drought, such as the Dakotas. Much of this region was dry in October, so precipitation is needed in this region to replenish soil moisture before the ground freezes.

Climate Outlooks

According to the Climate Prediction Center, ENSO-neutral conditions are present in the Pacific. Equatorial sea surface temperatures are near average to below average across the central and eastern Pacific Ocean. There is an increasing chance of La Niña conditions in the Northern Hemisphere during fall and winter 2017-18. A La Niña Watch is in effect. If you are looking for more information about La Niña, check out the ENSO blog here: https://www.climate.gov/news-features/department/8443/all.

Improvements in drought conditions have reduced the chance for above-normal wildland fire activity in the Northern Plains, and the National Interagency Fire Center has predicted normal wildland fire activity in this region through February. According to the National Weather Service, long-range flooding is not expected in the High Plains through January. 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

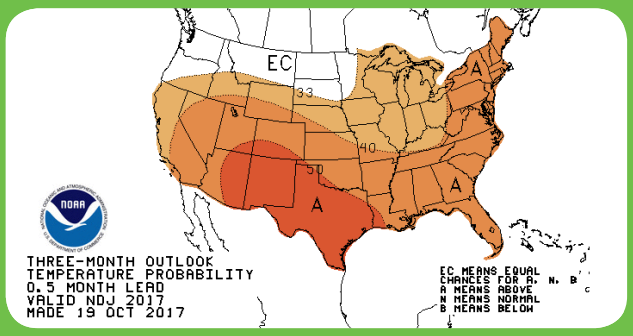
The November-January temperature outlook indicates an increased chance of above-normal temperatures for a large part of the contiguous U.S. In the High Plains region, this includes Colorado, Wyoming, Kansas, Nebraska, and southern South Dakota. The greatest probability for above-normal temperatures exists across southern Colorado. There are no regions in the contiguous U.S. that are predicted to have below-normal temperatures during the November-January period.

Precipitation

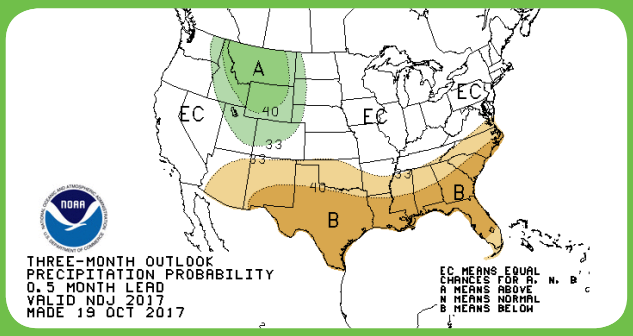
The precipitation outlook for the next three months calls for a higher probability of above-normal precipitation in the Northern and Central Rockies. In the High Plains region, this includes Wyoming, northern and central Colorado, and western portions of the Dakotas and Nebraska. Below-normal precipitation is expected throughout portions of the Southern Plains and the Southeast. Elsewhere, there are equal chances for above-, below-, and near-normal precipitation in the contiugous U.S. during the November-January period.

Drought

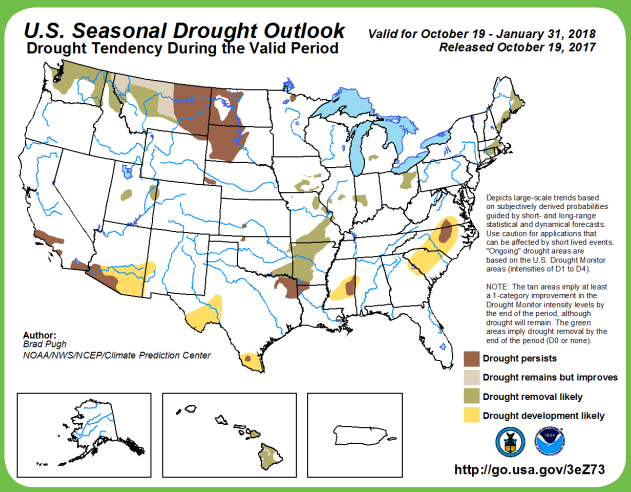
Temperature Outlook



Precipitation Outlook



Drought Outlook



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.

