# North Dakota Climate Bulletin

**Winter 2024-2025** **Volume 19, No. 1**

## In this Issue:




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## From the office of the State Climatologist

The North Dakota Climate Bulletin is a quarterly publication of North Dakota's weather and climate from the North Dakota State Climate Office in the College of Natural Resource Sciences, North Dakota State University in Fargo, North Dakota.

Winter 2024-2025 was not an unusual winter, just a very quiet one. On average, winter precipitation was slightly below normal, which is reflective of the lack of significant snowstorms. Temperatures were also slightly above average until February, when persistent arctic air flooded the Northern Plains. Record breaking cold temperatures dominated throughout the month. Overall, the winter season had below average temperatures, with the exception of a small portion of the Northern Red River Valley that had above average temperatures due to the lack of snowpack. High winds exposed fields and even caused blowing dust on many occasions.

Multiple North Dakota Agricultural Weather Network stations experienced their coldest temperatures during the month of February, and one station in particular tied the record for Coldest Temperature recorded by the mesonet!

*Figure 1: NDAWN Wahpeton station in January 2025. Bare field is seen across the road, contributing to the warmer temperatures*

Detailed monthly summaries can be found at www.ndsu.edu/ndsco



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

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## Seasonal Summary

### Precipitation

Statewide winter (1 December 2024 - 28 February 2025) precipitation averaged 0.98 inches, slightly below normal total precipitation of 1.66 inches for the three month period. Most of North Dakota saw below normal precipitation, with only Pembina County reaching above average. The most significant precipitation was measured at the Cavalier (4NNW) NDAWN Station with a total of 1.90 inches, of which 1.26 inches fell in December. This was also the highest monthly amount recorded during the winter season.

The lowest seasonal rainfall occurred not too far away at the Baker (1N) station in Benson County with 0.82 inches. January was a dry month for most, and that was the most true for the Stanley (8SW) station in Mountrail County which measured just 0.06 inches of precipitation, the driest of any month throughout this winter season.

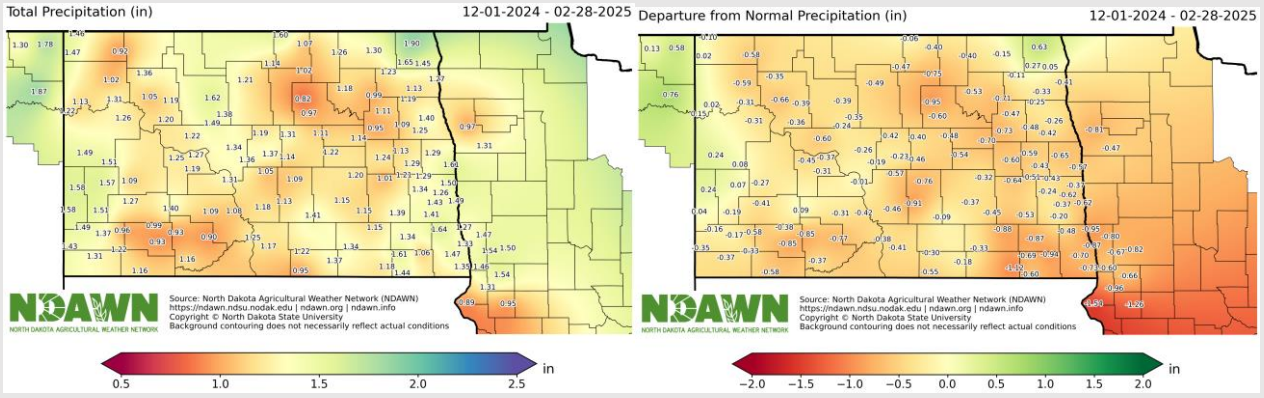


*Figure 2: Total precipitation (left) and departure from normal (right) recorded by NDAWN stations between 12/01/2023-2/29/2024*



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There have been changes to the U.S. Drought Monitor from the beginning of winter to the end. Authors drastically reduced the area of D3 Extreme Drought in Western North Dakota. Average precipitation and slight snowpack melt in the area are some of the reasons that contributed to this decision. Still, drought persists in the area, as Western ND has been lacking significant precipitation for many months.

