



North Dakota Monthly Climate Summary

September 2023

Volume 17, No. 9

North Dakota State Climate Office: Your Resource for Climate Information

North Dakota State University
School of Natural Resource Sciences

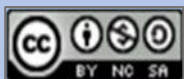
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Precipitation

Based on data from 145 stations* across the North Dakota Agricultural Weather Network (NDAWN) the statewide average precipitation in September 2023 was 2.15 inches, which is only a 0.26 increase from normal average precipitation. The greatest measured precipitation was recorded at the Mooreton (3SW) NDAWN station in Cass County with 5.68 inches. The least precipitation fell in Ramsey County, where the Fortuna (4N) NDAWN station measured just 0.33 inches (Figure 1).

Maximum average September precipitation occurred in 2019 with 5.9 inches, and minimum precipitation in 2012 with 0.2 inches. Historical climate data indicates a 0.32 inch increase over a century long trend (NCEI) for the month of September (Figure 2).

Average September precipitation was 0.13 inches less than the previous month and ranks as the 30th wettest September over 129 years of precipitation data (NCEI).

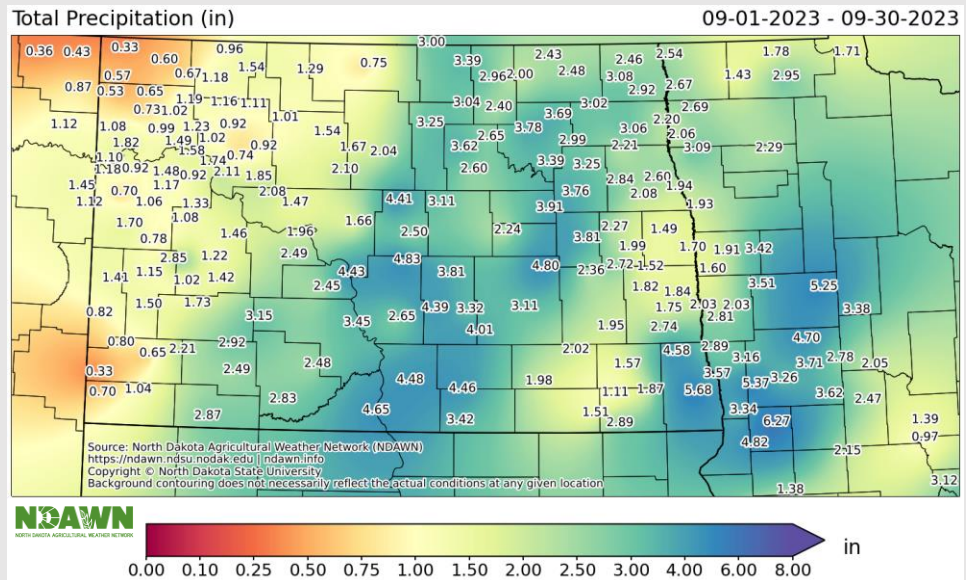


Figure 1: Total precipitation 9/1/2023 - 9/30/2023 at all NDAWN stations (NDAWN)

