

Montana Weather/Precipitation Summary

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

March temperatures averaged above normal across most of the state. Some areas of the east were over 10 degrees above normal (Fig. 2). Precipitation distribution was mixed. Above normal precipitation fell across the western and southwestern Montana, and portions of the hi-line (Fig. 3), while eastern Montana was very dry. Winds picked up again in March with mostly above normal speeds. Gusts to 117 mph were recorded at Logan Pass, which tied the highest gust for March first set at Logan Pass on March 12, 2007. Upper air flow averaged southwesterly across Montana, with a trough of low pressure along the west coast (Fig. 1). Usually, a ridge of high pressure dominates western North America, with a trough over the Great Lakes. In March, this trough produced cooler than normal temperatures in extreme western Montana, with above normal temperatures, and dry conditions across the eastern Montana. 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 40.3F, 7.5 degrees above normal. This was the 3rd warmest March of record, and the ninth consecutive month with above normal temperatures. This was also the warmest March since 1992. Several locations in eastern Montana had their warmest March of record, including Sidney, Miles City and Glendive. Greatest temperatures anomalies were greatest across eastern Montana (Fig. 3). For the period October through March, temperatures have averaged 32.4F, or 4.0F above normal (the 5th warmest of record). This has been the warmest water-year season-to-date since 1999-2000. Sidney and Glendive recorded their warmest water-year-to-date of record. The statewide average temperature for the past 12 months is running 1.8F above normal.

Precipitation widely varied across the state, from very wet areas in the west and southwest, and portion of the hi-line, to very dry over the eastern tier (Fig. 4). Overall, March averaged 1.41-inches of precipitation, or 0.47-inches above normal. This was 150% of normal, and the 9th wettest March of record. Mullan Pass had their wettest March of record, besting the old record of 7.96 inches set in 2003. Havre recorded their second wettest March of record while Miles City recorded their second driest. It is likely that a new statewide March precipitation record may be established. The record of 7.42-inches at Heron set in 1916 has been exceeded at Heron this year. They collected 8.46-inches. Total precipitation excess over the average in the past 12 months is 1.73-inches. For the period water-year-to-date, precipitation has averaged 5.54-inches, or 0.51-inches above normal, and the 48th wettest of record. March snowfall averaged 6.9 inches across the state, or 2.1-inches below normal. This was the 45th lowest March total of record. For the water-year period, an average of 37.4 inches of snow has fallen. This is the 28th lowest of record and the lowest since 1999-2000.

Wind speeds were above normal in March. The average of 10.5 mph was 0.9 mph above average, and the 21st windiest of record. This was the windiest March since 2004. For period from October through March, an average speed of 9.1 mph was 0.1 mph above normal, and the 24th calmest of record.

March 1-8

During the first week of March, snow and windy conditions were scattered across the state. On the first, up to five inches of snow fell near Scobey (Daniels), with 6-8 inches in western Montana near Lost Trail Pass and Troy. Slightly cooler air followed the snow, then windy conditions spread across the state on the third. Rapelje reported gusts to 64 mph, as did some locations along the Rocky Mountain Front. Logan Pass reached a gust of 117 mph, which tied the highest gust for March in Montana. On the fifth, as a cold front moved through, winds gusted to 76 mph at Two Medicine. Up to a foot of snow fell in the northern Rockies. This system continued to move through the state, dropping heavy snow over southern Montana. Up to a foot of snow fell near Livingston and in the Beartooth Mountains. Cold air followed this system again. Lows of -20F were reported at West Yellowstone on the seventh and eighth.