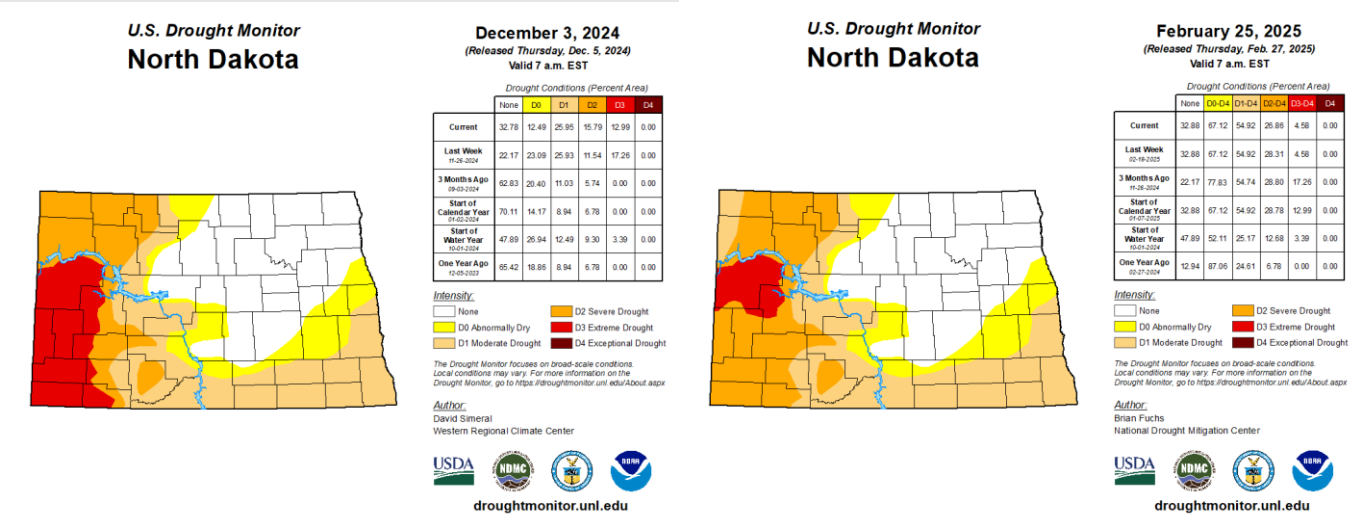


*Figure 3: First version of the U.S. Drought Monitor this winter 12/3/2024 (left) vs the latest 2/25/2025 (right)*

This year's winter, though comparable, is slightly drier than winter 2023-2024 on average. December 2023 was extremely wet for the Southern Red River Valley, which is the only significant difference between the two years. 2023-2024 winter had broad below average conditions, much like this year, where snow just couldn't seem to stick around. Overall, 2024-2025 Winter ranks as the 24th driest winter on record (1895-2025). The driest winter occurred in 1989-1990 with an average precipitation of just 0.59 inches.



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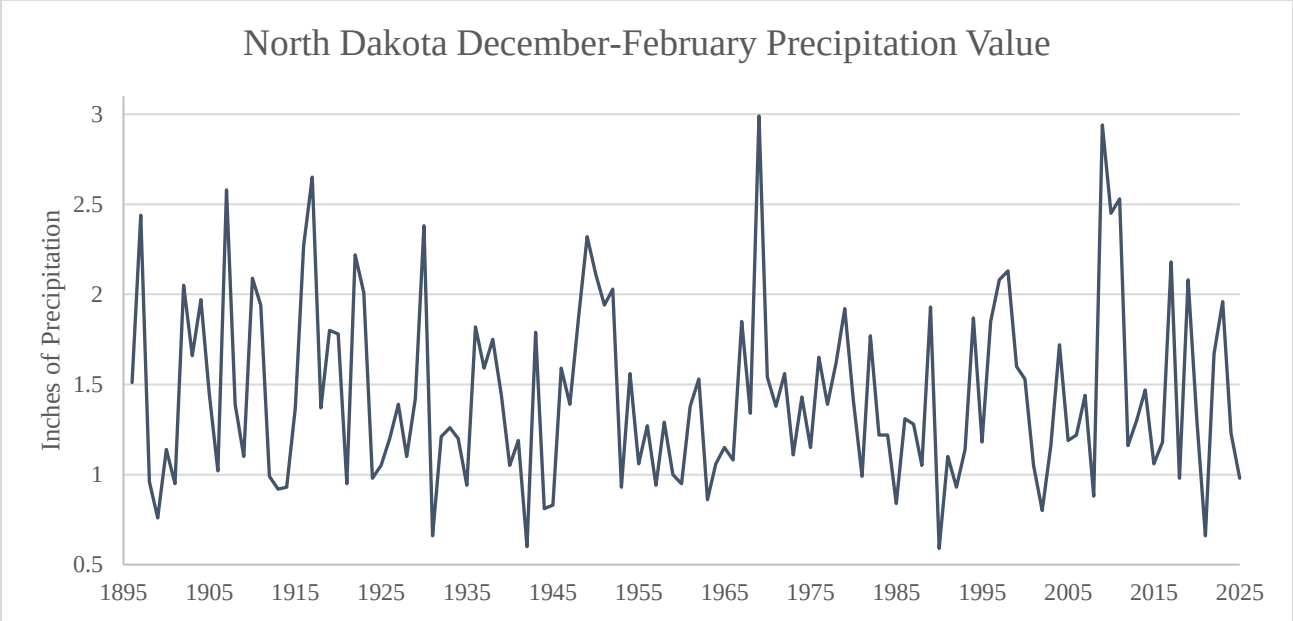


