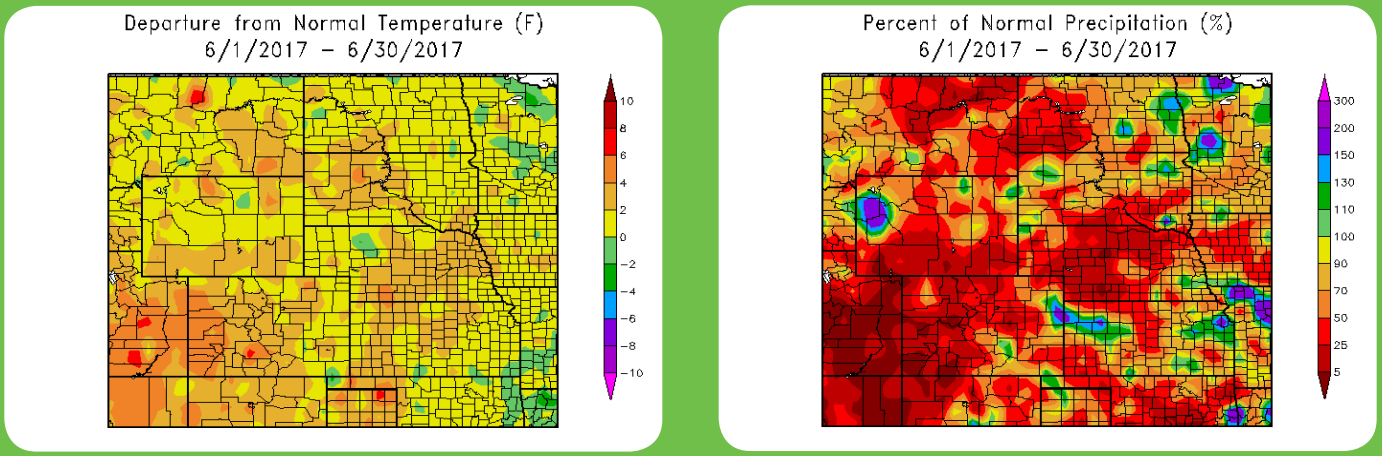
Drought Intensifies Rapidly in the Northern Plains

June brought a variety of weather conditions to the High Plains, including widespread dryness, heat waves, severe weather outbreaks, and flooding from snowmelt. Beginning with the dryness, below-normal precipitation during spring carried into June in the Dakotas and northeastern Montana, which resulted in rapid intensification of drought in this region. As of the end of June, much of this area had received no more than 50 percent of normal precipitation since April, which is a critical time for receiving ample precipitation so that crops take in adequate moisture for growth and pastures green up to feed livestock. The lack of precipitation depleted topsoil moisture, thus causing agricultural impacts to accumulate quickly. According to the July 5, 2017 U.S. Weekly Weather and Crop Bulletin, 68 percent of South Dakota's topsoil moisture was rated short to very short, compared to 54 percent in North Dakota. In South Dakota, nearly two-thirds of the spring and winter wheat crops were in poor to very poor condition. Similar conditions were reported for pastures in the Dakotas. Heat waves experienced in June exacerbated drought conditions, and without widespread precipitation and cooler conditions in July, the situation could become dire.

Severe weather and flooding also occurred throughout the High Plains in June. Reports of tornadoes, large hail, and high winds were numerous in all High Plains states. Severe weather impacted several cities and their surrounding areas. For instance, tornadoes touched down near Omaha, Nebraska and Grand Forks, North Dakota, and hail damage occurred in Lincoln, Nebraska and Cheyenne, Wyoming. Meanwhile, flooding continued on the Wind River and its tributaries in Wyoming, which was a result of runoff from the much-above-normal snowpack in the Wind River Range. The Casper Star Tribune stated that Fremont County, which includes the Wind River Indian Reservation and the cities of Lander and Riverton, was preparing for record-setting flooding during the first part of June. By the end of the month, floodwaters had begun to recede and many roads were reopened.