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

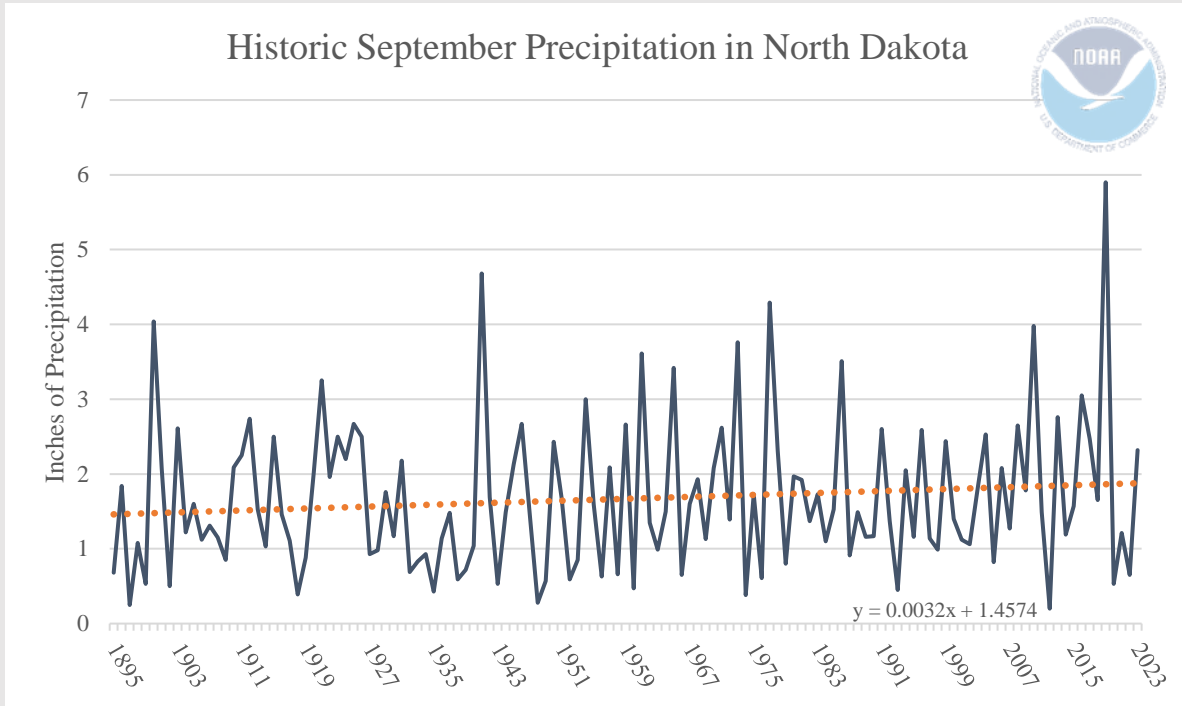


Figure 2: Historic average September precipitation 1895-2023 (NCEI, NOAA) with trendline representing average change per century.

North Dakota September Precipitation Summary

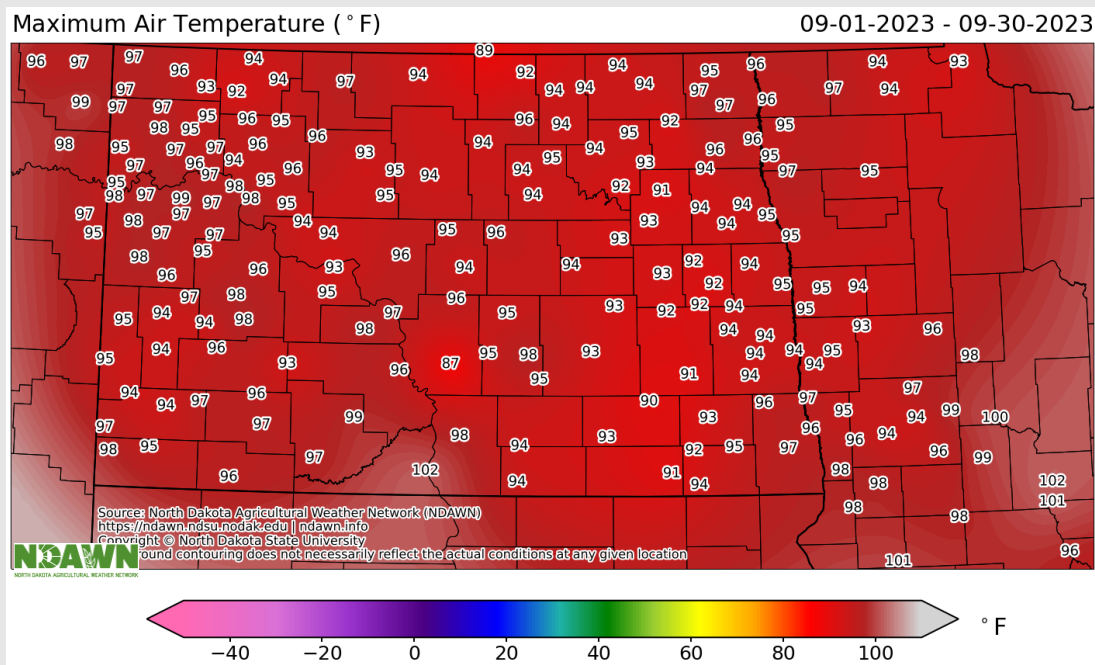
	Precipitation	Normal	Anomaly	Rank	Wettest/Driest Since	Record Year
September 2023	2.15"	1.89"	+0.26"	30 th Wettest	Wettest since 2019	1919
				100 th Driest	Driest since 2022	1912

