

Montana Weather/Precipitation Summary

October 2010 by NOAA's National Weather Service Great Falls Montana

October 2010 delivered warmer than normal temperatures across Montana with some all-time record warm temperatures for October set at a few locations. Even though precipitation was well below normal, a period of thunderstorms, heavy rainfall and heavy snowfall were recorded. Blizzard conditions even raged across the extreme eastern portion late in the month. Temperature averages ranged from slightly below normal at Polson, to 8.5F above normal near Bredette (Fig. 2). Though the state averaged below normal precipitation, portions of the northwest, southwest, central and extreme northeast had above average precipitation (Fig. 3). An anomalous upper level ridge dominated western North America. This contributed to the pattern of above normal temperatures over Montana (Fig. 1).

October 1-4

Above normal temperatures prevailed during this period. Gallatin Field and Dillon both recorded all-time warm temperatures for October. A location near Roundup reached 92F on the 3rd. A strong cold front brought precipitation to western Montana on the 4th, with over $\frac{3}{4}$ inch of rain at West Fork (Ravalli County).

October 5-15

After a brief cool-down in which heavy rain fell in western Montana, temperatures warmed again. Generally, above normal temperatures and windy conditions prevailed during this period. A few thunderstorms occurred over western and extreme eastern Montana on the 7th and 9th. On the 11th, a thunderstorm produced 0.50-inch hail near Highwood in Chouteau County. Also, heavy precipitation fell over western Montana, especially higher elevations. Flattop Mountain reported 1.20 inches on the 11th. By the 15th, another strong cold front brought a change in the weather. Gusty winds prevailed along the northern Rocky Mountain Front. A location west of Choteau reported a gust to 65 mph on the 15th.

October 16-18

Slightly below normal temperatures occurred during this period. Conditions generally remained dry, but winds did weaken somewhat, too.

October 19-24

Temperatures again warmed to above normal levels across the state. Some light precipitation fell late in the period as weak weather disturbances moved through the state. Windy conditions also returned late in the period.

October 25-31

Some of the most variable weather conditions occurred during the final seven days of the month. A large low pressure system developed south of Montana and moved into the upper Midwest. This was the deepest low pressure of record in the lower 48 states for a non-hurricane storm. The moisture wrapping around this system contributed to heavy snowfall over western and southwestern Montana on the 25th and 26th. Up to two feet of snow fell at Noisy Basin in the Swan Range. Blizzard conditions prevailed over extreme eastern Montana with wind gusts up to 56 mph at Cannonball (Fallon County). Seven inches of snow fell at Carlyle (Wibaux County), with four inches at Circle (McCone). Dry and mild conditions returned from the 29th through 31st.

New Temperature Records for October 2010

Station	Record Type	New Record	Date	Previous Record	Year of Previous Record
Butte	High Daily Max	82	2	81	1992
Missoula	High Daily Max	84	2	84	1992
Bozeman Apt	High Daily Max	89*	3	84	1987
Butte	High Daily Max	85*	3	82	1919
Dillon	High Daily Max	86*	3	82	1987
Butte	High Daily Min	47	4	47	1922

*Bozeman recorded an all-time October warm temperature of 89F on the third. The old record was 87F on October 1, 1997 and October 2, 1992. Butte tied the all-time October warm temperature record of 85F on the third. This tied the record of 85F set on October 5, 1918. Dillon set an all-time October warmest temperature record of 86F on the third. The old record was 84F on October 2, 1987.

Precipitation

Severe convective weather occurred on zero days in October.

Areas of above normal precipitation were over northwest, southwest, central and northeast Montana (Fig. 3). The rest of the state was below to much below normal

New Precipitation Records for October 2010

Station	Record Type	New Record	Date	Previous Record	Year of Previous Record
Glasgow	High Daily Snow	1.1	27	0.6	1984

Other Information

October's statewide average temperature of 48.3F was 4.1F above normal. This was the 25th warmest October of record, and the warmest since 1988. Some areas saw their warmest October since the mid 1960s.

For precipitation, this was the driest October since 2002. The statewide average was 0.73 inches, and the 37th driest of record.

For October winds, this was the seventh calmest October of record.