Temperature and Precipitation Overview



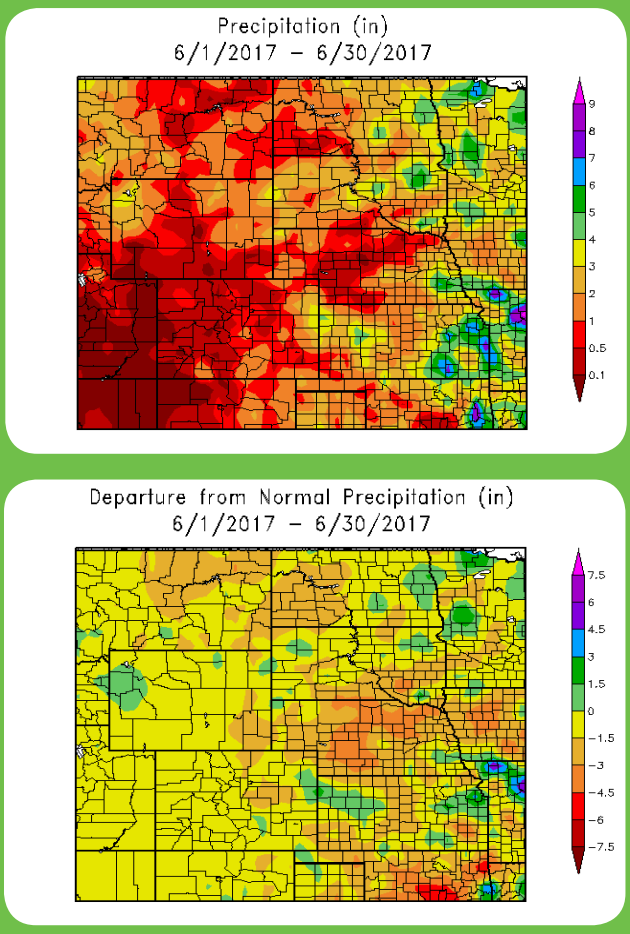
Above: Departure from 1981-2010 normal temperature (left) and percent of normal precipitation (right) for June 2017 in the High Plains region. Maps produced by the High Plains Regional Climate Center and are available at: http://hprcc.unl.edu/maps/current .

Precipitation

The precipitation pattern turned dry during June, as most of the High Plains region experienced below-normal precipitation. Other than some pockets of wetness, the majority of the region only received 50 percent of normal precipitation, at best. Precipitation was particularly abysmal across parts of Colorado, Wyoming, western and central Nebraska, and western North Dakota where these areas received less than 25 percent of normal precipitation. This dryness resulted in some impressive records. The following locations had a top 5 driest June on record: Chadron, NE (2nd driest), North Platte, NE (2nd driest), Laramie, WY (2nd driest), Dickinson, ND (3rd driest), and Valentine, NE (4th driest). This dryness came at a critical time for crop growth and, as a result, drought began to spread quickly across the northern High Plains and has negatively impacted agriculture.

Despite the widespread dryness, it was a very active month for severe weather on the Plains. Numerous severe weather outbreaks occurred throughout June, and tornadoes, high winds, and large hail were reported in all six states in the High Plains region. One area that was repeatedly impacted was eastern Nebraska. Several storm systems made their way through this area and caused damage to homes and vehicles. On the 16th, supercells developed in northeastern Nebraska and raced southeastward, eventually congealing into a squall line. Tornadoes spun up along the squall line, several of which hit the Omaha suburb of Bellevue, Nebraska. An EF-2 tornado with winds of approximately 135 mph (217 km/hr) ripped roofs off homes. Another tornado went through Offutt Air Force Base, damaging several buildings and two of America's four E-4B Doomsday Planes. Storm spotters measured impressive wind gusts with the squall line, including 110 mph (177 km/hr) two miles northwest of Fremont and 104 mph (167 km/hr) in Omaha.

Regional Precipitation



Above: Total precipitation in inches (top) and departure from normal precipitation in inches (bottom) for June 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.

Lingering wetness enabled crop diseases to spread in parts of Kansas and Nebraska during June. According to the Kansas Wheat Innovation Center, the Wheat Streak Mosaic Virus has been the primary culprit for low wheat yields throughout western and central Kansas. The virus was also prevalent in southwestern Nebraska, and wheat rust was reported in the North Platte area. Black stem disease was reported in alfalfa in western Nebraska. In addition to the crop diseases, winter wheat damage from the late-spring snowfall in southwestern Kansas has been realized. Kansas State University agronomist Romulo Lollato reported lodging, tiller abortion, and smaller grain.

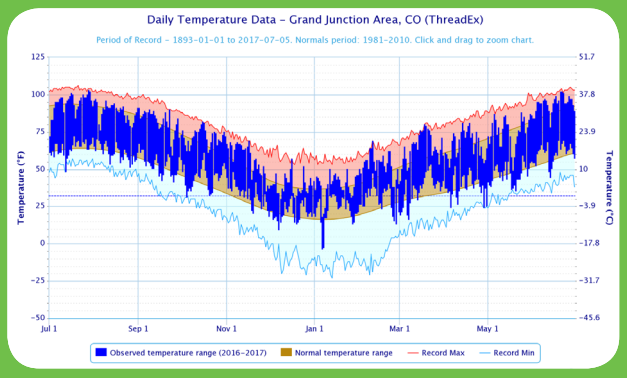
Streamflow Update

Snowpack has melted in the Rocky Mountains in Wyoming and Colorado and has impacted streamflow in these areas. The excessive snowpack in the Wind River Range in Wyoming has run off and caused high streamflows along the Wind River and its tributaries. Flooding was reported in several areas, including the Wind River Indian Reservation and the community of Hudson, Wyoming. Otherwise, stream levels have mostly returned to normal in locations such as the North Platte River in Nebraska, where streamflows were high during peak runoff. Meanwhile, prolonged dryness in the western Dakotas and southwestern Nebraska has depleted surface water supplies, and streamflow has dwindled in these areas. For the month of June, average streamflow on several streams was less than the 10th percentile, which is considered much below normal by the U.S. Geological Survey.

