

Montana Weather/Precipitation Summary

February 2012 by NOAA's National Weather Service Great Falls Montana

February temperatures averaged above normal across most of the state. Some areas were as much as 5 degrees above normal. The warmest departures were across the northeastern portions of the state (Fig. 2). Precipitation distribution was mixed. Above normal precipitation fell across the northeast...extreme south...and areas around the Big Belt and Little Belt Mountains (Fig. 3). Winds were much weaker in February, mostly below normal. Gusts to 113 mph were recorded at Logan Pass, with a handful of locations having their highest February gust in several years. Upper air flow averaged northwesterly across Montana, with a ridge of high pressure along the west coast (Fig. 1). Usually, a weak ridge of high pressure dominates western North America. In February, the ridge was displaced farther to the east, causing above normal conditions over most of Canada and the western states. Refer to NCDC's State of the Climate report for the latest monthly discussion: <http://www.ncdc.noaa.gov/sotc/>.

Temperatures across the state averaged 25.3F, 1.4 degrees above normal. This was the 43rd warmest February, and the eighth consecutive month with above normal temperatures. This was also the warmest February since 2005. Temperature anomalies were greatest over northeastern Montana (Fig. 3). For the period December through February, temperatures averaged 25.6F, or 4.2F above normal (the 15th warmest of record). This was the warmest winter period since 1991-92. The statewide average temperature for the past 12 months is 0.8F above normal.

Precipitation widely varied across the state, from very wet areas in the northeast, extreme south and some central portions, to nearly nothing in other parts (Fig. 4). Overall, February averaged 0.08-inches above normal, or 0.65-inches. This was 114% of normal, and the 64th driest February of record. The precipitation excess over the average in the past 12 months is 1.24 inches. For the period December through February, precipitation averaged 2.06 inches, or 0.10-inches below normal, and the 45th driest of record. February snowfall averaged 6.9 inches across the state, or 0.6-inches below normal. This was the 56th lowest February total of record. This was also the lowest average February snowfall since 2010. For the winter period, an average of 21.3 inches of snow has fallen. This is the 23rd lowest of record and the lowest since 1991-92.

Wind speeds were below normal in February. The average of 7.3 mph was 1.2 mph below average, and the 3rd calmest of record. This was the calmest February since 2010. For period from December through February, an average of 8.9 mph was 0.1 mph above normal, and the 11th calmest of record.

February 1-5

The windy conditions of January did not continue into February. Mild conditions prevailed most areas during this period. Some snow fell across portions of western Montana. The greatest amounts were 3" inches at Essex (Flathead) and 5" at Lookout Pass (Mineral). Some of the warmest conditions of the month occurred on the 4th, when Grass Range reached 52F and Plentywood reached 53F. Colder air trapped in the higher southwest valleys caused overnight lows to -24F at Wisdom on the 5th.

February 6-21

This was a changeable period of the month, with generally mild conditions. The coolest period was on the 10th and 11th, with temperatures 10 to 15 degrees below normal. Otherwise, regular storms produced precipitation. On the 6th through 11th, periods of snow produced up to a foot and one-half in the Red Lodge area (Carbon). The tail end of this system dropped 4-6 inches of snow from Helena through the Little Belts. On the 14th, snow fell across northeast Montana, with up to 4" reported across Phillips and Valley Counties. Another weather system moved into western Montana on the 17th, producing 9" of snow at Lookout Pass (Mineral). As this system moved across southwest and central Montana, 9" of snow was reported in the Bridger Mountains. Snowfall concentrated over the Little Belts produced a report of 10" from the Showdown Ski Area

on the 20. Again on the 21st, another system brought snow to west and southwest Montana. Seven inches was reported near Whitefish, with 17" in the Bridger Mountains.