October summary information:

High Temperature	92°F near Roundup (3 rd)	Greatest Precip	3.73" at Mullan Pass
Low Temperature	5°F at Culbertson (28 th)		7.50" at Stahl Peak SNOTEL (Lincoln)
Warmest Ave Temp	55.4°F at Billings Water Treatment Plant	Peak Wind Gust	78 mph at Logan Pass (31 st) 65 mph near Choteau (15 th)
Coollest Ave Temp	39.8°F at West Yellowstone		
Range of Temp departures	-0.2°F at Polson to +8.5°F at Bredette	Highest Ave Wind	13.8 mph at Two Medicine and 20.7 mph at Deep Creek
18 city mean monthly Temperature/Normal	48.3/44.2; 25 th warmest of record (since 1880)	18 city mean monthly wind speed/Normal	7.8 mph/8.9 mph; 7 th calmest of record (since 1936)
18 city mean monthly precipitation/Normal	0.73"/1.00" – 73% of normal; 37 th driest of record (since 1880)		

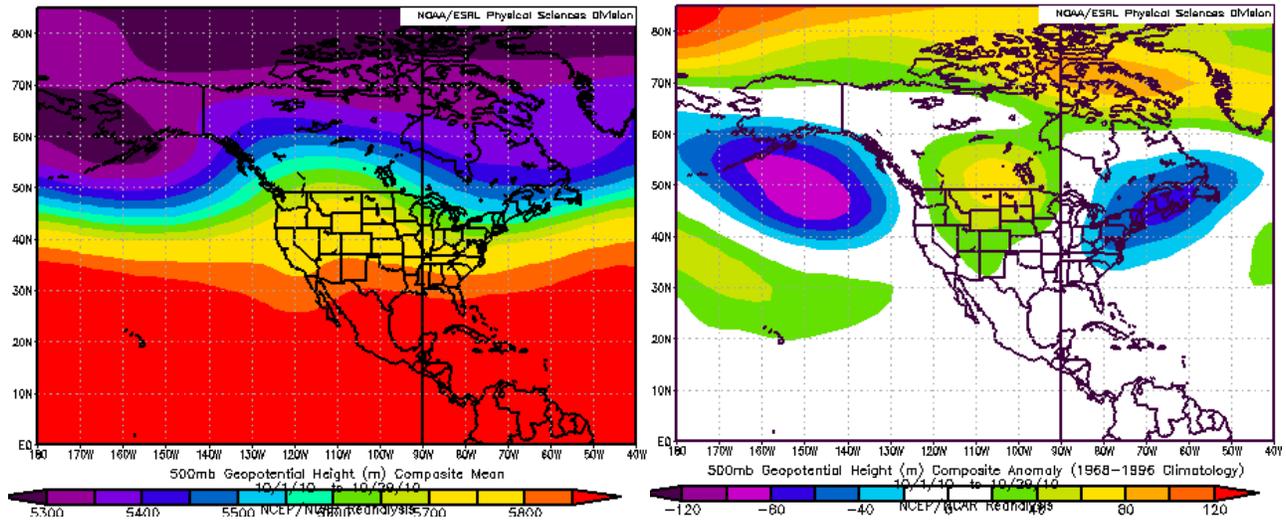
**Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date**

Location	Oct	% of Norm	Rank	Pcntl	Oct 1 – Oct 31	% of norm	Rank	Pcntl	Years
Baker	0.52	43%			0.52	43%			12
Billings	0.63	50%	40	39	0.63	50%	40	39	102
Belgrade	0.67	60%	21	27	0.67	60%	21	27	74
Butte	0.66	84%	62	53	0.66	84%	62	53	117
Cut Bank	0.08	17%	18	17	0.08	17%	18	17	104
Dillon	0.51	80%	40	56	0.51	80%	40	56	71
Glasgow	0.36	51%	43	37	0.36	51%	43	37	114
Great Falls	0.46	49%	38	31	0.46	49%	38	31	119
Havre	0.20	32%	27	20	0.20	32%	27	20	131
Helena	0.46	70%	55	42	0.46	70%	55	42	131
Jordan	0.59	62%			0.59	62%			14
Kalispell	0.53	55%	92	78	0.53	55%	92	78	117
Lewistown	0.76	72%	44	38	0.76	72%	44	38	115
Livingston	0.73	50%	31	28	0.73	50%	31	28	108
Miles City	0.45	40%	44	32	0.45	40%	44	32	134
Missoula	1.08	130%	81	62	1.08	130%	83	63	131
Mullan Pass	3.73	125%	48	67	3.73	125%	47	66	71
Wolf Point	0.75	83%			0.75	83%			13
Glendive	0.48	48%	43	37	0.48	48%	43	37	114
Sidney	0.47	46%	23	31	0.47	46%	23	31	71
BZN-MSU	0.83	52%	32	24	0.83	52%	32	24	132

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) and 1b (right). Mean flow at 500 millibars (~18,000 ft) for October (left). A ridge of high pressure dominated western North America. This contributed to the above normal temperatures and below normal precipitation in Montana.

