



North Dakota

Monthly Climate Summary

July 2024

Volume 18, No. 7

North Dakota State
Climate Office: Your
Resource for
Climate Information

North Dakota State University
School of Natural Resource
Sciences

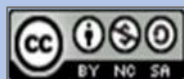
174 Van Es Hall
Fargo, ND 58108

www.ndsu.edu/ndSCO

cassidy.holth@ndsu.edu



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Precipitation

Based on data from 158 stations* across the North Dakota Agricultural Weather Network (NDAWN), July was below average in terms of precipitation across the state. Some areas, such as Benson County and Richland County had widespread above average precipitation, while areas in Western North Dakota continue to see dry conditions.

The statewide average precipitation in July 2024 was 1.9 inches, a full inch below average for the month. The maximum precipitation recorded by NDAWN occurred at the Niles (3SE) station in Benson County with 5.72 inches. In the West where rain was not as frequent, the Hirschville () NDAWN station had just 0.32 inches of precipitation for the entire month of July (Figure 1). This led to an increase of the area of Abnormally Dry conditions from 8.6% to 12.96% of the state according to the US Drought Monitor. Moderate drought continues in the Southwest corner of the state (Figure 3).

The historical maximum statewide-averaged July precipitation occurred in 1993 with 7.97 inches, and minimum precipitation in 1936 with 0.64 inches. Average July precipitation was 2 inches less than the previous month and ranks as the 43rd driest July out of 130 years. (NCEI).

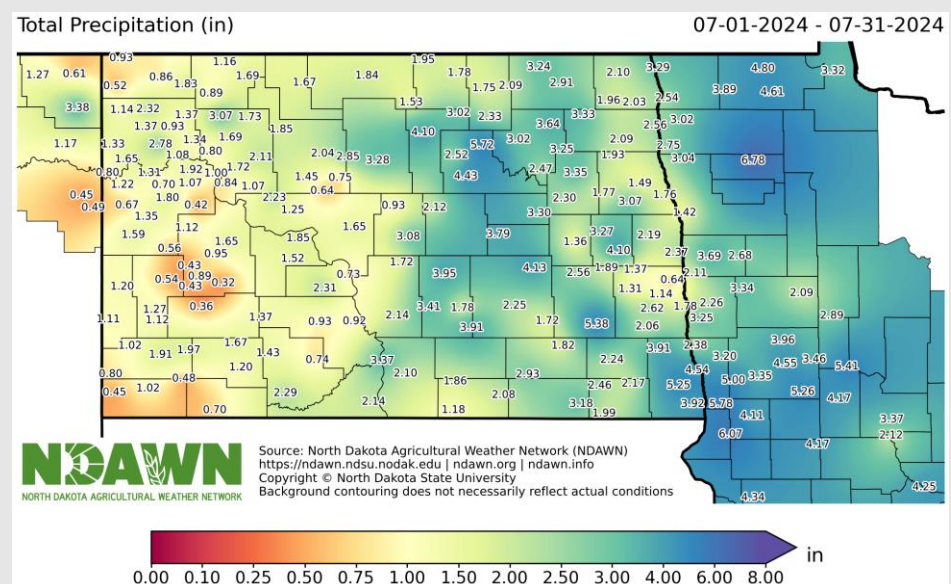


Figure 1: Total precipitation 7/1/2024 – 7/31/2024 at all NDAWN stations (NDAWN)

