

# Montana Weather/Precipitation Summary

October 2013 by NOAA's National Weather Service Great Falls Montana

Temperatures averaged below normal across the state in October. A ridge of high pressure along the west coast allowed cool air to flow across the state in a northwest flow aloft. Precipitation was above normal south central and southeast, and below normal elsewhere. The ridge of high pressure along the west coast contributed to cooler than normal conditions.

Statewide composite temperatures averaged 2.4°F below normal for the month. Figure 2 the extent of the cool conditions. The temperatures were as much as 5°F below normal over portions of southwest Montana, to only slightly below normal around Terry. The warmest average October temperature was 47.1°F at Glendive, and the coolest was 29.5°F at Placer Basin SNOTEL. For the past 12-months, the statewide composite average temperature is 0.6°F above normal. The figure to the right shows that this is the first month since April to record below normal temperatures.

The monthly departure from normal for precipitation across Montana is shown in Figure 4. This figure shows above normal precipitation across the southeast and south central, with below normal over the rest of the state. The driest areas were over most of the below normal portions. The heaviest precipitation fell in the Red Lodge area, with this area receiving over six inches of precipitation. Heavy snowfall contributed to a large portion of the total. Mystic Lake measured 56-inches of snow for the month. Normal snowfall for October is around 14 inches at Mystic Lake. The precipitation figure to the right shows that October had a 0.29" negative departure. The statewide composite precipitation for the past 12 months is 1.42-inches above normal.

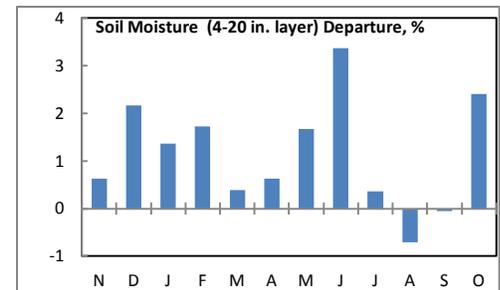
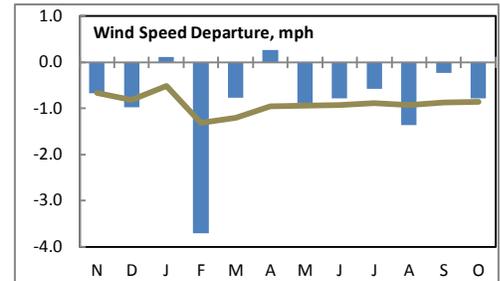
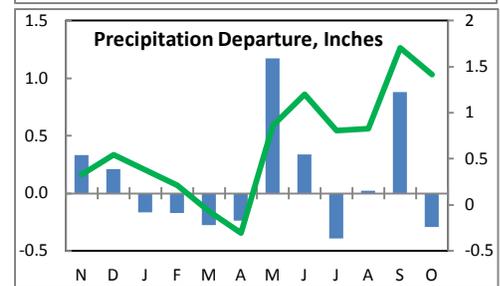
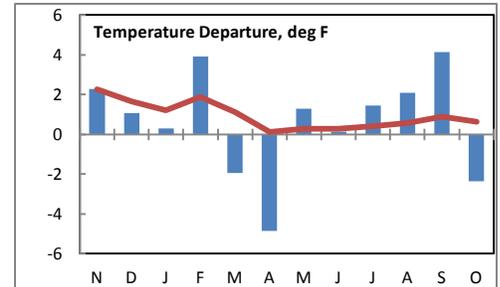
On a statewide average, winds continued below normal in October. This October was the 10<sup>th</sup> calmest of record, with an average speed of 7.9-mph. Only two of the past 12-months have had wind speeds averaging above normal. The fastest measured gust of the month, 69 mph, occurred near East Glacier. For the past 12-months, winds are running 0.9-mph below average.

Even though much of the state received below normal precipitation in October, statewide composite soil moisture conditions were 2.4 percentage points above normal. Over the past 12 months, from a statewide composite perspective, only two months have recorded below normal soil moisture conditions. This October ranks as the second wettest of record (with records starting in 1995) (see soil moisture figure to right). Refer to NCDC's State of the Climate report for the latest monthly discussion: <http://www.ncdc.noaa.gov/sotc/>.

## October 1-4

While much of the state remained dry, a snowstorm raged across the southeast on the second and third. Amounts up to two feet fell in Stillwater County, and three feet in the Tobacco Root Mountains of southwest Montana. On the morning of the fourth, Cut Bank tied their record low temperature of 17F.