February 22-23

One of the most unique systems to affect the state occurred on the 22nd. While warm air ahead of a cold front pushed temperatures to 56F at Fort Benton and Columbus, snow fell over the higher elevations in western Montana and heavy rain at lower elevations. Windy conditions ahead of a cold front caused very strong winds across the state. Gusts reached 113 mph at Logan Pass and 97 mph at Hyalite Peak (southwest Montana). At lower elevations, gusts reached into the mid-70s (mph) as the cold front rushed through the state. A location near Roundup reported a gust to 76-mph. Accompanying the winds was blowing dust over north central Montana. As the cold front pushed southward, thunderstorms developed. Graupel and hail accompanied these storms. After the thunderstorms passed, some areas received up to 3" of snow in a very short period of time. Figure 4 shows a radar image of the thunderstorms in central Montana. West of the divide, up to 1.62 inches of rain fell at Mullan Pass, while 14" of snow fell at Lost Trail Pass (Ravalli) and in the Little Belts. Badger Pass received a foot of snow. Thunder was heard at Great Falls. This was the first February thunderstorm at Great Falls since February 28, 1954. On the upper air sounding at Great Falls, winds of 164 knots were observed at 5 am at around 30,000 feet, these were the strongest winds of record for February at this time. The old record of 159 knots was observed on February 26, 1986. The combination of weather on the 22nd made it a truly unique day. Cooler conditions returned for the 23rd.

February 24–29

Periodic storms moved through the state during this period. Windy conditions prevailed in the normally windy areas on the 24th and 25th. Some heavier precipitation and snow fell across the west and southwest on the 25th and 26th. Up to two-feet of snow fell over the Rockies and a foot in the Bears Paws. Snow fell across extreme southeast Montana on the 28th. Biddle received 4-inches. On the 29th, a stronger system produced strong winds and brief blizzard-like conditions over much of central and northeast Montana. As much as 4 inches of snow fell at Glasgow.

Precipitation/convection

Severe convective weather occurred on one day in February, the normal is none.

February summary information:

High Temperature	56°F at Fort Benton and Columbus (22 nd)	Greatest Precip	3.55" at Mullan Pass 12.80" at Noisy Basin SNOTEL
Low Temperature	-24°F at Wisdom (5 th)		
Warmest Ave Temp	33.8°F at Thompson Falls	Peak Wind Gust	76 mph near Roundup (Musselshell) (22 nd) 113 mph at Logan Pass (21 st)
Coollest Ave Temp	13.7°F at Wisdom		
Range of Temp departures	-2.3°F at Wisdom to +5.4°F at Westby	Highest Ave Wind	17.8 mph at Deep Creek RAWS; 14.4 mph at Livingston
21 city mean monthly Temperature/Normal	25.3/23.9; 43 rd warmest of record (since 1880) Winter: 25.6F/21.4F; 15 th warmest of record	20 city mean monthly wind speed/Normal	7.3 mph/8.5 mph; 3 rd calmest of record. (since 1936) Winter: 8.9 mph/8.8 mph; 11th calmest of record
22 city mean monthly precipitation/Normal	0.65/0.57" – 114% normal; 64 th driest of record. (since 1880) Winter: 2.06"/2.16"; 45th driest of record	19 city mean monthly snow/Normal	6.9/7.5; 56 th lowest of record. (since 1881) Winter: 21.3"/28.0"; 23 rd lowest of record

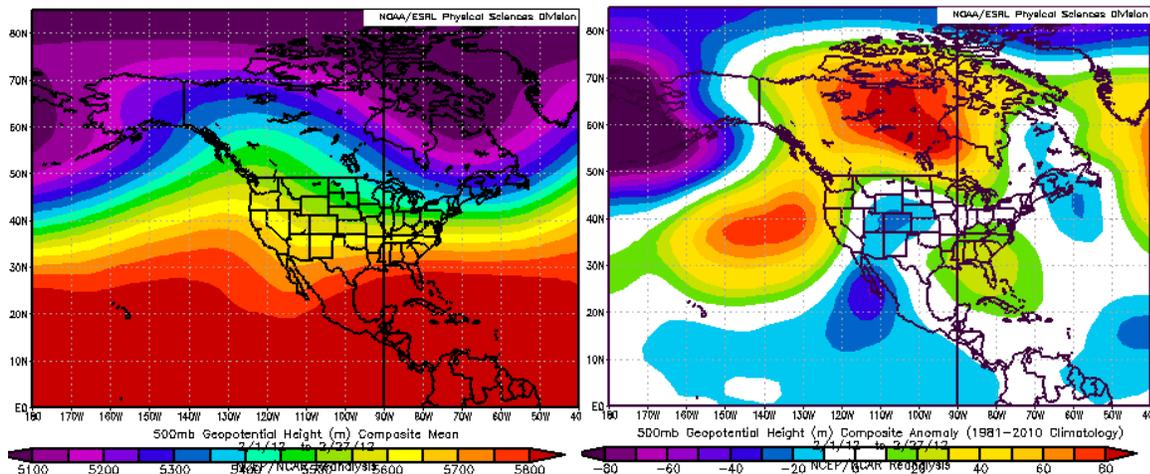
**Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date**

