North Dakota Monthly Climate Summary

December 2018 **Volume: 12, No: 12**

Precipitation

Based on the National Centers for Environmental Information (NCEI), the statewide average December precipitation was 0.63 inch, which was 0.12 inch less than last month but 0.23 inch more than in December 2017, and 0.11 inch more than the 1981-2010 average, making it the 32nd wettest December in the 124-year period of record. It was the wettest December since 2016 (Table 1). The numbers less than 100 in Figure 1 below are shaded in yellow and red to depict the region with below-average rainfall. In contrast, the numbers that are greater than 100 in the same figure are shaded in green and blue to depict the region with above-average rainfall in December. The greatest monthly precipitation accumulation was 1.52 inches, recorded in Steele, Kidder County. The greatest 24-hour precipitation was 0.78 inch, also recorded in Steele on Dec. 27. The greatest monthly snowfall accumulation was 16.5 inches, recorded in Minnewaukan, Benson County. The greatest 24-hour snowfall was 10.5 inches, recorded in Ashley, McIntosh County, on Dec. 27. Based on historical records, statewide December precipitation showed a positive long-term trend of 0.06 inch per century since 1895. The highest and lowest December precipitation for the state ranged from 1.3 inches in 2016 to 0.05 inch in 1944 (Figure 2).

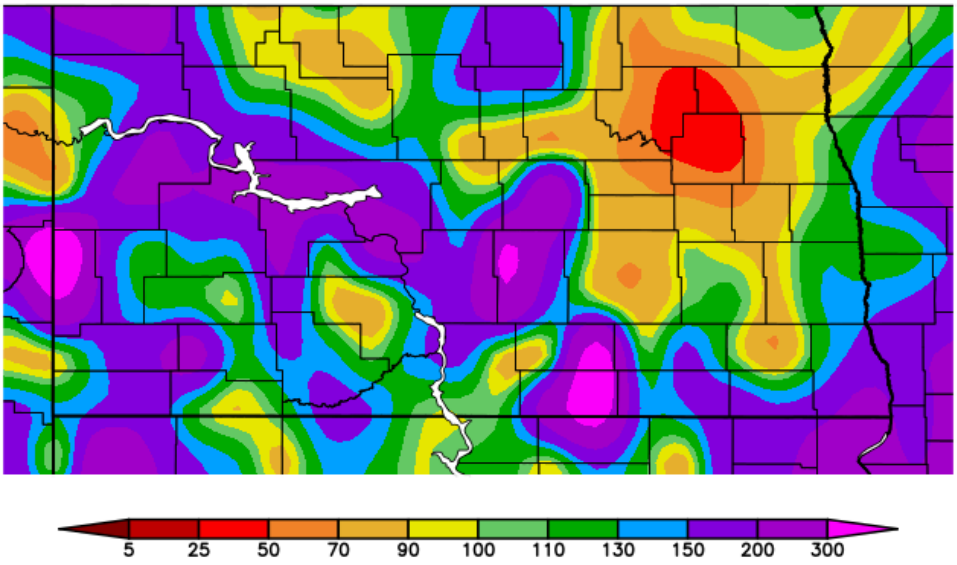

Figure 1. December 2018 precipitation percent of normal for North Dakota. (High Plains Regional Climate Center)

