

North Dakota State
Climate Office: Your
Resource for
Climate Information

North Dakota State University
School of Natural Resource
Sciences

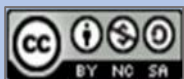
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Precipitation

Based on data from 149 stations* across the North Dakota Agricultural Weather Network (NDAWN) the statewide average precipitation in December 2023 was 0.58 inches, which is 0.05 inches less than normal average precipitation for the month. The greatest measured precipitation was recorded at the Sonora (1E) NDAWN station in Richland County with a whopping 3.61 inches. The least precipitation fell in Slope County, where the Marmarth (2N) NDAWN station measured just 0.08 inches (Figure 1).

Maximum average December precipitation occurred in 2022 with 1.49 inches, and minimum precipitation in 1944 with 0.05 inches. Historical climate data indicates a 0.1 inch increase over a century long trend (NCEI) for the month of December (Figure 2).

Average December precipitation was 0.44 inches more than the previous month and ranks as the 30th driest December over 129 years of precipitation data (NCEI).

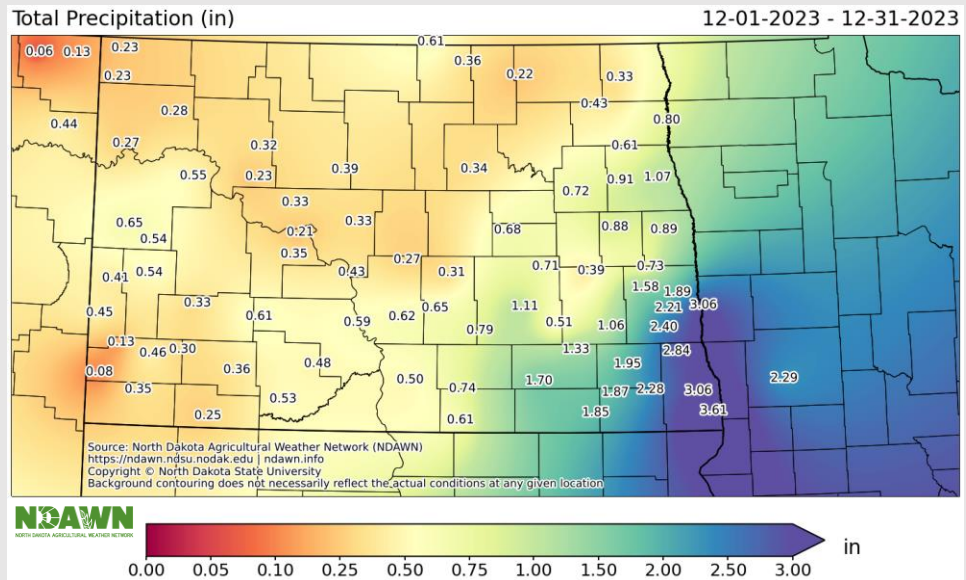


Figure 1: Total precipitation 12/1/2023 – 12/31/2023 at all NDAWN stations (NDAWN)

