

Montana Weather/Precipitation Summary

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

A weak ridge of high pressure aloft dominated the weather in Montana during December (Fig. 1). This pattern produced near to below normal heights aloft. Usually, a stronger ridge of high pressure dominates western North America during December. The more westerly flow contributed to near normal temperatures across the state Montana. There were some extremes, with below normal temperatures prevailed across the hi-line for the month. Temperature anomalies ranged from four-degrees below

normal at Gold Butte, to nearly seven-degrees above normal at Troy (Fig. 2). This was the second consecutive month to record above normal temperatures for the state, and the tenth of the past twelve months with above normal temperatures. For the past 12-months, the statewide composite average temperature is 2.1°F above normal. The monthly accumulated precipitation across Montana is shown in Figure 3. It shows scattered areas of above normal precipitation across the state, with the central portion

below normal. The wettest areas were over portions of the southwest, west and extreme northeast. Since October, all months have averaged above normal precipitation for the state. For the past 12-months, there is a 1.04-inch negative anomaly for the state.

Winds have been on the weak side most of 2012, with December no exception (see graphic to right). Winds were 1.3-mph below average in December, and were 0.5-mph below average for the year.

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

December 1-7

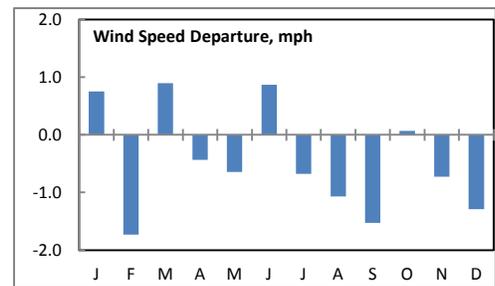
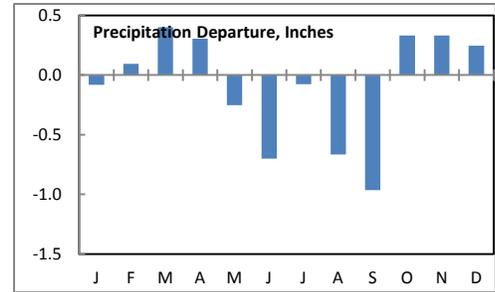
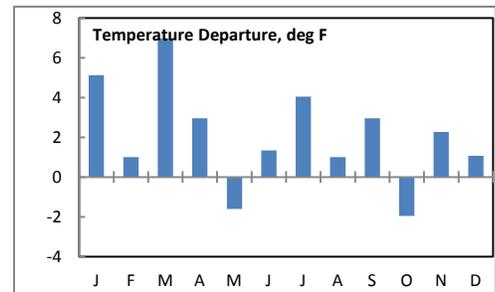
While generally mild temperatures prevailed during this period, windy conditions prevailed east of the divide and some heavy precipitation fell west of the divide. Winds gusted to 77 mph at Livingston on the second and 83 mph at Logan Pass. Bozeman reached 59F, a record high temperature for the day. Up to two inches of precipitation fell over the higher elevations of western Montana, and portions of southwest Montana mountains picked up 1.5 feet of snow. Snow continued on the third, with a foot of snow over the higher mountains of western Montana. Winds continued in the east, with a gust to 67 mph in southern Phillips County. Temperatures peaked on the fifth, with Billings reaching 65F, the warmest for the month. Winds continued along the Rocky Mountain front, with gusts of 71 mph west of Choteau.

December 8-10

A snow storm affected most areas of the state on the eighth and ninth. Anywhere from three inches to over a foot of snow fell across the state. Great Falls set a daily record on the 8th, measuring 5.7-inches. Locally, Sand Coulee measured a foot. Cold air pushed across the state with lows of -18°F at Sidney and Denton on the ninth. Meanwhile, winds picked up again in the northern Rockies, with a gust to 85 mph at Deep Creek RAWS on the ninth.