*Figure 4: Historical Average precipitation totals for the winter season in North Dakota*

## North Dakota Winter Precipitation Summary

| | Precipitation | Normal | Anomaly | Rank | Wettest/Driest Since | Record Year |
|---|---|---|---|---|---|---|
| ***Winter '24-'25 December-February*** | 0.98" | 1.66" | -0.68" | 107th Wettest | Wettest since 2024 | 1969 |
| | | | | 24th Driest | Driest since 2021 | 1990 |

*Table 1: Ranking from NCEI NOAA based on data for the winter season December-February 1885-2025. Precipitation amounts averaged from records at NDAWN stations in North Dakota.*



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## Temperature

Though December 2024 was warmer than average for the month, the cold of January and especially February was overpowering. The average temperature this winter season was 11°F, nearly 2.5°F colder than normal. This again is due to February being nearly 10°F below average, despite a deep snowpack. The exception to this being the Northern Red River Valley, this area had little snowfall and strong winds which left fields bare. These dark fields absorb more heat, and the Grand Forks area was slightly above average. More information about individual months can be found at www.ndsu.edu/ndsco

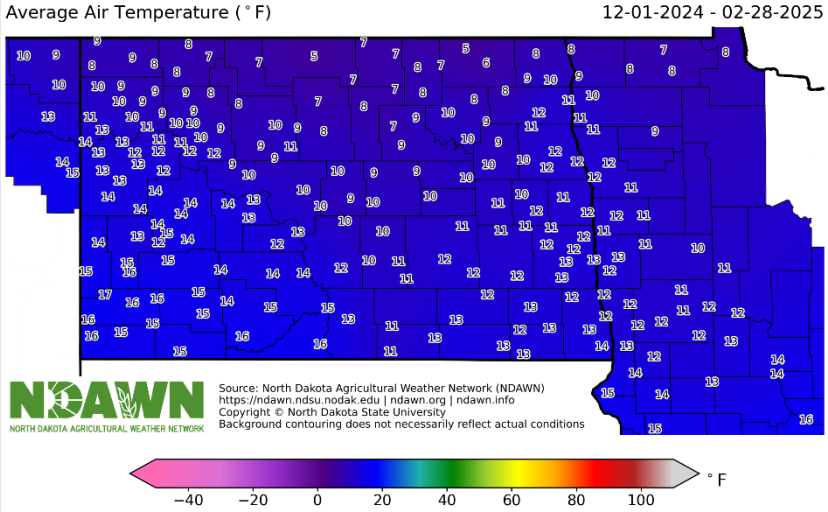


*Figure 5: Average temperature across North Dakota NDAWN stations from 12/1/2024-2/28/2025*

Statewide average minimum and maximum temperatures were also approximately 2°F below normal. The maximum temperature for the winter season was 20.3°F, well below the normal average winter temperature of 23°F. The minimum temperature only came out to be 1.7°F. Quite a change from the previous winter, where all three months were well above normal temperatures. However, North Dakota was no stranger to a temperature swing. The maximum temperature observed from December-February was 59°F at the 3 NDAWN stations in the Southwest: Sunny Slope, Bowman, and Marmarth. The minimum temperature observed was a frigid -47°F New Hradec NDAWN Station in Dunn County. This tied the record for coldest temperature observation made by NDAWN!