Location	Feb	% of Norm	Rank	Pcntl	Oct 1 – Feb 29	% of norm	Rank	Pcntl	Years
Baker	0.46	143%			2.00	81%			14
Billings	0.24	41%	38	33	3.18	78%	51	45	111
Belgrade	0.31	69%	29	37	1.96	59%	6	7	75
Butte	0.16	37%	18	15	1.53	55%	13	10	118
Cut Bank	0.16	76%	35	32	3.08	218%	94	89	105
Dillon	0.13	54%	28	38	1.38	75%	22	30	72
Glasgow	0.74	285%	104	90	2.68	123%	80	71	113
Great Falls	0.31	66%	33	27	3.40	114%	57	47	120
Havre	0.26	93%	50	37	1.35	67%	13	9	132
Helena	0.55	183%	89	66	3.22	144%	81	60	134
Jordan	0.42	168%			2.59	126%			14
Kalispell	1.04	107%	67	56	5.43	86%	35	29	118
Lewistown	0.45	102%	43	36	4.45	127%	79	68	116
Livingston	0.21	42%	26	23	2.50	74%	26	23	109
Miles City	0.34	148%	66	49	1.86	87%	35	25	135
Missoula	0.83	119%	83	61	6.29	139%	104	79	132
Mullan Pass	4.03	128%	42	59	23.99	113%	42	59	71
Wolf Point	0.10	48%			1.54	76%			14
Glendive	0.64	246%	99	84	2.06	82%	42	37	113
Sidney	0.21	64%	25	33	1.10	38%	5	6	71
BZN-MSU	0.50	64%	46	34	4.32	79%	44	33	133

Rankings and Percentiles are 1=driest, higher numbers=wetter.

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>



Figures 1a (left); 1b (right). Mean flow at 500 millibars (~18,000 ft) for February (left). The western ridge was displaced somewhat more easterly during February, causing higher than normal heights across Canada (right).

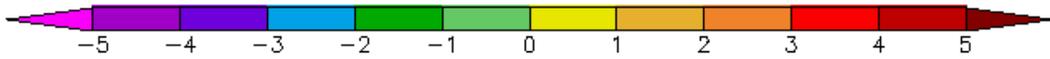
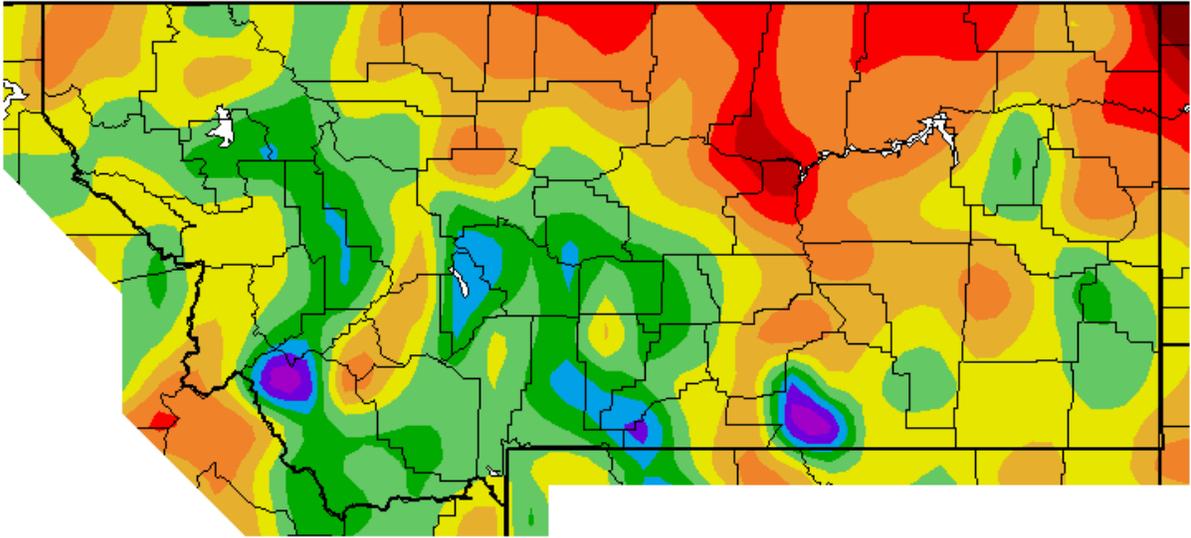