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

Temperature

The North Dakota September 2023 average temperature was 61.6°F making it the 9th warmest September within the period of record (129 years) (NCEI). Normal September temperatures average 58.0°F; making September 2023 about 3.5°F above normal (NDAWN, Figure 5). The maximum temperature recorded by NDAWN was 102°F at the Fort Yates (2W) station in Sioux County. All but one NDAWN station in North Dakota recorded maximum temperatures in the 90s. The minimum temperature recorded in North Dakota in September was 30°F at the Wales (1W) NDAWN station in Cavalier County (Figure 3).

Statewide Maximum and Minimum Air Temperature



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

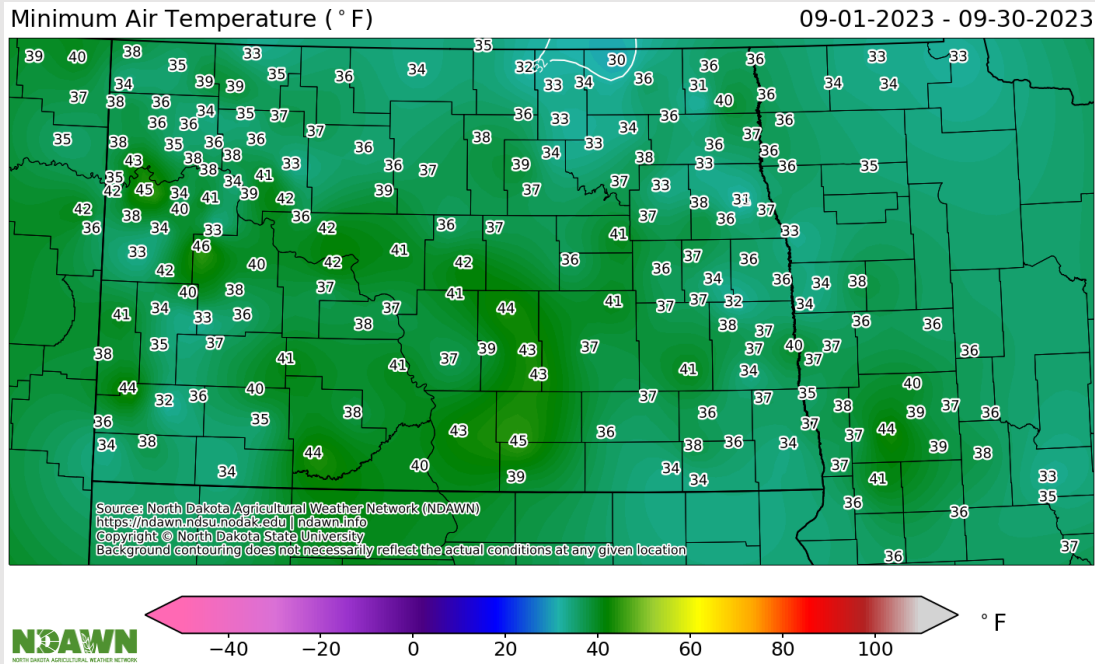


Figure 3: Maximum (Top) and Minimum (Bottom) air temperatures (°F) for September 2023 at all NDAWN Stations

September 2023 temperatures were slightly above average, though much cooler than the previous month. August 2023 had an average temperature of 67.7°F, differing by 6.2°F. Maximum temperatures in September stayed above average, with maximum temperatures averaging 74.2°; 2.9°F warmer than normal temperatures for the month.

