

# Montana Weather/Precipitation Summary

**September 2009** by NOAA's National Weather Service Great Falls Montana

September was very dry. The last day of the month provided the state with the most widespread precipitation in 45 days or more. It was a very warm month, with temperatures from 5 to 8 degrees above normal (Fig. 1). It was the warmest September of record at some locations, but overall, was the warmest September since 1998. A mean ridge dominated for the month, which contributed to the above normal temperatures (Fig. 2).

Thunderstorms persisted into the early part of the month, with temperatures pushing close to 100F. Severe thunderstorms occurred near the middle of the month, but probably the biggest weather event occurred on the last day, when widespread snow fell over southwest Montana, with nearly 2-3 inches reported in the Bozeman area. Even with the late month precipitation, most of the state was below normal (Fig. 3).

## **Sep 1-6**

This period was very warm, with high temperatures approaching 100F at Havre and Miles City. Temperatures were as much as 15-20 degrees above normal. Additionally, there were nearly daily thunderstorms scattered throughout the state. On the 5<sup>th</sup>, a thunderstorm wind gust to 58 mph was reported at Livingston. Havre hit 99F on the 3<sup>rd</sup>.

## **Sep 7-13**

A strong cold front pushed across the state on the 6<sup>th</sup>, which ushered in much cooler temperatures. At some locations, temperatures on the 8<sup>th</sup> were the first below normal readings in over two weeks. Temperatures averaged much closer to seasonal normals, but on the 13<sup>th</sup>, a front brought severe thunderstorms to eastern Montana.

## **Sep 14-19**

Warm and dry conditions returned, with a stretch of over 90 degree high temperatures across the state during this period. Havre peaked at 99F on the 17<sup>th</sup>, with Yellowtail Dam reaching 99F on the 19<sup>th</sup>. Many new record high temperatures were set during this period, with temperatures 20-25 degrees above seasonal normals. Isolated thunderstorms produced small hail in Beaverhead County on the 15<sup>th</sup> and Liberty County on the 17<sup>th</sup>.

## **Sep 20-22**

A short-lived cool spell dropped temperatures, and many locations recorded their first frost of the season. Light showers fell at some locations during the transitions to cooler conditions.

## **Sep 23-26**

Very warm conditions returned with temperatures 12-17 degrees above normal. Very windy conditions on the 26<sup>th</sup> caused wind gusts to 62 mph at Babb, 54 mph at Havre and 96 mph at Logan Pass. The MacDonald Pass fire started during this period. A cold front swept across the state late on the 26<sup>th</sup>.

## **Sep 27-30**

This was the final transition period for the month. A few record high temperatures were set, but the highlight was the large storm to settle in on the 30<sup>th</sup>. This produced up to one inch of precipitation over portions of southwestern Montana, and snowfall up to 8 inches at the higher elevations. High temperatures struggled to rise higher than near 40 in the areas that received the heaviest precipitation of central and southwest Montana. The coldest temperatures in the state occurred during this period, with Polebridge falling to 15F on the 28<sup>th</sup>.

## New Temperature Records for Sep 2009

Station	Record Type	New Record	Date	Previous Record	Year of Previous Record
Havre	High Daily Max	99	3	98	1978
Glasgow	High Daily Min	65	6	60	2002
Glasgow	High Daily Max	91	15	91	1998
Bozeman	High Daily Max	92	16	90	1998
Great Falls	High Daily Max	91	16	90	1979
Havre	High Daily Max	85	16	93	1979
Helena	High Daily Max	92	16	90	1979
Missoula	High Daily Max	91	16	91	1937
Bozeman	High Daily Max	93	17	91	1981
Glasgow	High Daily Max	95	17	95	2000
Great Falls	High Daily Max	92	17	90	1981
Havre	High Daily Max	99	17	95	1943
Lewistown	High Daily Max	91	17	89	1943
Bozeman	High Daily Max	90	18	90	1981
Bozeman	High Daily Max	94	19	90	1938
Butte	High Daily Max	86	19	86	1956
Cut Bank	High Daily Max	90	19	87	1922
Great Falls	High Daily Max	92	19	91	1938
Havre	High Daily Max	96	19	90	1898
Helena	High Daily Max	92	19	88	1956
Missoula	High Daily Max	88	19	86	1956
Cut Bank	High Daily Max	92	23	87	1949
Valier	High Daily Max	91	23	87	1949
Glasgow	High Daily Min	52	24	51	1992
Bozeman	High Daily Max	91	24	90	1938
Butte	High Daily Max	85	24	85	2001
Great Falls	High Daily Max	93	24	91	2001
Havre	High Daily Max	94	24	92	1938
Helena	High Daily Max	88	24	87	2001
Lewistown	High Daily Max	89	24	89	1938
Missoula	High Daily Max	86	24	86	1974
Bozeman	High Daily Max	91	26	85	1956
Helena	High Daily Max	84	29	84	1967

## Precipitation

Severe weather was recorded on 1 day in September, the normal is zero days.

