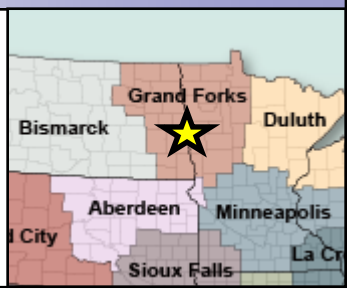
National Weather Service Grand Forks

Weather & Climate Review

November-December 2022

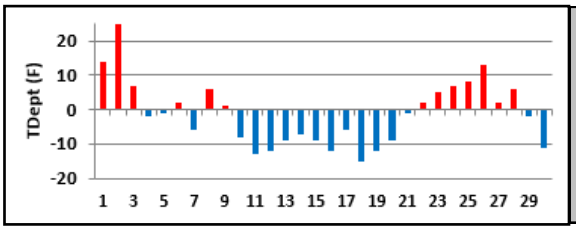


November

	AveT	TDept	THigh	TLow	Pcpn	PDept	Snow	PWnd
DVL	23.2	-3.1	71	-2	M	M	M	55
NWS GF	25.8	-1.5	68	2	0.87	0.00	12.7	M
GFK	25.6	-1.1	69	-1	0.52	-0.40	7.5	56
RDR	25.5	-1.2	70	-1	M	M	M	51
FAR	26.3	-3.2	70	1	0.74	-0.23	5.3	63
BDE	29.1	2.4	73	2	M	M	M	45
PKD	27.5	-0.4	74	-1	M	M	M	56
BJI	27.0	0.3	71	0	M	M	M	37
TVF	26.2	-1.0	70	-4	M	M	M	43
Y63	28.1	-1.6	72	1	M	M	M	M
AGA	25.5	-2.1	71	-8	M	M	M	M

Table 1 November 2022 Temperature and Precipitation Statistics

In Table 1, (ND) **DVL** = Devils Lake, **NWS GF** = NWS Grand Forks, **GFK** = GF Airport, **RDR** = GF Air Force Base, **FAR** = Fargo, (MN) **BDE** = Baudette, **PKD** = Park Rapids, **BJI** = Bemidji, **TVF** = Thief River Falls, **Y63** = Elbow Lake, **AGA** = Agassiz MN NWR.



Blue Bars = Colder than Normal Days & Red Bars = Warmer than Normal Days

Figure 1 November Daily Departure from Normal Temperatures at the NWS Grand Forks ND

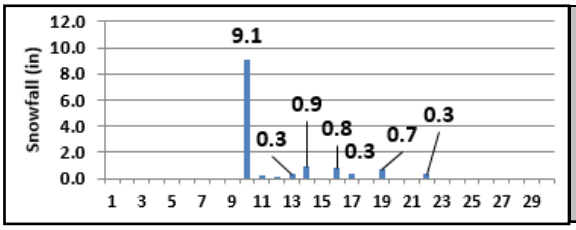


Figure 2 November Daily Snowfall Totals NWS Grand Forks ND

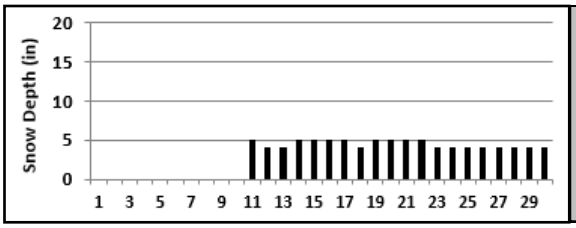


Figure 3 November Daily Snow Depth NWS Grand Forks ND

Table 1 shows the November average temperature (AveT), departure from normal temperature (TDept), highest temperature (THigh), lowest temperature (TLow), precipitation (Pcpn), departure from normal precipitation (PDept), snowfall (Snow), and peak wind speed (PWnd in mph) for 11 climate stations. The November average temperature was slightly above or below normal at all sites. Precipitation amounts were near normal. Figure 1 plots the daily departure from normal temperatures in November 2022 at the NWS Grand Forks. November 2nd was quite mild, and was the warmest day of the month for all the sites in Table 1. Figure 2 shows the November daily snowfall totals at NWS Grand Forks. The highest total occurred on the 10th, with 9.1 inches of snow. Figure 3 shows the November daily snow depth at the NWS Grand Forks (which is measured at 6 am).