The October 19th U.S. Seasonal Drought Outlook shows that drought is expected to persist across small portions of the Southwest, Southern Plains, Mid-Atlantic, as well as in the Northern Plains, including eastern Montana, the western Dakotas, and a small sliver of the Nebraska Panhandle and southern Kansas. Drought may improve or be removed in the Pacific Northwest and portions of the Midwest and Northeast. In the High Plains, this includes a small area of western Colorado. Drought development is likely in areas of the Southwest, Southern Plains, and Southeast. Additional drought development is not expected in the High Plains region through January.

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	63.6	35.4	49.5	-0.7	83	10/25	15	10/27	0.52	-0.59	47
Alamosa San Luis Airport	64.5	24.3	44.4	1.3	75	10/04	15	10/27+	0.06	-0.62	9
Colorado Springs Municipal Airport	65.1	35.3	50.2	0.8	79	10/25+	20	10/27	0.23	-0.59	28
Denver International Airport	64.5	35.7	50.1	-0.8	84	10/25	13	10/27	0.96	-0.06	94
Grand Junction Walker Field Airport	66.2	35.4	50.8	-2.2	77	10/20+	27	10/16+	0.28	-0.78	26
Pueblo Memorial Airport	70.3	35.1	52.7	0.9	86	10/12	26	10/29+	0.21	-0.51	29

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	67.9	44.0	56.0	0.6	83	10/02	19	10/28	3.50	1.58	182
Dodge City Regional Airport	72.7	42.7	57.7	1.1	91	10/14	17	10/28	0.37	-1.37	21
Goodland Renner Field	67.0	36.6	51.8	-0.1	84	10/12	19	10/27	0.44	-0.93	32
Topeka Municipal Airport	70.6	46.7	58.7	2.1	88	10/02	25	10/31	2.94	-0.09	97
Wichita Mid-Continent Airport	72.1	47.9	60.0	1.7	88	10/14	25	10/28	3.60	0.82	129

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	64.4	30.3	47.4	-0.2	87	10/19	7	10/31	1.04	-0.27	79
Grand Island Airport	65.2	40.2	52.7	0.5	81	10/19	15	10/28	5.36	3.50	288
Lincoln Municipal Airport	67.4	43.7	55.5	2.3	84	10/02	22	10/28	4.90	2.93	249
Norfolk Karl Stefan Airfield	63.5	39.2	51.4	0.4	79	10/19+	14	10/28	3.52	1.45	170
North Platte Regional Airport	66.1	34.5	50.3	1.2	81	10/17	12	10/28	3.11	1.56	201
Omaha Eppley Airport	66.1	44.5	55.3	2.1	84	10/02	20	10/28	4.06	1.91	189
Valentine Miller Field	64.7	34.9	49.8	1.3	87	10/19	9	10/31	1.30	0.05	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	61.4	32.1	46.8	2.0	80	10/19+	11	10/28	0.18	-1.07	14
Fargo International Airport	59.2	35.7	47.5	2.0	78	10/20	14	10/31+	0.77	-1.38	36
Grand Forks International Airport	58.9	34.3	46.6	3.5	80	10/17	13	10/31	0.12	-1.85	6
Theodore Roosevelt Airport	58.9	30.0	44.4	0.6	81	10/20+	9	10/27	0.06	-1.17	5
Williston International Airport	58.8	29.4	44.1	1.1	80	10/20	8	10/27	0.37	-0.55	40

All data are preliminary and subject to change. + indicates multiple dates, latest date listed. * indicates some missing data for the period.
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October 2017 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	61.6	32.1	46.9	1.7	79	10/20+	5	10/28	0.81	-1.18	41
Huron Regional Airport	61.8	35.0	48.4	0.5	79	10/01	11	10/28	1.78	-0.01	99
Pierre Regional Airport	63.0	36.7	49.9	1.2	84	10/19	15	10/31	1.11	-0.54	67
Rapid City Regional Airport	62.6	31.5	47.1	-0.6	86	10/19	10	10/30	0.58	-0.84	41
Sioux Falls Joe Foss Field Airport	61.9	38.8	50.4	2.5	78	10/17	13	10/28	5.28	3.11	243

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	57.6	29.8	43.7	-1.5	74	10/19+	9	10/31	1.08	-0.03	97
Cheyenne Municipal Airport	59.2	32.9	46.0	-0.3	79	10/25	19	10/27+	1.13	0.20	122
Lander Hunt Field Airport	58.1	29.4	43.8	-1.8	75	10/25	17	10/31	1.07	-0.22	83
Laramie Regional Airport	54.2	23.3	38.7	-3.1	70	10/19	-2	10/10	0.96	0.16	120
Rawlins Municipal Airport	55.1	28.0	41.5	-1.8	70	10/04	10	10/27	0.45	-0.30	60
Sheridan County Airport	62.1	28.4	45.2	-0.3	82	10/19	11	10/31	0.34	-1.07	24

