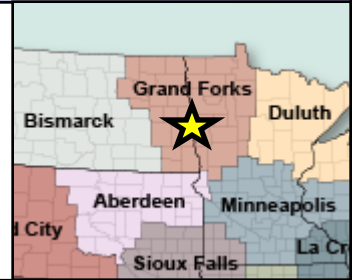


National Weather Service Grand Forks



Weather & Climate Review

December-January 2022



December

	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 1 December 2021 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 NWR.

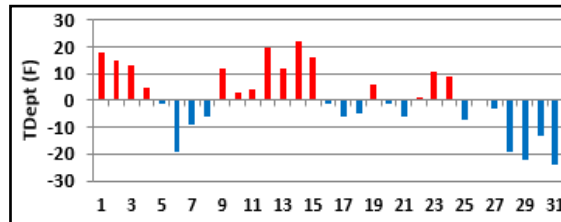


Figure 1
December Daily Departure from Normal Temperatures at the NWS Grand Forks ND

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

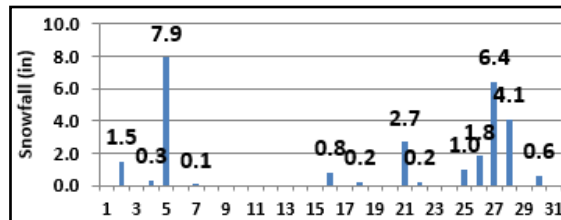


Figure 2
December Daily Snowfall Totals NWS Grand Forks ND

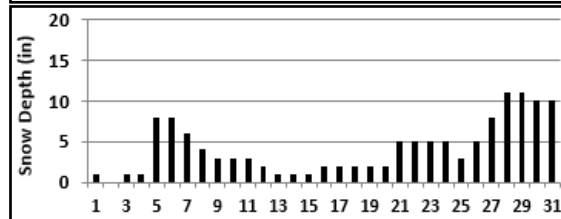


Figure 3
December Daily Snow Depth NWS Grand Forks ND

Table 1 shows the December 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 December average temperature was slightly below normal at most sites. Precipitation amounts were above normal at our 3 main winter sites. Figure 1 plots the daily departure from normal temperatures in December 2021 at the NWS Grand Forks. More days through the first half of the month were warmer than normal, while the second half of the month trended colder. Figure 2 shows the December daily snowfall totals at NWS Grand Forks. There were quite a few days with measurable snowfall! Figure 3 shows the daily snow depth at the NWS in Grand Forks (which is measured at 6 am).

Records At Fargo, the 1.85 inches of precipitation for December ties 2009 for the 3rd highest total. The snowfall total of 25.1 inches becomes the 4th highest total.

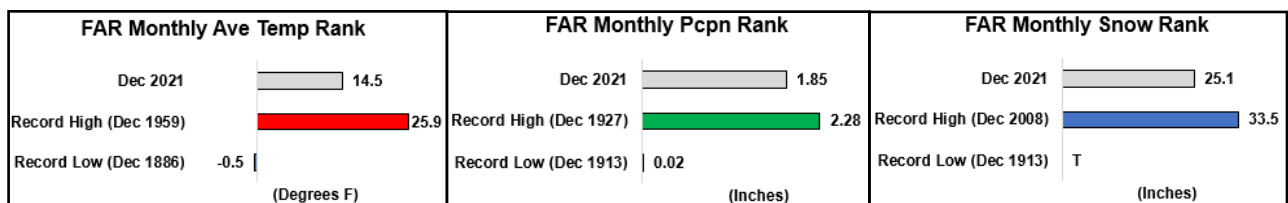


Figure 4 December 2021 Fargo Temperature and Precipitation Statistics Compared to Records

Figure 4 compares the December 2021 average temperature (AveT) and precipitation (Pcpn) at Fargo to the established records.