North Dakota State Climate Office: Your Resource for Climate Information

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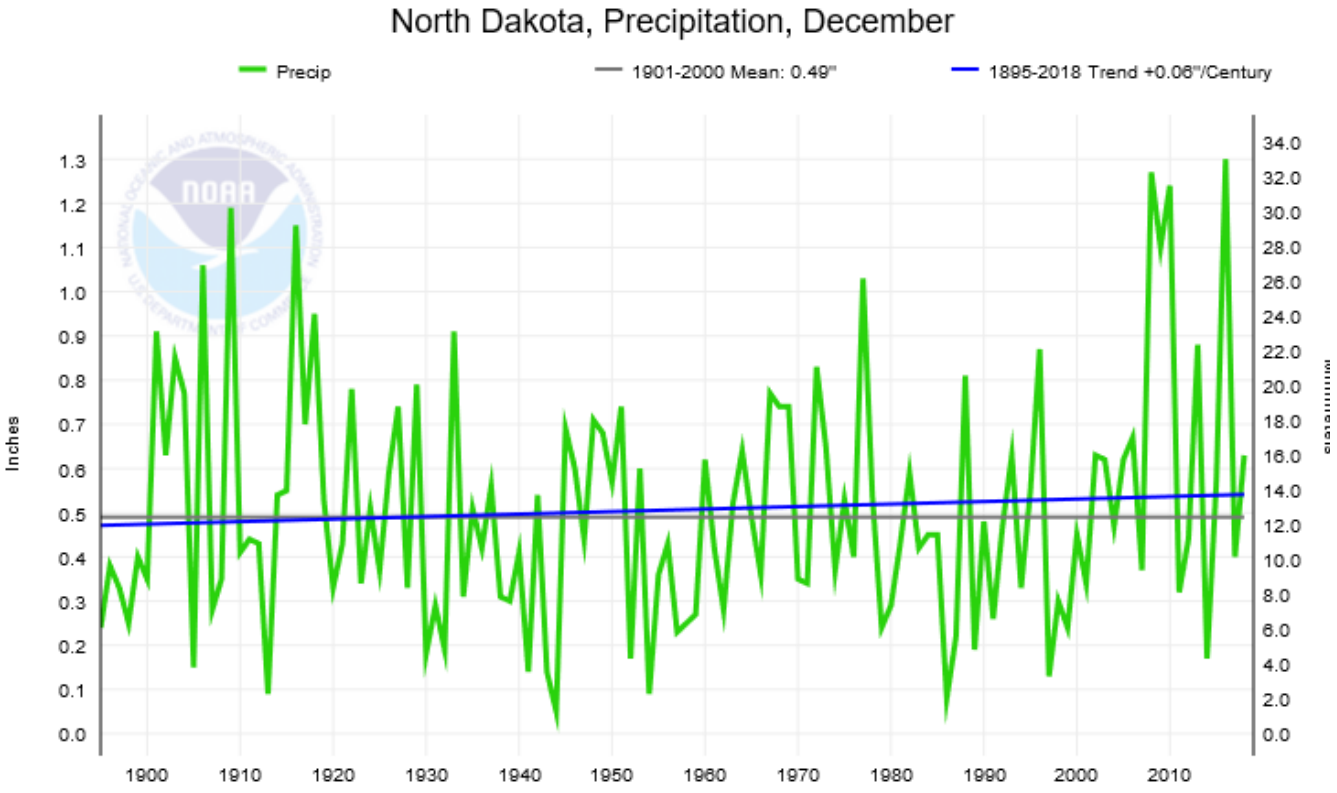

December Precipitation Statistics
Record high value: 1.3 inches in 2016
Record low value: 0.05 inch in 1944
Trend: 0.06 inch per century

December 2018 value: 0.63 inch
1981-2010 average: 0.52 inch
Monthly ranking: 32nd wettest
Record length: 124 years

Figure 2. Historical December precipitation time series for North Dakota.

Table 1. North Dakota December Precipitation Ranking Table.

Period	Value	Normal	Anomaly	Rank	Wettest/Driest Since	Record Year
December 2018	0.63”	0.52”	0.11	93rd driest 32nd wettest	Driest since 2017 Wettest since 2016	1944 2016

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Temperature

The official state average December temperature was 21.4 F, 1.3 F cooler than last month but 5.8 F warmer than in December 2017. The average December temperature was 7.4 F warmer than the 1981-2010 average, making it the 10th warmest December in the 124-year period of record. It was the warmest December since 1939 (Table 2). The positive numbers in Figure 3 are shaded in red and orange to depict the region with much above-average temperature in December. The state's highest and lowest daily temperatures ranged from 58 F on Dec. 20 in Hettinger, Adams County, to minus 22 F on Dec. 28, in Taylor, Stark County. Based on the historical records, the state average December temperature showed a positive long-term trend of 0.26 F per decade since 1895. The highest and lowest monthly state December average temperatures ranged from 25.4 F in 1939 to minus 3.2 F in 1927 (Figure 4).