Precipitation was generally below normal across the state. The driest areas remained dry, especially across northwest Montana. Cut Bank and Kalispell were especially dry. Kalispell recorded their 5<sup>th</sup> driest September of record. Cut Bank ended the Water Year with the 4<sup>th</sup> driest of record, collecting just under five inches of precipitation. Figure 4 shows how the northwest has remained dry for the water year.

## New Precipitation Records for Sep 2009

Station	Record Type	New Record	Date	Previous Record	Year of Prev Record
Dillon	Daily Maximum Rainfall	1.04 inches	30	0.66 inches	1949
Stanford	Daily Maximum Rainfall	0.69	30	0.69	1977
Wisdom	Daily Maximum Rainfall	0.69	30	0.40	1983
Wisdom	Daily Maximum Snow	1.0	30	0.5	1959

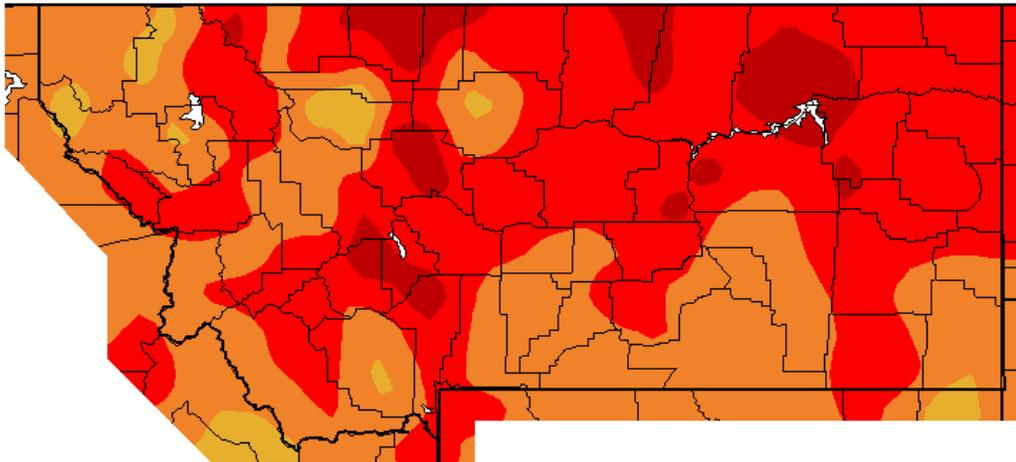
## Other Information

Bozeman recorded their 2<sup>nd</sup> warmest September of record. At Cut Bank and Great Falls, September was the 4<sup>th</sup> warmest of record, with temperatures 7 degrees above normal. Dillon and Helena recorded their 3<sup>rd</sup> warmest September.

Bozeman reached 90 or higher on 13 days in September. This exceeds the old record of 7 days set in 1998. Miles City, Billings, Great Falls and Cut Bank all tied their records for the most days of 90 or higher in September. Billings had 9 days, Miles City 13, Great Falls 7 and Cut Bank recorded 5 days.

### September summary information:

<b>High Temperature</b>	99°F at Havre (3 <sup>rd</sup> & 17 <sup>th</sup> ) and Yellowtail Dam (19 <sup>th</sup> )	<b>Greatest Precip</b>	1.64" at Brenner 2.50" at Placer Basin SNOTEL
<b>Low Temperature</b>	15°F at Polebridge (28 <sup>th</sup> )		
<b>Warmest Ave Temp</b>	67.6°F at Miles City	<b>Peak Wind Gust</b>	62 mph at Babb (26 <sup>th</sup> ) 96 mph at Logan Pass (26 <sup>th</sup> )
<b>Coollest Ave Temp</b>	52.5°F at West Yellowstone		
<b>Range of Temp departures</b>	+3.6°F at Libby to +8.7°F at Turner	<b>Highest Ave Wind</b>	13.2 mph at McDonalds DOT (northeast) 14.2 mph at Deep Creek RAWS
<b>18 city mean monthly Temperature/Normal</b>	Sep: 58.8/52.8 warmest since 1998 and 3 <sup>rd</sup> warmest. WY: 41.1/41.0		
<b>18 city mean monthly precipitation/Normal</b>	0.65"/1.11" – 59% of normal - 25 <sup>th</sup> driest WY: 13.06/14.40 – 41 <sup>st</sup> driest	<b>18 city mean monthly wind speed/Normal</b>	Sep: 7.9 mph/8.6 mph 15 <sup>th</sup> calmest WY: 8.6/9.3 - 5 <sup>th</sup> calmest



**Figure 1.** Average temperature departure from normal for September 2009. Temperatures were above normal across the state (Western Region Climate Center).