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

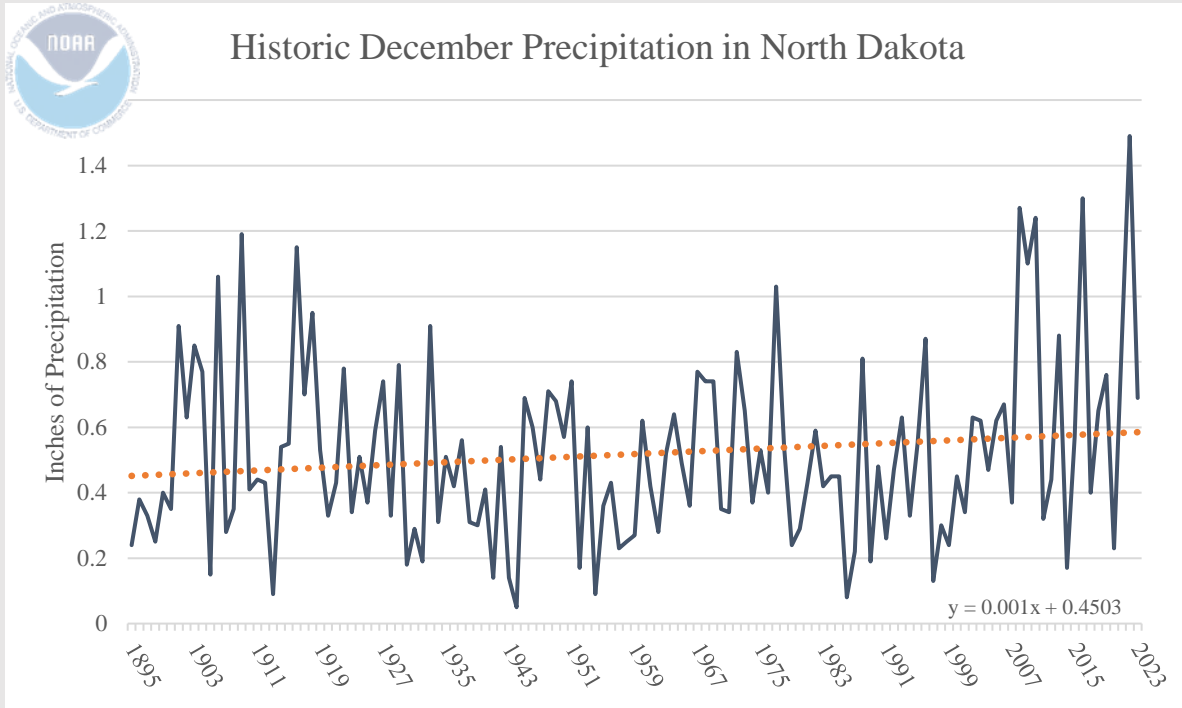


Figure 2: Historic average December precipitation 1895-2023 (NCEI, NOAA) with trendline representing average change per century.

North Dakota December Precipitation Summary

	Precipitation	Normal	Anomaly	Rank	Wettest/Driest Since	Record Year
December 2023	0.58"	0.63"	-0.05"	110 th Wettest	Wettest since 2022	2022
				30 th Driest	Driest since 2020	1944

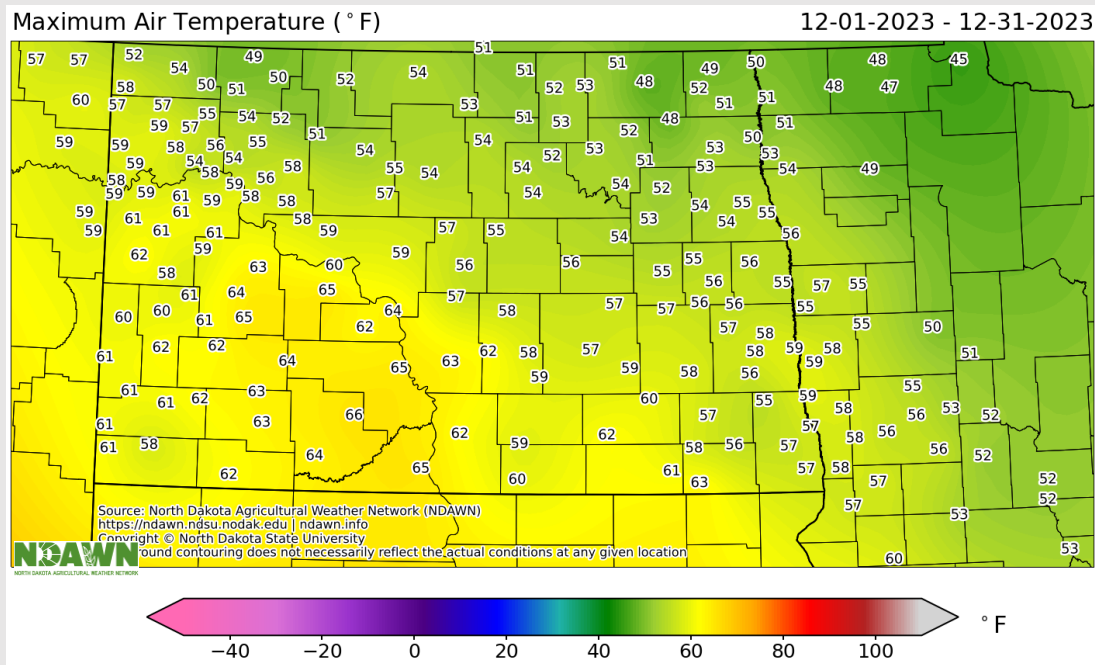
Table 1: Ranking from NCEI NOAA based on data from December 1885-2023. Precipitation amounts averaged from records at NDAWN stations in North Dakota.