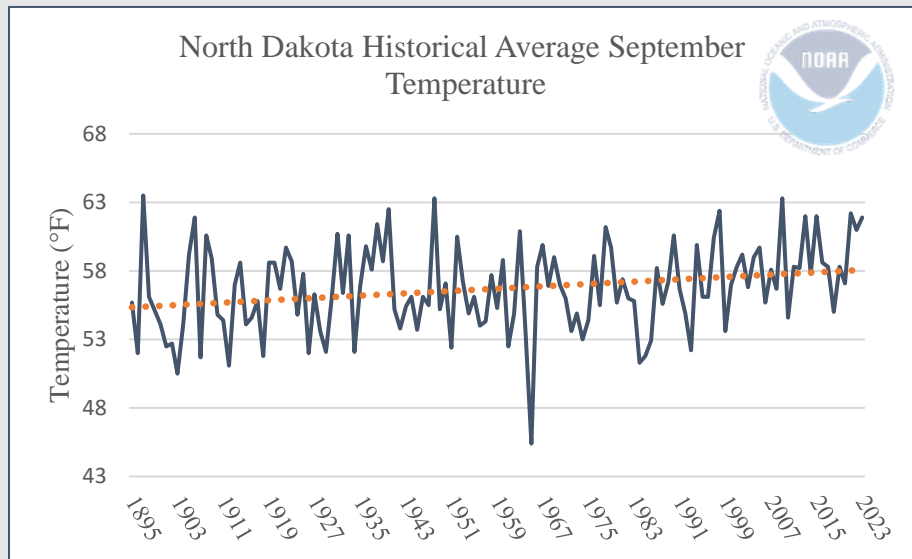


Figure 4: September historic average temperatures in North Dakota with trendline representing change per century. (NCEI)

Daily minimum temperatures for September averaged 44.8°F; 4.2°F above normal (NDAWN). NCEI 129-year climate database indicates a 2.0°F increase per century (Figure 4).