Records At Fargo-Moorhead, the low of 47 on November 2nd tied the record high minimum for that date (last set in 1947).

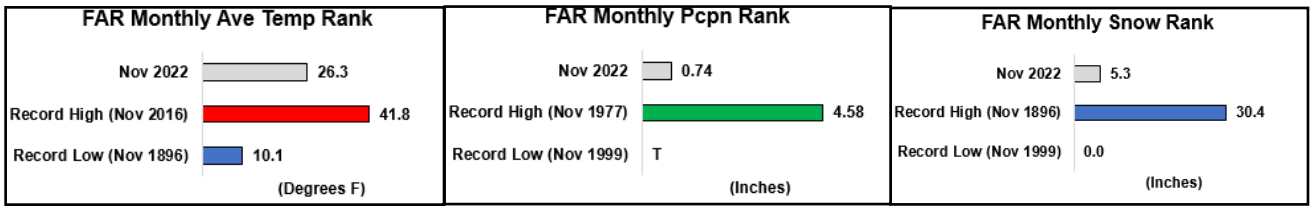


Figure 4 November 2022 Fargo Temperature and Precipitation Statistics Compared to Records

Figure 4 compares the November 2022 average temperature (AveT), precipitation (Pcpn), and snowfall (Snow) at Fargo to the established records.

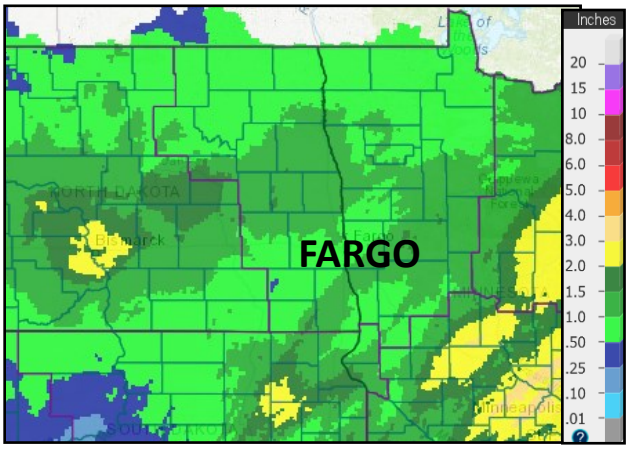


Figure 5 November Observed Precipitation

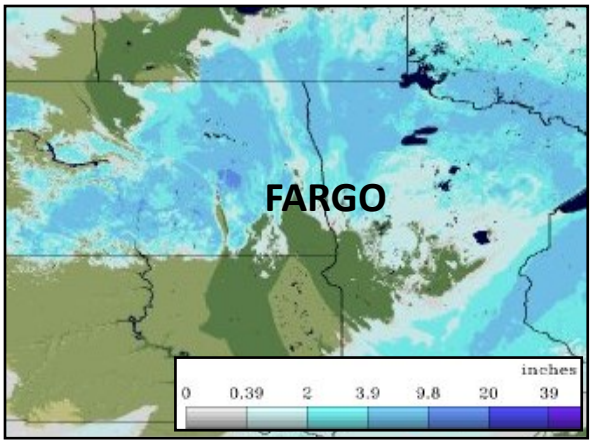


Figure 6 November 30th Snow Depth

Figure 5 gives a November precipitation estimate for all of eastern North Dakota and the northwest quarter of Minnesota. Amounts were fairly consistent across the area, ranging from 0.50 to 1.50 inches (the light green colors). Figure 6 shows the snow depth across the region on November 30th. Most of the area had 1 to 5 inches of depth. The exception was portions of southeast North Dakota and west central Minnesota, where whatever snow had fallen during the month had basically melted.