October 2017 Highlights

Monthly Rankings

Precipitation in inches, Temperature in degrees F

Coolest	**Temperature / Ranking**	**Record / Year**	**Period of Record**
Laramie, WY	38.7 / 6th coolest (tie, 2006+)	35.1 / 2009+	1948-2017
Wettest & Driest	**Precipitation / Ranking**	**Record / Year**	**Period of Record**
Salina, KS	5.78 / 2nd wettest	6.77 / 1979	1948-2017
Nebraska City 2NW, NE	6.58 / 3rd wettest	9.82 / 2007	1936-2017
Lincoln, NE	4.90 / 4th wettest (tie, 2002)	5.40 / 1986	1887-2017
Grand Island, NE	5.36 / 5th wettest	6.10 / 1897	1895-2017
Yankton, SD	5.12 / 5th wettest	6.49 / 2008	1932-2017
Sioux Falls, SD	5.28 / 7th wettest	6.89 / 1911	1894-2017
North Platte, NE	3.11 / 10th wettest	5.80 / 1946	1874-2017
Grand Forks, ND	0.12 / 3rd driest (tie, 1999)	0.02 / 1952	1895-2017
Dickinson, ND	0.06 / 6th driest	Trace / 1965	1948-2017
Alamosa, CO	0.06 / 10th driest	0.00 / 1995+	1932-2017
Sheridan, WY	0.34 / 10th driest (tie, 1964)	0.02 / 1965	1907-2017

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North Dakota Climate Summary

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Precipitation:

Based on the National Centers for Environmental Information (NCEI), the statewide total October precipitation was 0.3", 2.12" less than last month, 0.93" less than the last October, and 1.16" less than the 1981-2010 average, making it the 11th driest October in the 123-year period of record. It was the driest October since 1993. Below-average precipitation was observed commonly in all parts of the state (Figure 1). The greatest monthly precipitation accumulation was 1.98" recorded in Abercrombie, Richland County. The greatest 24-hr precipitation was 1.31" recorded also in Abercrombie, Richland County on October 2. The greatest monthly snowfall accumulation was 2" recorded in Cavalier and Pembina, Pembina County and Langdon, Cavalier County. The greatest 24-hr Snowfall was 2" recorded also in Cavalier, Pembina County on October 27. Based on historical records, statewide October precipitation showed a positive long-term trend of 0.5" per century since 1895. The highest and the lowest October precipitation for the state ranged from 4.61" in 1982 to 0.09" in 1952.

Temperature:

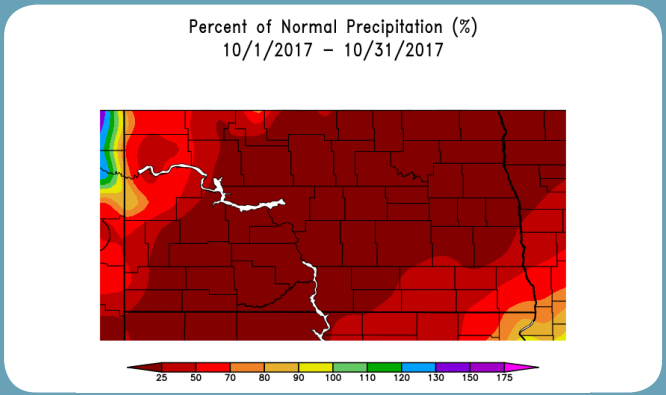
The official state average October temperature was 44.8°F, 13.4° colder than last month, 1.3° colder than the last October, but 1.4° warmer than the 1981-2010 average, making it the 54th warmest October in the 123-year period of record. It was the warmest October since 2016. Above-average temperatures were observed commonly in all parts of the state except for a few pockets where cooler than normal conditions were observed (Fig. 2). The state's highest and lowest daily temperatures ranged from 84° on October 21 in Hettinger, Adams County to 6° on October 31 in Riverdale, McLean County. Based on the historical records, the state average October temperature showed a positive trend of 0.1°F per decade since 1895. The highest and the lowest monthly state October average temperatures ranged from 54.8° in 1963 to 32.6° in 1925.