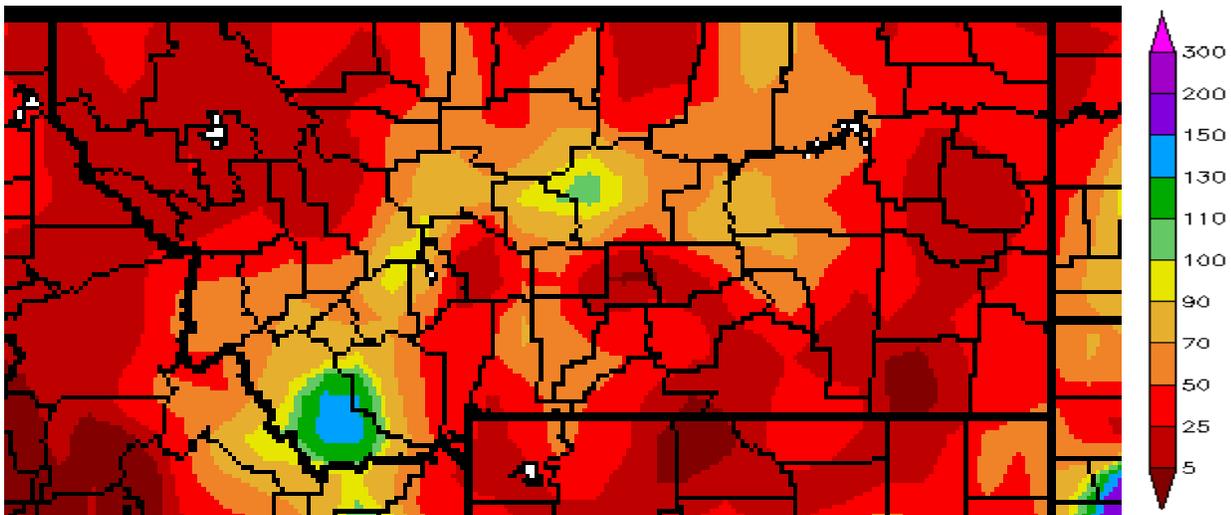


**Historical Rank of Precipitation (inches)  
for the Current Month and Water Year to Date**

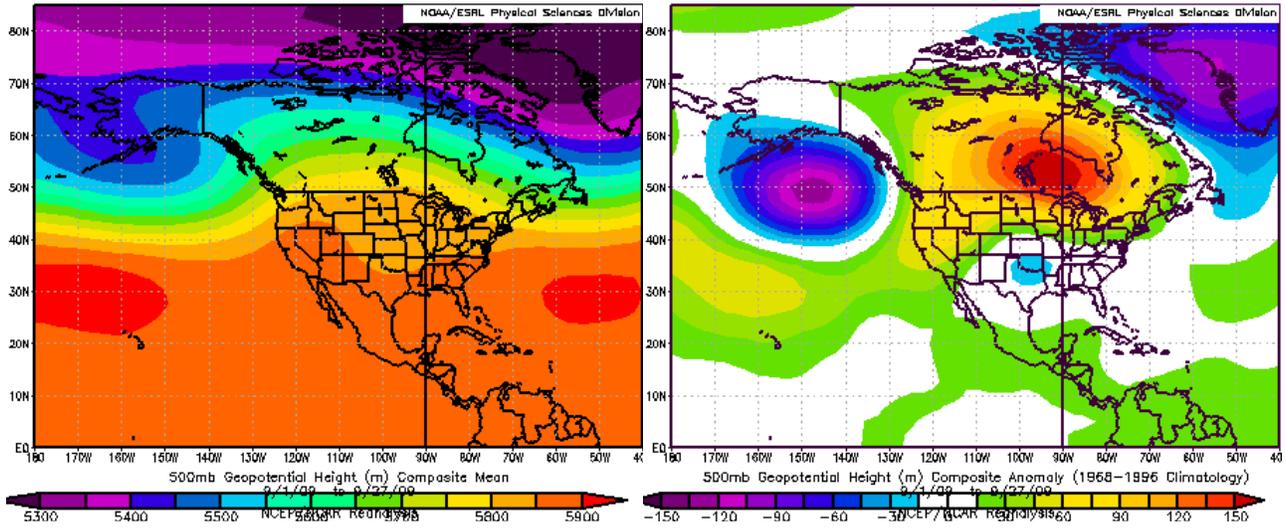
Location	Sep	% of Norm	Rank	Pcntl	Oct 1 – Sep 30	% of norm	Rank	Pcntl	Years
Baker	1.13	99%			14.95	129%			11
Billings	0.65	49%	33	32	11.96	81%	46	45	100
Belgrade	0.41	29%	11	14	13.03	89%	26	35	72
Butte	0.71	65%	43	37	13.60	106%	70	61	114
Cut Bank	0.20	17%	12	11	4.99	40%	4	3	101
Dillon	1.24	128%	48	68	10.59	107%	44	63	69
Glasgow	0.58	59%	49	43	11.84	105%	54	49	109
Great Falls	0.91	74%	47	39	14.88	100%	66	56	117
Havre	0.84	82%	63	48	9.10	79%	24	18	129
Helena	0.97	92%	71	54	10.93	97%	61	46	131
Jordan	0.75	127%			12.29	110%			11
Kalispell	0.14	12%	5	3	15.24	89%	76	66	114
Lewistown	1.22	88%	51	44	13.88	78%	23	20	112
Livingston	0.98	55%	46	42	14.55	91%	51	50	101
Miles City	0.36	30%	32	23	11.57	86%	47	35	132
Missoula	0.27	25%	12	9	13.85	100%	64	52	123
Mullan Pass	0.27	16%	5	6	30.05	85%	10	14	67
Wolf Point	1.46	311%			8.78	78%			11
Glendive	0.21	14%	26	22	13.51	98%	52	49	105
Sidney	0.44	29%	18	25	14.18	99%	40	58	68
BZN-MSU	0.79	44%	26	19	18.90	98%	68	55	122