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



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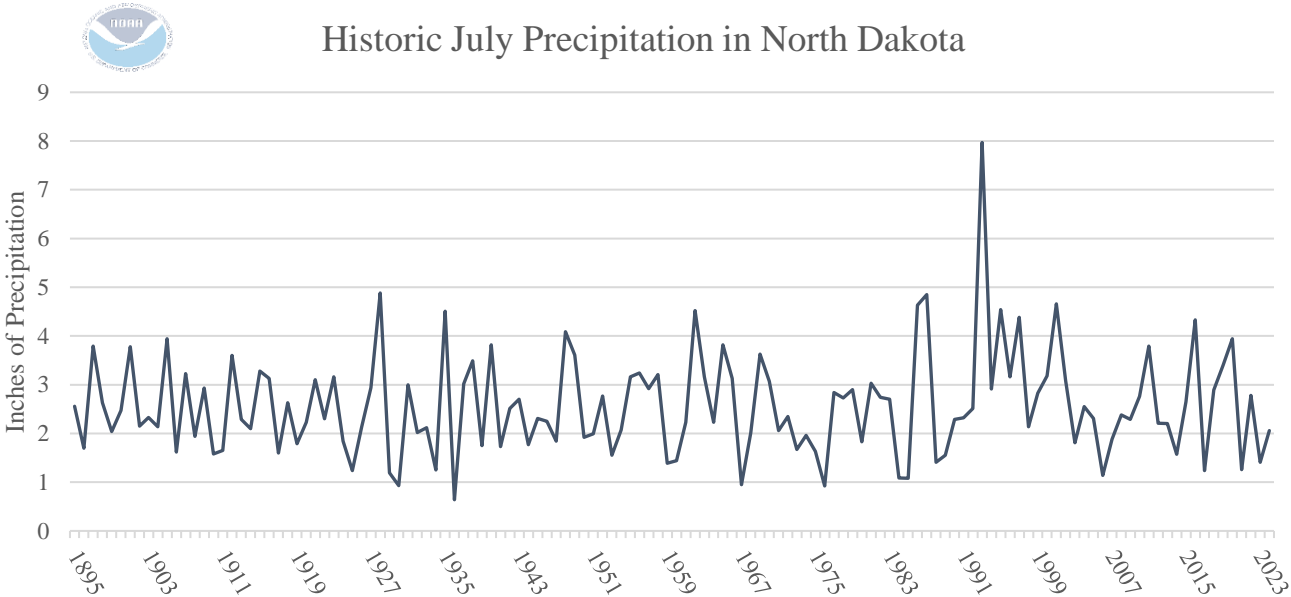


Figure 2: Historical statewide average precipitation in July 1895-2024 (NCEI, NOAA)

North Dakota July Precipitation Summary

	Precipitation	Normal	Anomaly	Rank	Wettest/Driest Since	Record Year
July 2024	1.94'	3.01"	-1.06"	88 th Wettest	Wettest since 2022	1993
				43 rd Driest	Driest since 2023	1936

Table 1: Ranking from NCEI NOAA based on data from July 1885-2024. Precipitation amounts averaged from records at NDAWN stations in North Dakota.

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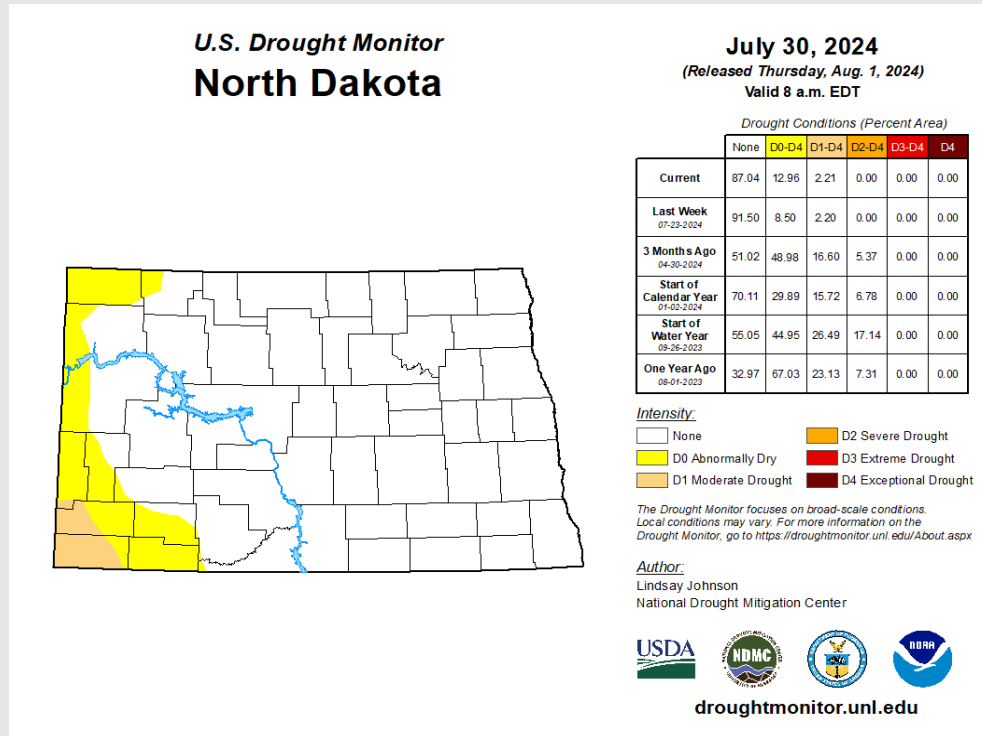


