

# Montana Weather/Precipitation Summary

**March 2008** by NOAA's National Weather Service Great Falls Montana

March 2008 was not a typical March. Precipitation was lacking across much of the state until the last couple of days. The upper flow pattern showed a weak ridge over the west, with troughing over eastern North America (Fig. 1). Temperatures were below normal temperatures to the west and southwest, with above normal conditions to the northeast (Fig. 2). The coldest area was Wisdom, in the southwest, with temperatures averaging more than six degrees below normal. Glasgow and Turner averaged around two degrees above normal.

A series of storms did pass through the state during the month bringing scattered precipitation. Most areas were below normal, however (Fig. 3). The warmest temperature in the state occurred early, with 70F at Huntley on the 1<sup>st</sup>. A windy period on the 3<sup>rd</sup> produced wind gusts to 78 mph at Livingston and 79 mph near East Glacier Park. There were gusts to 100 mph at Snowlip. A storm moved through the state on the 4<sup>th</sup> and 5<sup>th</sup>, bring 8-12 inches of snow to higher elevations in the west, and 2 to 6 inches at lower elevations. Across the east, 2-6 inches of snow were common across central Montana. The next big system was a windy one during a mild period. Gusts to 66 mph were recorded at Cut Bank and 72 mph at Choteau. Temperatures were 10 to 15 degrees above normal during this period. Relatively benign weather conditions prevailed until the 21<sup>st</sup>.

A storm brought 2-6 inches of snow to western Montana on the 21<sup>st</sup> and 22<sup>nd</sup>. At the same time, 2-6 inches of snow fell west of the divide. This was the start of a stormy period that lasted to the end of the month. On the 24<sup>th</sup>, a cold front sweeping across the state brought one of the windiest periods in some time. Gusts near to 107 mph occurred early at Snowlip, then gusts between 60 and 70 mph were common across the hi-line. A location south of Chinook recorded the highest gust in eastern Montana at 78 mph. Some blowing dust and damage was reported with these strong winds. Afterwards, colder temperatures and scattered snows fell across the state. Northeast Montana picked up 3-6 inches of snow on the 28<sup>th</sup>. The coldest temperature in the state occurred after this initial cold push. Wisdom dropped to -19F on the 28<sup>th</sup>. Their record low for the date was -23F in 1975. On the 29<sup>th</sup>, another stronger storm system moved across Montana. Northwest Montana received up to a foot of snow, with 6 inches common in north central portions. As this system moved through the Great Falls area, blizzard conditions prevailed for a little over two hours. Not much snow fell in the Great Falls area, but 18 inches fell around Cleveland and a foot in the Bears Paws.

In the mountains, several SNOTEL sites in the northern Rockies, northwest Montana and the southwest reported over 100 inches of snow on the ground at the end of the month. Soil moisture conditions east of the divide showed an interesting trend. Since soil moisture probes were installed at Great Falls in 2003, the end-of-month values in March were the driest of record for the date. The probes are at 6, 12, 18, and 30 inch depths.

Though there were variations in temperature, precipitation and wind speeds across the state, the mean statewide average temperature at 14 cities was just a couple of tenths of a degree below average (33.4). Winds averaged a bit below the long-term average at 9.6 mph. Precipitation was 46 percent of the average at 0.38 inches.

Other record or notable information for March:

- Butte had their 4<sup>th</sup> driest March. The driest is 0.07 inches set in 1959. Normal March precipitation is 0.83 inches. March was also the 6<sup>th</sup> calmest March of record at an average of 5.8 mph. The normal March average wind speed is 6.8 mph.
- Havre has had their 6<sup>th</sup> driest water-year-to-date of record. They have recorded 1.46 inches of moisture. The normal for the period is 3.11 inches.
- Lewistown recorded their highest March gust of record. Winds gusted to 61 mph on the 24<sup>th</sup>. They have also recorded their 4<sup>th</sup> driest March of record. The driest was 0.16 inches in 1900.
- Miles City has had their driest water-year-to-date of record. They have recorded 0.62 inches of moisture. The normal for the period is 2.52 inches. They have also recorded their driest March of record, collecting a trace. The old record was 0.01 inches in 2004.

The January through March precipitation of 0.11 inches is also the record driest for the period. The old record was 0.25 inches in 2004.

- Missoula recorded their 2<sup>nd</sup> calmest March of record at 4.7 mph. The normal March average wind speed is 6.7 mph.