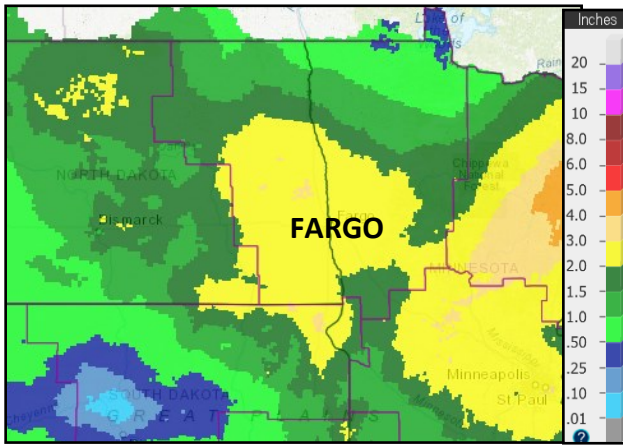


Figure 5 December Observed Precipitation

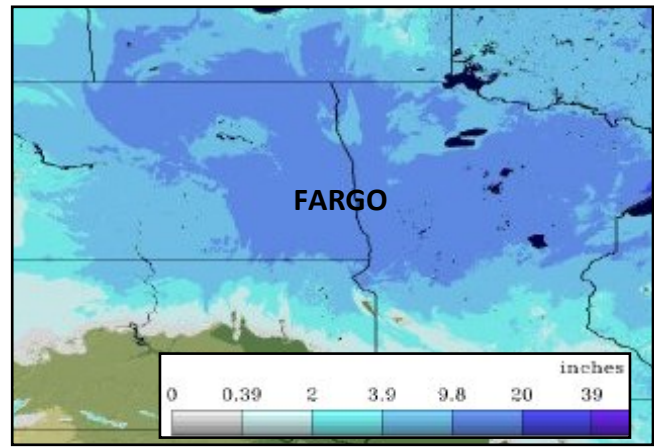


Figure 6 December 31st Snow Depth

Figure 5 gives a December precipitation estimate for all of eastern North Dakota and the northwest quarter of Minnesota. A good portion of the area received 2.0 to 3.0 inches of precipitation (yellow color), with lower amounts along the Canadian border. Figure 6 shows the depth of snow on the ground across the Northern Plains on December 31st. Most of the area had over 10 inches of snow on the ground.

Temperature

Figure 7 CPC Temp Outlook

Precipitation

Figure 9 CPC Pcpn Outlook

Figure 8 Obs Temp Dept

Figure 10 Obs Pcpn Dept

The December temperature (Figure 7) and precipitation (Figure 9) outlooks issued by the Climate Prediction Center (CPC) in late November are shown above. Compare these with the observed December 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 December 2021 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.

The December below normal temperature is the first in the last 6 months (Figure 11). August through December have all been wetter than normal (Figure 12).

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

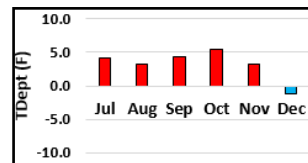


Figure 11 Monthly Departures from Normal Temps at Fargo, ND

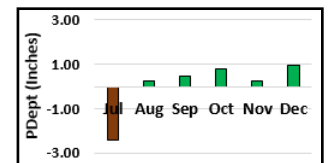


Figure 12 Monthly Departures from Normal Pcpn at Fargo, ND

	Observed Value	Normal	Departure from Normal	Last Year
Pcpn Since Jan 1	19.21	23.95	-4.74	19.38
Snow Since Jul 1	28.4	19.7	8.7	16.3

Figure 13 Yearly Precipitation & Seasonal Snowfall Trends at Fargo

U. S. Drought Monitor

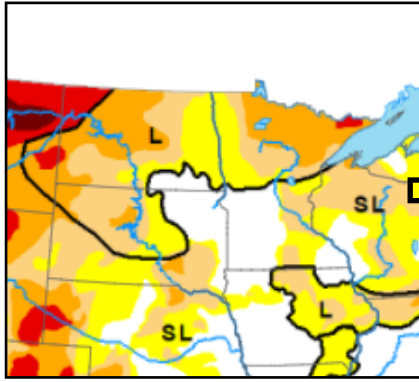


Figure 14 U. S. Drought Monitor, November 30

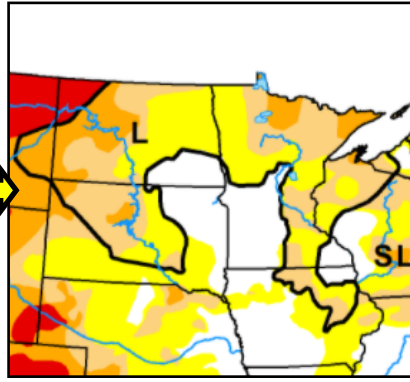


Figure 15 U. S. Drought Monitor, December 30

The above normal precipitation amounts in December continued to ease the drought categories across eastern North Dakota and the northwest quarter of Minnesota (Figures 14 & 15). The key for both figures is shown below.

