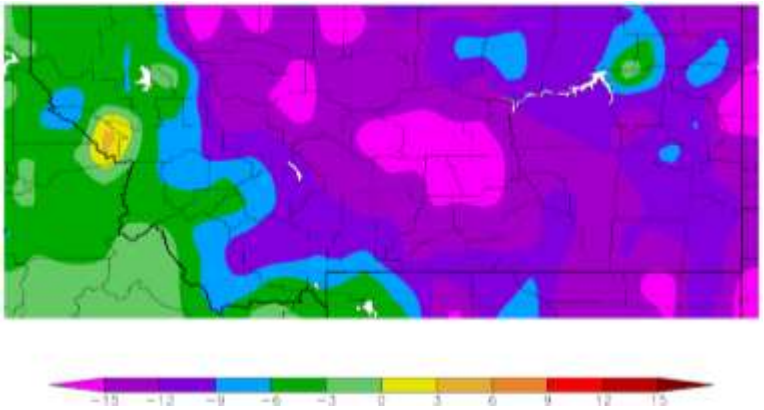
Montana Weather/Precipitation Summary

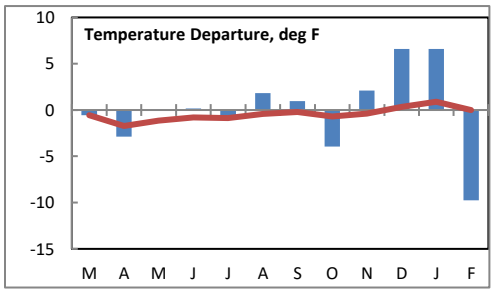
February 2021 NOAA's National Weather Service Great Falls Montana

Northwesterly flow aloft dominated during February (Fig. 1). A ridge of high pressure over the Gulf of Alaska is normally along the west coast of North America. A trough of low pressure aloft was centered over the western Great Lakes. The deeper trough over central North America contributed to below normal temperatures over Montana. Precipitation was above normal, except over the northeast. Winds averaged above normal.

February temperature anomalies ranged from 15.6°F below normal at Lewistown to 3.5°F below normal at West Yellowstone. The map below shows the variation in departures. The warmest average temperatures were in western Montana. The warmest average temperature of 31.8°F was at Alberton, while the coolest was 4.6°F at Plentywood. The highest temperature was 66°F at Huntley and Loma on the 2nd. The coldest temperature was -47°F near Ulm on the 12th. This range of 113°F is above the February average range of 104°F, and the largest for February since 2014. The statewide temperature average of 13.8°F was 9.8°F below normal and the 16th coldest. This was the coldest February and month since February 2019. The red line on the graph shows the cumulative 12-month departure from normal, which was right at normal. See the state summary and temperature tables below for more details.

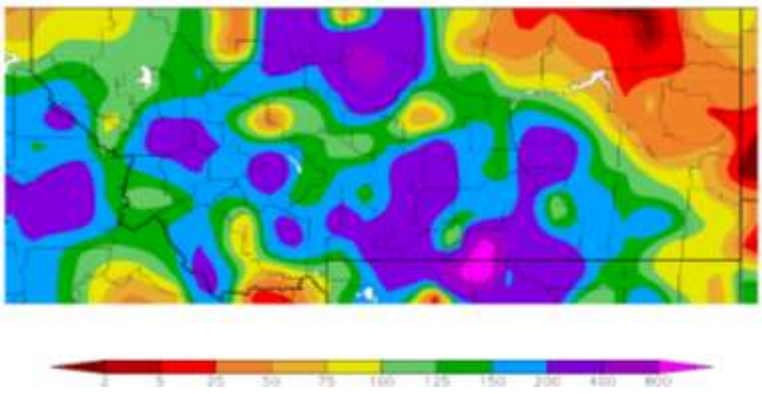
Temperature departure from normal

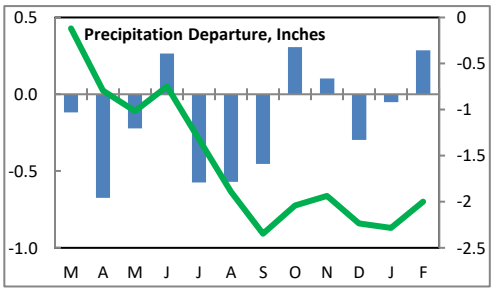




Precipitation was heaviest over mountain areas of northwest Montana and along the Idaho border. The highest amount (10.20-inches) fell at NF Jocko SNOTEL (Missoula), with the highest amount at a lower elevation at Bigfork (4.05-in) (Flathead). The month's statewide composite of 0.95" was 0.29" above normal. This ranks as the 24th wettest February of record for Montana. The northeast was very dry, recording a tenth of an inch or less. The green line on the precipitation graph shows the cumulative 12-month departure from normal, which is now 2.00" below normal.