Temperatures

Temperatures were near normal to slightly above normal throughout most of the High Plains region during June. The greatest departures occurred in western and central Colorado, where temperatures exceeded 4.0 degrees F (2.2 degrees C) above normal. Grand Junction, Colorado tied for its 5th warmest June on record, which was 5.0 degrees F (2.8 degrees C) above normal. In fact, Grand Junction experienced temperatures exceeding 100.0 degrees F (37.8 degrees C) on three consecutive days in late June.

Station Spotlight: Grand Junction, CO



Above: Daily temperatures along with extremes and normals values since July 1, 2016 in Grand Junction, CO.

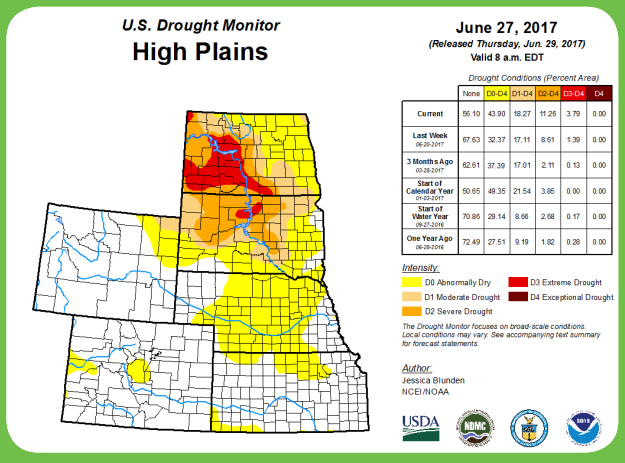
Much of the rest of the region experienced heat waves during June as well. The warmest temperatures of the month occurred in early June throughout the Dakotas. Temperatures soared into the upper 90s and lower 100s, which exacerbated drought conditions. A late-June heat wave pushed temperatures into the 100s in parts of Colorado, Nebraska, and Kansas. On the 21st, North Platte, Nebraska reached an astounding 107.0 degrees F (41.7 degrees C), which tied for the warmest June temperature on record in North Platte.

Despite these heat waves, there was a cool spell in late June across the eastern High Plains. During the last week of June, minimum temperatures dipped down into the 30s to near the freezing mark across parts of the Dakotas. Unfortunately, the cool temperatures had a negative impact on corn. Frost was reported on corn in eastern North Dakota, and frost damage occurred in southeastern South Dakota. Frozen corn was also reported on the Standing Rock Reservation. The extreme temperatures experienced in June combined with below-normal precipitation since spring have taken their toll on crops in the Dakotas.

Drought Conditions

Drought conditions intensified rapidly during the month of June across the Dakotas and northeastern Montana. According to the June 27th U.S. Drought Monitor depiction, nearly half of the High Plains region was experiencing drought or abnormal dryness (D0-D4), compared to only a quarter of the region at the end of May. Conditions worsened considerably in the Dakotas, and some areas quickly slipped into extreme drought (D3). While much of the Dakotas experienced a wet winter, it was very dry during the spring, which is a critical time for moisture as plants come out of winter dormancy and crops are planted. Spring precipitation was only 25-50 percent of normal for the majority of the Dakotas, and the dryness carried into June as well. A hot spell with temperatures in the high 90s and low 100s occurred in early June, making conditions even worse.

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/.

A wide range of drought impacts have been reported in the Dakotas. The winter and spring wheat crops were faring poorly, especially in South Dakota. Pasture conditions have suffered considerably across the Dakotas, which has led to the culling of herds and the allowance of emergency grazing on Conservation Reserve Program (CRP) lands. Water hauling for livestock has been reported in some areas. Due to the scarcity of hay, the North Dakota Department of Agriculture designed an interactive online map to display information on producers selling hay, hay haulers, and hay/pasture land for rent and feedlots and can be accessed here: http://ndda.maps.arcgis.com/apps/webappviewer/index.html?id=d9266e1cc231463399c585d7f0a39893.

Climate Outlooks

According to the Climate Prediction Center, ENSO-neutral conditions are present in the Pacific. Equatorial sea surface temperatures are near average to above average across most of the Pacific Ocean. ENSO-neutral conditions are favored in the Northern Hemisphere through fall 2017. If you are looking for more information about ENSO, check out the ENSO blog here: https://www.climate.gov/news-features/department/8443/all.