Temperature

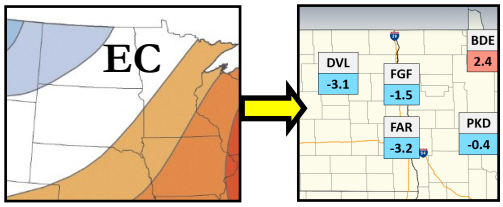


Figure 7 CPC Temp Outlook

Figure 8 Obs Temp Dept

Precipitation

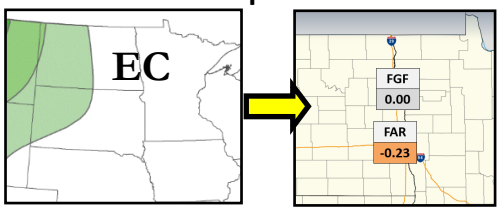


Figure 9 CPC Pcpn Outlook

Figure 10 Obs Pcpn Dept

The November temperature (Figure 7) and precipitation (Figure 9) outlooks issued by the Climate Prediction Center (CPC) in late October are shown above. Compare these with the observed November departures from normal temperatures (Figure 8) and precipitation (Figure 10).

Longer Term Trends

Looking at just the Fargo climate site (FAR), Figures 11 and 12 show how November 2022 fits into the previous 5 months. Figure 11 plots the monthly departures from normal temperatures at Fargo. The blue bars represent months that were colder than normal, while the red bars represent months that were warmer than normal. Figure 12 plots the monthly departures from normal precipitation at Fargo. The green bars represent months that were wetter than normal, while the brown bars represent months that were drier than normal.

Four out of the last six months have had slightly above normal monthly average temperatures (Figure 11). The last six months have all had below normal precipitation totals (Figure 12).

Figure 13 tracks how much precipitation has fallen since January 1, 2022, and how it compares to normal and last year. Snowfall is also tracked for the snow season, which began on July 1, 2021.

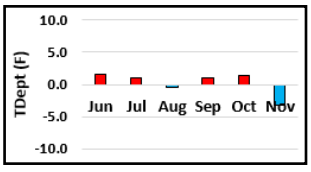


Figure 11 Monthly Departures from Normal Temps at Fargo, ND

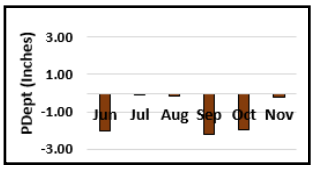


Figure 12 Monthly Departures from Normal Pcpn at Fargo, ND

	Observed Value	Normal	Departure from Normal	Last Year
Pcpn Since Jan 1	19.47	23.06	-3.59	17.36
Snow Since Jul 1	5.3	8.0	-2.7	3.3

Figure 13 Yearly Precipitation & Seasonal Snowfall Trends at Fargo

U. S. Drought Monitor

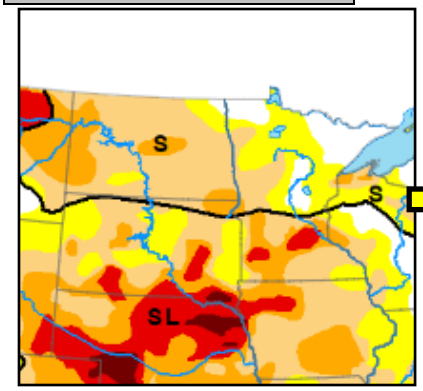


Figure 14 U. S. Drought Monitor, October 27

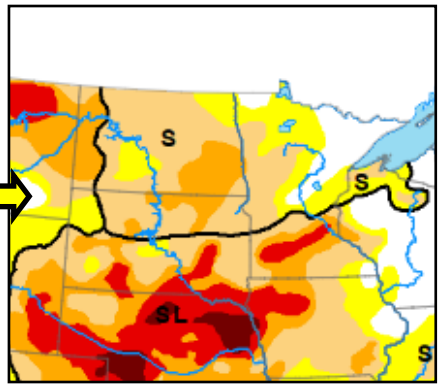
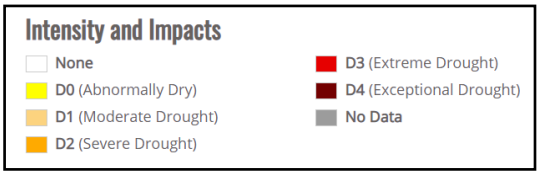


Figure 15 U. S. Drought Monitor, November 23

The current dry stretch has resulted in expanding areas of D1 and D2 drought across eastern ND and northwest MN (Figures 14 & 15). The key for both figures is shown below.



