



North Dakota Monthly Climate Summary

August 2023

Volume 17, No. 8

North Dakota State Climate Office: Your Resource for Climate Information

North Dakota State University
School of Natural Resource Sciences

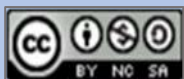
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Precipitation

Based on data from 140 stations* across the North Dakota Agricultural Weather Network (NDAWN) the statewide average precipitation in August 2023 was 2.28 inches, which is only a 0.14 increase from normal average precipitation. The greatest measured precipitation was recorded at the Brampton (2WSW) NDAWN station in Dickey County with 6.17 inches. The least precipitation fell in Ramsey County, where the Webster (1N) NDAWN station measured just 0.43 inches (Figure 1).

Maximum average August precipitation occurred in 1900 with 4.54 inches, and minimum precipitation in 1933 and 1929 with 0.73 inches. Historical climate data indicates a steady trend over a century (NCEI) for the month of August (Figure 2).

Average August precipitation was 1.0 inches greater than the previous month and ranks as the 44th wettest August over 129 years of precipitation data (NCEI).

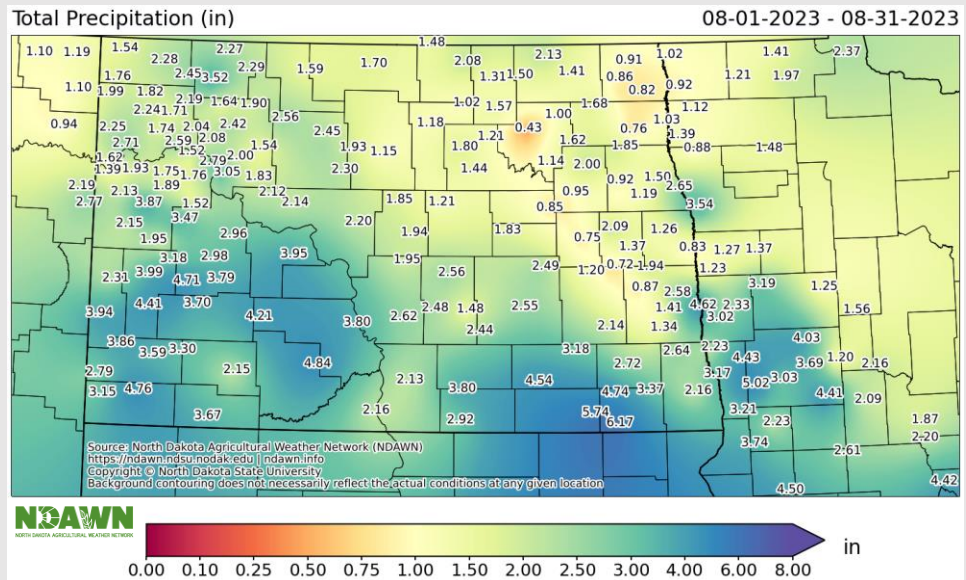


Figure 1: Total precipitation 8/1/2023 - 8/31/2023 at all NDAWN stations (NDAWN)

*Only North Dakota stations used for NDAWN data. All MN and MT stations omitted.