According to the National Weather Service, water levels have come down in the Wind River and its tributaries and the North Platte River in Nebraska where flooding occurred during the spring. There is less than a 50 percent chance of long-range flooding throughout most of the High Plains region through September. The National Interagency Fire Center has predicted above-normal wildland fire activity in the western Dakotas through October. 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 July-September temperature outlook indicates an increased chance of above-normal temperatures for nearly all of the contiguous U.S. except for the northern Rockies. This includes all of the High Plains region except northwestern North Dakota and northern Wyoming. Chances are greatest for above-normal temperatures in western and southern Colorado. Elsewhere, there is an equal chance for above-, below-, or near-normal temperatures in the contiguous U.S. during the July-September period.

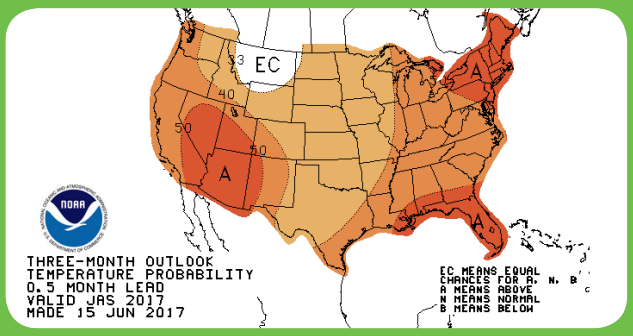
Precipitation

The precipitation outlook for the next three months calls for a higher probability of above-normal precipitation across much of the northern Plains, as well as coastal areas of Texas and Louisiana. In the High Plains region, this includes North Dakota, South Dakota, northern Nebraska, and northeastern Wyoming. Chances are greatest for above-normal precipitation across western and central North Dakota and northwestern South Dakota. The remainder of the contiguous U.S. has equal chances for above-, below-, or near-normal precipitation.

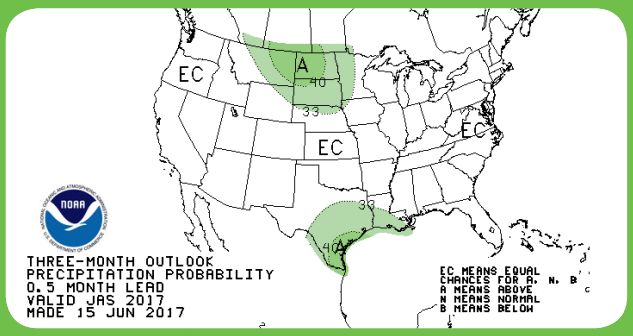
Drought

The June 15th U.S. Seasonal Drought Outlook shows that drought is expected to persist across portions of California and southwestern Arizona. Drought may improve or be removed in portions of the Southwest, the Plains, and the Southeast, including Florida. In the High Plains, this includes the region in drought in the northern Plains, including eastern Montana, much of North Dakota, and northern and central South Dakota. Drought development is not predicted in any region of the U.S. through September.

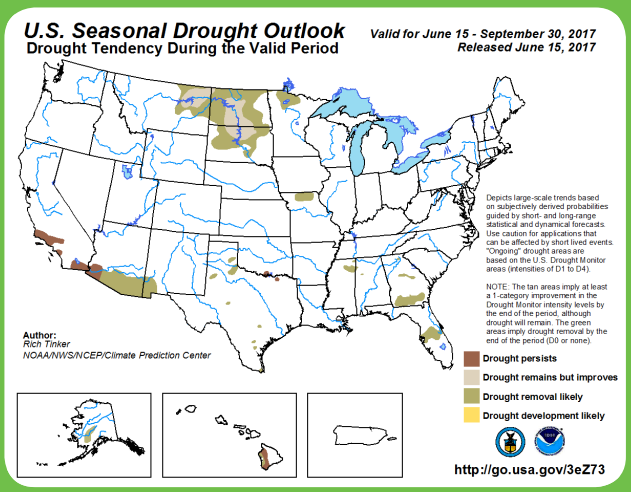
Temperature Outlook



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.

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	83.8	54.8	69.3	2.1	99	06/27+	46	06/24	0.68	-1.78	28
Alamosa San Luis Airport	82.6	42.0	62.3	2.7	90	06/21+	32	06/14	0.19	-0.30	39
Colorado Springs Municipal Airport	83.8	54.8	69.3	4.2	95	06/21	46	06/01	0.50	-2.00	20
Denver International Airport	85.5	53.6	69.5	2.1	99	06/20	42	06/13	0.33	-1.65	17
Grand Junction Walker Field Airport	93.8	60.2	77.0	5.0	102	06/21+	44	06/13	0.03	-0.43	7
Pueblo Memorial Airport	89.2	55.4	72.3	2.3	102	06/21+	44	06/14	1.57	0.21	115

Kansas	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Concordia Municipal Airport	88.3	63.3	75.8	2.4	98	06/20+	52	06/24	3.34	-0.71	82
Dodge City Regional Airport	88.3	62.5	75.4	1.5	102	06/17	56	06/26+	3.12	-0.12	96
Goodland Renner Field	85.5	57.5	71.5	1.8	100	06/21	48	06/01	4.44	1.19	137
Topeka Municipal Airport	86.6	64.4	75.5	1.3	94	06/15	53	06/26	6.59	1.19	122
Wichita Mid-Continent Airport	88.6	65.6	77.1	1.3	95	06/16+	58	06/08	4.58	-0.62	88