Figure 3: US Drought Monitor interpretation of drought conditions in North Dakota. As of 7/30/2024 12.96% of ND is experiencing abnormally dry conditions, and 2.21% moderate drought (US Drought Monitor)

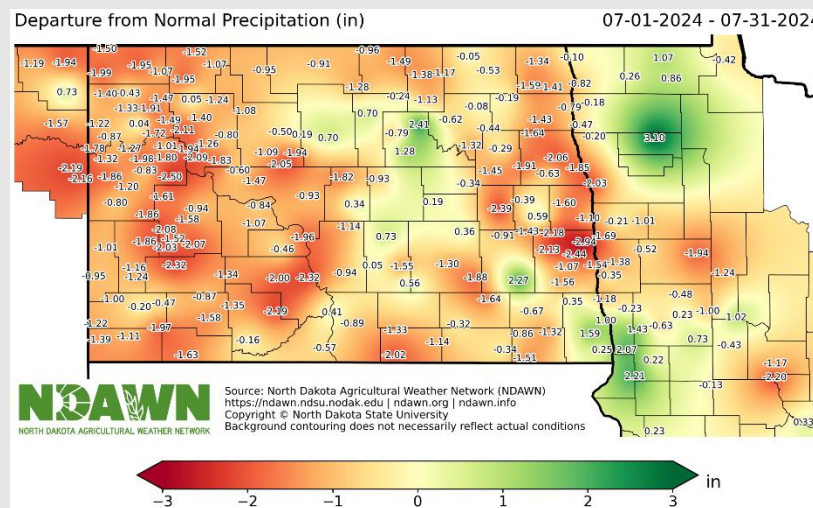


Figure 4: Departure from normal precipitation at each NDAWN station (NDAWN)



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Temperature

The average temperature in North Dakota for the month of July was 70.5°F, ranking as the 36th warmest June within the period of record (130 years) (NCEI). Normal temperatures average 69.1°F; making 2024 an average year in terms of temperature (NDAWN, Figure 3). In Western North Dakota temperatures were slightly higher above average, as maximum temperatures rose into the triple digits in that area. The rest of the state saw upper 80s and well into the 90s. The maximum temperature recorded by NDAWN in July was 111°F at the Banks (8SW) in Mckenzie County this is also the highest temperature ever recorded by NDAWN in the history of operation! The minimum temperature recorded in North Dakota in June was 43°F at the Wales (1W) NDAWN station in Cavalier County. Minimum temperatures did not vary much across the state, staying between 43-53°F (NDAWN).