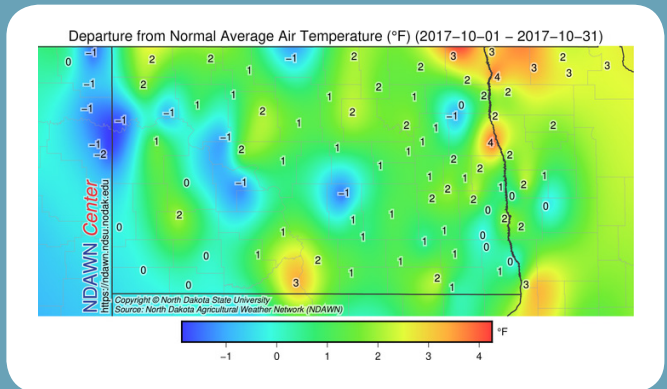
Drought and other notable impacts:

Despite dry conditions dominating the month, it posed a very little or no impact since most agricultural activities required dry conditions anabling field work. Therefore, the Drought Monitor (DM) map did not change as much as it would if it were during the growing season. By the end of the month, the percent of the state experiencing drought was 37%, a 23% reduction compared to the previous month. Severe Drought conditions (D3) was removed by the middle of the month as the momentum of the wetness in September was carried into October. Based on the DM map on October 31, only 3% of the state was in Severe Drought (D2), and 34% of the state was in Moderate Drought (D1).

NDAWN's highest peak gust in October was 56 mph, recorded at the Turtle Lake weather station in McLean County on October 22, 2017. The NOAA Storm Report reported no significant storm events in October. Across the observation network of weather stations with at least 30 years of history, a total of 19 daily high-temperature related and 9 daily low-temperature related records were set or tied. A total of 2 highest daily precipitation related records were set or tied.

Temperature and Precipitation Overview





Above: Percent of normal precipitation (left, figure 1) and departure from normal average temperature (right, figure 2) for October 2017 in North Dakota. Figure 1 produced by the Applied Climate Information System, Figure 2 produced by NDAWN.

October 2017 Climate Summary

Kansas Climate Summary

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KANSAS STATE UNIVERSITY

Cold End

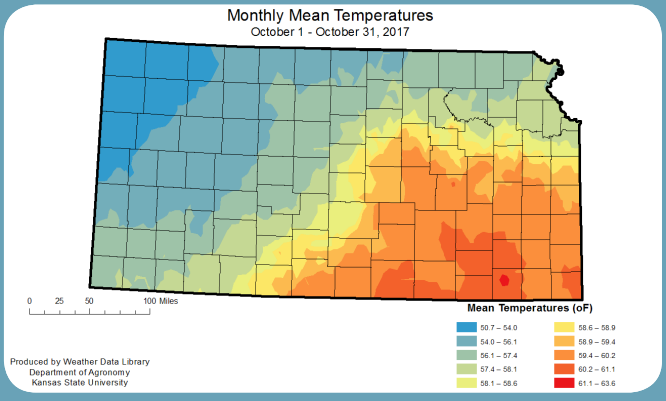
The cold temperatures that ended October were not enough to balance the warm start to the month. Temperatures averaged warmer than normal across all divisions. Statewide average temperature was 57.2 oF, or 1.5 degrees warmer than normal. The Southwest Division came closest to normal with an average of 56.5 oF, or 0.5 degrees warmer than normal. In contrast, the East Central Division averaged 58.9 oF or 2.5 degrees warmer than normal. The warmest reading for the month was 94 oF recorded at Hillsdale Lake, Miami County, on the 3rd. This set both a new daily record and a new monthly record for the location. The coldest reading was 11 oF reported at both Alton 2SW, Osborne County, and Russell 2E, Russell County, on the 28th. Most of the departure from normal came on the low temperature side. There were 17 new daily records for warm minimum temperatures, and only 6 new daily records for high maximum temperatures. Despite the warmth, there were 6 new record cold minimum temperatures and 8 new record low maximum temperatures. The 15 oF low reported at Great Bend 3W on the 31st set not only a record low for the date, but also a record low for the month at that location.