March 9-17

Generally dry, windy and mild conditions prevailed mid-month. A rapid warm-up on the ninth produced record warmth over portions of Montana. Miles City warmed to 74F, the warmest so early in the season. Record highs were also set at Kalispell, Helena and Cut Bank. Windy conditions accompanied the warmth. Record warm temperatures continued on the thirteenth. Sidney reached 78F on the 13th. This ties the statewide record for this date of 78 set at Glendive in 2007. Gusty winds accompanying a cold front caused gusts to 74 mph at Livingston, 69 mph at Kila (Flathead), and 101 mph at Logan Pass. Gusts to 63 mph produced blowing dust at Great Falls, and at Havre, gusts to 62 mph tied for the highest all-time gust. A weather system pushed into western Montana on the fourteenth, producing a foot of snow at Lookout Pass (Mineral). Warmth continued across eastern Montana. On the fifteenth, record high temperatures were set at Glasgow and Havre. Havre reached 70F. On the sixteenth, Powderville reached 80F, tying the statewide record for the date last set at Roundup in 1916. On the 17th, Billings and Miles City both set new record high temperatures.

March 18-26

Cooler conditions and precipitation dominated through the twentieth. Up to a foot of snow fell over higher elevations of southwest Montana, with 6-8" over western Montana. Dillon had a record daily precipitation amount on the eighteenth. As the weather system continued east, it wrapped up into one of the more potent late winter storms in several years. Blizzard conditions developed across central Montana on the nineteenth. A foot of snow fell at Cooke City and Raynesford, with two feet or more in the Highwoods and Bears Paws. Snow was pushed into five foot drifts by 50 mph winds. Widespread power outages, school and road closures occurred from Fergus through Hill and Blaine Counties. Windy conditions returned on the twentieth. Gusts to 76 mph occurred at Livingston. Meanwhile, another storm moved into western Montana. Over a foot of snow fell at Lookout Pass (Mineral). After another brief warm-up on the 22nd-23rd, a cold front brought cooler temperatures to the state once again. On the twenty-third, a high temperature of 84F was recorded at Moorhead. This again broke a daily record of 83F for the date. On the twenty-fourth, up to ten inches of snow fell in the Fairfield (Teton) area, with five inches at Great Falls. A period of dense fog settled over the state from the 24th-26th. Cool temperature caused falling drizzle across north central Montana to freeze on roads and other surfaces.

March 27-31

Warmer and windy conditions prevailed on the twenty-eighth ahead of a cold front. As the front pushed across the state, isolated thunderstorms and small hail occurred. Strong winds also caused large trees to snap in Missoula as this front passed through. By the 31st, warmer conditions spread across the region. Record highs were set at several locations in central Montana. Temperatures pushed into the lower 80s along the eastern tier.

Precipitation/convection

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

March summary information:

High Temperature	84°F at Moorhead (23 rd)	Greatest Precip	11.21" at Mullan Pass 13.90" at Poorman Creek SNOTEL (Lincoln)
Low Temperature	-20°F at West Yellowstone (7 th and 8 th)		
Warmest Ave Temp	47.1°F at Miles City	Peak Wind Gust	76 mph at Two Medicine (5 th) and Livingston (Park) (20 th) 117 mph at Logan Pass (3 rd)
Coollest Ave Temp	26.8°F at Mullan Pass		
Range of Temp departures	-1.4°F at Plains to +13.6°F at Ekalaka	Highest Ave Wind	22.1 mph at Deep Creek RAWS; 22.8 mph nr Whitlash
21 city mean monthly Temperature/Normal	40.3/32.8; 3 rd warmest of record (since 1880)	20 city mean monthly wind speed/Normal	10.5 mph/9.6 mph; 21 st windiest of record. (since 1936)
22 city mean monthly precipitation/Normal	1.41/0.94" – 150% normal; 48 th wettest of record. (since 1880)	19 city mean monthly snow/Normal	6.9/9.0; 45 th lowest of record. (since 1881)