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

Temperature

The North Dakota December 2023 average temperature was 26.5°F making it the warmest December within the period of record (129 years) (NCEI). Normal December temperatures average 15.5°F; making December 2023 11.0°F above normal (NDAWN, Figure 5). The maximum temperature recorded by NDAWN was 66°F at the Carson (9ESE) station in Grant County. Even minimum temperatures stayed mild in December, with the minimum temperature measuring just -4°F at the Adams (5N) and Epping (2SE) NDAWN stations in Walsh and Williams County, respectively (Figure 3).

Statewide Maximum and Minimum Air Temperature



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

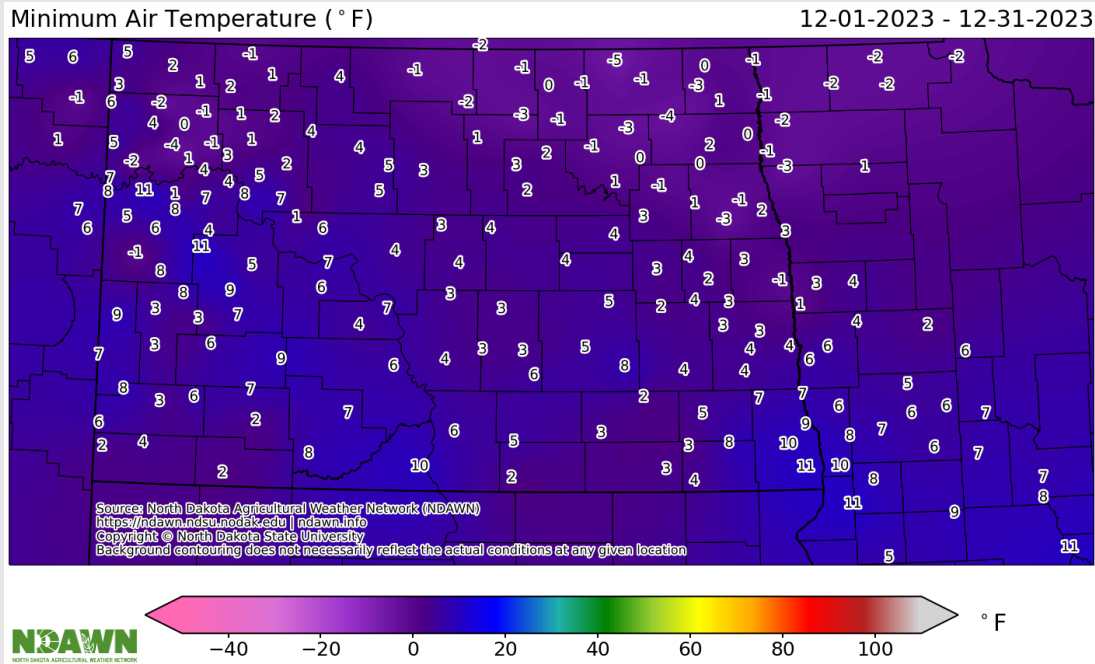


Figure 3: Maximum (Top) and Minimum (Bottom) air temperatures (°F) for December 2023 at all NDAWN Stations

Temperatures in December 2023 were unseasonably above average and ended winter prospects temperature wise. November 2023 had an average temperature of 31.0°F, differing by just 4.5°F. Maximum temperatures in December stayed well above average, with maximum temperatures averaging 35.9°; 11.4°F warmer than normal temperatures for the month.