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

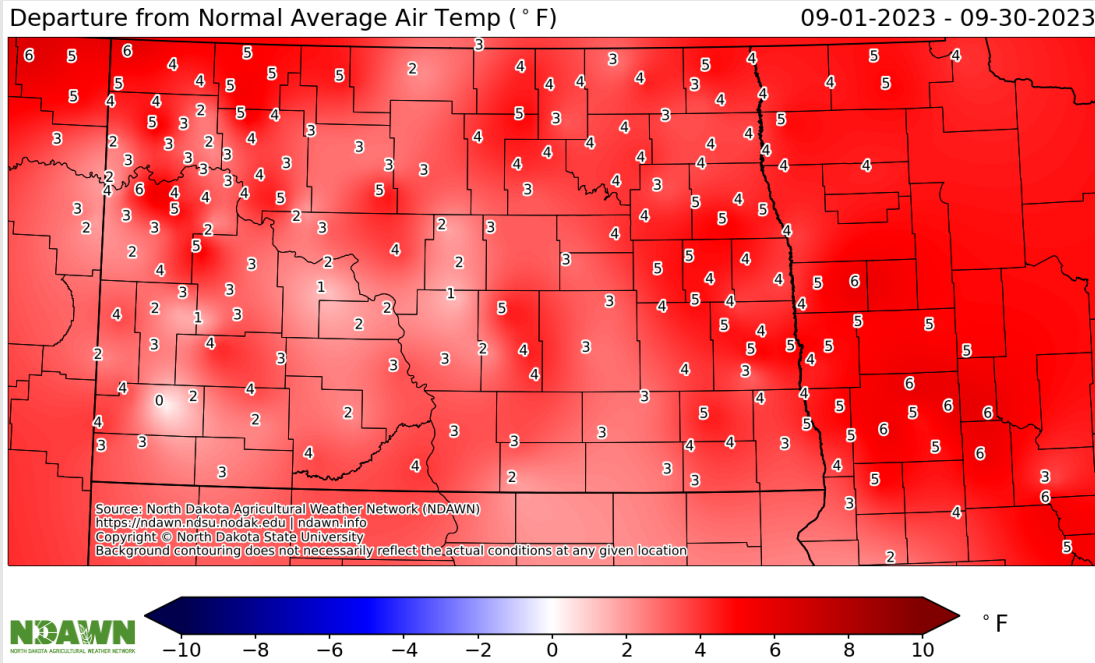


Figure 5: Departure from normal average air temperature for September 2023 at all NDAWN stations.

North Dakota September Temperature Summary

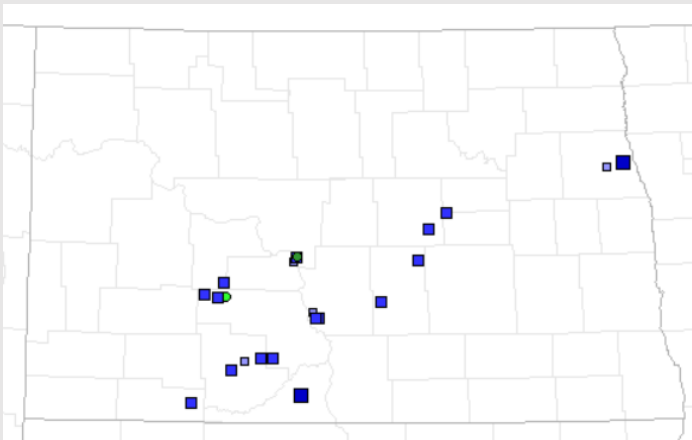
September 2023 Temperature Summary	Average T	Avg max T	Avg min T	Maximum	Minimum
	61.6°F	74.2°F	48.9°F	102°F	30°F
Anomaly	+3.5°F	+2.9°F	+1.2°F		
Rank					
Warmest	9 th Warmest	20 th Warmest	3 rd Warmest		
Coolest	121 st Coolest	110 th Coolest	127 th Coolest		
Record					
Warmest	63.5°F (1897)	79.6°F (1897)	49.7°F (2009)	109°F (Larimore, 1906)	
Coolest	45.4°F (1965)	55.7°F (1965)	35.2°F (1965)		3°F (New England, 1907)

Table 2: September 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

September 2023 reported just 5 days with severe weather with a total of 23 storm reports. The National Weather Service (NWS) preliminary report noted 20 severe wind, 3 severe hail, and no tornado reports. Two of the reported wind gusts were greater than 75 mph, with the strongest gust estimated at 100 mph and caused damage to several farms in the Kidder County area. Another wind gust of 77 mph was measured at the Grand Forks International Airport. Of the 3 hail reports, 2 were between 1”-1.24” and only one report of hail between 1.25”-1.99” which occurred in McLean County (Figure 6).



Tornadoes	0
▼ All Reports.....	0
▼ Possible EF2+.....	0
Severe Wind	20
□ Wind Damage.....	4
■ Meas. Gusts.....	14
■ Meas. Gusts > 75 MPH.....	2
Severe Hail	3
● Hail 1.00-1.24 in.....	2
● Hail 1.25-1.99 in.....	1
● Hail 2.00+ in.....	0

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

September was fairly active regarding severe weather, mostly due to the event on September 4th 2023 which caused over \$0.25 million in property damage. September 2022 had just 7 hail reports, 2021 with 5 hail and 1 wind report.



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Image/Data Sources

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

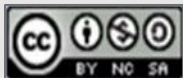
NDAWN current conditions

NDAWN Weather

SPC Storm Reports

NCEI Storm Events Database

XMACIS2



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