Intensity and Impacts

None	D3 (Extreme Drought)
D0 (Abnormally Dry)	D4 (Exceptional Drought)
D1 (Moderate Drought)	No Data
D2 (Severe Drought)	

Winter Warnings

December 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.

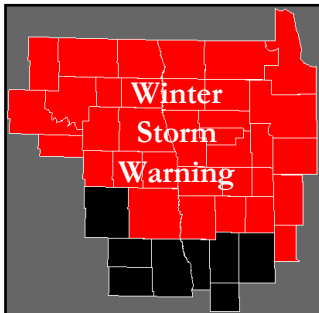


Figure 16 December 4-6
Winter Storm area

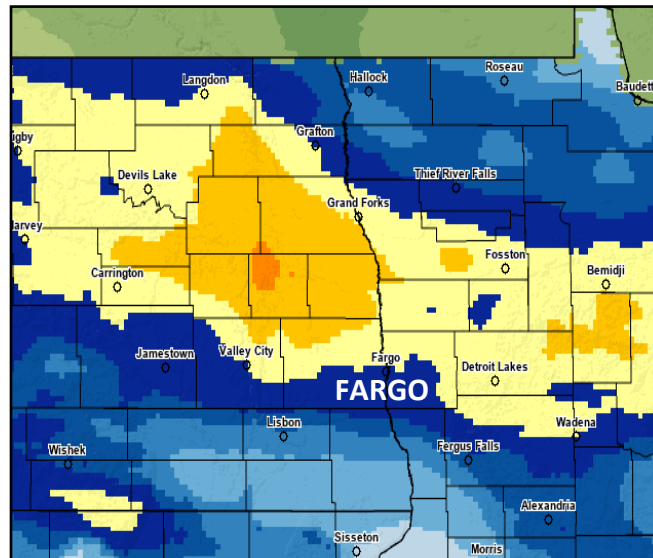


Figure 17 Observed Snowfall December 4-6
(not exact for all areas)

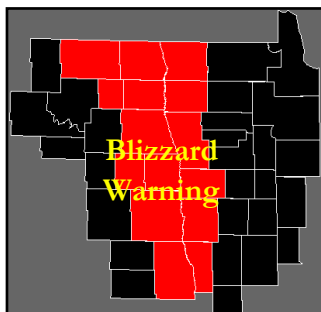
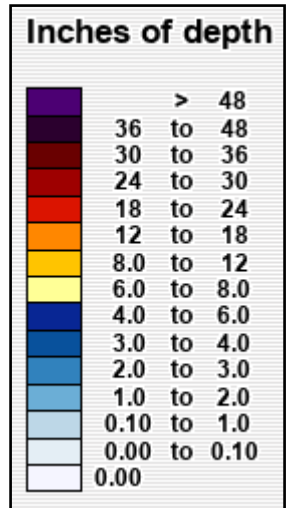


Figure 18 December 5-6
Blizzard area



Peak Winds

- Fargo 56 mph
- Grand Forks 56 mph
- Wahpeton 52 mph
- Donaldson MN 50 mph
- Tenney MN 50 mph