Nebraska	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Chadron Municipal Airport	83.6	50.8	67.2	1.3	96	06/21	41	06/26+	0.81	-2.43	25
Grand Island Airport	87.5	61.2	74.4	3.1	99	06/13	47	06/24	2.10	-2.20	49
Lincoln Municipal Airport	88.0	61.8	74.9	2.3	98	06/11	47	06/24	7.35	3.00	169
Norfolk Karl Stefan Airfield	85.8	58.6	72.2	2.0	95	06/21	44	06/25	2.47	-1.79	58
North Platte Regional Airport	87.9	55.3	71.6	3.7	107	06/21	44	06/25	0.43	-2.99	13
Omaha Eppley Airport	88.2	63.2	75.7	3.6	97	06/21	52	06/25+	3.14	-1.04	75
Valentine Miller Field	86.8	54.6	70.7	3.2	102	06/09	39	06/24	0.53	-3.03	15

North Dakota	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	% Norm
Bismarck Municipal Airport	82.5	53.2	67.9	3.2	101	06/09	40	06/26	1.74	-1.43	55
Fargo International Airport	80.3	55.3	67.8	1.6	96	06/02	40	06/26	2.50	-1.40	64
Grand Forks International Airport	78.8	54.3	66.5	2.5	96	06/02	41	06/25	4.57	1.09	131
Theodore Roosevelt Airport	79.2	47.4	63.3	1.1	92	06/05	38	06/25+	0.63	-2.57	20
Williston International Airport	82.0	51.3	66.7	3.5	96	06/05	42	06/04	1.29	-1.23	51

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.

June 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	82.7	52.1	67.4	1.8	100	06/02	39	06/26+	3.94	0.24	106
Huron Regional Airport	83.6	54.1	68.8	1.0	95	06/02	43	06/26+	3.04	-0.89	77
Pierre Regional Airport	84.1	54.8	69.5	1.8	103	06/09	43	06/25+	2.60	-0.97	73
Rapid City Regional Airport	83.4	50.8	67.1	2.6	99	06/09	40	06/25	1.75	-0.78	69
Sioux Falls Joe Foss Field Airport	83.3	57.7	70.5	2.7	94	06/02	41	06/01	3.29	-0.63	84

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	80.6	45.3	62.9	0.7	94	06/21+	33	06/13	1.01	-0.60	63
Cheyenne Municipal Airport	78.5	50.2	64.3	2.2	92	06/27+	45	06/23+	0.67	-1.67	29
Lander Hunt Field Airport	79.1	48.4	63.8	0.8	93	06/20	40	06/24	0.26	-1.01	20
Laramie Regional Airport	77.8	42.4	60.1	2.9	88	06/20	35	06/15+	0.19	-1.35	12
Rawlins Municipal Airport	80.0	44.1	62.1	2.8	91	06/20	30	06/13	0.10	-0.93	10
Sheridan County Airport	78.9	47.7	63.3	1.7	94	06/08	39	06/23	1.11	-1.01	52

June 2017 Highlights

Monthly Rankings

Precipitation in inches, Temperature in degrees F

Driest	**Precipitation / Ranking**	**Record / Year**	**Period of Record**
Chadron, NE	0.81 / 2nd driest	0.67 / 1961	1942-2017
North Platte, NE	0.43 / 2nd driest	0.33 / 1952	1875-2017
Laramie, WY	019 / 2nd driest	0.07 / 2001	1948-2017
Dickinson, ND	0.63 / 3rd driest	0.54 / 2006	1949-2017
Valentine, NE	0.53 / 4th driest	0.32 / 1918	1890-2017
Rawlins, WY	0.10 / 7th driest (tie, 1989)	T / 2012+	1951-2017
Akron, CO	0.68 / 9th driest	0.19 / 1944	1937-2017
Warmest	**Temperature / Ranking**	**Record / Year**	**Period of Record**
Grand Junction, CO	77.0 / 5th warmest (tie, 1918)	79.1 / 1977	1893-2017

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For more information please contact us: http://www.hprcc.unl.edu/contact.php.

North Dakota 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), the statewide total June precipitation was 2.03", 0.58" less than the last year, and 1.35" less than the 1981-2010 average, making it the 14th driest June in the 123-year period of record. It was the driest June since 2006. Below-average precipitation was common in most of the state with the exception of a few above normal spots around the Devils Lake Basin (Figure 1). The greatest monthly precipitation accumulation was 7.59" recorded in Grand Forks, Grand Forks County. The greatest 24-hr precipitation was 3.74" recorded in Grand Forks, Grand Forks County on June 29. Based on historical records, statewide June precipitation showed a slight negative long-term trend of -0.21" per century since 1895. The highest and the lowest June precipitation for the state ranged from 7.01" in 2005 to 0.11" in 1974.