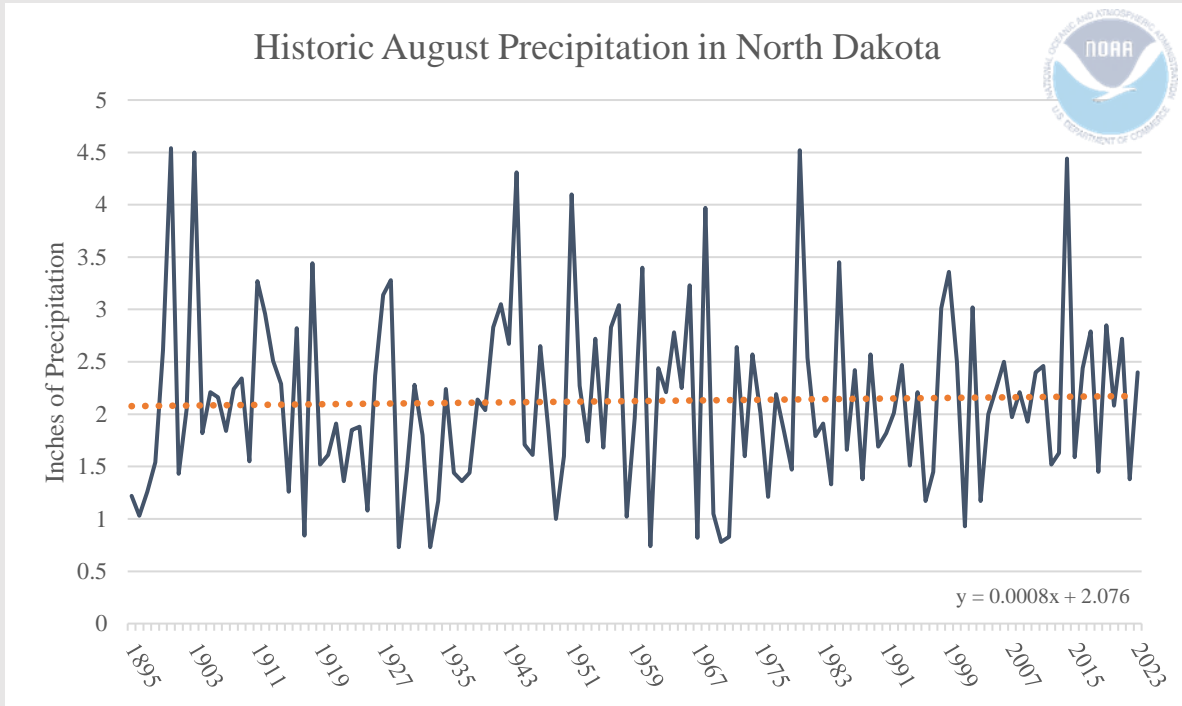


Figure 2: Historic average August precipitation 1895-2023 (NCEI, NOAA) with trendline representing average change per century.

North Dakota August Precipitation Summary

	Precipitation	Normal	Anomaly	Rank	Wettest/Driest Since	Record Year
August 2023	2.28"	2.14"	+0.14"	44 th Wettest	Wettest since 2021	1993
				86 th Driest	Driest since 2022	1936

Table 1: Ranking from NCEI NOAA based on data from August 1885-2023. Precipitation amounts averaged from records at NDAWN stations in North Dakota.

*Only North Dakota stations used for NDAWN data. All MN and MT stations omitted.



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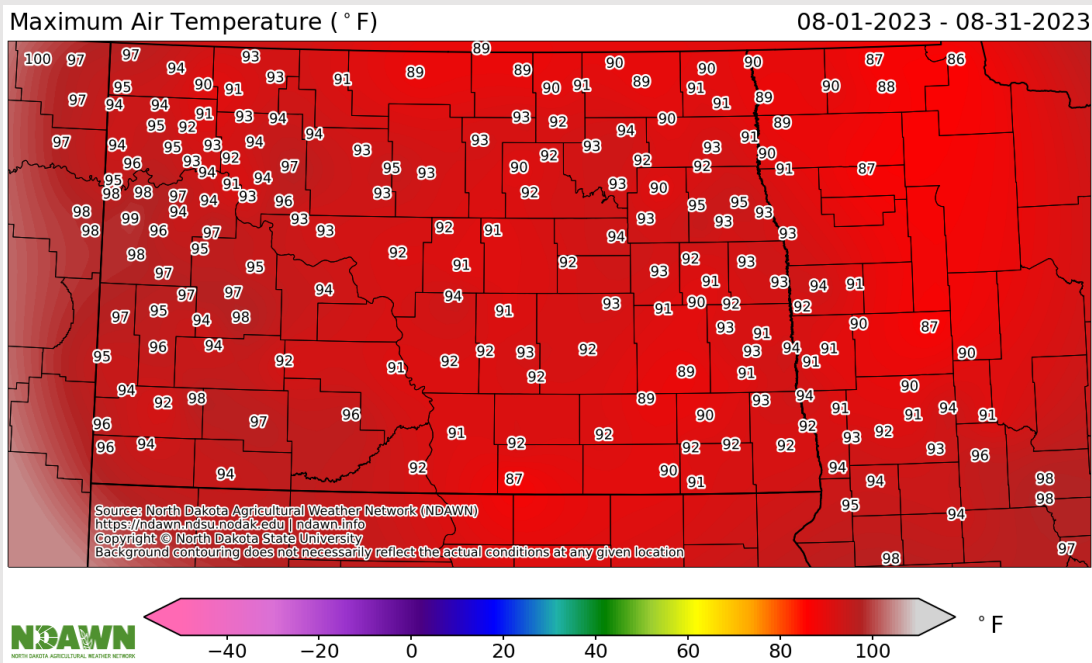
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Temperature