**March summary information:**

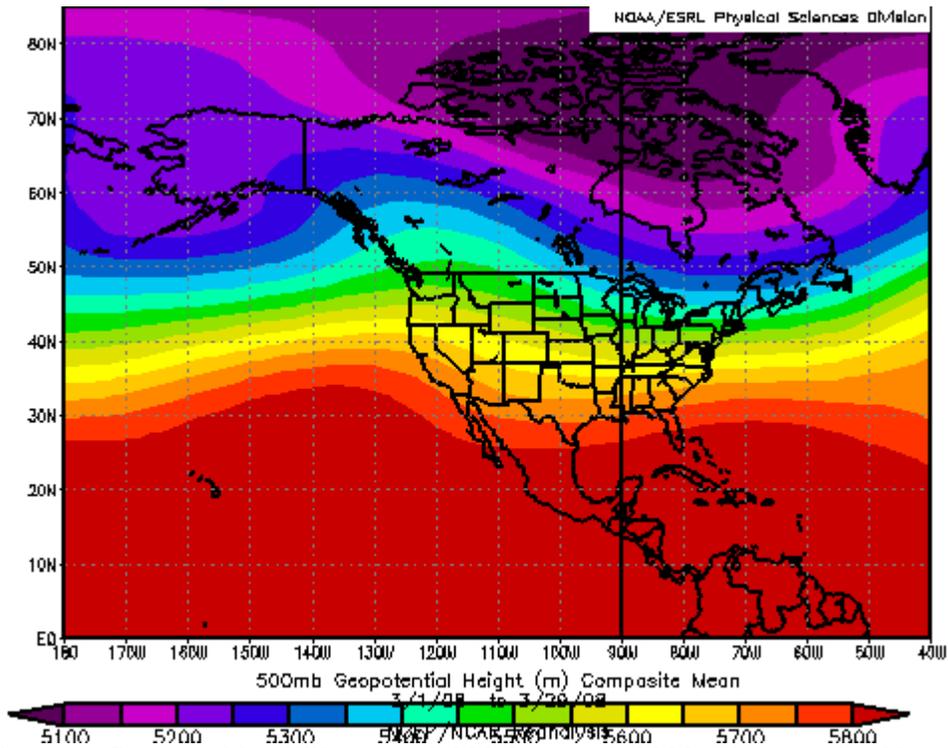
<b>High Temperature</b>	70°F at Huntley (1 <sup>st</sup> )	<b>Greatest Precip</b>	1.86" at Mullan Pass 2.29" Gird Point
<b>Low Temperature</b>	-19°F at Wisdom (28 <sup>th</sup> ) & Whiskey Ck (22 <sup>nd</sup> )		8.8" at Noisy Basin SNOTEL
<b>Warmest Ave Temp</b>	38.9°F at Thompson Falls	<b>Peak Wind Gust</b>	107 mph Snowslip (24 <sup>th</sup> ) & 78 mph at Livingston (3 <sup>rd</sup> ) & 78 mph near Chinook (24 <sup>th</sup> )
<b>Coollest Ave Temp</b>	20.6°F at Wisdom		
<b>Range of Temp departures</b>	-6.2°F at Wisdom to 2.2°F at Turner and Glasgow	<b>Highest Ave Wind</b>	21.5 mph near East Glacier and 18.0 mph in Sweet Grass Hills
<b>14 city mean monthly Temperature/Normal</b>	33.4/33.6	<b>14 city mean monthly wind speed/Normal</b>	9.6mph/10.0mph
<b>14 city mean monthly precipitation/Normal</b>	0.38"/0.83" – 46% of normal		