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

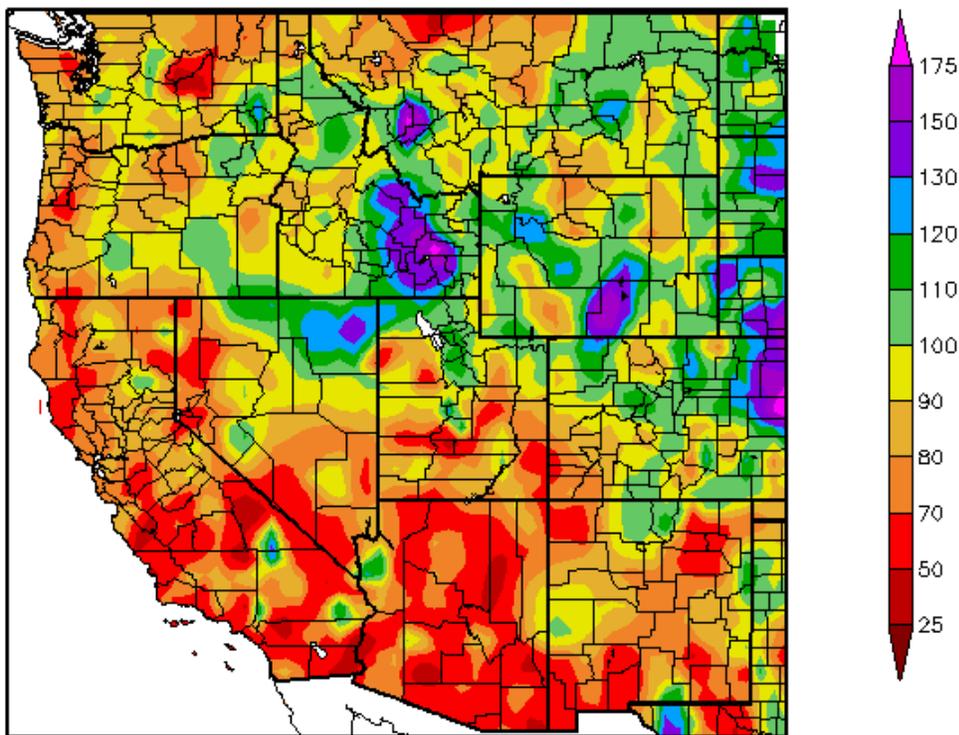
For an automated version of this chart, updated daily, go to  
<http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS>



**Figure 2.** Precipitation anomaly (% of normal) for September. (High Plains Regional Climate Center).



**Figure 3.** September 2009 mean flow at 500 mb (18000 ft) (left) with the departure from normal (right).



**Figure 4.** Precipitation percentage of normal for the Water Year (Oct 1 – Sep 30) (High Plains 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>

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 accessed 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>