Fall Warnings

The first half of November 2022 was active. One Red Flag Warning was issued on the 6th (Figure 16) for low humidity and strong winds. A High Wind Warning was also issued on the 6th (Figure 17) for most of eastern North Dakota. Finally, Blizzard (Figure 18) and Winter Storm (Figure 19) warnings were issued from the 9th to 11th. Figure 20 shows the snowfall totals for the event. The most snow fell at Michigan and Sheyenne (ND) at 13.5 inches, while Devils Lake had 12.5 inches and New Rockford 12.0 inches.

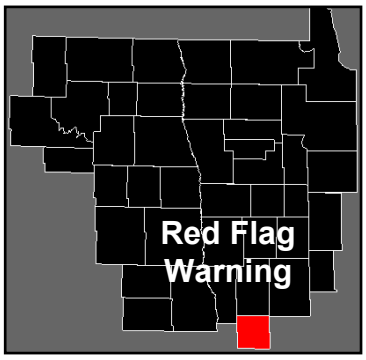


Figure 16 November 6th Red Flag Warning Area

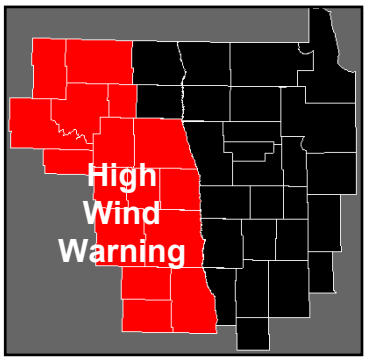


Figure 17 November 6th High Wind Warning Area

<u>Peak Winds November 6th</u>

Fargo 63 mph

Cooperstown 62 mph

Valley City 60 mph

Langdon 58 mph

Gwinner 58 mph

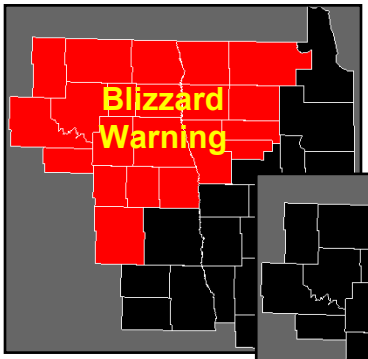


Figure 18 November 10 Blizzard area

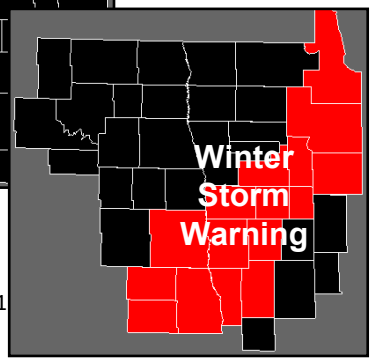


Figure 19 November 9-11 Winter Storm area

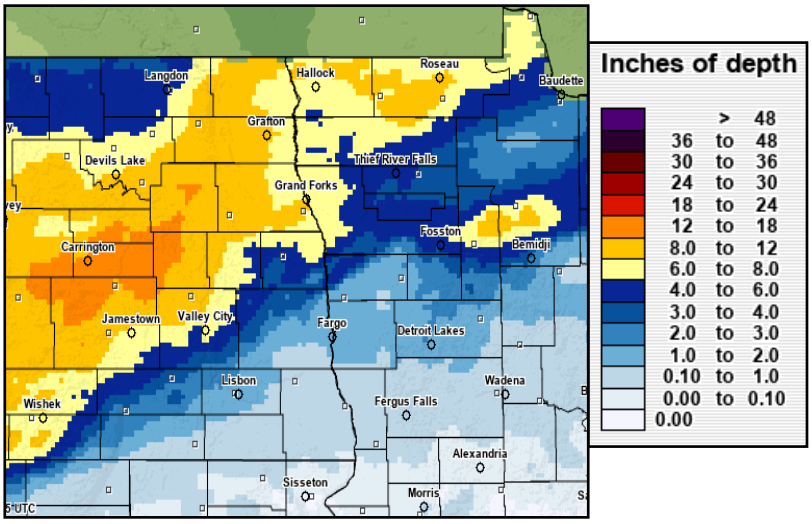


Figure 20 Observed Snowfall November 9-11 (not exact for all areas)

December

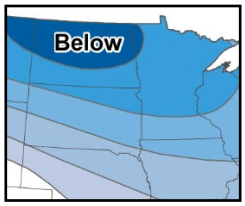


Figure 21 Temperature

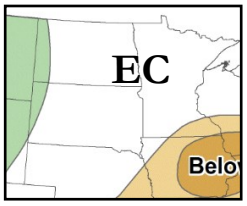


Figure 22 Precipitation

The latest Climate Prediction Center (CPC) temperature (Figure 21) and precipitation (Figure 22) outlooks for December 2022 are shown to the left. For eastern North Dakota and the northwest quarter of Minnesota, the CPC is forecasting higher probabilities for below normal temperatures and equal chances for above normal, normal, or below normal precipitation.