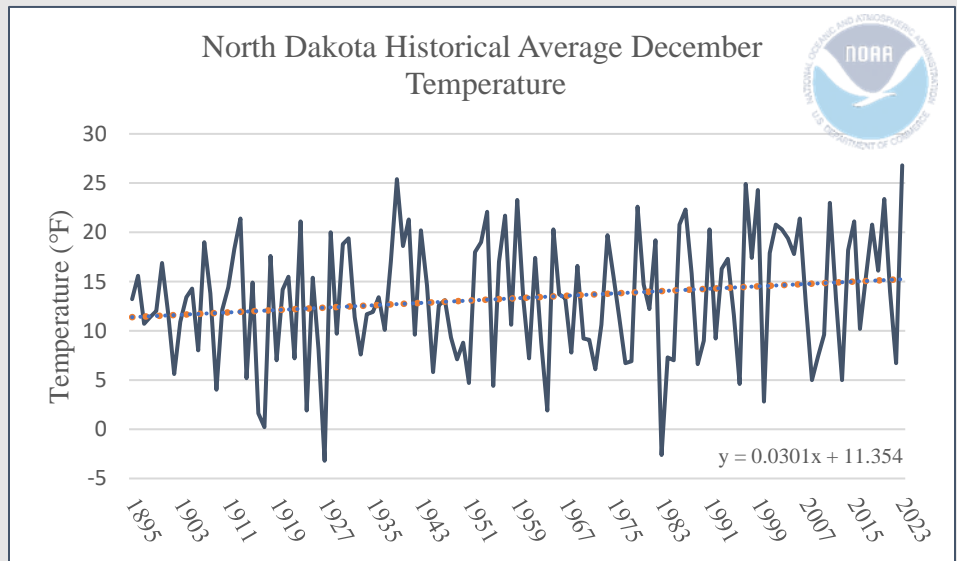


Figure 4: December historic average temperatures in North Dakota with trendline representing change per century. (NCEI)

Daily minimum temperatures for December averaged 17.2°F; 11.0°F above normal (NDAWN). NCEI 129-year climate database indicates a 3.0°F increase per century (Figure 4).

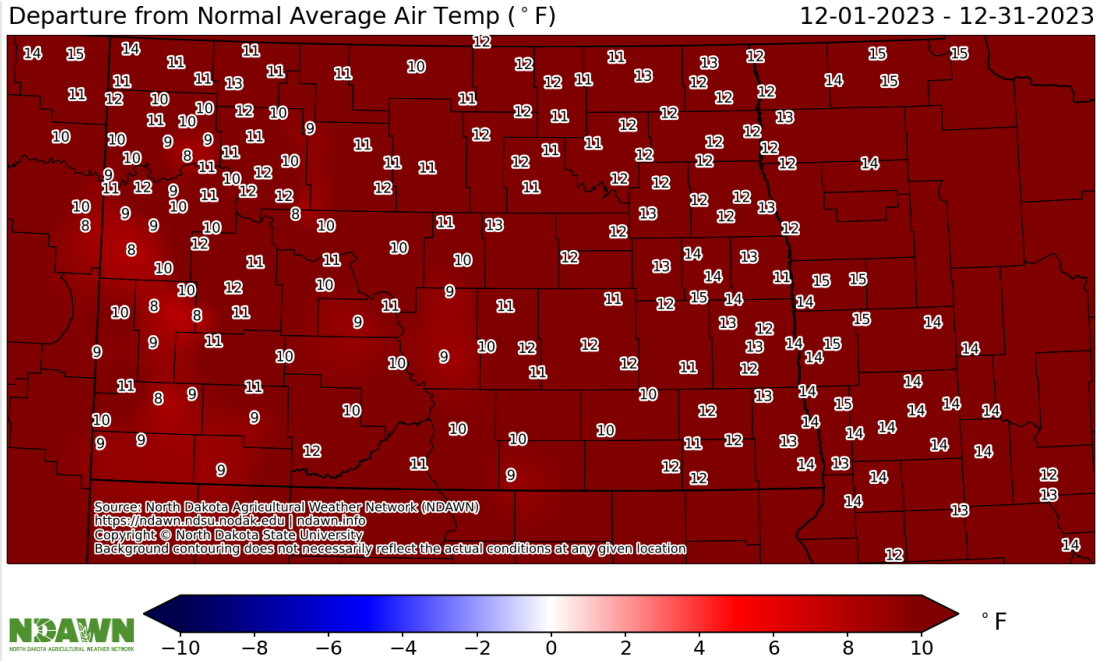


Figure 5: Departure from normal average air temperature for December 2023 at all NDAWN stations.