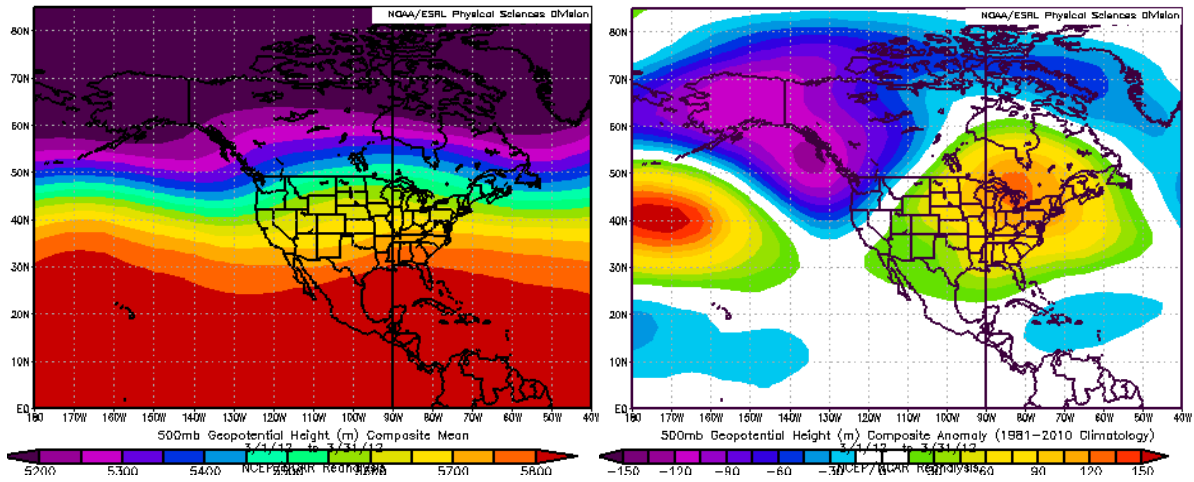
**Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date**

Location	Mar	% of Norm	Rank	Pcntl	Oct 1 – Mar 31	% of norm	Rank	Pcntl	Years
Baker	0.02	3%			2.02	65%			14
Billings	0.70	63%	50	44	3.88	75%	52	46	111
Belgrade	1.25	133%	62	81	3.21	75%	16	20	75
Butte	1.20	158%	97	82	2.73	77%	33	27	118
Cut Bank	0.33	66%	50	47	3.41	179%	92	88	105
Dillon	0.98	181%	66	90	2.36	99%	39	54	72
Glasgow	0.41	98%	58	50	3.09	119%	75	66	113
Great Falls	1.10	121%	81	67	4.50	116%	64	53	120
Havre	1.91	354%	133	100	3.26	127%	67	50	132
Helena	0.89	151%	91	68	4.11	146%	88	65	134
Jordan	0.17	33%			2.76	107%			14
Kalispell	1.65	151%	108	91	7.08	96%	54	45	118
Lewistown	0.92	93%	61	52	5.37	119%	72	62	116
Livingston	0.83	99%	58	52	3.33	79%	29	26	109
Miles City	0.01	2%	2	1	1.87	68%	18	13	135
Missoula	1.17	122%	97	72	7.46	136%	106	80	132
Mullan Pass	11.21	251%	71	100	35.20	137%	65	91	71
Wolf Point	0.04	9%			1.58	64%			14
Glendive	0.01	2%	4	3	2.07	67%	24	21	113
Sidney	0.05	8%	3	3	1.15	33%	1	1	71
BZN-MSU	1.69	122%	99	74	6.01	88%	57	42	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 March (left). Normally a ridge of high pressure exists along the west coast, but this month was dominated by a trough, causing below normal heights over the Pacific Northwest (right).