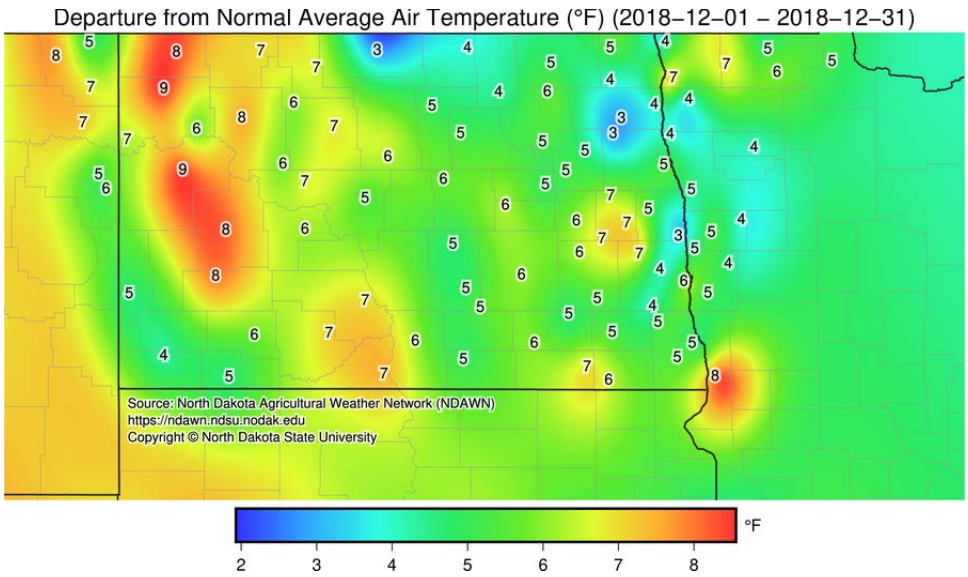

Figure 3. December 2018 temperature departure from normal for North Dakota. (NDAWN)