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

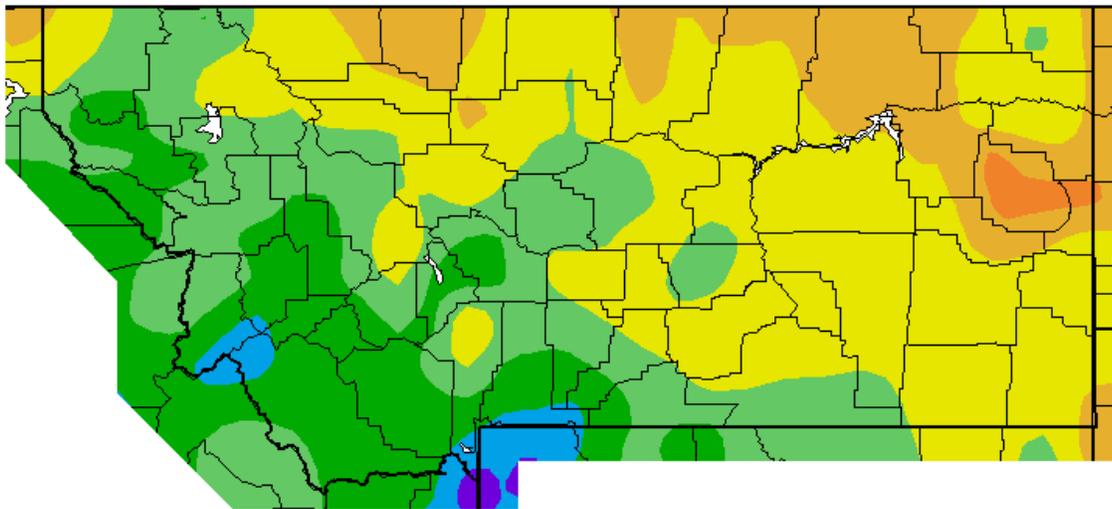
Location	Mar	% of Norm	Rank	Pcntl	Oct 1 – Mar 31	% of norm	Rank	Pcntl	Years
Baker	0.27	43%			1.31	42%			10
Billings	0.42	38%	28	28	3.99	77%	55	56	99
Belgrade	0.52	51%	9	13	4.20	90%	33	49	67
Butte	0.11	13%	4	4	2.65	71%	26	23	114
Cut Bank	0.11	20%	21	21	M	M			101
Dillon	0.43	81%	29	42	3.03	136%	54	79	68
Glasgow	0.27	57%	30	27	2.77	109%	57	52	109
Great Falls	0.35	35%	14	12	3.18	72%	24	21	114
Havre	0.16	23%	24	19	1.46	47%	6	5	128
Helena	0.12	19%	7	5	2.52	81%	27	21	130
Jordan	0.51	142%			4.30	175%			9
Kalispell	0.79	71%	47	41	5.05	65%	17	15	114
Lewistown	0.24	21%	4	4	3.09	59%	11	10	112
Livingston	0.73	77%	49	45	3.88	74%	42	40	104
Miles City	0.00	0%	1	1	0.62	18%	1	1	131
Missoula	0.81	84%	68	52	4.35	76%	22	17	128
Mullan Pass	1.86	59%	7	11	29.48	133%	44	66	67
Wolf Point	0.17	76%			1.36	73%			10
Glendive	0.20	35%	20	18	1.81	56%	11	10	108
Sidney	0.14	25%	13	19	1.74	50%	8	12	66
BZN-MSU	1.02	73%	45	35	8.02	125%	107	83	129

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

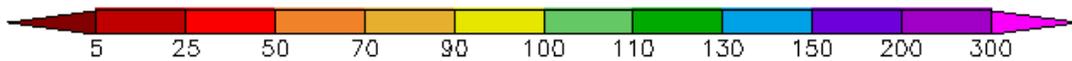
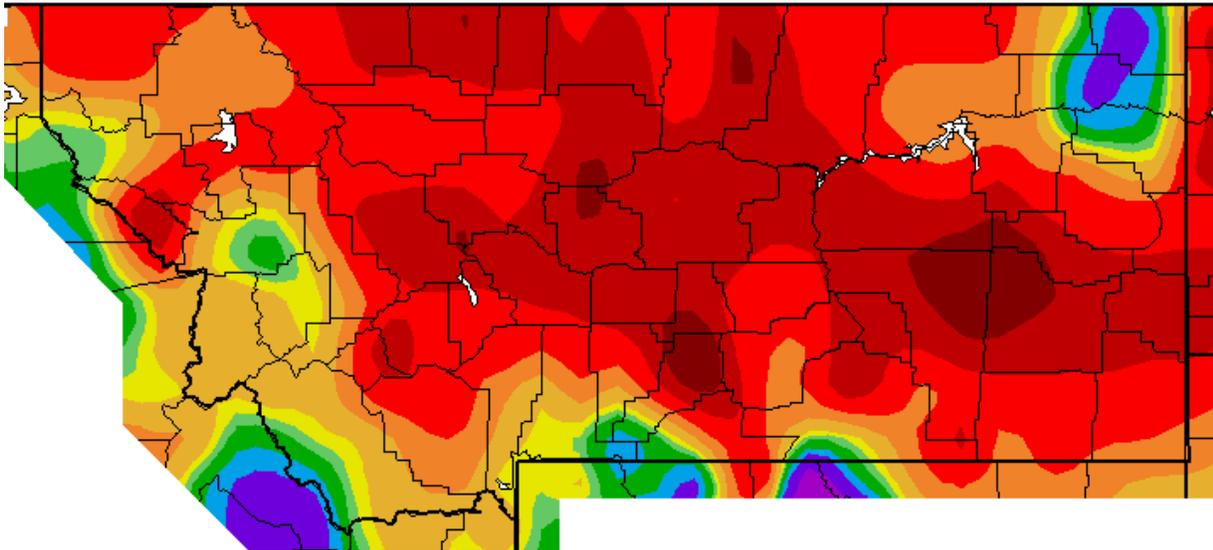
For an automated version of this chart, updated daily, go to  
<http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS>



**Figure 1.** Mean flow at 500 millibars (~18,000 ft) March 2008. The trough of low pressure over eastern North America and the weak ridge along the west coast were somewhat anomalous for March.



**Figure 2.** Temperature anomaly for March. The state experienced temperatures a bit above normal temperatures across the north and east, with below normal temperatures across the southwest. (Western Regional Climate Center).



**Figure 3.** Precipitation anomaly (% of normal) for March. The precipitation was mostly below average across the state (Western Regional Climate Center).

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

All reported data is preliminary. 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>