Figure 2. Temperature anomaly for February. Temperatures averages were mostly above normal. (Western Region Climate Center).

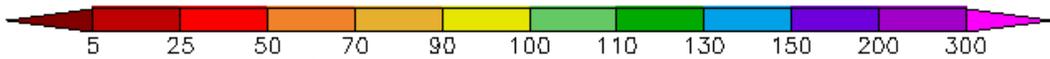
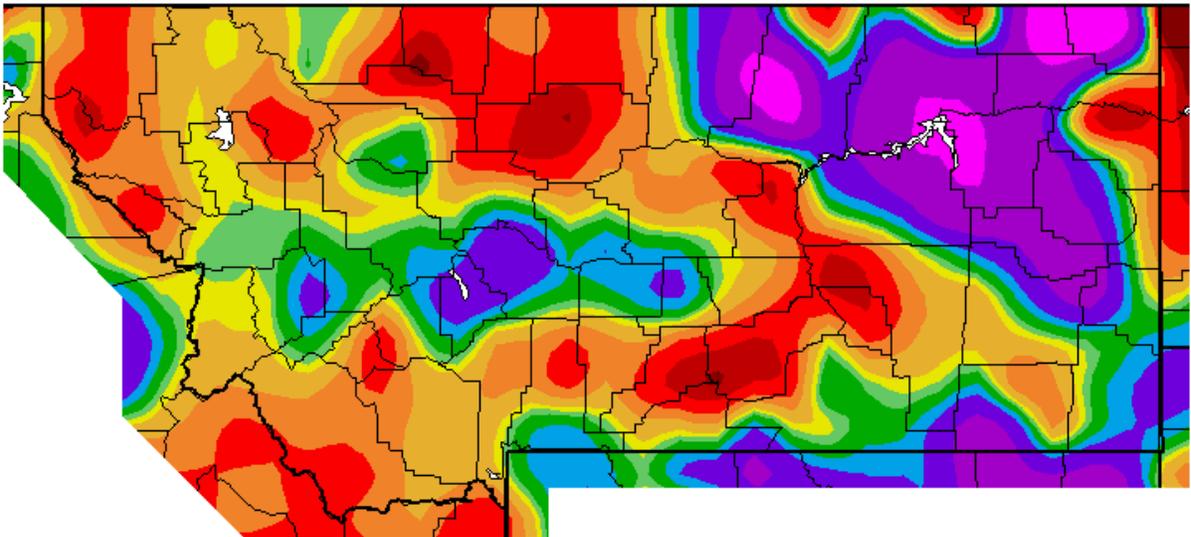


Figure 3. Precipitation anomaly (% of normal) for February.