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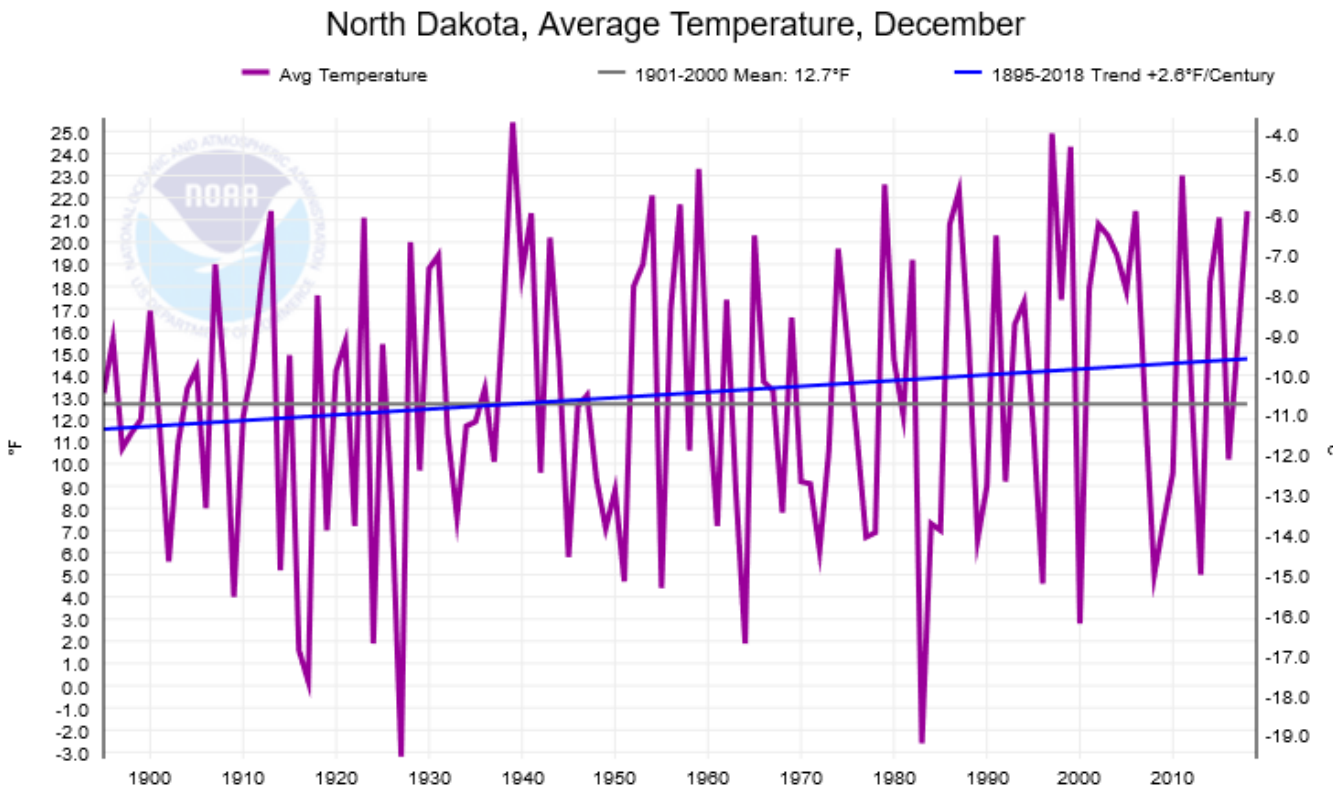

December Temperature Statistics
Record high value: 25.4 F in 1939
Record low value: minus 3.2 F in 1927
Trend: 0.26 F per decade

December 2018 value: 21.4 F
1981-2010 average: 14 F
Monthly ranking: 10th warmest
Record length: 124 years

Figure 4. Historical December temperature time series for North Dakota.

Table 2. North Dakota December Temperature Ranking Table.

Period	Value	Normal	Anomaly	Rank	Warmest/Coolest Since	Record Year
December 2018	21.4	14	+7.4	115th coolest 10th warmest	Coolest since 2017 Warmest since 2011	1927 1939