Figure 19 December 15-16
Winter Storm area

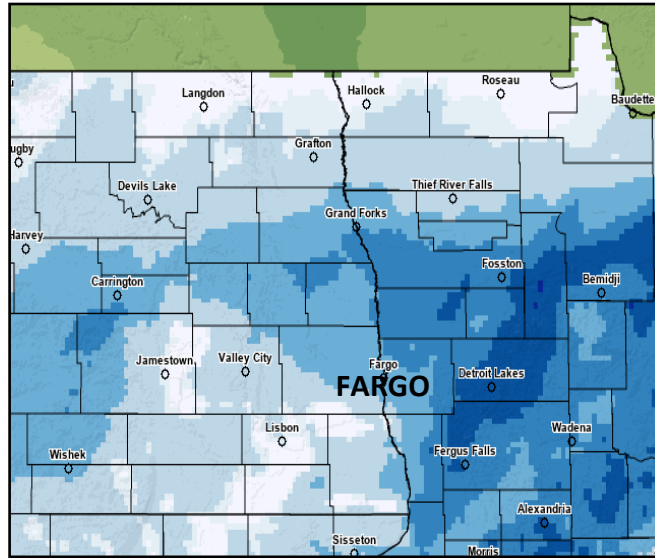


Figure 20 Observed Snowfall December 15-16
(not exact for all areas)

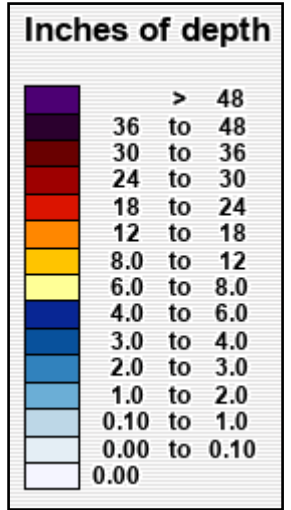


Figure 21 December 17
Winter Storm area

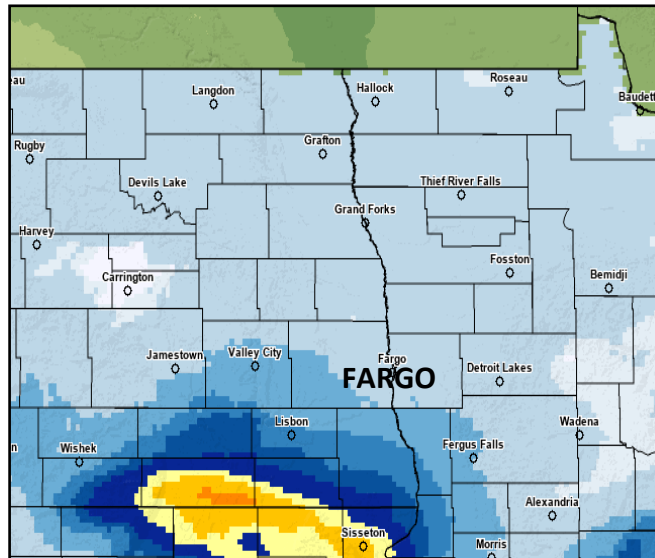


Figure 22 Observed Snowfall December 17
(not exact for all areas)

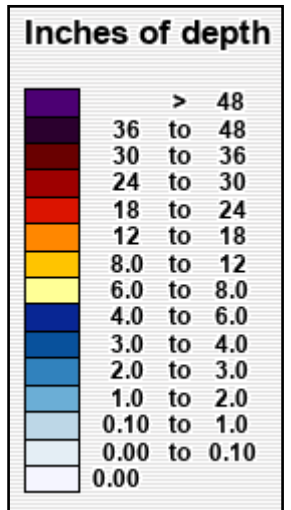


Figure 23 December 26-27
Winter Storm area

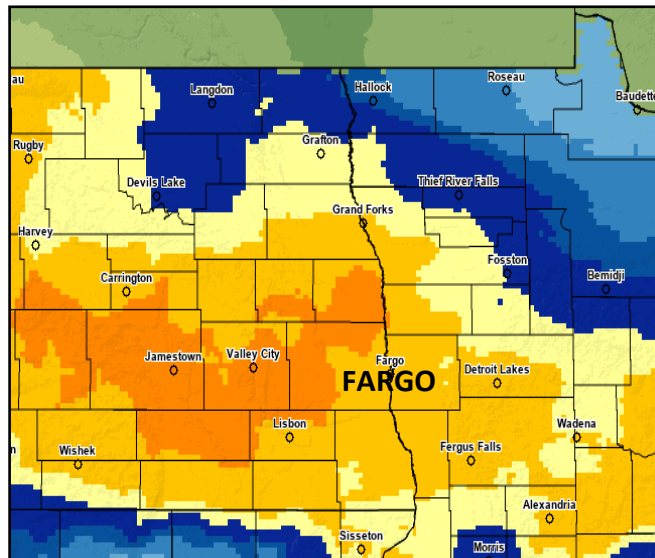
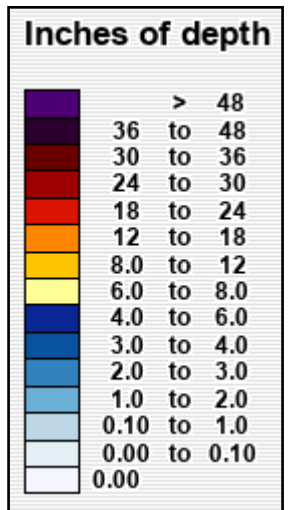