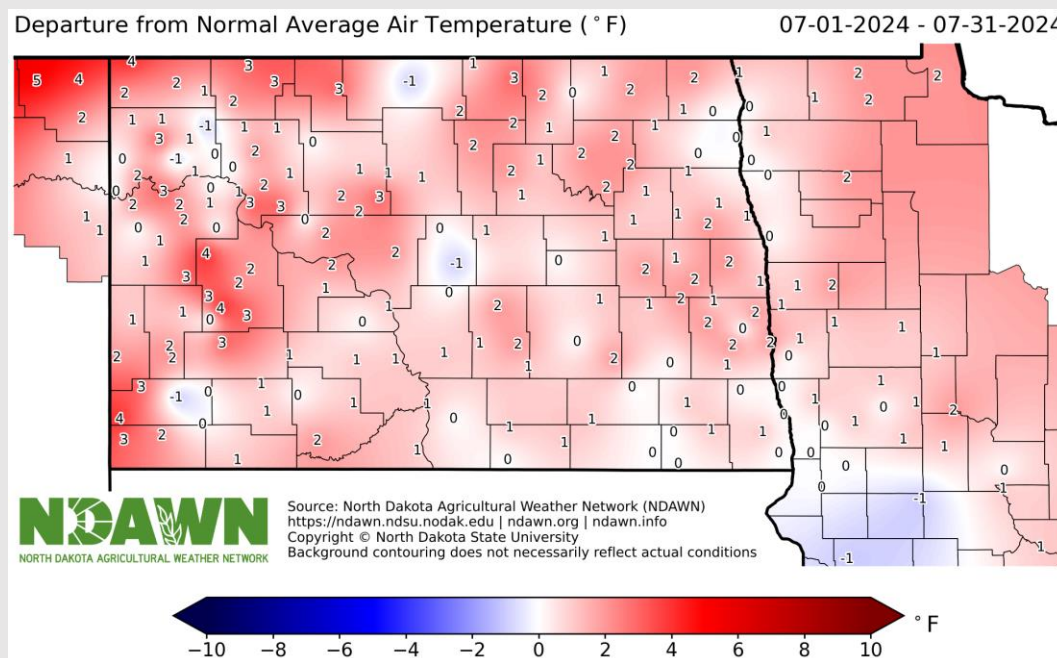


Figure 5: July 2024 departure from normal average temperature. (NDAWN)

