



North Dakota Monthly Climate Summary

June 2017

Volume: 11, No: 6

Precipitation

North Dakota State Climate Office

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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 (Figure 2).

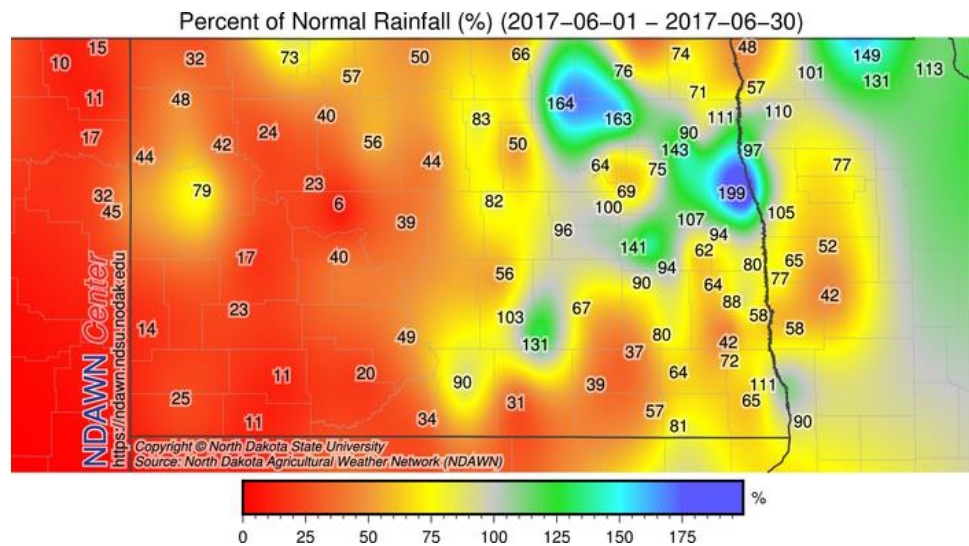


Figure 1. Precipitation Percent of Normal in June 2017 for North Dakota (North Dakota Agricultural Weather Network)



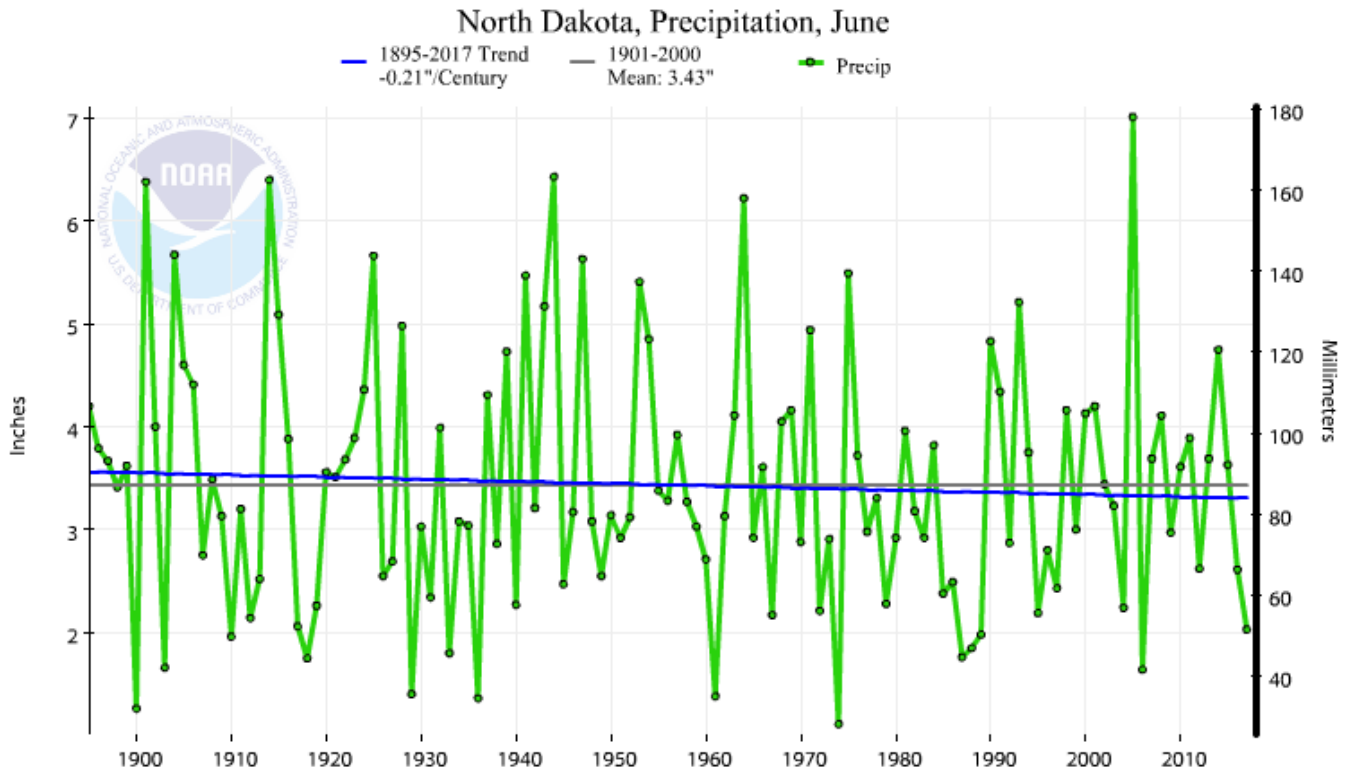
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June Precipitation Statistics