Sunrise/Sunset

Fargo, ND	Dec 1	Sunrise: 7:51 am	Sunset: 4:41 pm
	Dec 31	Sunrise: 8:13 am	Sunset: 4:47 pm

Last Year & Normals

Per Table 2, in December 2021, the monthly average temperature (TDept) was slightly below normal at most sites. Meanwhile, precipitation amounts were above normal at our 3 main winter sites.

	AveT	TDept	THigh	TLow	Pcpn	PDept	Snow	PWnd
DVL	10.3	-2.5	50	-26	M	M	M	45
NWS GF	12.7	-0.9	48	-27	1.34	0.61	27.6	M
GFK	10.7	-2.1	47	-33	1.36	0.70	27.0	56
RDR	11.7	-1.1	48	-30	M	M	M	47
FAR	14.5	-1.2	51	-26	1.85	0.96	25.1	59
BDE	13.8	1.5	46	-27	M	M	M	49
PKD	13.8	-0.4	44	-30	M	M	M	44
BJI	13.5	-0.2	43	-28	M	M	M	40
TVF	12.5	-1.0	41	-30	M	M	M	47
Y63	16.2	0.1	51	-23	M	M	M	M
AGA	11.6	-1.4	41	-33	M	M	M	M

Table 2 December 2021 Temperature and Precipitation

Figure 23 shows normal highs and lows on December 1st for selected cities across eastern North Dakota and northwest Minnesota. Figure 24 shows how normal highs and lows change by December 31st. As an example, at NWS Grand Forks on December 1st, the normal high is 27 and the normal low is 12. By December 31st at NWS Grand Forks, the normal high falls to 16 and the normal low falls to 1. Figure 25 shows the normal precipitation and snowfall amounts (if available) at the same sites as Figures 23 and 24. As an example, the normal precipitation at NWS Grand Forks in December is 0.73 inches and the normal snowfall is 13.4 inches.