Statewide Maximum and Minimum Air Temperature

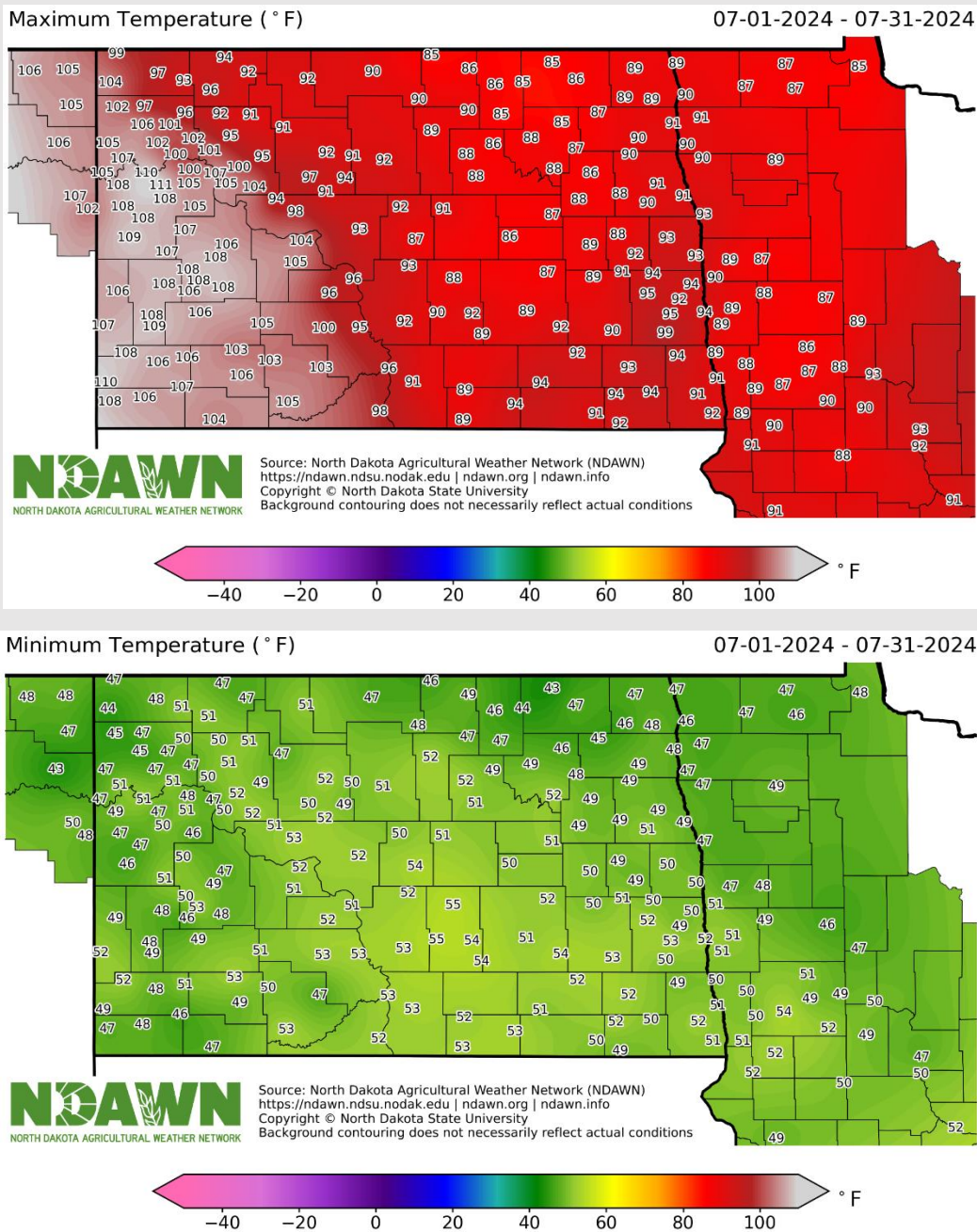


Figure 6: Maximum (Top) and Minimum (Bottom) air temperatures (°F) for July 2024 at all NDAWN Stations



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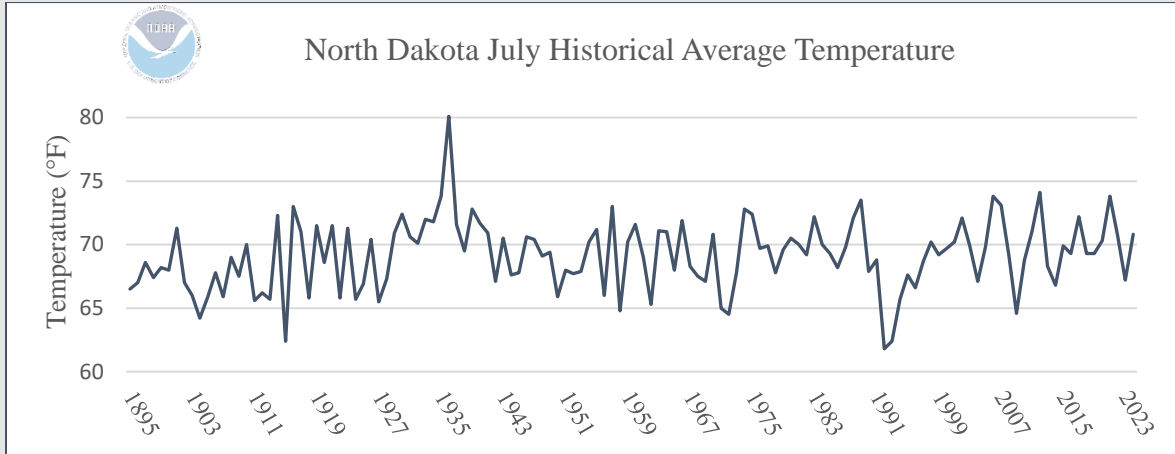


Figure 7: July historic average temperatures by year in North Dakota (NCEI)

Average minimum and maximum temperatures in July 2024 were similarly slightly above average. This month's average maximum temperature was warmer than normal by 1°F at 81.6°F. The average minimum temperature of 58.4°F was also warmer than normal by just under 2°F. The warmest July on record was 1936 where the average temperature was recorded at 80.1°F, 10°F warmer than July 2024. It is a testament to the extent of the weather that created the dustbowl, as the second warmest July on record occurred in 2012 at 74.1°F, a staggering 6°F between the first and second warmest years. The coolest July on record averaged 61.8°F in 1992.