The North Dakota August 2023 average temperature was 67.7°F making it the 51st warmest August within the period of record (129 years) (NCEI). Normal August temperatures average 67.7°F; making August 2023 a normal month on average (NDAWN, Figure 5). The maximum temperature recorded by NDAWN was 99°F at the Alexander (7SW) station in McKenzie County. All but three NDAWN stations in North Dakota recorded maximum temperatures in the 90s. The minimum temperature recorded in North Dakota in August was 38°F at the Tioga (7NW) NDAWN station in Williams County (Figure 3).

Statewide Maximum and Minimum Air Temperature



*Only North Dakota stations used for NDAWN data. All MN and MT stations omitted.

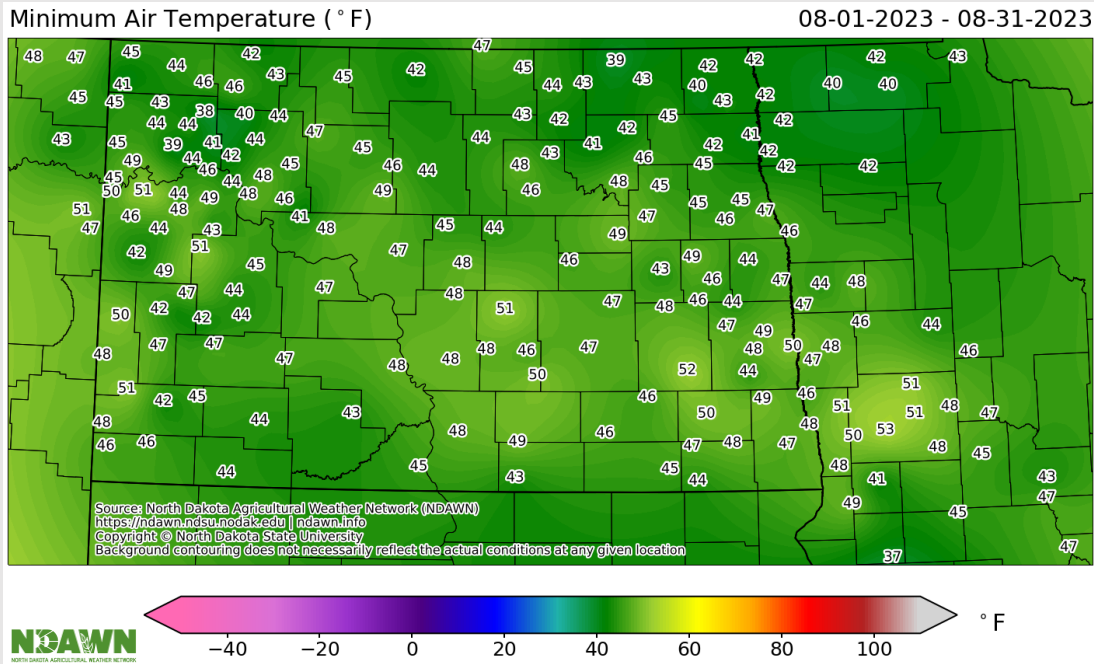


Figure 3: Maximum (Top) and Minimum (Bottom) air temperatures (°F) for August 2023 at all NDAWN Stations

August 2023 temperatures were relatively mild. July 2023 had an average temperature of 66.7°F, so the two months were very similar, only differing by 1°F.

Maximum temperatures in August stayed slightly cooler than average, with maximum temperatures averaging 79.9°; 1.2°F cooler than normal August temperatures.