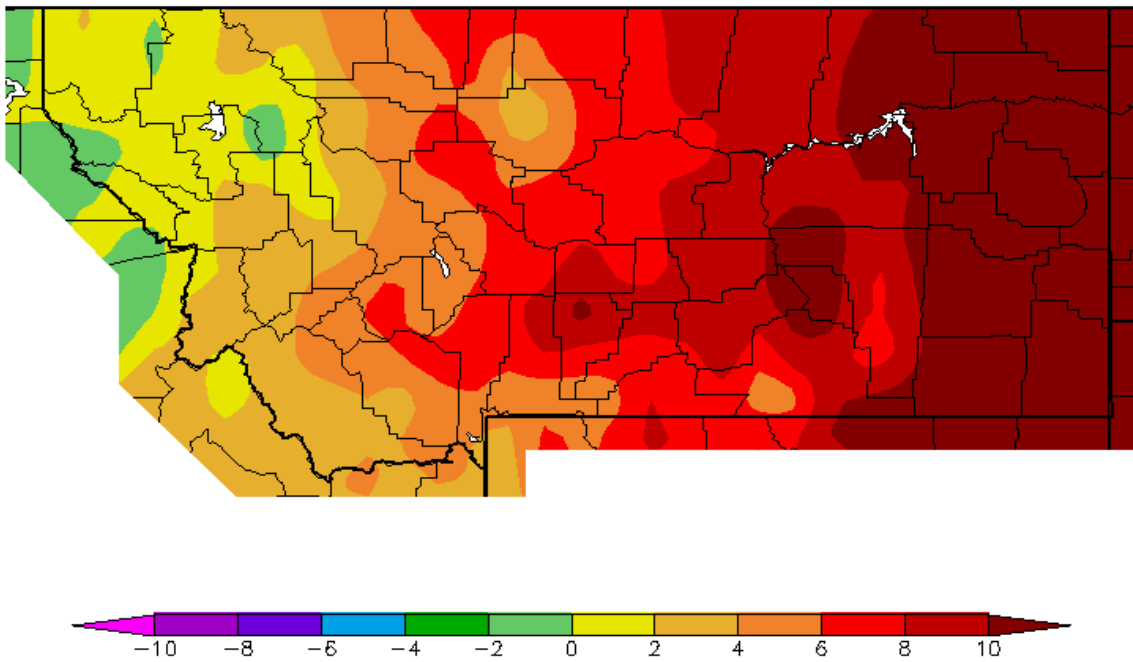


Figure 2. Temperature anomaly for March. Temperatures averages were mostly above normal. (Western Region Climate Center).

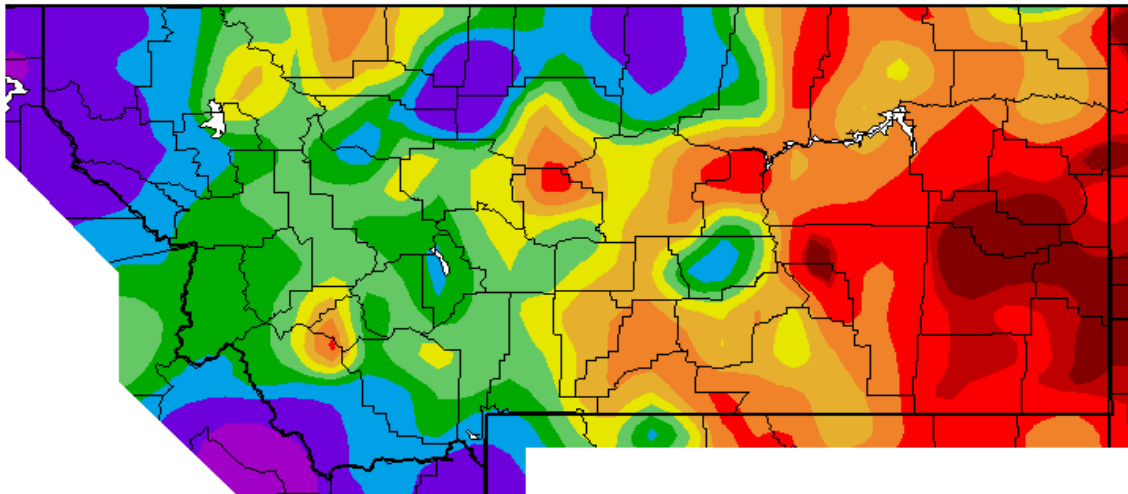


Figure 3. Precipitation anomaly (% of normal) for March.

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=tfx&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=tfx>. 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.