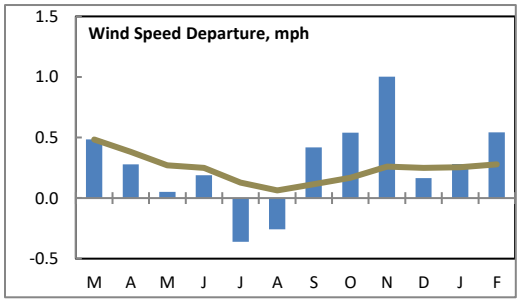
Precipitation percent of normal (gauge only)





Snowfall was above normal as well, again except for the northeast. The statewide average of

13.1-inches was the 15th highest for February and highest since 2019. See state summary and precipitation tables below for more details.



Wind speed averages were near to above normal. Even so, statewide, the month ranked as the 30th calmest February, with an average speed of 9.4-mph. The strongest averages were along the Rocky Mountain Front and Livingston areas. The composite statewide average was 0.5-mph above normal. The brown line of the wind graph to the right shows the 12-month cumulative statewide wind departure from normal. All but two of the past 12-months have had above normal wind speed averages.

Refer to NCEI's State of the Climate report for the latest monthly discussion:
http://www.ncdc.noaa.gov/sotc/

February continued the mild pattern from January, until the 5th. A strong cold front brought arctic air to the state, with well below normal temperatures and snow. Temperatures peaked in the 60s over portions of eastern Montana on the 2nd, with highs reaching 66°F at several locations. The cold front brought snow on the 5th and 6th, then bitterly cold air. A low temperature of at least -40°F or colder was observed over six consecutive nights from the 9th-14th. Averages were as much as 50°F below normal. Lows bottomed out at -47°F on the 12th, which was the coldest temperature in Montana since February 2019. On the 12th, the wind chill at Kevin was -62.2°F, the coldest wind chill in the state since February 12, 2018 when a value of -67.5°F was reported. The temperature remained below zero for 8-days at Great Falls, which was their 4th longest period of record, and longest since December 1983. At Havre, the temperature was below zero for nine days, their 11th longest such period of record and longest since January 1969. After a 14-day period with temperatures below freezing, temperatures returned to above normal values on the 19th, and remained above normal until near the end of the month. Windy conditions returned as well.
Snowfall was heavy over southern Montana. Bozeman reported their third highest amount for February, while Billings had their 9th highest.

The highest daily temperatures in February occurred on eight days at Alberton. Ingomar had the state's lowest temperature on five days.

Water Year to-date
For the water-year through February, composite temperatures averaged 28.6°F, which was 0.4°F above normal. This has been the warmest water year since 2016. Precipitation tallied 4.71-inches, which was 0.35" above normal and the highest at this point since 2019. Statewide average snowfall since July has been 43.7-inches or 3.2-inches above normal. Winds averaged 9.4-mph, which is 0.5-mph higher than normal. This was the highest average since 2009 and 39th lowest of record.

Winter Season
This past winter-season (Dec-Feb) produced a composite temperature average of 23.2°F, which was 1.1°F above normal. Precipitation averaged 2.15-inches, which was only 0.5" below normal for a winter season. Snowfall averaged about 6.5-inches below normal, at 22.7-inches. Winds averaged 9.3-mph, 0.4-mph highest than normal. This was the windiest such period since 2014 and 28th lowest of record.

Precipitation/convection
Severe convective weather occurred on zero days in February, which is normal.

February information:

High Temperature	66°F at Huntley and Loma (2nd)	**Greatest Precip**	4.05" at Bigfork (Flathead)
Low Temperature	-47°F at Ulm (12th)		10.20" at North Fork Jocko SNOTEL (Missoula)
Warmest Ave Temp	31.7°F at Alberton	**Peak Wind Gust**	94 mph near Moore (13th)
Coolest Ave Temp	4.6°F at Plentywood		100 mph at Deep Creek RAWS (19th)
Range of Temp departures	-3.5°F at West Yellowstone to -15.6°F at Lewistown	**Highest Ave Wind**	22.7 mph at Deep Creek RAWS 19.1 mph at Livingston
21 city mean monthly Temperature/Nrml	13.8/23.6F normal. 16th coldest of record (since 1880). 12th percentile.	**20 city mean monthly wind speed/Nrml**	9.4 mph/8.9 mph; 40th calmest of record (since 1936). 47th percentile.
22 city mean monthly precipitation/Nrml	0.95"/0.67" – 143% of normal. 24th wettest of record (since 1880). 82nd percentile.	**20 city mean monthly snowfall/Nrml**	13.1"/7.8" – 15th highest of record (since 1880). 89th percentile

Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date

Location	Feb	% of Norm	Rank	Pcntl	Oct 1 - Feb	% of norm	Rank	Pcntl	Years
Baker	0.03	10%	88	45	1.10	41%	88	94	94
Billings	1.08	192%	16	12	4.27	117%	32	26	120
Belgrade	0.59	142%	25	29	2.67	86%	56	66	84
Butte	0.65	148%	39	30	2.23	79%	79	62	127
Cut Bank	0.60	212%	14	11	3.46	170%	11	9	114
Dillon	0.09	34%	62	75	0.45	24%	81	100	81
Glasgow	0.69	201%	12	9	2.81	108%	37	30	122
Great Falls	0.69	117%	39	29	3.94	115%	49	38	129
Havre	0.81	216%	13	9	2.40	99%	81	57	141
Helena	0.87	191%	23	15	3.75	143%	35	24	142
Jordan	0.32	69%	45	44	1.45	49%	72	75	96
Kalispell	1.07	112%	52	40	8.15	125%	24	18	127
Lewistown	0.42	86%	86	68	2.93	83%	97	77	125
Livingston	0.37	66%	70	57	3.74	98%	54	45	118
Miles City	0.26	100%	91	63	1.63	80%	114	79	144
Missoula	1.31	149%	28	19	5.77	109%	43	30	141
Mullan Pass	7.03	178%	11	12	32.91	147%	5	5	82
Wolf Point	0.04	20%	44	56	0.79	42%	73	96	76
Glendive	0.08	21%	111	87	1.50	57%	105	85	124
Sidney	0.10	28%	68	83	1.08	37%	77	95	81
BZN MSU	1.70	207%	8	5	5.38	96%	62	43	144
W Yellowst	2.16	120%	27	23	11.17	111%	29	26	109

Rankings and Percentiles are 1=wettest, higher numbers=drier.
For an automated version of this chart, updated daily, go to
http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS

Historical Rank of Average Temperature (°F) for the Current Month and Water Year to Date

Location	Feb	Normal	Rank	Pcntl	Oct 1 - Feb	Normal	Rank	Pcntl	Years
Baker	9.8	24.2	98	90	29.0	27.2	29	26	109
Billings	16.6	29.3	118	93	33.5	33.6	61	49	123
Belgrade	15.8	24.2	73	85	28.0	27.8	39	45	86
Butte	16.3	22.1	104	82	26.4	25.9	65	51	127
Cut Bank	9.3	23.3	105	93	27.8	28.2	49	43	112
Dillon	25.7	26.2	73	75	29.3	29.5	59	65	77
Glasgow	10.8	18.0	85	67	27.2	24.7	27	21	126
Great Falls	12.4	26.5	119	95	31.1	31.4	75	60	124
Havre	9.7	21.1	118	83	28.0	26.8	47	33	141
Helena	18.1	26.9	115	81	31.6	30.2	41	29	141
Jordan	10.1	21.7	95	91	29.0	27.5	39	38	101
Kalispell	20.9	26.9	98	81	30.6	29.8	27	22	121
Lewistown	10.1	24.6	120	98	28.8	29.7	75	63	119
Livingston	17.9	29.3	116	97	33.1	33.5	68	57	118
Miles City	12.6	24.1	118	83	29.7	29.4	46	33	139
Missoula	24.6	29.1	96	74	31.7	31.3	48	37	128
Mullan Pass	17.4	23.0	37	86	26.8	26.6	17	37	44
Wolf Point	9.2	17.4	62	78	25.4	23.9	26	34	75
Glendive	10.5	22.8	110	86	27.5	28.9	64	51	125
Sidney	8.8	20.9	84	86	26.5	26.8	36	37	98
W Yellowst	12.2	15.7	80	72	19.7	20.1	76	67	113