December 11-21

Near normal temperatures prevailed during this period. Snowfall was scattered during the period as well. On the 12th, a foot of snow fell at Big Sky, with snow falling in northwestern Montana on the 17th. Libby measured a foot as did Troy. Snow again fell in the northwest on the 20th. Heron



picked up 7.5-inches, and Troy measured an additional 10-inches. It was a generally windy period east of the divide. Logan Pass recorded a gust of 88 mph on the 11th, with gusts reaching 84 mph near Choteau on the 17th. Winds increased many areas on the 20th, with Livingston peaking at 81 mph, their highest December gust since 1982. Gusts reached 78 mph near Cascade.

December 22-31

The coldest period of the month occurred during the last ten days. Temperatures were as much as 30 degrees below normal around Christmas, with low temperatures as low as -29° at West Yellowstone, near Rudyard and near Scobey. Only periods of light snow were seen during this period.

Precipitation/convection

Severe convective weather occurred on zero days in December. The normal for the month is zero days.

Snow depths at lower elevations were near normal at the end of the month. At higher elevations, Flattop Mountain had 86 inches on the ground (67), Spur Park 37 inches (34), Black Bear 73 inches (65), and Noisy Basin (59) and Hoodoo Basin (66) had 62 inches. Normal values for each location are in parentheses.

December summary information:

High Temperature	65°F at Billings (5 th) (Yellowstone)	Greatest Precip	7.34" at Noxon (Sanders)
Low Temperature	-29°F at West Yellowstone (20 th) and Rudyard 21N (24 th) and Scobey 4N (26 th)		12.60" at Flattop Mountain (Flathead)
Warmest Ave Temp	31.9°F at Thompson Falls	Peak Wind Gust	84 mph near Choteau (17 th) (Teton) 96 mph at Logan Pass (2 nd)
Coollest Ave Temp	11.4°F at Plentywood		
Range of Temp departures	-4.2°F at Gold Butte to +6.7°F at Troy	Highest Ave Wind	18.4 mph at Livingston (Park) 22.9 mph at Deep Creek (Glacier)
21 city mean monthly Temperature/Normal	21.5/20.4F 1.1F above normal. 50 th coolest of record (since 1880). 37 th percentile.	20 city mean monthly wind speed/Normal	8.0 mph/9.3 mph; 5 th calmest of record (since 1936). 6 th percentile
22 city mean monthly precipitation/Normal	1.02/0.77" – 132% of normal. 35 th wettest of record (since 1880). 74 th percentile	19 city mean monthly snowfall/Normal	11.2-in/10.8-in; 46 th snowiest of record (since 1880). 61 st percentile

For the year, 2012, the, the statewide mean temperature was 45.2F, 1.8°F above normal. This is the 13th warmest of record, and the warmest since 2007. Statewide annual precipitation averaged 13.65-inches, 0.98-inches below normal. This was the 42nd driest of record and ranked at the 31st percentile. Average annual wind speeds averaged 8.7-mph, or 0.5-mph below normal. This was the tenth calmest year and ranked at the 13th percentile. Statewide snowfall for 2012 was 57.9-inches, or 1.0-inch above normal. This was the 46th snowiest calendar-year of record, and at the 61st percentile.

For a summary of notable weather events across Montana in 2012, visit this [link](#).

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

Location	Dec	% of Norm	Rank	Pcntl	Oct 1 – Dec 31	% of norm	Rank	Pcntl	Years
Baker	0.08	34%			1.75	89%			
Billings	0.27	40%	41	36	2.05	76%	55	49	112
Belgrade	0.70	137%	53	69	2.31	97%	40	52	76
Butte	0.30	59%	34	28	1.63	86%	50	42	119
Cut Bank	0.43	215%	77	72	2.17	217%	97	91	106
Dillon	0.07	27%	8	10	1.02	76%	31	42	73
Glasgow	0.49	123%	73	63	2.20	142%	98	85	115
Great Falls	0.55	100%	67	55	3.34	167%	107	88	121
Havre	0.39	98%	65	48	2.48	176%	109	82	133
Helena	0.87	218%	106	78	3.30	210%	121	90	135
Jordan	0.32	110%			2.26	144%			
Kalispell	1.19	76%	51	42	5.38	135%	100	84	119
Lewistown	0.36	55%	31	26	2.51	100%	59	50	117
Livingston	0.57	110%	70	63	2.30	97%	51	46	110
Miles City	0.20	69%	34	24	1.53	96%	55	40	136
Missoula	1.65	162%	112	82	4.79	161%	120	90	133
Mullan Pass	9.50	213%	70	96	23.66	191%	73	100	73
Wolf Point	0.05	17%			1.06	71%			
Glendive	0.35	92%	55	46	2.55	135%	93	81	114
Sidney	0.48	92%	45	61	3.79	175%	68	94	72
BZN-MSU	0.97	104%	88	66	2.89	75%	45	33	134