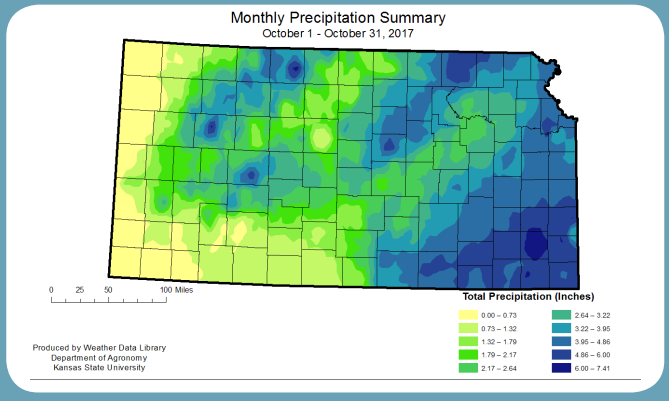
Extreme western Kansas saw a break in the heavy precipitation that dominated September, but heavy amounts were reported in the North Central Division, as well as the eastern three divisions. Only the Southwestern Division had less than normal precipitation for the month. That division averaged 1.21 inches or 83 percent of normal. The September-October precipitation total for the Southwest Division is still averaging 3.66 inches or 120 percent of normal. Statewide average precipitation was 2.78 inches or 118 percent of normal. The greatest monthly total at a National Weather Service Coop (NWS) station was 7.08 inches at Chanute 4E, Neosho County. The greatest monthly total at a Community Collaborative Rain Hail and Snow (CoCoRaHS) network station was 7.41 inches at Phillipsburg 5.7 E, Phillips County. The greatest daily totals for each network: 6.37 inches at Gove 4W, Gove County, on the 3rd (NWS); 5.43 inches at Morland 9.7 S, Graham County, on the 3rd. The daily report at Gove 4W on the 3rd set an all-time record of the station. A second all-time record was set at Hill City 1E with 5.03 inches, also on the 3rd.

Severe weather was more active in October. The preliminary tornado count is 14, with 46 hail reports and 22 reports of damaging wind The tornadoes came in two outbreaks: on the 2nd in western KS and on the 6th in central KS. In both cases, the tornadoes were classified as EF0 or EF1. Damage was to trees, power poles/lines, and outbuildings. There were no reports of injuries.

The near normal precipitation coupled with only slightly warmer than normal temperatures resulted in improvement in the drought conditions across the state. There was a 26 percent decrease in drought coverage from the end of September through the end of October. The October outlook calls for drier than normal conditions in Southwest KS, with equal chances of above or below normal precipitation across the rest of the state. This is coupled with increased chances of above normal temperatures in the western and southern parts of the state, with equal chances of above or below normal temperatures across the rest of the state.

Temperature and Precipitation Overview





Above: October 2017 monthly mean temperatures (left) and total precipitation (right) in Kansas. Maps produced by Weather Data Library, Department of Agronomy, Kansas State University.

Nebraska Climate Summary

Martha Shulski - State Climatologist
Nebraska State Climate Office, University of Nebraska-Lincoln
For more information: https://nsco.unl.edu/

NEBRASKA STATE CLIMATE OFFICE

Season-ending freeze a bit later than normal, strong winds impacts harvest

October brought warm and wet conditions to the eastern two-thirds of Nebraska and cool, dry conditions to the west. Temperatures averaged close to 60°F in the far southeast, which was a few degrees above average. In the Panhandle, temperatures averaged in the mid 40s, up to three degrees below average.

A few locations around Nebraska reached the freezing mark during September, but the widespread and growing season-ending hard frost occurred during October. The first event occurred on October 10th and 11th reaching primarily western Nebraska. The second hard frost occurred at mid-month, and the third event, which was statewide, occurred on the 27th and 28th. These first freeze dates were generally later than the average date for the respective locations, but not record-breaking.

The high temperature for the month was 87°F, reported at a handful of locations throughout Nebraska early in the month. As more seasonable air filtered into the state later in the month, lows near zero were reported in the west. By month's end, soil temperatures under bare ground were mostly in the 40s across the state.

Precipitation

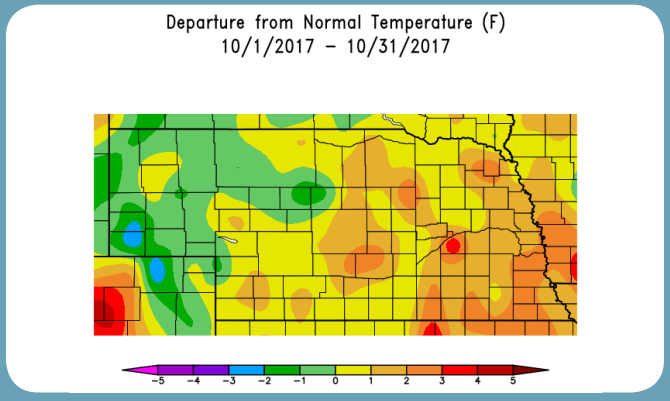
For most of the state, the first half of October was much wetter than the second half. In fact, 90% of the moisture received in Lincoln occurred during the first 10 days of the month. Monthly totals of 4 to more than 7 inches were received in the east, which is about 2 – 3 inches more than normal. Conditions in the western half of the state were near normal to about an inch below normal. A half inch to an inch of rain fell in the west.