Record High Value: 7.01 inches in 2005
 Record Low Value: 1.11 inches in 1974
 Trend: -0.21" per Century

June 2017 Value: 2.03 inches
 1981-2010 Average: 3.34"
 Monthly Ranking: 14th Driest
 Record Length: 123 Years

Figure 2. Historical June Precipitation Time Series for North Dakota.



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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 (Fig. 3). 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 (Figure 4).

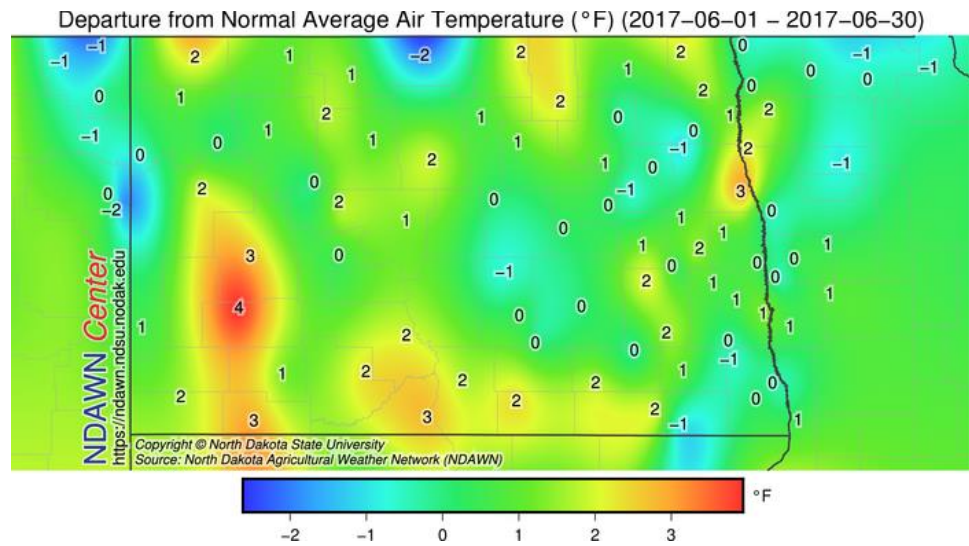


Figure 3. Temperature Departure from Normal in June 2017 for North Dakota (NDAWN).