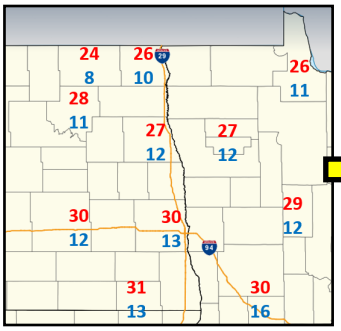


Figure 23 Normal Temps Dec 1

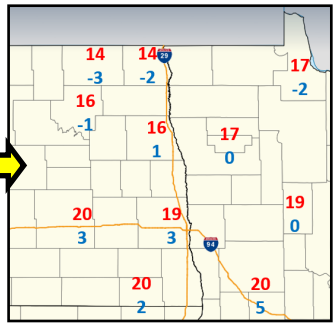


Figure 24 Normal Temps Dec 31

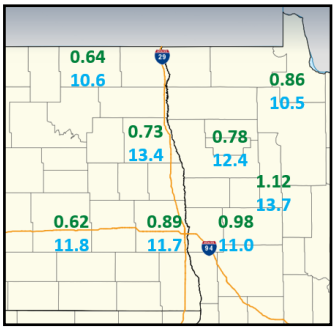


Figure 25 Normal Dec Pcpn/Snow

Winter Warnings

December 2021 was a very active weather month. Five Winter Storm Warnings, two Blizzard Warnings, and two Wind Chill Warnings were issued. The graphics below show the various warnings issued, with either the corresponding snowfall amounts or peak wind speeds for each event.

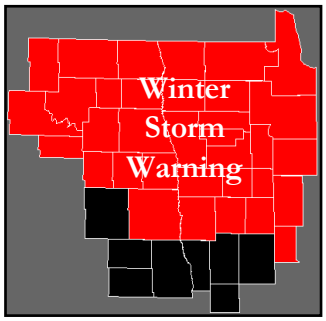


Figure 26 December 4-6
Winter Storm area

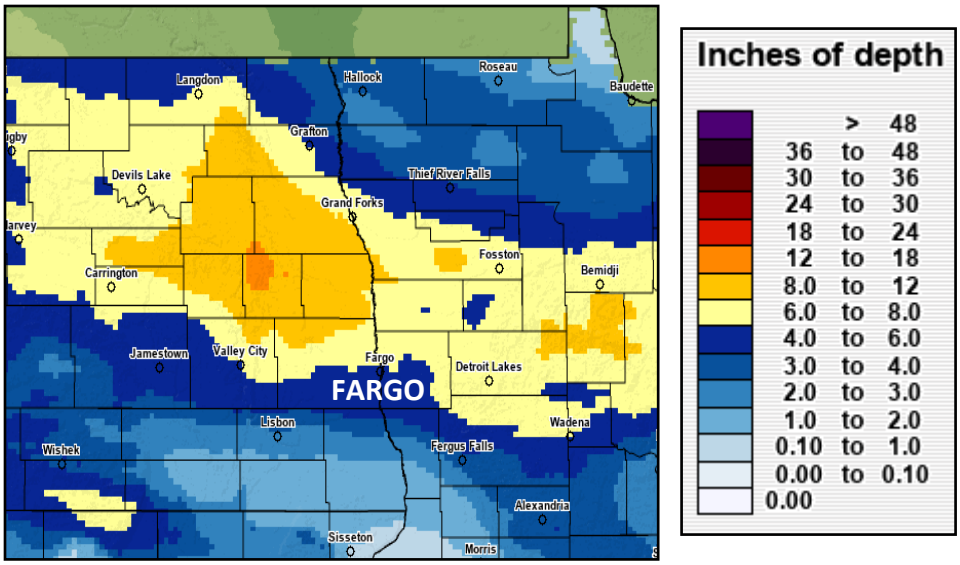


Figure 27 Observed Snowfall December 4-6
(not exact for all areas)