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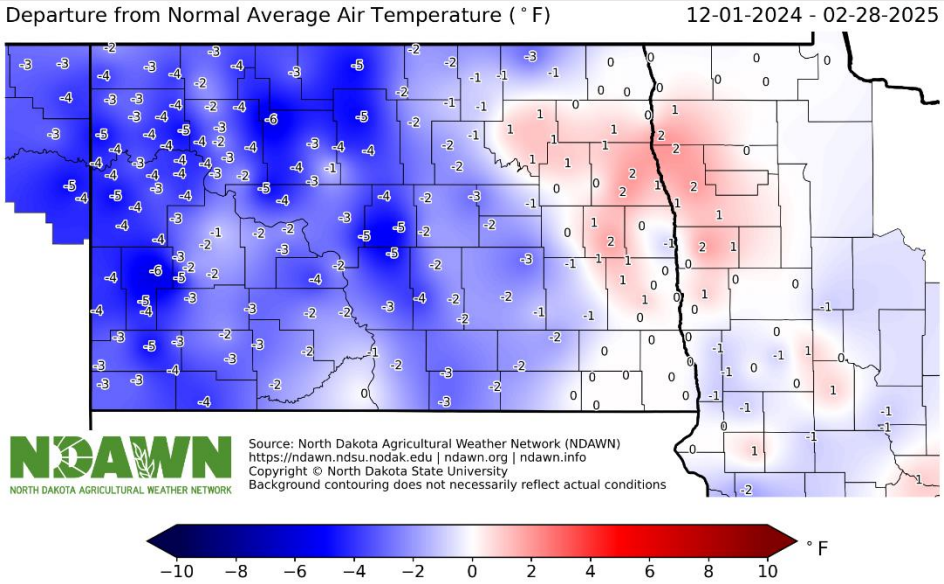


*Figure 6: NDAWN Departure from normal temperatures for each station from 12/1/2024 – 2/28/2025*

## North Dakota Winter Temperature Summary

| ***Winter '24-'25 December-February*** | **Average T** | **Avg max T** | **Avg min T** | **Maximum** | **Minimum** |
|---|---|---|---|---|---|
| | 11.0°F | 20.3°F | 1.7°F | 59°F | -47°F |
| **Anomaly** | -2.4°F | -2.8°F | -2.1°F | | |
| **Rank** | | | | | |
| **Warmest** | 59th Warmest | 66th Warmest | 57th Warmest | | |
| **Coolest** | 58th Coolest | 38th Coolest | 54th Coolest | | |
| **Record** | | | | | |
| **Warmest** | 22.2°F (1987) | 31.5°F (1992, 2012) | 13.3°F (2024) | 74°F (Bismarck AP, 2016) | |
| **Coolest** | -3.0°F (1936) | 6.3°F (1936) | -12.3°F (1936) | | -60°F (Parshall, 1936) |

*Table 2: Winter temperature summary for North Dakota. 2024-2025 statistics from NDAWN station data. Ranking and records based on NCEI climate data (1885-2025) (NOAA)*



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# Storm Reports & Record Events

## NWS Issued Warnings

One of the major factors of snow events from this winter was the strong winds. Though not every winter storm met blizzard criteria, nearly every snow storm had significant impacts from blowing snow, and even blowing dust in the Northern Red River Valley. The first major winter snowstorm on December 18th 2024 impacted a wide swath of North Dakota, and continued into Northern Minnesota as well with Winter Weather Advisories and Winter Storm Warnings. When this expired, a High Wind Warning took over for parts of the RRV.