## October 5-18



After a warm-up in which temperatures reached 84F at Dry Blood Creek on the 7<sup>th</sup>, temperatures settled into a below-normal regime through the 18<sup>th</sup>. Gusty winds reached 62 mph at Two Medicine and Whitlash on the seventh. A cold front pushing through southeast Montana brought a few thunderstorms on the 11<sup>th</sup>. Afterwards, snow fell in the Red Lodge area. They picked up another 11 inches on the 13<sup>th</sup> and 14<sup>th</sup>.

**October 19-26**

A mild and generally dry period prevailed during this time. Temperatures reached the 60s and a few lower 70s, with generally light winds, too.

**October 27-31**

A cold front brought gusty winds to much of the state. As the front moved west of the divide, gusts reached 63 mph around Flathead Lake. Near blizzard conditions prevailed in the Sieben area (north of Helena) with gusts to 62 mph. Heavy snow fell on the 28<sup>th</sup>, with Craig picking up 14 inches, Montana City 12 inches, Great Falls 6.9 inches and Butte 6 inches. Butte set a daily precipitation record on the 28<sup>th</sup>, measuring 0.44 inches. After the coldest temperature of the month was recorded at Mystic Lake on the 29<sup>th</sup> (-7F), warmer air returned by the 31<sup>st</sup>. Gusty winds accompanied this warm-up along the Rocky Mountain Front. Deep Creek RAWs clocked the strongest gust of the month, 69 mph.

**Precipitation/convection**

Severe convective weather occurred on no days in October. This is normal for October. For the convective season, severe weather was reported on 58 days, this is 19 days above normal, and the most since 2010.

**October summary information:**

<b>High Temperature</b>	84°F at Dry Blood Creek (7 <sup>th</sup> )	<b>Greatest Precip</b>	6.14" near Red Lodge
<b>Low Temperature</b>	-7°F at Mystic Lake (29 <sup>th</sup> )		
<b>Warmest Ave Temp</b>	47.1°F at Glendive	<b>Peak Wind Gust</b>	69 mph at Deep Creek RAWs (Glacier) (31 <sup>st</sup> )
<b>Coollest Ave Temp</b>	29.5°F at Placer Basin SNOTEL		
<b>Range of Temp departures</b>	-5.9°F at Hot Springs to -0.4°F at Terry	<b>Highest Ave Wind</b>	16.6 mph at Deep Creek RAWs 13.1 mph at Browning
<b>21 city mean monthly Temperature/Normal</b>	60.4/56.2F 4.2F above normal. 12 <sup>th</sup> warmest of record (since 1880). 88 <sup>th</sup> percentile.	<b>20 city mean monthly wind speed/Normal</b>	7.9 mph/8.7 mph; 10 <sup>th</sup> calmest of record (since 1936). 13 <sup>th</sup> percentile
<b>22 city mean monthly precipitation/Normal</b>	0.79/1.08" – 73% of normal. 43 <sup>rd</sup> driest of record (since 1880). 31 <sup>st</sup> percentile	<b>20 city mean monthly snowfall and normal</b>	2.4/3.4" – 0.9" below normal. 65 <sup>th</sup> lowest. 48 <sup>th</sup> percentile

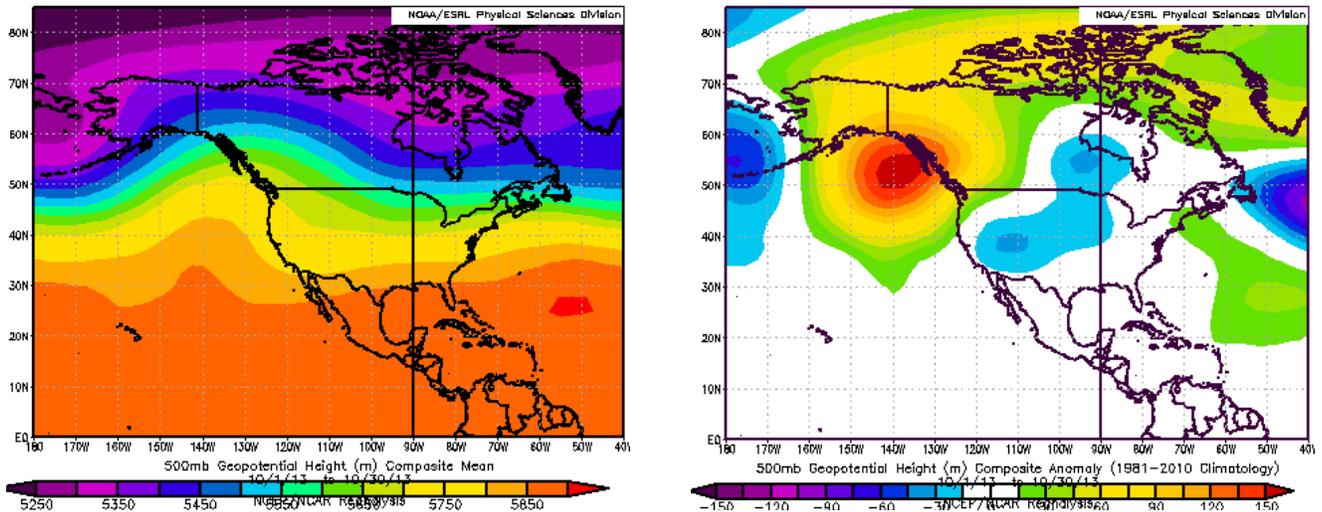
### Historical Rank of Precipitation (inches) for the Current Month and Water Year to Date