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>

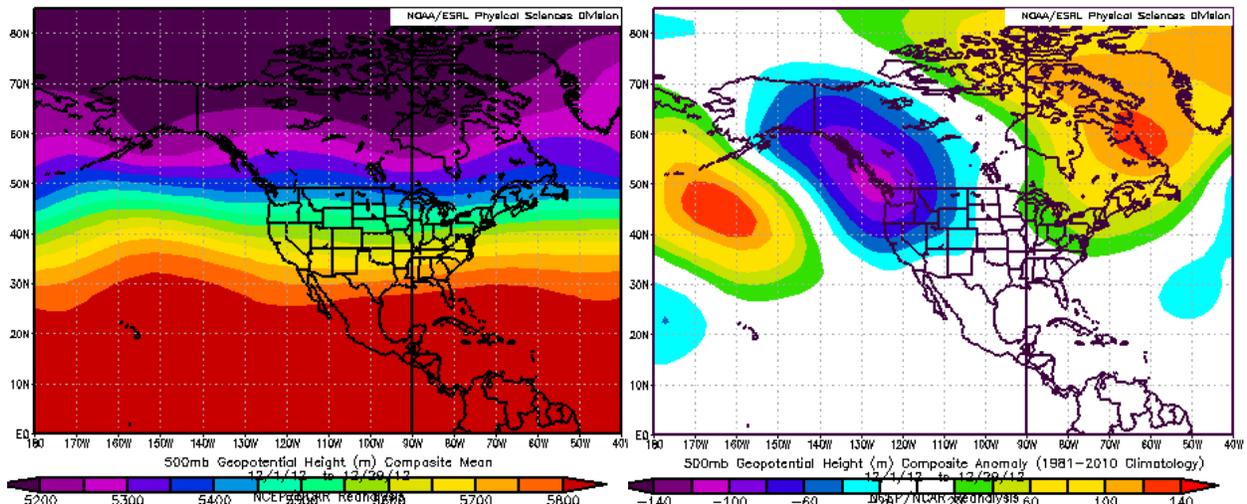


Figure 1a (left); 1b (right). Mean flow at 500 millibars (~18,000 ft) for December 2012 (left) and anomaly (right). Heights across Montana were slightly above normal.