Figure 24 Observed Snowfall December 26-27
(not exact for all areas)



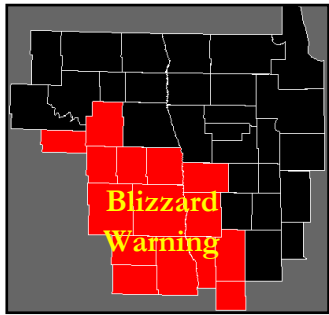


Figure 25 December 27
Blizzard area



Peak Winds
 Fargo 60 mph
 Wahpeton 58 mph
 Valley City 54 mph
 Grand Forks 54 mph

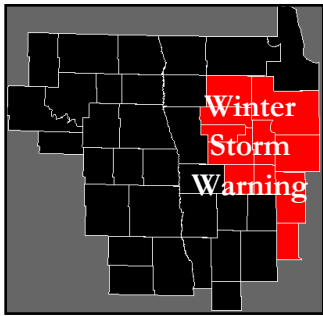


Figure 26 December 28
Winter Storm area

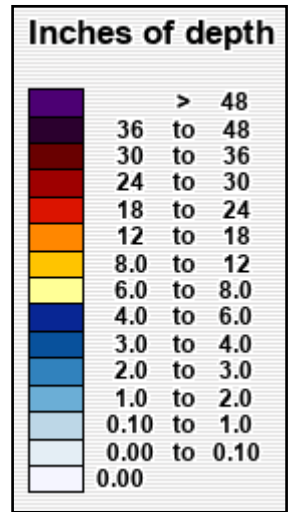
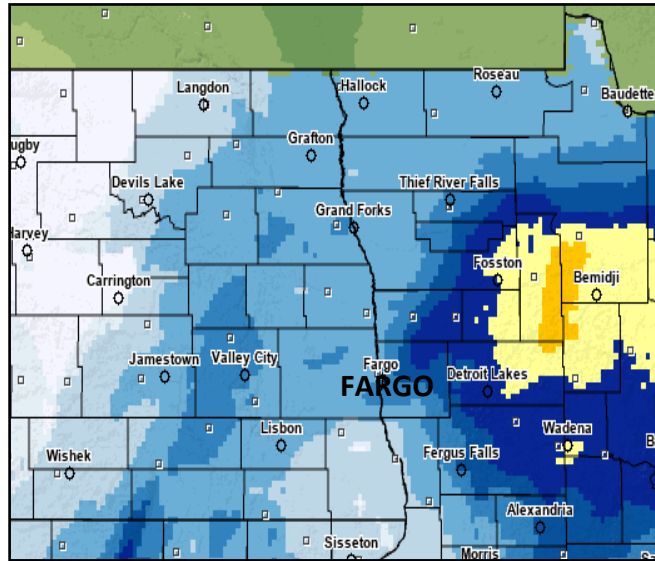


Figure 27 Observed Snowfall December 28
(not exact for all areas)

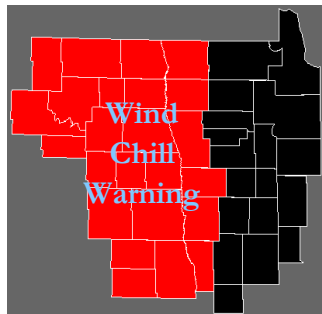


Figure 28 December 28-30
Wind Chill Warning area
(-40F to -55F wind chills)