Temperature:

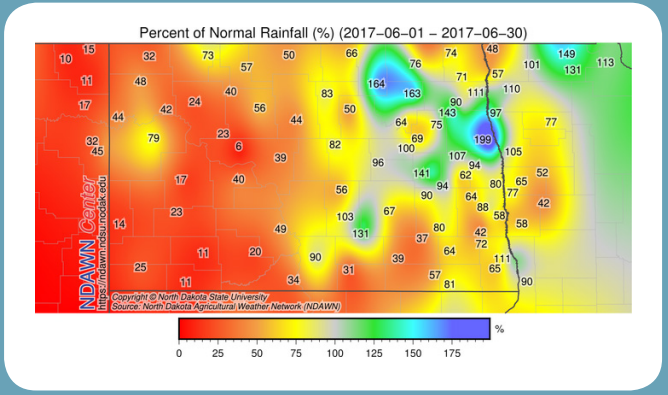
The official state average June temperature was 64.8°F, 1.1° colder than the last year, but 1.5° warmer than the 1981-2010 average, making it the 33rd warmest June in the 123-year period of record. Above-average temperatures were observed commonly in all parts of the state accept for a few pockets of cooler than-average conditions with no distinct pattern (Figure 2). The state's highest and lowest daily temperatures ranged from 101° on June 9 in Bismarck, Burleigh County to 32° on June 25 in Hettinger, Adams County. Based on historical records, the state average June temperature showed a positive trend of 0.13°F per decade trend since 1895. The highest and the lowest monthly state June average temperatures ranged from 74.1° in 1988 to 56.8° in 1915.

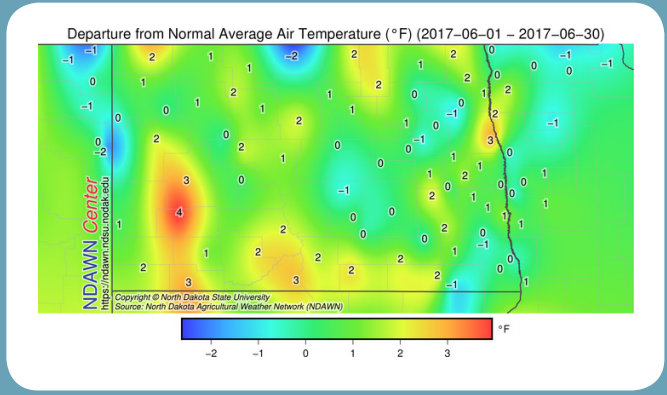
Drought and other notable impacts:

Consistently dry conditions in western North Dakota worsened the drought status in these parts of the state. Northeastern parts of the state received some timely and sufficient amounts of rain to improve the conditions there. Based on a scale developed by the National Drought Monitor (DM), 25% of the state was in Extreme Drought, 20% of the state was in severe drought, 20% of the state was in moderate drought, and the rest of the state was in abnormally dry conditions. Cattle producers are worried about deteriorating pasture and hayland conditions and reduction of cattle size in drought-stricken areas. Some of the comments coming from extension agents were concentrated on how the crops were looking stressed and some are starting to burn up. They also mentioned noticing pastures burning up and grasses not growing. Hay was averaging around 1,300 pounds per acre in Oliver County and farmers are concerned that what is left will burn out very fast. Drought conditions are expected to continue and intensify in the short term with drier and warmer than average conditions.

NDAWN's highest peak gust in June was 66 mph, recorded at the Langdon weather station in Cavalier County on June 9, 2017. The St. Thomas weather station in Pembina County also recorded a peak gust of 64mph on the same day. The NOAA Storm Report reported 132 storm events including 22 tornadoes, 55 hail events, and 55 wind damage reports. Frost damage from cold temperatures on June 25 was present in corn, soybean, dry bean and wheat in counties including Emmons, Logan, McIntosh and Stutsman.

Temperature and Precipitation Overview





Above: Percent of normal precipitation (left, figure 1) and departure from normal average temperature (right, figure 2) for June 2017 in North Dakota. Both figures produced by NDAWN.