Location	Oct	% of Norm	Rank	Pcntl	Oct 1 – Oct 31	% of norm	Rank	Pcntl	Years
Baker	1.68	140%	13	80	1.68	140%	13	80	16
Billings	2.57	204%	108	96	2.57	204%	108	96	113
Belgrade	0.36	33%	8	9	0.36	33%	8	9	77
Butte	0.62	79%	58	48	0.62	79%	58	48	120
Cut Bank	0.50	114%	65	60	0.50	114%	65	60	107
Dillon									74
Glasgow	0.24	32%	33	28	0.24	32%	33	28	117
Great Falls	0.93	108%	80	65	0.93	108%	79	64	122
Havre	0.32	55%	43	32	0.32	55%	43	32	134
Helena	0.56	82%	65	48	0.56	82%	65	48	134
Jordan	0.52	58%	1	0	0.52	58%	1	0	17
Kalispell	0.33	33%	16	13	0.33	33%	16	13	120
Lewistown	1.07	95%	62	52	1.07	95%	62	52	118
Livingston	1.15	91%	63	57	1.15	91%	63	56	111
Miles City	0.97	105%	87	63	0.97	105%	87	63	137
Missoula	0.06	7%	3	2	0.06	7%	4	2	134
Mullan Pass	0.78	25%	5	5	0.78	25%	5	5	74
Wolf Point	0.25	31%	2	7	0.25	31%	2	7	16
Glendive	0.98	92%	82	69	0.98	92%	82	70	117
Sidney	1.33	121%	56	75	1.33	121%	56	75	74
BZN-MSU	1.00	58%	43	31	1.00	58%	43	31	135

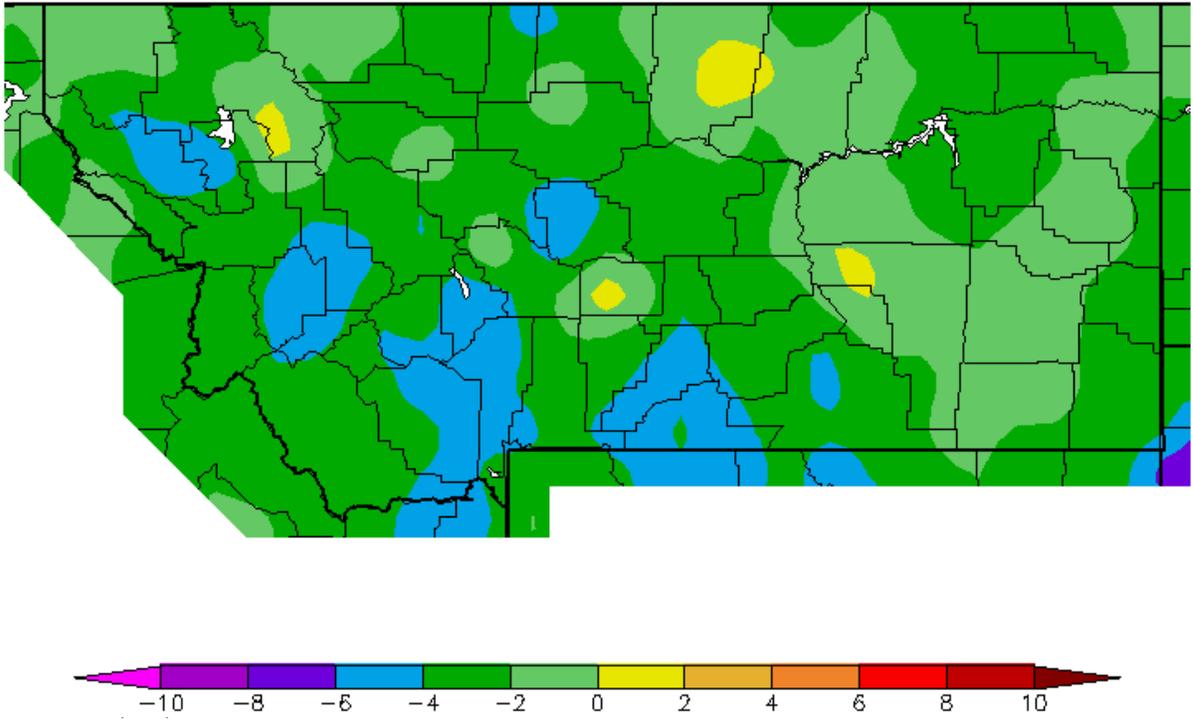
Rankings and Percentiles are 1=driest, higher numbers=wetter.