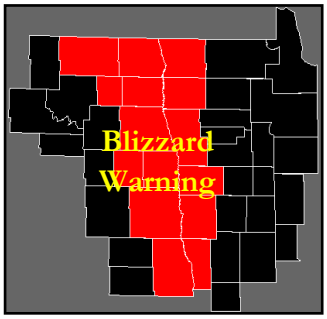


Figure 28 December 5-6
Blizzard area

<u>Peak Winds</u>

Fargo 56 mph

Grand Forks 56 mph

Wahpeton 52 mph

Donaldson MN 50 mph

Tenney MN 50 mph

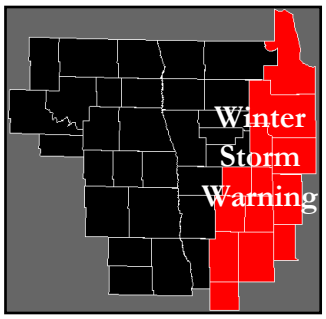


Figure 29 December 15-16
Winter Storm area

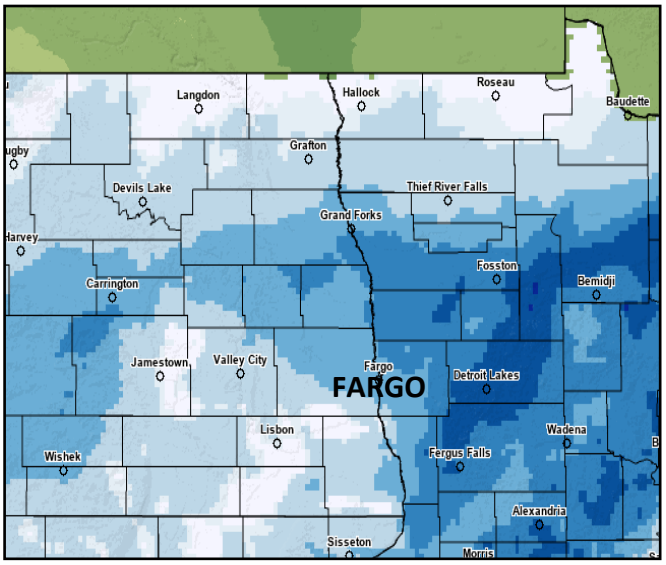


Figure 30 Observed Snowfall December 15-16
(not exact for all areas)

Figure 31 December 17
Winter Storm area

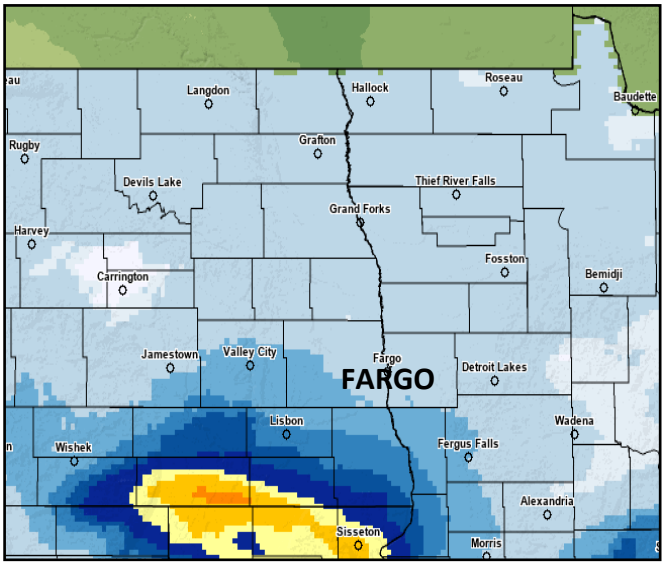


Figure 32 Observed Snowfall December 17
(not exact for all areas)

Figure 33 December 26-27
Winter Storm area

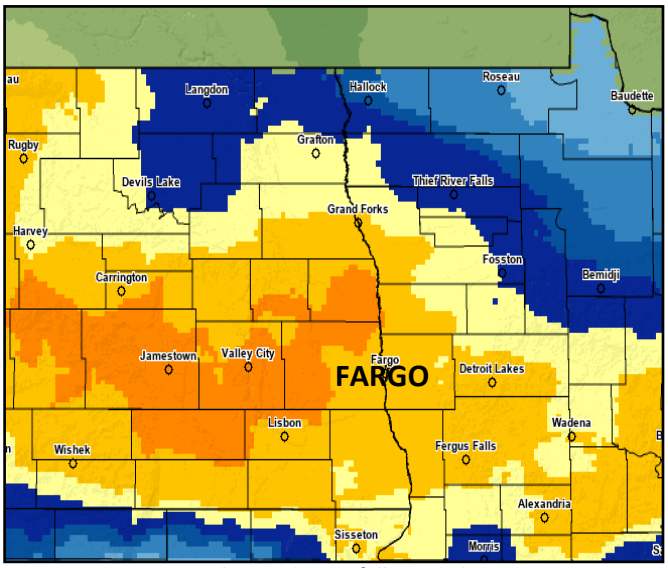


Figure 34 Observed Snowfall December 26-27
(not exact for all areas)