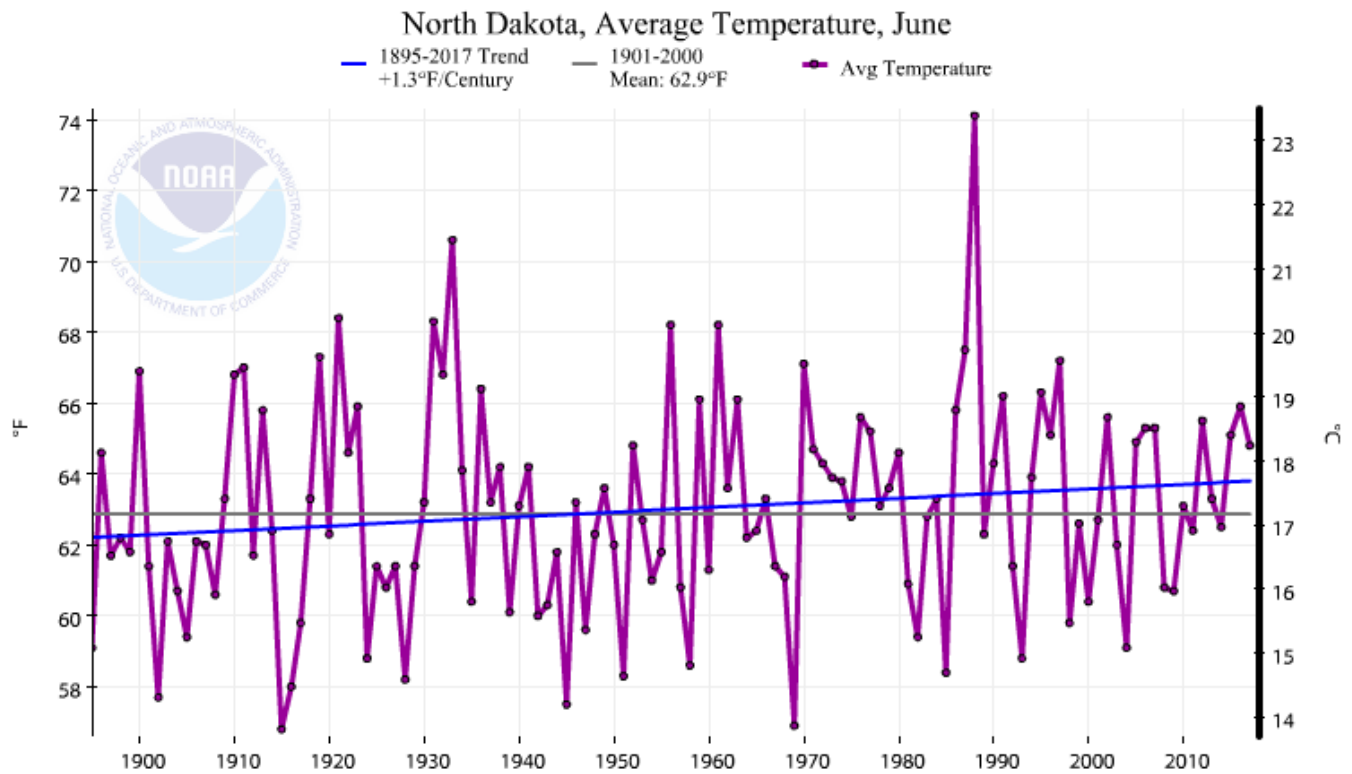




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June Temperature Statistics

Record High Value: 74.1°F in 1988
 Record Low Value: 56.8°F in 1915
 Trend: 0.13°F per Decade

June 2017 Value: 64.8°F
 1981-2010 Average: 63.3°F
 Monthly Ranking: 33rd Warmest
 Record Length: 123 Years

Figure 4. Historical June Temperature Time Series for North Dakota.



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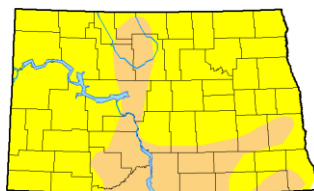
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Notable Impacts

U.S. Drought Monitor North Dakota



May 30, 2017
(Released Thursday, Jun 1, 2017)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0	D1	D2	D3	D4
Current	61.10	36.90	24.11	0.00	0.00	0.00
Last Week (5/23/2017)	56.39	43.61	6.36	0.00	0.00	0.00
3 Months Ago (3/29/2017)	93.83	6.17	0.00	0.00	0.00	0.00
Start of Calendar Year (1/1/2017)	93.87	6.13	0.00	0.00	0.00	0.00
Start of Water Year (10/1/2016)	96.70	3.30	0.41	0.00	0.00	0.00
One Year Ago (5/30/2016)	87.24	12.76	0.00	0.00	0.00	0.00

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

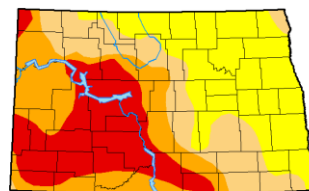
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
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<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor North Dakota



June 27, 2017
(Released Thursday, Jun 29, 2017)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0	D1	D2	D3	D4
Current	0.02	36.88	46.77	46.90	25.06	0.00
Last Week (6/20/2017)	0.02	36.88	47.34	39.90	7.73	0.00
3 Months Ago (3/29/2017)	93.83	6.17	0.00	0.00	0.00	0.00
Start of Calendar Year (1/1/2017)	93.87	6.13	0.00	0.00	0.00	0.00
Start of Water Year (10/1/2016)	96.70	3.30	0.41	0.00	0.00	0.00
One Year Ago (6/27/2016)	82.42	17.58	3.61	0.19	0.00	0.00

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

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
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<http://droughtmonitor.unl.edu/>

Figure 5. Drought Monitor map Comparison for North Dakota in the Beginning (on the left) and at the end (on the right) of June 2017.

Drought Monitor: 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. Figure 5 shows a comparison of the drought conditions across the state between the beginning and the end of the month. Figure 6 on the right shows the statewide drought coverage in % and intensity (i.e. DO, and D1) in time scale representing the state from the beginning to the end of the month with one-week resolution.