For an automated version of this chart, updated daily, go to

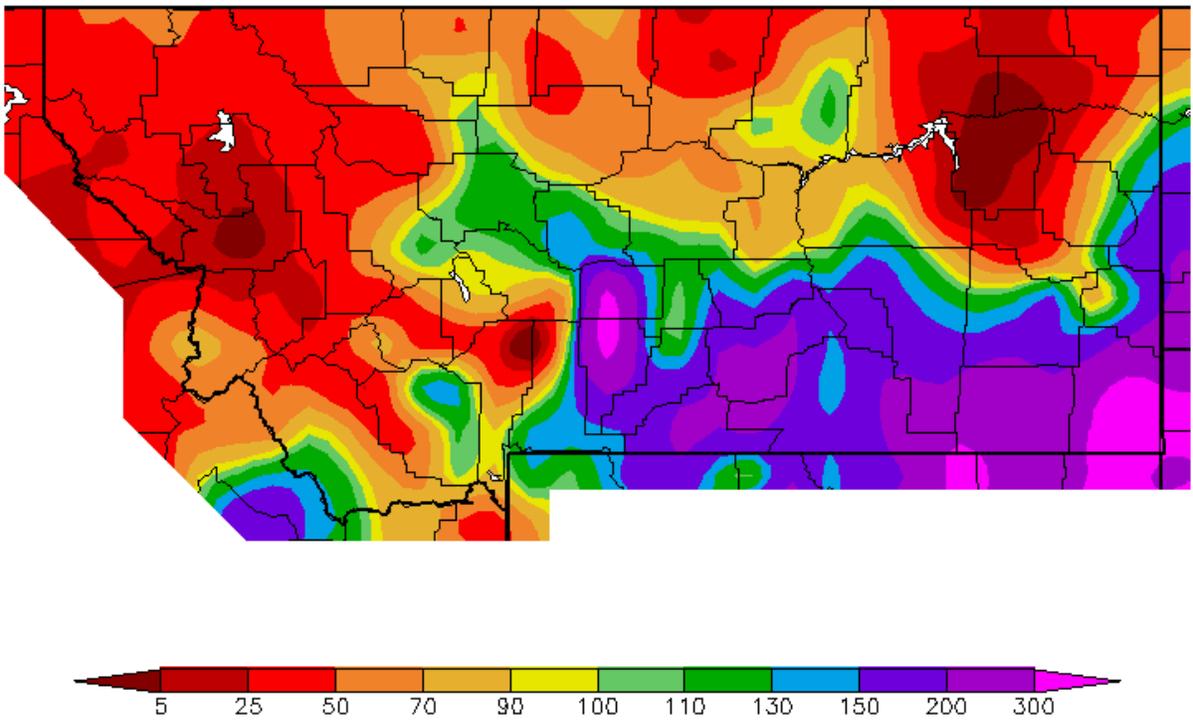
<http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS>



**Figure 1.** Mean flow at 500 millibars (~18,000 ft) for this month (left) and departure from normal (right). The west coast ridge was much stronger than normal. The trough across the central and southwest US was stronger than normal. This contributed to the cooler than normal conditions.



**Figure 2.** October 2013 temperature departures from normal (°F) (Western Region Climate Center).



**Figure 4.** October 2013 precipitation departures from normal (percent) (Western Region 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=tx&type=data&loc=hydro&fx=watyr\\_pcnorm.png](http://www.wrh.noaa.gov/tfx/image.php?wfo=tx&type=data&loc=hydro&fx=watyr_pcnorm.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.