North Dakota July Temperature Summary

July 2024 Temperature Summary	Average T	Avg max T	Avg min T	Maximum	Minimum
	70.5°F	82.5°F	58.4°F	111°F	43°F
Anomaly	+1.34°F	+0.96°F	+1.71°F		
Rank					
Warmest	36 th warmest	54 th warmest	19 th warmest		
Coolest	95 th coolest	77 th coolest	112 th coolest		
Record					
Warmest	80.1°F (1936)	96.6°F (1936)	63.7°F (1936)	121°F (Steele 1936)	
Coolest	61.8°F (1992)	72.2°F (1993)	50.3°F (1992)		18°F (Foxholm 2000)

Table 2: July temperature summary for North Dakota. 2024 statistics from NDAWN station data. Ranking and records based on NCEI climate data (1885-2024) (NOAA).

Significant Weather

July had frequent cold core precipitable weather for the latter half of the month. In total, about 15 cold air funnels were reported across the state, all happening within the span of a week. There are 23 total reports of funnel clouds, and 5 reports of a tornado or landspout. Quite an active month, but very few tornadoes caused damage. On July 13 at least one tornado touched down in Richland County which caused minimal damage in the area. This tornado is being rated as a preliminary (not final) EF-1.

Severe weather continued, but with few storms causing damage or significant rainfall. However, towards the end of the month on July 29 a strong severe thunderstorm impacted the Bismarck area, and hail up to 4.5 inches fell in Morton and Burleigh Counties!

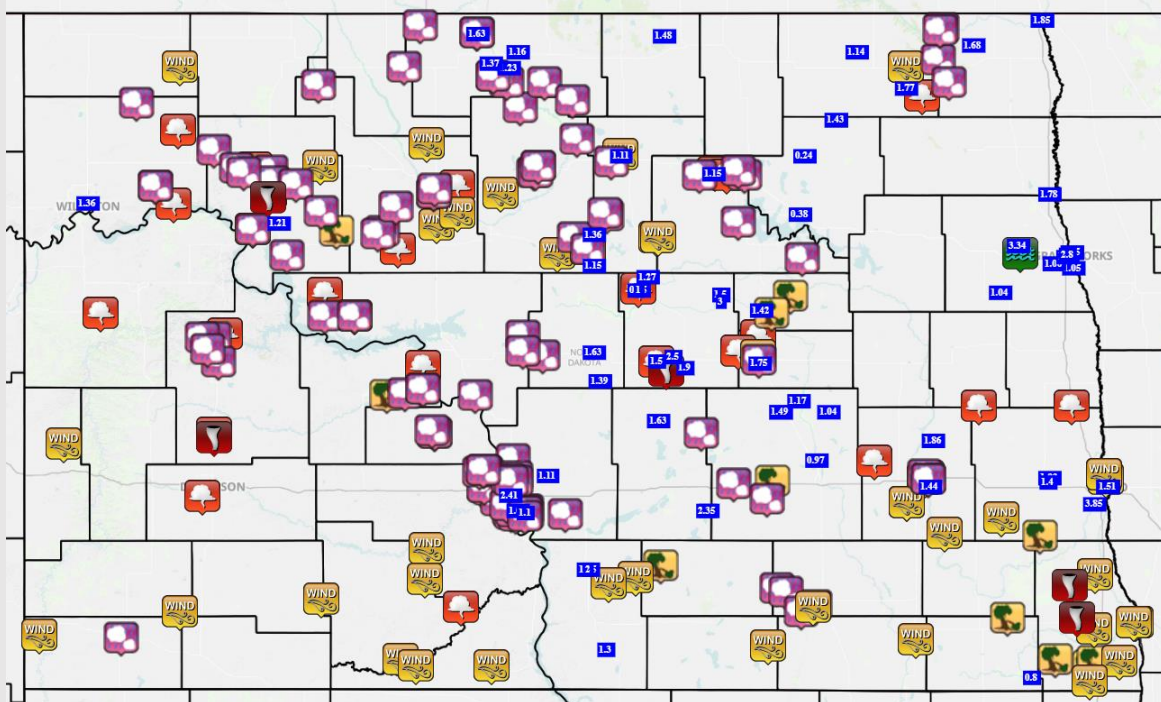


Figure 8: Local storm reports from the month of July. Several funnel clouds and five tornadoes were reported to the National Weather Service (NWS, IEM)