North Dakota December Temperature Summary

<i>December 2023 Temperature Summary</i>	Average T	Avg max T	Avg min T	Maximum	Minimum
	26.5°F	35.9°F	17.2°F	66°F	-4°F
Anomaly	+11.0°F	11.4°F	+11.1°F		
Rank					
Warmest	1 st Warmest	1 st Warmest	1 st Warmest		
Coolest	129 th Coolest	129 th Coolest	129 th Coolest		
Record					
Warmest	26.5°F (2023)	35.9°F (2023)	17.2°F (2023)	74°F (Haley, 1911)	
Coolest	-3.2°F (1927)	5.8°F (1927)	-12.2°F (1927)		-50°F Tioga, 1985)

Table 2: December 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

The mild December 2023 brought spring-like weather to parts of North Dakota, but also brought an onslaught of consequences due to the warmth of the atmosphere. On December 25-27th 2023 a historic ice storm swept over Eastern North Dakota. This storm severely impacted holiday travel brought down powerlines in South-Central and Southeast North Dakota, leaving many without power for days due to delays from emergency services caused by the storm. A line from McIntosh County to Grand Forks county reported ice amounts up to an inch (Figure 6). The same system also brought heavy rain to the southeast corner of North Dakota where areas such as Cass County received over 3 inches of rain. (Figure 6).

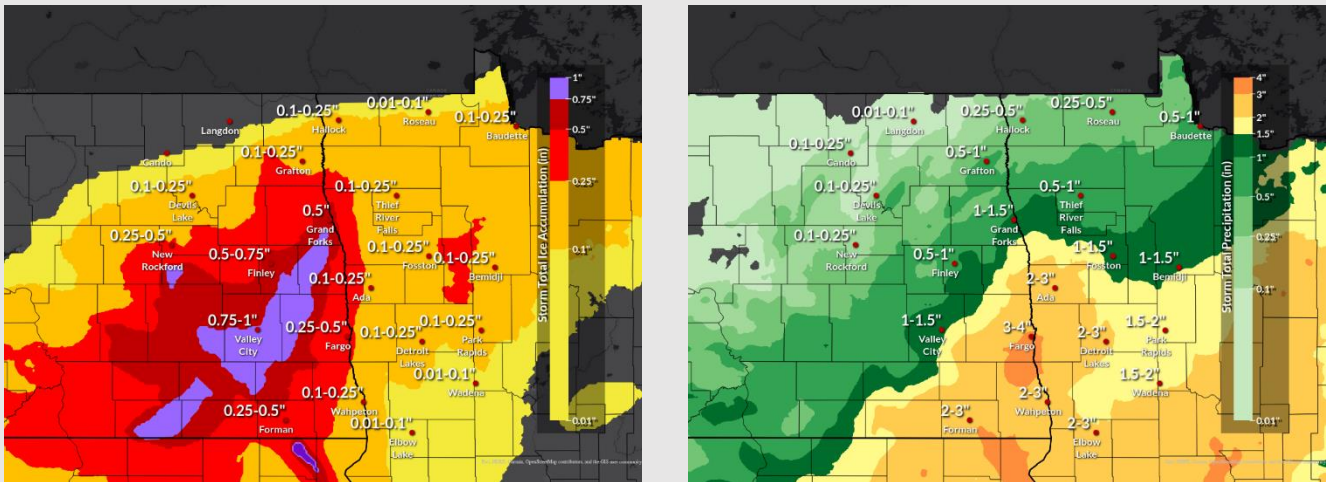


Figure 6: Map of ice accumulation (left) and rainfall (right) between December 25-27th 2023 courtesy of Grand Forks NWS

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



North Dakota Monthly Climate Summary

December 2023

Volume 17, No. 12

Image/Data Sources

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

NDAWN current conditions

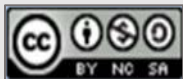
NDAWN Weather

SPC Storm Reports

NCEI Storm Events Database

NWS Major Ice Storm

XMACIS2



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