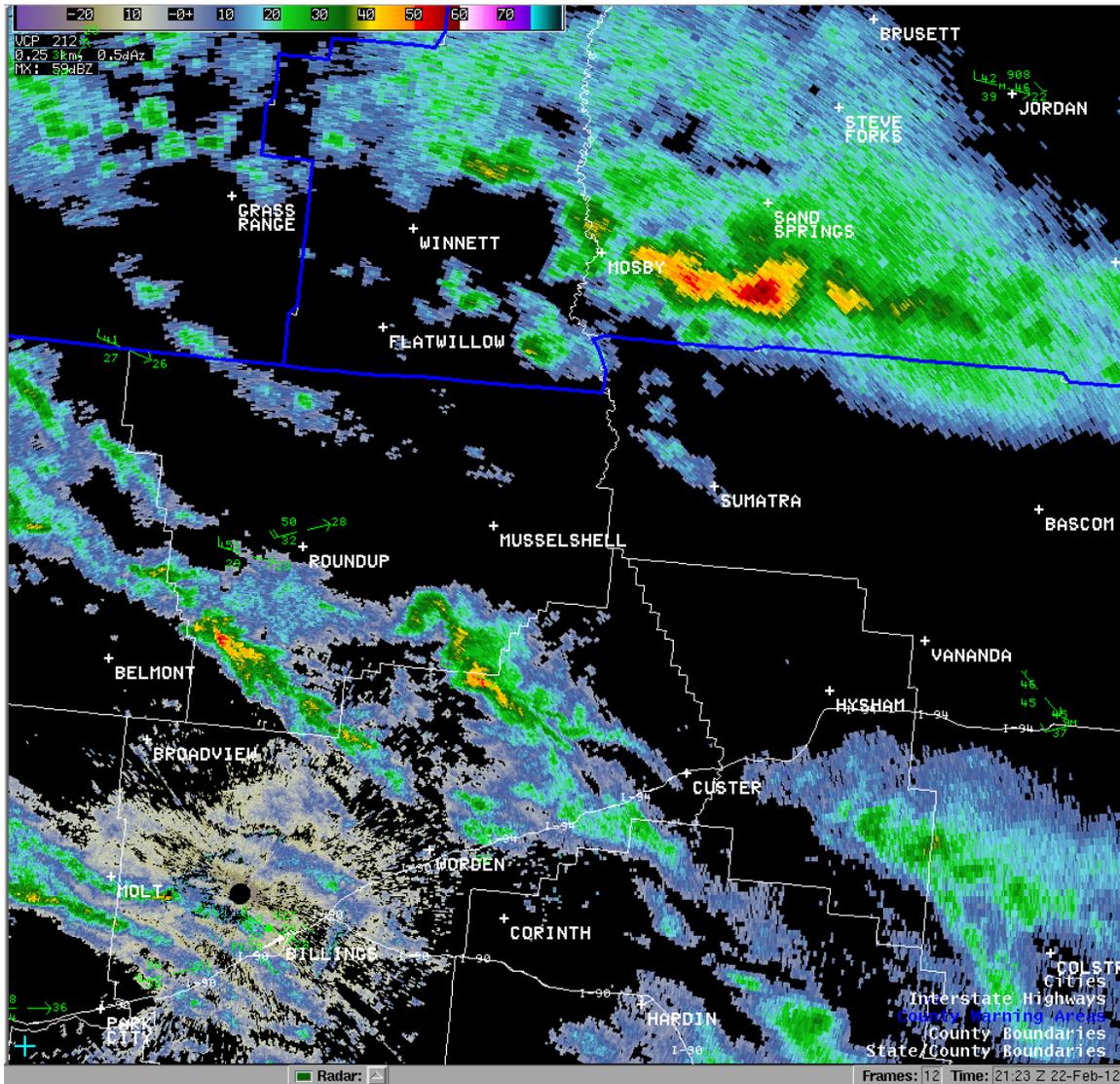


Figure 4. Radar image of thunderstorms in the Mosby and Roundup areas of central Montana on February 22, 2012 at 2:23 pm MST.

For a state map of % of normal water year precipitation (updated around the 7th of each month), go to: http://www.wrh.noaa.gov/tfx/image.php?wfo=tx&type=data&loc=hydro&fx=watyr_pcntnorm.png

For the latest information on mountain snow pack from the NRCS, go to: <http://www.mt.nrcs.usda.gov/snow/index.html>

For the latest U.S. Drought Monitor, issued weekly by the Climate Prediction Center (CPC), go to: <http://www.drought.unl.edu/dm/monitor.html>

These data are preliminary and have not undergone final QC by NCDC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Climatic Data Center (NCDC) <http://www.ncdc.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=tx>. The climatological record for normals is 1981-2010. 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.