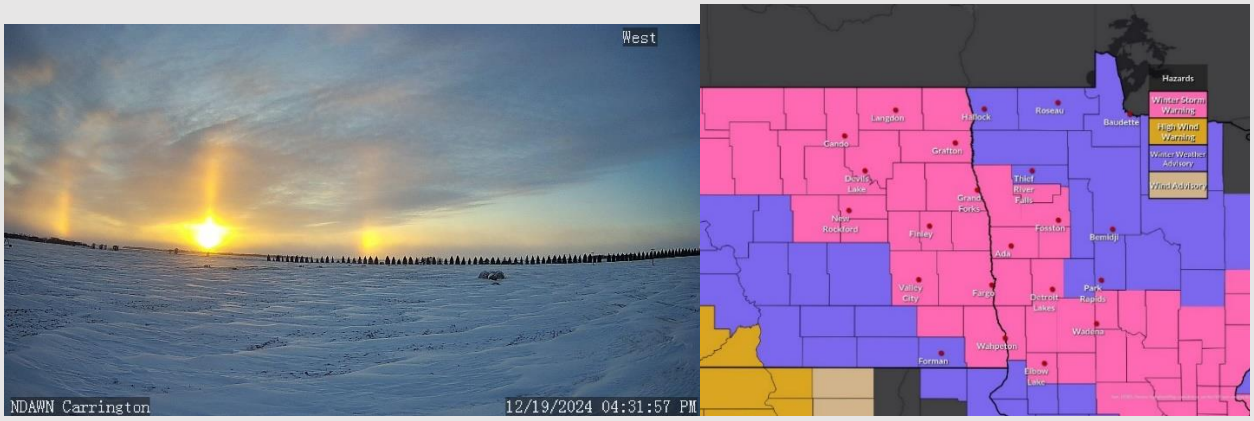


*Figure 6: Blowing snow created snow drifts and sun dogs along with the sunset after a heavy snowfall at the Carrington REC (left). Winter Weather Advisories and Winter Storm Warnings paint the region (right)*



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In January, winds along the Plains caused Horizontal Convective Rolls, associated with stronger winds and reduced visibility inside the snow bands. A Snow Squall Warning was issued on January 17th 2025 in Bottineau County to warn commuters of the snow storm. HCR continued throughout the day towards the RRV.

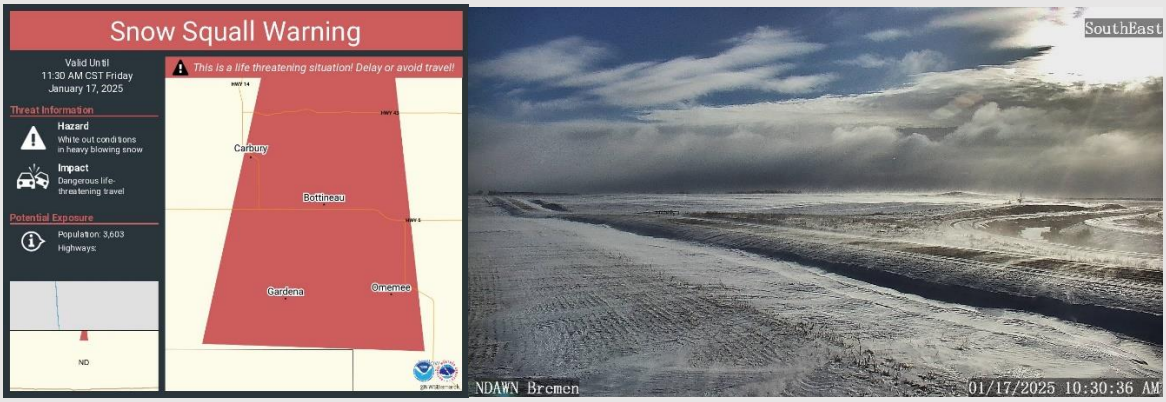


*Figure 7: Snow Squall Warning (left) and what a Snow Squall looks like as it approaches the Bremen NDAWN station in Wells County (right)*

Finally, our first and only blizzard of the winter season occurred in Early February. Wind speeds up to 45 mph caused whiteout conditions, and the National Weather Service upgraded the severity of their Winter Weather Advisory to a Blizzard Warning.