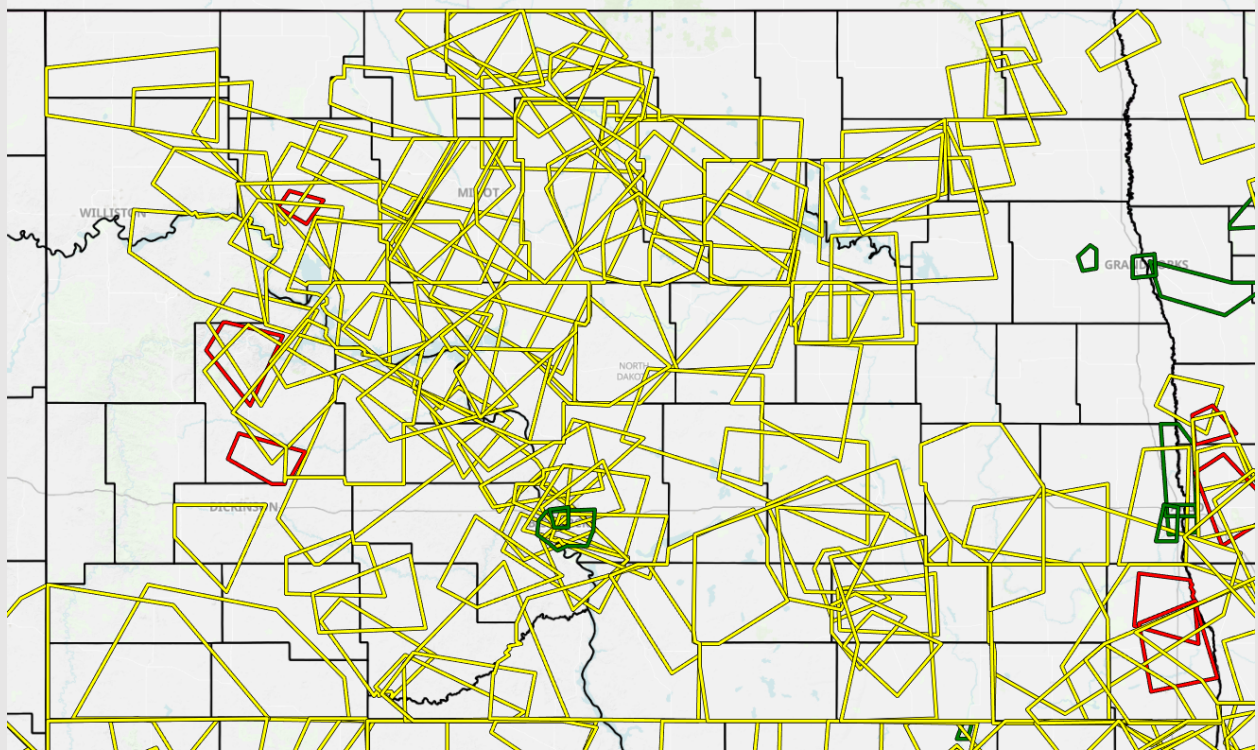


Figure 9: Severe warnings during the month of July. Many metro areas experienced flash flooding due to rainfall from severe weather. Five tornado warnings were issued in various counties. (NWS, IEM)



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Image/Data Sources

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

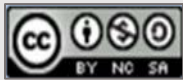
NDAWN current conditions

NDAWN Weather

SPC Storm Reports

NCEI Storm Events Database

XMACIS2



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