Daily minimum temperatures for August averaged 55.5°F; 1.3°F above normal (NDAWN). NCEI 129-year climate database indicates a 2.0°F increase per century (Figure 4).

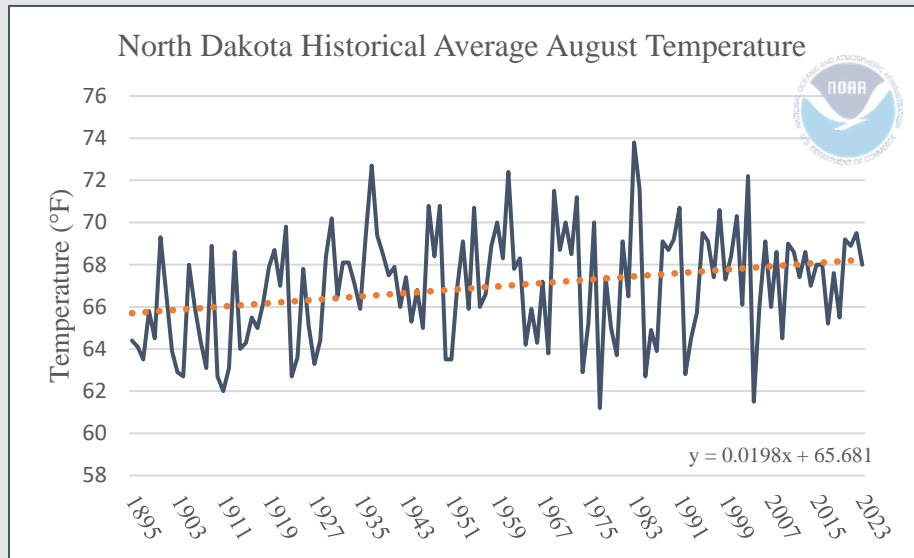


Figure 4: August historic average temperatures in North Dakota with trendline representing change per century. (NCEI)

*Only North Dakota stations used for NDAWN data. All MN and MT stations omitted.

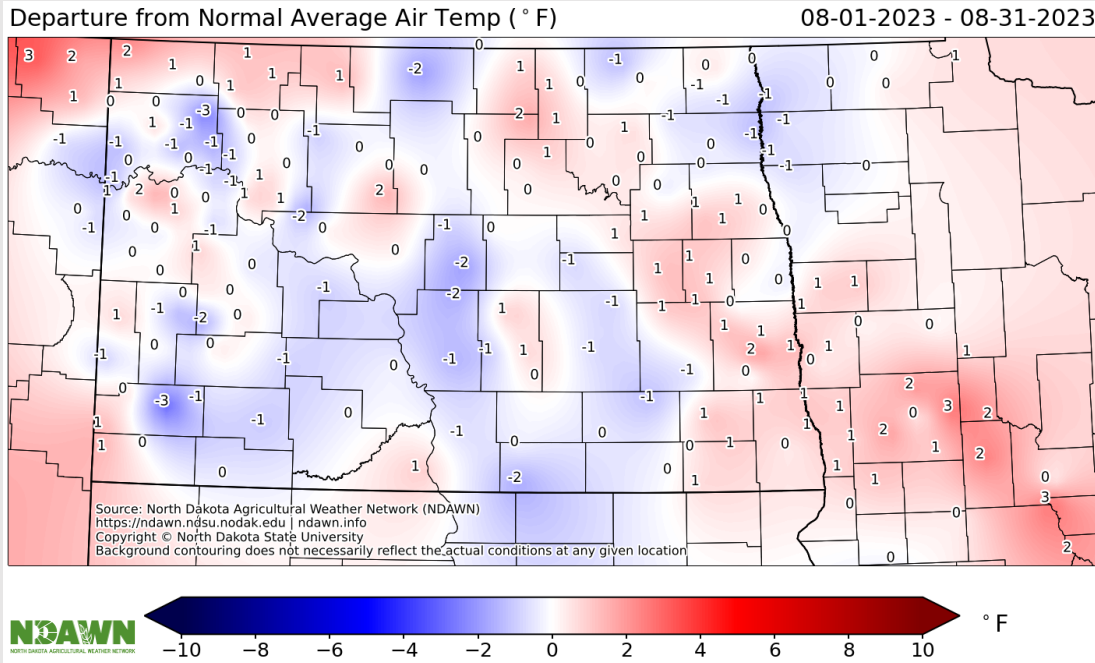


Figure 5: Departure from normal average air temperature for August 2023 at all NDAWN stations.