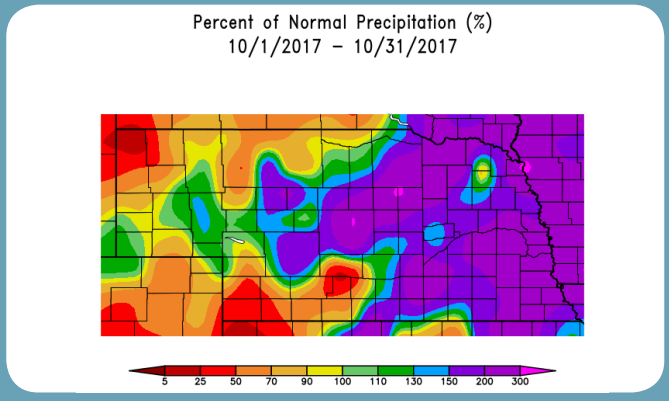
A handful of hail and wind events were reported in the state during October – a function of both localized convective severe weather and frontal boundary passage. One tornado briefly touched down 4 miles northwest of St. Edwards on the 2nd and was an EF0. The Nebraska Mesonet station near Ord reported a wind gust of 54 mph, also on October 2nd. High winds associated with weather fronts occurred on the 23rd, 24th, 26th and 27th of October. Peak wind gusts in excess of 50 mph were reported.

Crops

As with the end of September, the wetness during the first part of October was an issue resulting in harvest delays. For the remainder of the month, mostly dry conditions led to significant field activity that put corn and soybean harvest percentages back closer to normal. The high wind event in late October resulted in substantial ear losses for fields yet to be harvested. This is causing concern about feeding stalks with an abundance of corn on the ground.

Temperature and Precipitation Overview





Above: October 2017 departure from normal temperature (left) and percent of normal precipitation (right) in Nebraska. Maps produced by the Applied Climate Information System.

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.

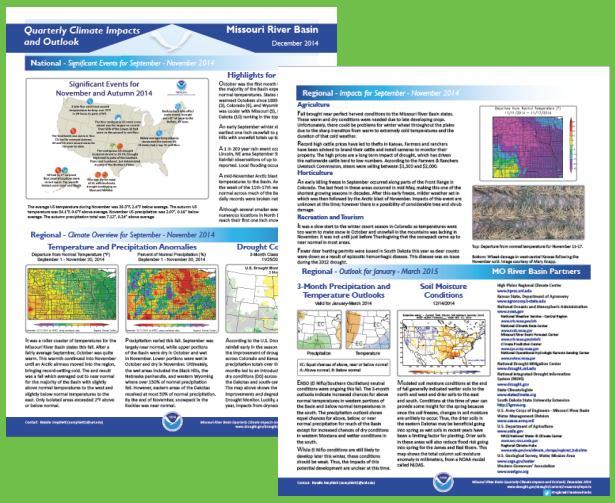
Much of the data and products found throughout this publication were built on the Applied Climate Information System (ACIS) framework. ACIS was designed to manage the complex flow of information from climate data collectors to the end users of climate data information. The main purpose of ACIS is to 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.

ACIS Applied Climate Information System

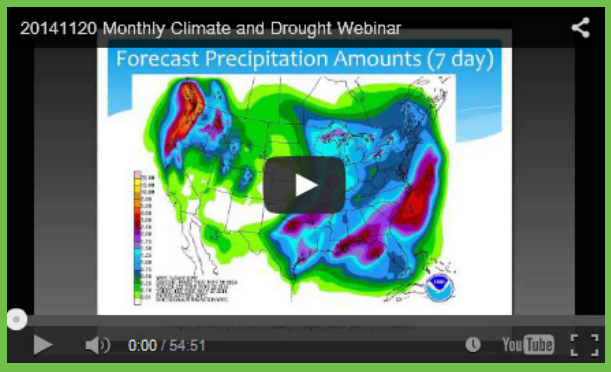
Additional Summary Information for the High Plains

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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