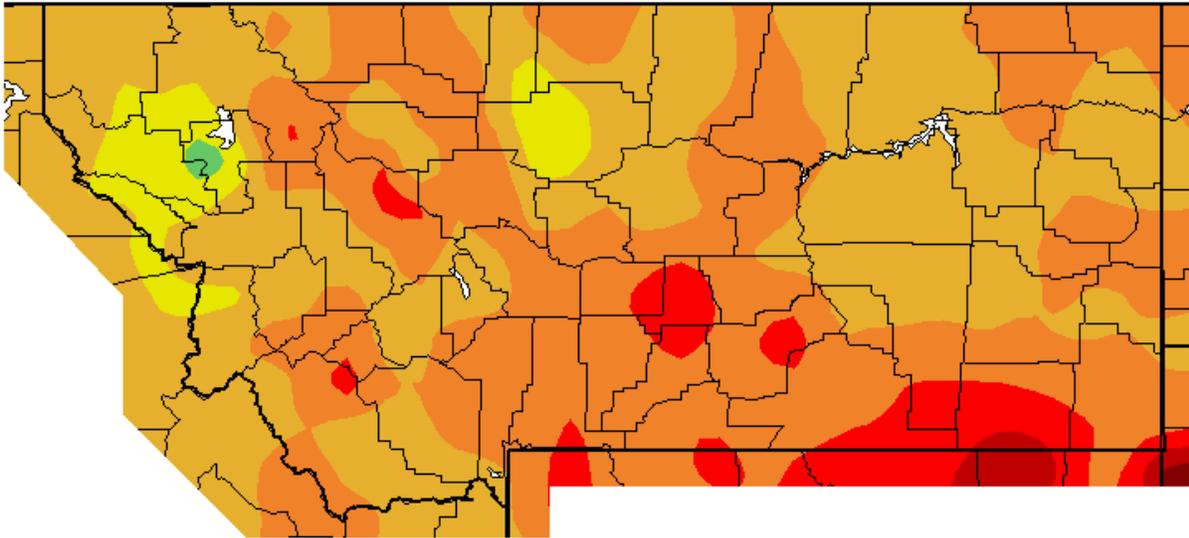


Figure 2. Temperature anomaly for October. Temperatures were above normal across most of the state. (Western Region Climate Center).

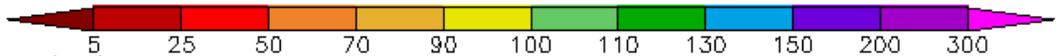
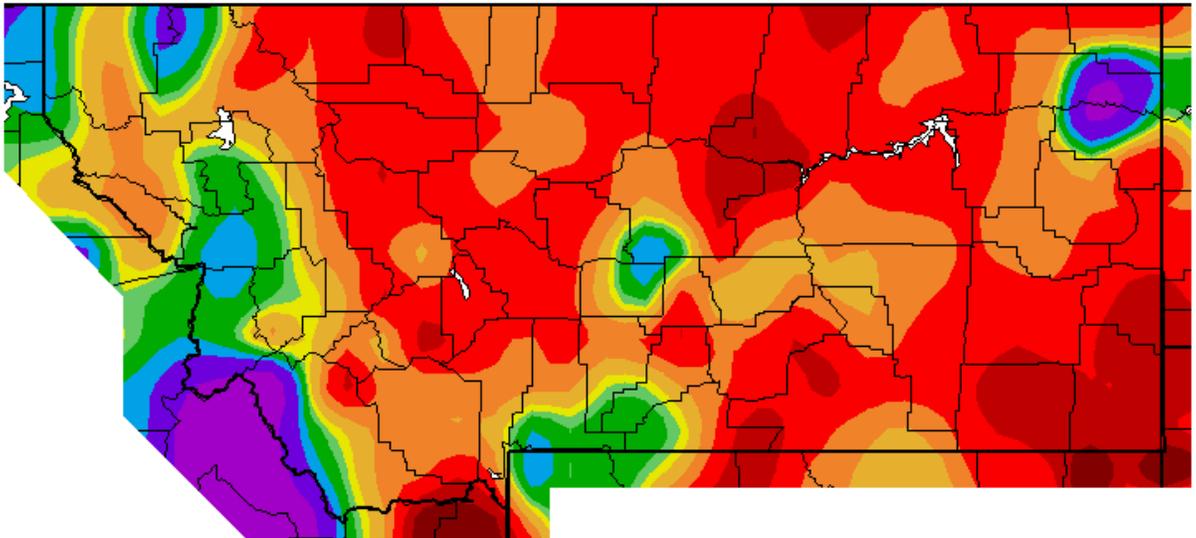


Figure 3. Precipitation anomaly (% of normal) for October. (Western Region Climate Center)

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=tx>