North Dakota August Temperature Summary

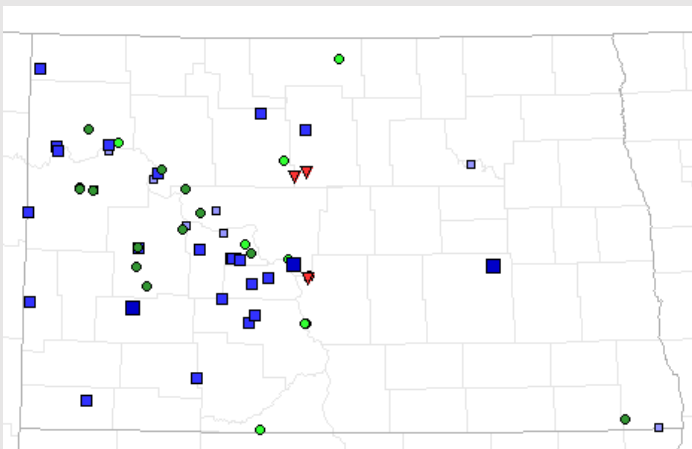
August 2023 Temperature Summary	Average T	Avg max T	Avg min T	Maximum	Minimum
	67.7°F	79.9°F	55.5°F	99°F	38°F
Anomaly	-0.4°F	-1.17°F	+1.2°F		
Rank					
Warmest	51 st Warmest	73 rd Warmest	19 th Warmest		
Coolest	79 th Coolest	57 th Coolest	111 th Coolest		
Record					
Warmest	73.8°F (1983)	88.8°F (1961)	58.9°F (1983)	114°F (Medora, 1900)	
Coolest	61.2°F (1977)	74.0°F (1911)	47.7°F (1977)		14°F (Flasher, 1907)

Table 2: August temperature summary for North Dakota. 2023 statistics from NDAWN station data. Ranking and records based on NCEI climate data (1885-2023) (NOAA).

*Only North Dakota stations used for NDAWN data. All MN and MT stations omitted.

Storm Reports

August 2023 reported just 6 days with severe weather with a total of 62 storm reports. Though the numbers may be small, severe weather in western North Dakota caused a great amount of property and crop damage. The National Weather Service (NWS) preliminary report noted 13 severe wind, 12 severe hail, and 3 tornado reports. Two of the tornado reports (McLean Co, Mercer Co.) were classified as funnel clouds, and the Burleigh Co. report was rated EFU (severity unknown) due to lack of damage evidence (SPC, NOAA). Only three of the 13 severe wind reports were confirmed gusts above 75 MPH. Of the 25 severe hail reports, 11 were between 1"-1.24" across North Dakota. There were 14 reports of large hail between 1.25"-1.99", and only one report of hail greater than 2" which occurred in Cass County. (Figure 6)



Tornadoes.....	3
▼ All Reports.....	3
▼ Possible EF2+.....	0
Severe Wind.....	34
□ Wind Damage.....	10
■ Meas. Gusts.....	21
■ Meas. Gusts > 75 MPH.....	3
Severe Hail.....	25
● Hail 1.00-1.24 in.....	11
● Hail 1.25-1.99 in.....	14
● Hail 2.00+ in.....	0

Figure 6: NOAA Storm Prediction Center summary of preliminary storm reports that occurred in August 2023 (NOAA SPC)

On August 1 2023 a swath of severe thunderstorms impacted Western North Dakota bringing winds up to 95 mph and large hail. 37 of the 62 storm reports occurred on this day. Multiple agricultural fields were flattened and considered a total loss. Crop and property damage totaled over \$4 million due to this event.



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Image/Data Sources

Climate at a Glance | National Centers for Environmental Information (NCEI).

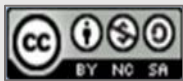
NDAWN current conditions

NDAWN Weather

SPC Storm Reports

NCEI Storm Events Database

XMACIS2



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