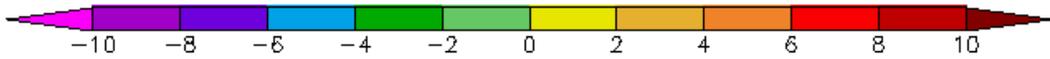
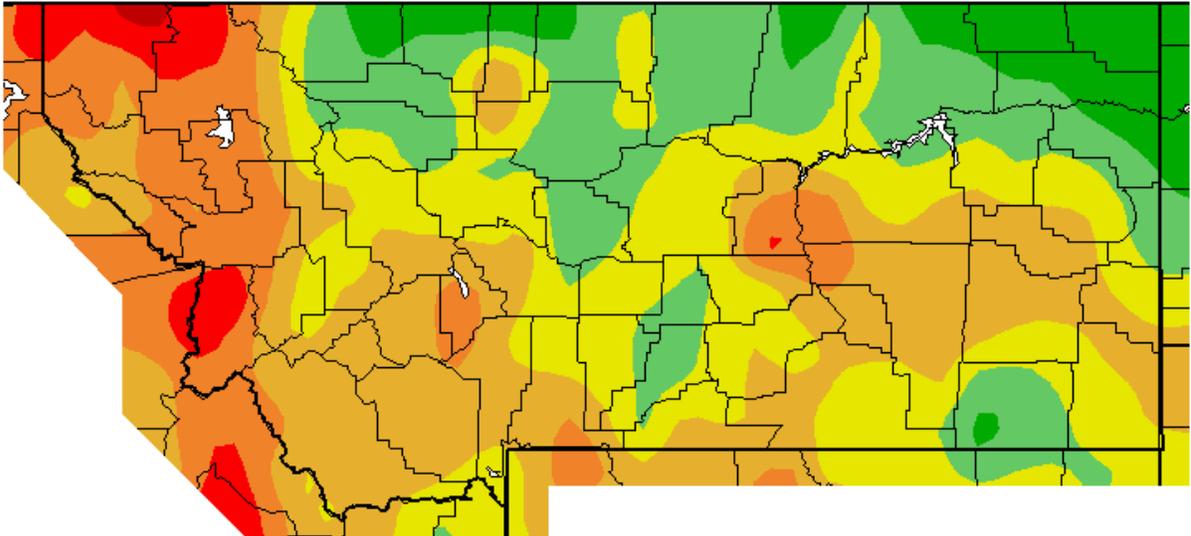


Figure 2. December 2012 Temperature anomalies (Western Region Climate Center).

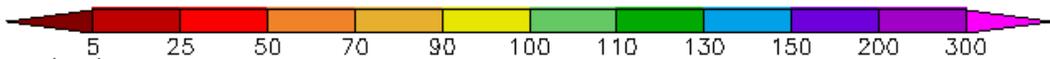
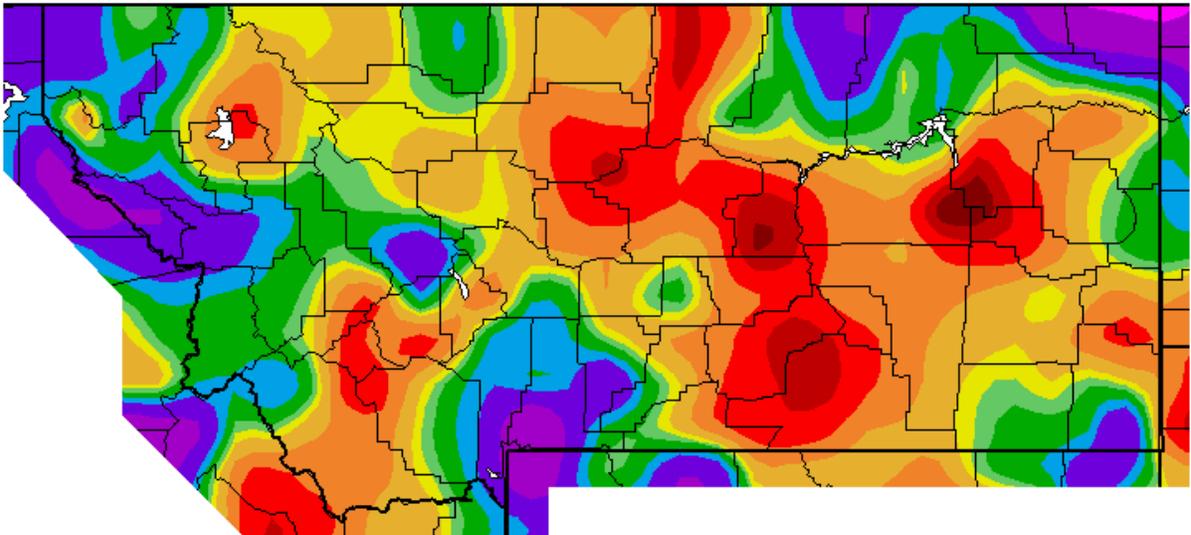


Figure 3. December 2012 Precipitation anomalies (Western Region Climate Center).

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=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.