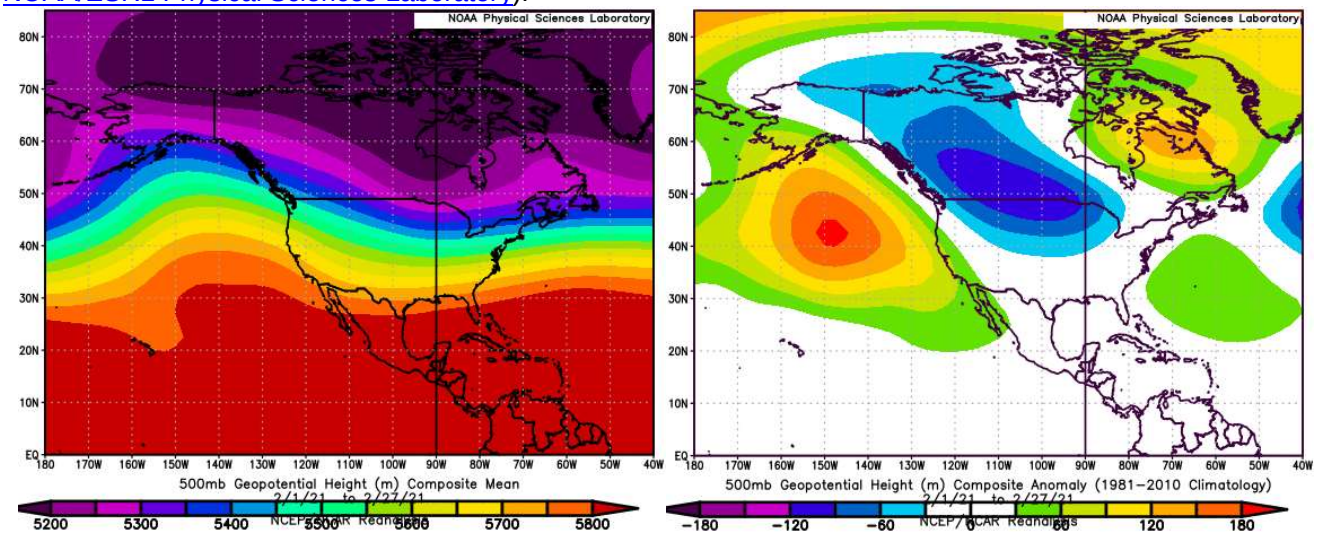
Rankings and Percentiles are 1=coldest, higher numbers=warmer.

Historical Rank of Average Wind Speed (mph) for the Current Month and Water Year to Date

Location	Feb	Normal	Rank	Pcntl	Oct 1 - Feb	Normal	Rank	Pcntl	Years
Baker	10.5	10.3			10.9	10.8			23
Billings	11.0	11.6	64	75	12.5	11.9	41	48	85
Belgrade	5.9	5.3	21	36	5.2	5.1	27	47	56
Butte	5.2	5.2	32	55	4.9	5.1	37	64	57
Cut Bank	13.6	12.8	45	58	15.0	13.8	31	38	79
Dillon	11.2	9.9	27	39	10.2	9.5	25	36	67
Glasgow	9.9	9.5	27	34	9.7	9.7	43	56	76
Great Falls	11.6	12.1	56	66	14.0	13.0	33	39	83
Havre	10.9	9.6	27	20	11.4	10.0	9	6	132
Helena	7.6	6.3	32	22	6.5	5.9	75	53	141
Jordan	8.4	7.6	9	23	8.5	7.6	3	6	37
Kalispell	7.6	4.8	17	13	4.9	4.3	115	94	122
Lewistown	9.9	9.6	51	65	10.6	10.0	40	50	79
Livingston	17.1	17.9	34	60	19.0	18.4	17	30	54
Miles City	9.3	9.7	49	38	9.6	9.6	47	36	130
Missoula	6.2	4.6	27	31	4.3	4.1	65	75	86
Mullan Pass	5.4	5.8	24	74	5.3	5.7	27	90	30
Wolf Point	7.8	7.4			7.6	7.5			23
Glendive	9.6	9.9	16	55	9.9	9.9	14	37	38
Sidney	9.2	8.8	12	34	9.18	8.9	11	34	32
W Yellowst	M	M	M	M	M	M	M	M	M

Rankings and Percentiles are 1=windiest, higher numbers=calmer.

Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (left) and climatology for the month (right) (from NOAA/ESRL Physical Sciences Laboratory).



For the latest information on mountain snowpack from the NRCS, go to: https://www.wcc.nrcs.usda.gov/gis/snow.html

For the latest U.S. Drought Monitor, issued weekly by the National Drought Mitigation Center, USDA and NOAA, go to: http://droughtmonitor.unl.edu/

These data are preliminary and have not undergone final QC by NCEI. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Centers for Environmental Information (NCEI) http://www.ncei.noaa.gov. Many more links are on the Drought Information Page of the NWS Great Falls web site at http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tfx. The climatological record for normals is 1991-2020. The ranking period for temperature, precipitation and snowfall is since 1880. The ranking period for wind speeds is since 1936. The ranking period for soil moisture is since 1995.