June 2017 Climate Summary

Kansas Climate Summary

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

KANSAS STATE UNIVERSITY

Uneven rainfall

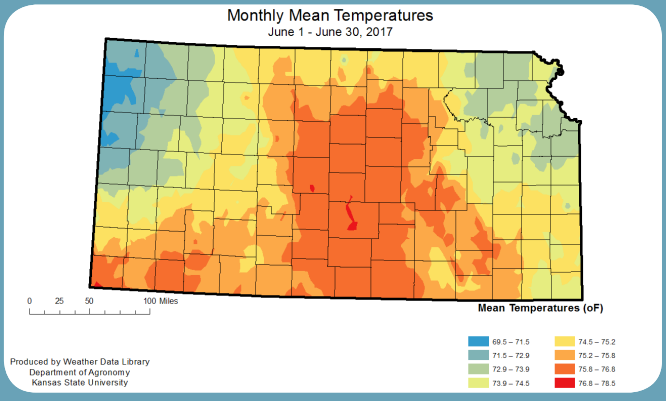
The wet May gave way to uneven rainfall in June. The statewide average precipitation was 3.23 inches or 74 percent of normal. The East Central and West Central divisions came closest to normal. The East Central Division averaged 5.57 inches or 99 percent of normal. The West Central Division averaged 2.74 inches or 98 percent of normal. In contrast, the Southwest Division averaged just 1.63 inches or 50 percent of normal, marking it as the division with the lowest percent of normal. The greatest monthly precipitation total for a National Weather Service (NWS) Coop station was 11.59 inches at Easton, Leavenworth County. The greatest monthly total for a Community Collaborative Rain, Hail and Snow (CoCoRaHS) station was 9.65 inches at Derby 2.9 N, Sedgwick County. The highest 24hr totals: 4.45 inches at Blue Rapids, Marshall County, on the 17th (NWS); 4.85 inches at Hope 9.4 WNW, Dickinson County, on the 30th (CoCoRaHS).

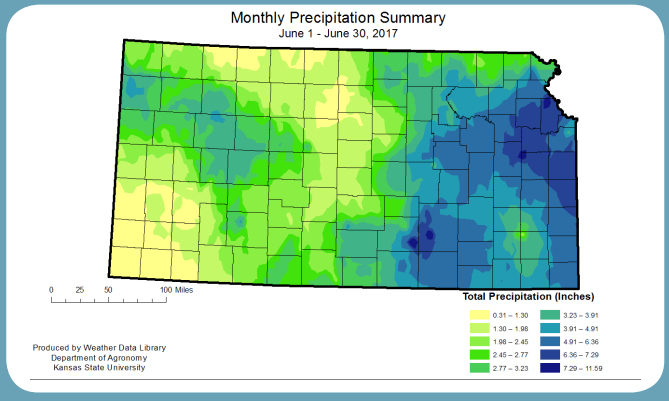
Temperatures rebounded from the cooler-than-normal conditions in May. State-wide temperatures averaged 74.9 oF or 1.6 degrees warmer than normal. The Southeast Division averaged closest to normal with an average of 74.6 oF, or 0.4 degrees warmer than normal. The Southwest Division had the greatest departure with an average of 76.4 oF which was 2.9 degrees warmer than normal. The warmest reading for the month was 110 oF at Tribune 14N, Greeley County, on the 17th. The coldest reading was 39 oF, recorded at Atchison 1S, Leavenworth County, on the 23rd. Despite the warm temperatures, there were only four record high maximum temperatures during the month and 12 record high minimum temperatures. On the cold side, there were 17 new record cold maximum temperature in June and 10 new record low minimum temperatures. None of the temperature records set new records for the month of June. All divisions saw high temperatures reach 90 oF or more, with all but the eastern divisions having highs in the 100s.

Severe weather was again a feature of the month, with most of the events in the form of hail and high winds. There were 3 reports of tornadoes, which is less than the 1950-2016 average of 14 tornadoes in June. In addition, there were 152 hail reports, and 178 high wind reports. One of the worst outbreaks came during the week of June 14th to June 20th when 117 hail events and 124 wind events were reported. The largest hail stones reported were 4.5 inches in diameter, reported near Ulysses, KS on the 20th.

The lower than normal precipitation with warmer than normal temperatures resulted in a return to abnormally dry conditions in parts of the state. The July outlook calls for a slightly increased chance of wetter than normal conditions the across the eastern third of the state coupled with higher chances of above normal temperatures. At this point, the dry pattern expected for the next week is providing a window for field work, but increasing concerns for spring field crops, especially those with poorly developed root systems, due to earlier saturated fields.

Temperature and Precipitation Overview





Above: June 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

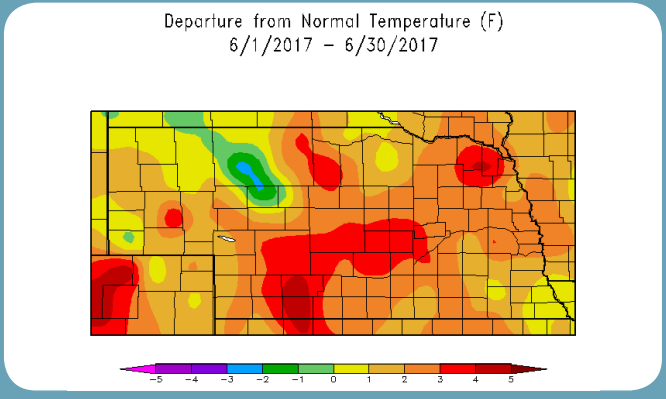
The weather conditions this June left Nebraska in the warm and dry category. The average monthly temperature was 2.1 degrees above average at 70.7°F. This ranks in the top (warmest) 25% for June temperatures. The strongest temperature departures of greater than 3 degrees above average occurred in the southcentral and northeast portions of the state. A handful of locations, mostly in the west, did wind up slightly cooler than normal for the month. Over the long-term (since 1895) June temperatures in Nebraska have increased by about one degree.