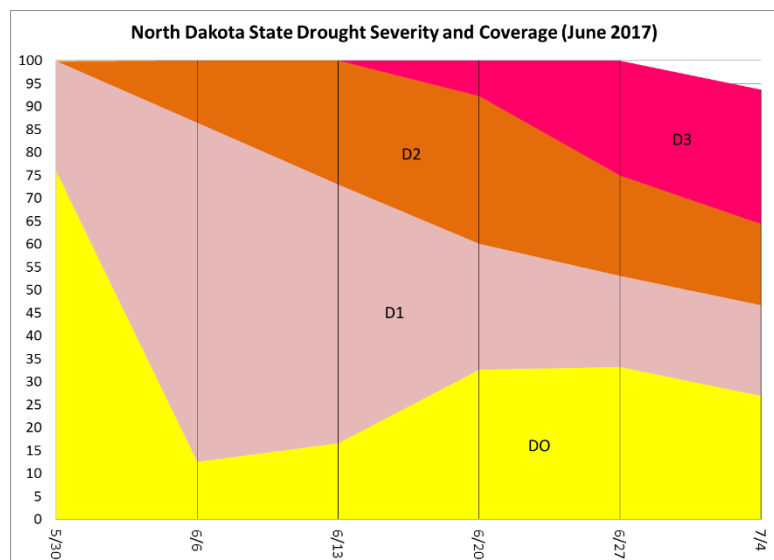
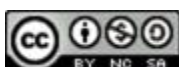


Figure 6. North Dakota State Drought Severity and Coverage Graph for June 2017.

Figure 6 on the right shows the statewide drought coverage in % and intensity (i.e. DO, and D1) in time scale representing the state from the beginning to the end of the month with one-week resolution.



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Counties in extreme drought areas as of June 30: Divide, Williams, Mountrail, Ward, Dunn, Mercer, McLean, Oliver, Burleigh, Morton, Stark, Billings, Golden Valley, Slope, Hettinger, Grant, Sioux, Emmons, Logan, McIntosh, Adams, and Bowman.

Storm Reports: 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. The picture below shows frost-damaged corn in Zeeland, ND (Greg Endres). Table 1 summarizes the number of tornado, hail and damaging wind reports in June, while Figure 7 geographically displays the locations of these storm reports.

Table 1. Summary of June Severe Storm Reports of North Dakota (SPC, NOAA)

Category	Number of Reports
Tornado Reports	22
Hail Reports	55
Wind Reports	55
Total	132

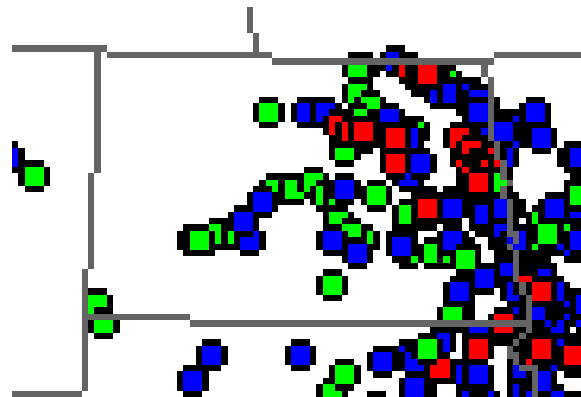


Figure 7. June 2017 North Dakota Storm Events (Red: Tornado; Blue: Wind; Green: Hail).



Frost-Damaged Corn near Zeeland, ND (G. Endres)



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Daily Record Event in June: Across the observation network of weather stations with at least 30 years of history, a total of 36 daily high-temperature related and 27 daily low-temperature related records were set or tied. A total of 5 highest daily precipitation related records were set or tied. Details of the records are in Table 2 below.

Table 2. Summary of daily June records broken or set in North Dakota in June (NCEI Daily Weather Records)

Category	Number of Records
Highest Daily Max Temp.	28
Highest Daily Min Temp.	8
Lowest Daily Max Temp.	13
Lowest Daily Min Temp.	14
Highest Daily Precipitation	5
Highest Daily Snowfall	0
Total	68

Highlight of the Month

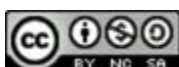
*A daily highest precipitation record of 3.21” set in **Grand Forks** on **June 28**, breaking the previous record by 2.17” that was broken in 1982 (Years on record: 68).*

Agricultural Impact: Persistent dry conditions in the western parts of the state caused drought to intensify. By the end of the month, 25% of the state was under extreme drought 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. The ND DOA formed a Drought Hotline Interactive Map to identify the hay, pasture land and feedlots for rent, individuals that are hauling hay, and the counties in need of hay. The interactive map link is <http://ndda.maps.arcgis.com/apps/webappviewer/index.html?id=d9266e1cc231463399c585d7f0a39893>

In addition, the ND Department of Emergency Services updates the Burn Ban/Restrictions map daily. The latest map can be accessed at <https://www.nd.gov/des/> .

Drought conditions are expected to continue and intensify in the short term with drier and warmer than average conditions. However, the Climate Prediction Center’s three-month outlook is promising some long term relief starting as early as August.

Acknowledgment: Many thanks to Loretta Herbel (NDAES) for her diligent editorial corrections.



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