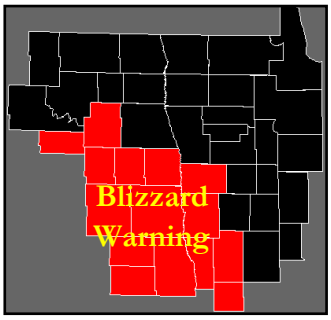


Figure 35 December 27
Blizzard area

<u>Peak Winds</u>

Fargo 60 mph

Wahpeton 58 mph

Valley City 54 mph

Grand Forks 54 mph

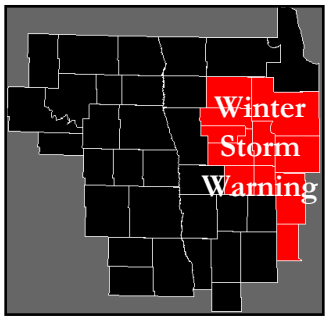


Figure 36 December 28
Winter Storm area

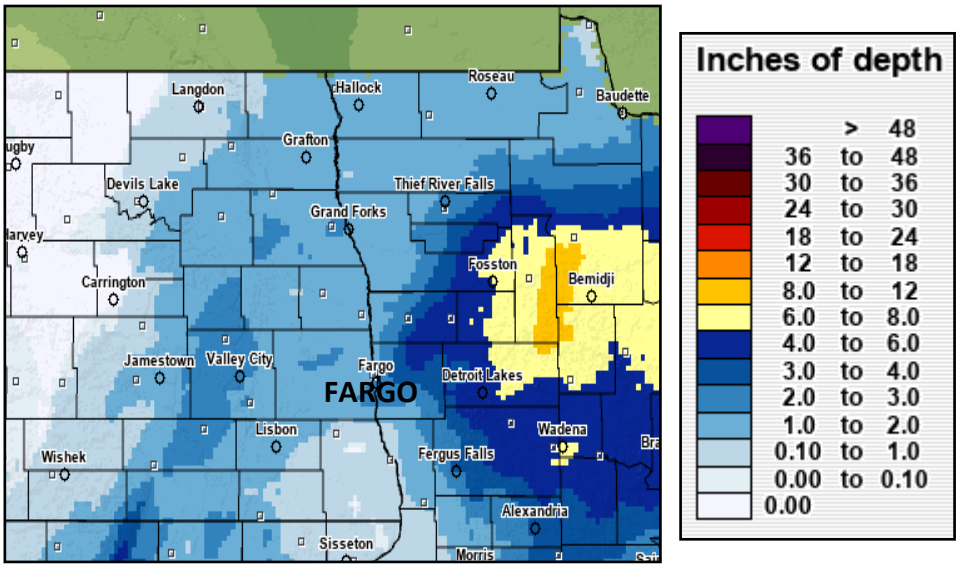


Figure 37 Observed Snowfall December 28
(not exact for all areas)

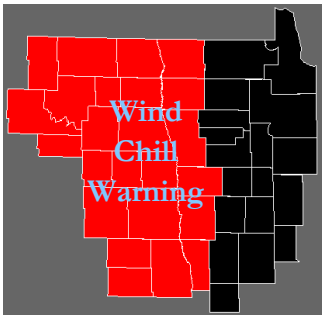


Figure 38 December 28-30
Wind Chill Warning area
(-40F to –55F wind chills)

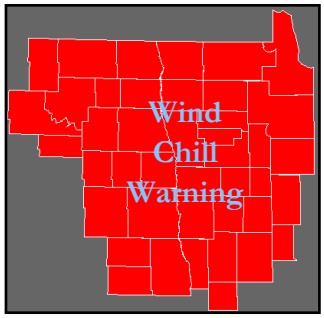


Figure 39 Dec 30-Jan 2
Wind Chill Warning area
(-40F to –60F wind chills)