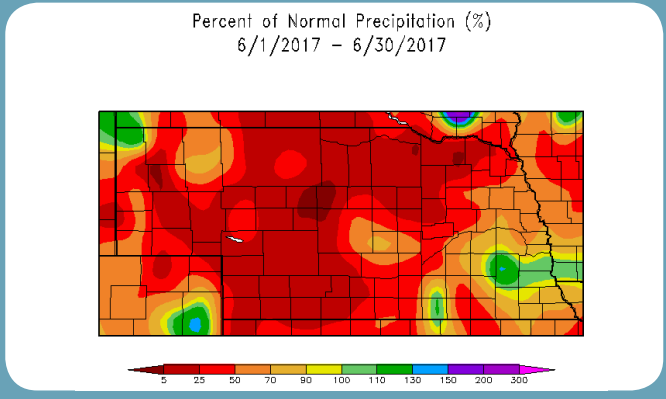
Precipitation statewide ranked as the second driest on record at 1.44 inches. This amount is 2.31 inches below normal. Only June of 1933 has been drier, going back to 1895. The driest areas of the state occurred in a large swath in central Nebraska where only 25% of normal rainfall was observed. A few localized areas did benefit from convective precipitation events during the month. Areas with above normal rainfall were in northern Sioux county and a few locations in southeast Nebraska. In fact, the Lincoln Airport recorded 7.35 inches, which is 6th wettest on record. Nebraska Mesonet monthly rainfall totals ranged from 0.06 inches at Dunning 6NW in the Sandhills to 6.84 inches in Lincoln. Statewide, there has been no appreciable long-term trend in June precipitation amount.

Official storm reports show there were three days with tornadic severe weather outbreaks across Nebraska. On the 12th there were 16 tornado reports with the worst damage occurring at Bayard. June 16th brought severe weather to eastern Nebraska with 9 tornado reports, including within the cities of Lincoln and Omaha. The Nebraska Mesonet station at West Point observed a 74 mph wind gust at 6:33pm on this day. The 29th saw activity in Cedar County with 3 tornado reports.

According to the US Drought Monitor, Nebraska started June with a blank slate - no dryness or drought designation. However, given the lack of rainfall coupled with the warmth, nearly 68% of the state was abnormally dry at the start of July. In addition, D1 (moderate drought) has been introduced in northeast Nebraska, covering nearly 9% of the state. Drought conditions over the last month have also worsened to our north and east with areas of extreme drought (D3) in the Dakotas and eastern Montana. The greatest stress currently reported for crops is for those in sandier soils and pivot corners.

Temperature and Precipitation Overview





Above: June 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.

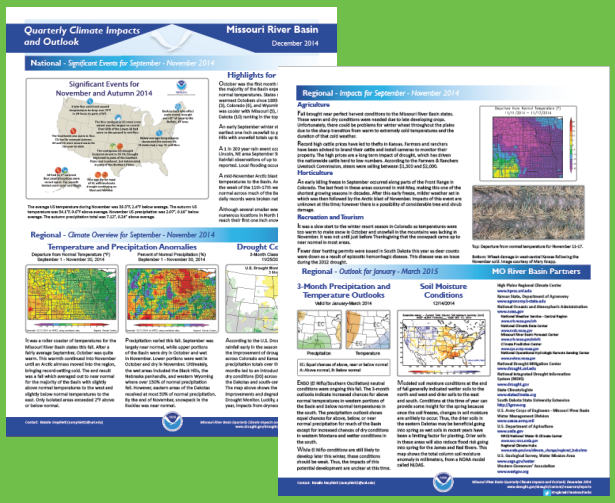
Much of the data and products found throughout this publication were built on the Applied Climate Information System (ACIS) framework. ACIS was designed to manage the complex flow of information from climate data collectors to the end users of climate data information. The main purpose of ACIS is to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

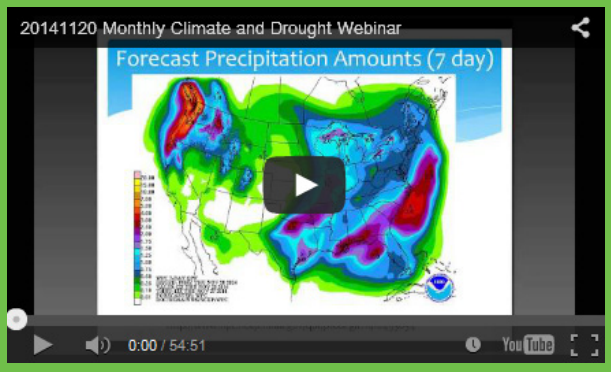
Additional Summary Information for the High Plains

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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