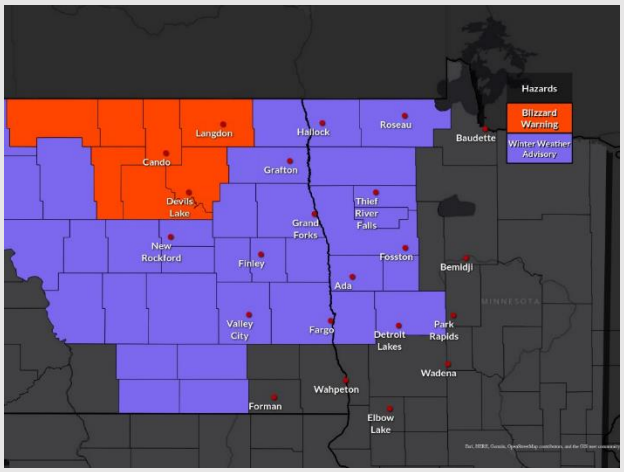


*Figure 8: Blizzard Warning issued 2/6/2025*



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If it wasn't snowing in North Dakota this winter, it was COLD! Temperatures were below average through most of February, but mid-month it took an even bigger turn downwards. Several NDAWN stations reached the -40s, and almost the entire network hit -20 air temperatures! Thankfully, there was less wind associated with these temperatures.

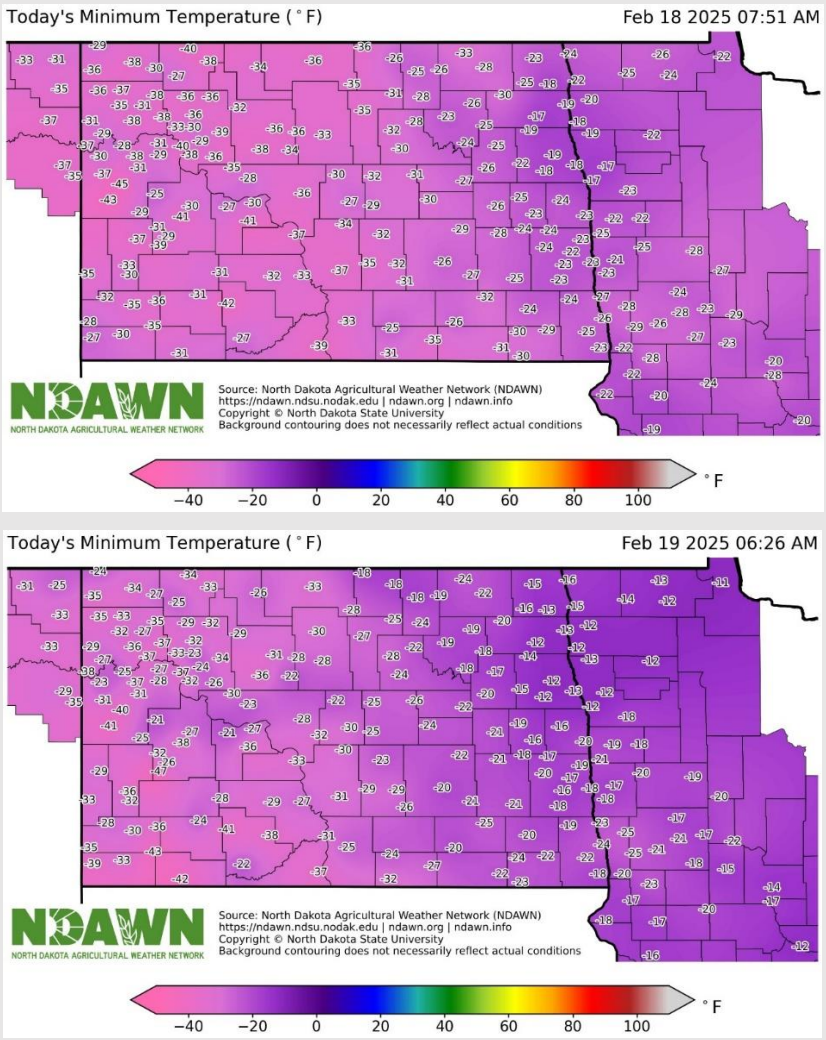


*Figure 9: Minimum temperatures from the coldest days of the winter 2/18/2025 (Top) and 2/19/2025 (Bottom) Temperatures set records, especially in Western ND*



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## Image/Data Sources

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

NDAWN Weather

Iowa Environmental Mesonet

U.S. Drought Monitor

SPC Storm Reports

NCEI Storm Events Database

NWS Grand Forks and Bismarck

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