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Notable Impacts

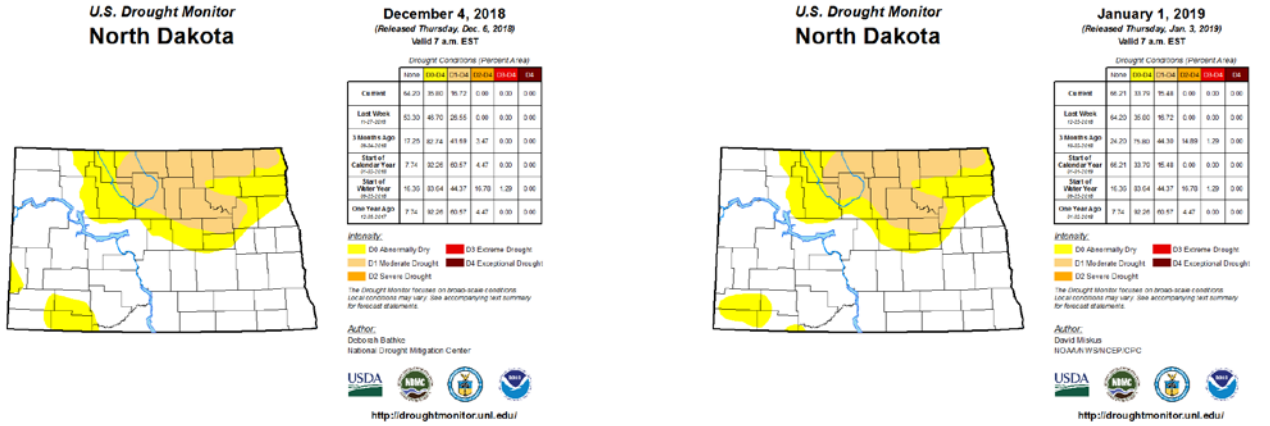

Figure 5. Drought Monitor map comparison for North Dakota in the beginning (on the left) and at the end (on the right) of December 2018.

Drought Monitor (DM): In general, overall drought conditions did not change significantly throughout the month. By the end of December, D1 (moderate drought) covered 15 percent of the state, which was only a 1 percent decrease in coverage, compared with the previous month. Figure 5 shows a comparison of the drought conditions across the state from the beginning to the end of the month. Figure 6 on the right shows the statewide drought coverage in percentage and intensity (DO and D1) in a time scale representing the state from the beginning to the end of the month, with a one-week resolution.

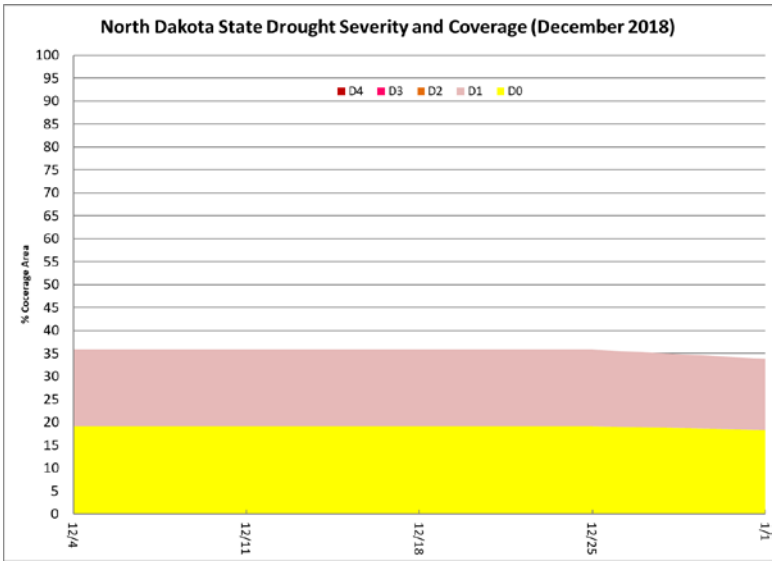

Figure 6. North Dakota drought severity and coverage for December 2018.

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Storm Reports: NDAWN's highest 10-meter peak gust in December was 50 mph, recorded at the Mooreton weather station in Richland County on Dec. 27, 2018.

Daily Record Events in December: Across the observation network of weather stations with at least 30 years of history, a total of one daily high and 26 daily low-temperature-related records were set or tied. A total of 19 highest daily precipitation-related records were set or tied. Details of the records are in Table 3 below.

Table 3. Summary of daily records broken or set in North Dakota in December. (NCEI Daily Weather Records)

Category	Number of Records
Highest daily max. temp.	10
Highest daily min. temp.	24
Lowest daily max. temp.	1
Lowest daily min. temp.	0
Highest daily precipitation	18
Highest daily snowfall	16
Total	**69**

*Highlight of the Month**

*A highest daily snowfall of 10.5 inches was set in **Ashley** on **Dec. 27**, breaking the previous record for that date by 6.5 inches, which was set in 1988 (years on record: 122).*

**The records in this box may be different than the record on Pages 1 and 3 due to the fact that this page only includes records for stations with at least 30 years of history.*