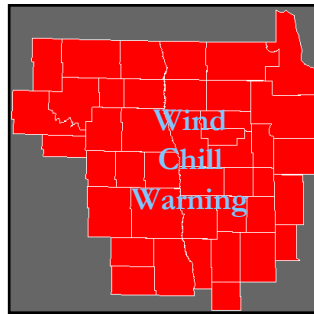


Figure 29 Dec 30-Jan 2
Wind Chill Warning area
(-40F to -60F wind chills)

January

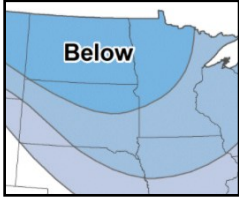


Figure 30 Temperature

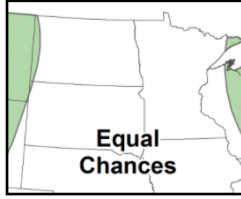


Figure 31 Precipitation

The latest Climate Prediction Center (CPC) temperature (Figure 30) and precipitation (Figure 31) outlooks for January 2021 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, or below normal precipitation.

Sunrise/Sunset

Fargo, ND Jan 1 Sunrise: 8:13 am Sunset: 4:49 pm
 Jan 31 Sunrise: 7:54 am Sunset: 5:28 pm



Last Year & Normals

Per Table 2, in January 2021, the average temperature was well above normal at all sites. Precipitation and snowfall amounts were below normal.

	AveT	TDept	THigh	TLow	Pcpn	PDept	Snow	PWnd
DVL	18.2	10.2	39	-22	M	M	M	54
NWS GF	17.5	10.1	39	-19	0.28	-0.43	3.5	M
GFK	17.5	10.8	39	-20	0.30	-0.25	3.3	53
RDR	18.2	11.5	42	-19	M	M	M	45
FAR	19.3	10.0	41	-9	0.37	-0.33	4.6	49
BDE	14.4	9.0	41	-30	M	M	M	47
PKD	17.1	10.3	41	-18	M	M	M	56
BJI	15.9	10.0	43	-28	M	M	M	46
TVF	16.5	10.8	38	-21	M	M	M	46
Y63	18.1	8.5	38	-6	M	M	M	M

Table 2 January 2021 Temperature and Precipitation Statistics

Figure 32 shows normal highs and lows on January 1st for selected cities across eastern North Dakota and northwest Minnesota. Figure 33 shows how normal highs and lows change by January 31st. As an example, at NWS Grand Forks on January 1st, the normal high is 16 and the normal low is 1. By January 31st, the normal high rises to 17 and the normal low falls to 1 below. Figure 34 shows the normal precipitation and snowfall amounts for a few selected sites. As an example, the normal precipitation at NWS Grand Forks in January is 0.52 inches and the normal snowfall is 10.6 inches.

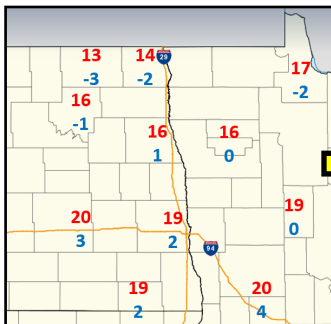


Figure 32 Normal Temps Jan 1

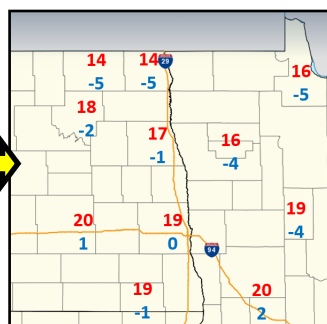


Figure 33 Normal Temps Jan 31

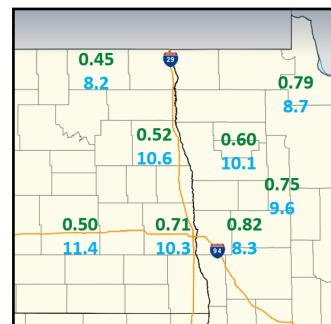


Figure 34 Normal Jan Pcpn/Snow

Winter Warnings

No winter warnings were issued in January 2021.