

# Montana Weather/Precipitation Summary

**June 2010** by NOAA's National Weather Service Great Falls Montana

June continued the trend of May, with below normal temperatures and above normal precipitation. The smallest temperature departure was over the southeast, with the portions of Petroleum, Garfield and Musselshell Counties in central Montana, with the largest departures over the north central and southwest (Fig. 2). Statewide, it was the 74<sup>th</sup> coolest June of average. As a whole, precipitation was above normal. Some areas in the southwest recorded over seven inches of precipitation. Small areas of the north central and east recorded below normal precipitation (Fig. 3). A weak trough of low dominated western North America. The flow pattern was close to normal for June

## **Jun 1-8**

Unsettled weather prevailed during this period with an isolated thunderstorm on the 1<sup>st</sup> producing one-inch hail in the Fairfield area (Teton Co). Winds blew along the east slopes of the Rockies on the 3<sup>rd</sup> as heavy precipitation fell over the northwest. Gusts to 71 mph occurred at Deep Creek (Pondera Co) and 66 mph west of Choteau. A trailer was blown over on highway 2 near Browning. Heavy precipitation continued over the mountainous areas of the northwest through the 5<sup>th</sup>, when amounts of over one inch fell in the Mission, Cabinet and Swan mountains. Generally below normal temperatures prevailed through this period.

## **Jun 9-12**

Warmer temperatures and thunderstorms were prevalent through this period. Billings Water Treatment Plant reached 84F on the 10<sup>th</sup>. Meanwhile, a cold front and large low-pressure area moved across the state on the 10<sup>th</sup> and 11<sup>th</sup>. Heavy rains fell across the southeast and south central, with snow up to five inches over some of the higher peaks of the southwest. Colstrip (Rosebud Co) picked up nearly two inches of rain from this storm. The heavy rains extended from near Billings to Broadus in the southeast. After the storm moved out and skies cleared, Gates Park fell to 21F, with new record lows set or tied at Butte and Cut Bank.

## **Jun 13-18**

Warmer air returned to the state, with Eureka and Superior topping out at 86F on the 13<sup>th</sup> and 14<sup>th</sup>. As the warm air spread to eastern Montana, Sidney and Glendive reached 88F on the 16<sup>th</sup>. Associated with the warmer air were thunderstorms. Severe thunderstorms affected the east on the 15<sup>th</sup> and 16<sup>th</sup>. Large hail was common with the thunderstorms, and wind gusts to 84 mph occurred at Glendive and Worden (Yellowstone Co). A tornado was sighted near Warren (Carbon Co). At Froid, a microburst destroyed a home and caused one death and serious injury. Significant hail and wind damage occurred in Lewistown on the 16<sup>th</sup> as a severe thunderstorm moved through the city. Some observers stated that this was the most damage they had seen since the Lewistown tornado in 1999. Meanwhile, widespread heavy rains caused flooding over much of central and southwest Montana. The Missouri River below Canyon Ferry was at its highest level since the spring of 1997. At the same time, heavy snow fell over portions of the southwest and mountains of the west. Up to a foot of snow fell in the Swan Range, with 8-10 inches over higher elevations of the southwest. Figure 4 shows a camera image from the morning of 17 June at Big Hole Pass in Beaverhead County.

## **Jun 19-30**

Unsettled weather continued for the rest of the month. From the 19<sup>th</sup>-22<sup>nd</sup> temperatures were below normal, then temperatures rose to near or above normal for the rest of the month. Periods of severe thunderstorms continued to affect the state. An isolated thunderstorm dropped one-inch hail near Thompson Falls on the 19<sup>th</sup>. As this system moved over the state on the 20<sup>th</sup> and 21<sup>st</sup>, it continued to produce severe thunderstorms. A tornado ripped through portions of Billings on the 20<sup>th</sup>, severely damaging portions of Billings in the vicinity of the MetraPark (Fig. 5).. Heavy rain accompanied these storms with over two inches and flooding reported in the Billings and Roundup areas. On the 21<sup>st</sup>, thunderstorms again generated tornados near Otter and Broadus (Powder River County), near Vida (McCone County) and northwest of the Hell Creek

Campground in Valley County. Baseball-size hail fell near Fort Peck. The warmest air of the month pushed temperatures to 102F at Hardin on the 29<sup>th</sup>. Again, thunderstorms developed with a gust to 88 mph east of Lincoln. Several trees were snapped off during this event. Strong thunderstorm winds spread over the plains through Great Falls. Another round of severe thunderstorms moved across southwest Montana on the 30<sup>th</sup>. Baseball-size hail was reported near Belgrade.

### New Temperature Records for June 2010

Station	Record Type	New Record	Date	Previous Record	Year of Previous Record
Butte	Low Daily Min	31	12	31	2004
Cut Bank	Low Daily Min	32	12	32	1996
Cut Bank	Low Daily Max	47	17	47	1944
Kalispell	Low Daily Max	50	17	55	1954
Lewistown	Low Daily Max	48	17	48	1944
Missoula	Low Daily Max	48	17	54	1954

### Precipitation

Severe convective weather occurred on 12 days in June. The average is 11 days. The highest reported thunderstorm gust was 88 mph near Lincoln on the 29<sup>th</sup>. Several tornados occurred over eastern Montana, along with several severe microbursts. Large hail also occurred on several days, including baseball-size hail near Fort Peck on the 21<sup>st</sup>, and near Belgrade on the 30<sup>th</sup>.

Precipitation was generally above normal across the state (Fig. 3). It was the 21<sup>st</sup> wettest June of record (of 131 years). Statewide, the averaged water year total has been 11.41 inches, which is 0.78 inches above normal. This ranks as the 45<sup>th</sup> wettest of record (of 128 years). For the calendar-year-so-far, the statewide average precipitation is 9.41 inches, which is 1.36 inches above normal. This is the highest at this point since 1998.

### New Precipitation Records for June 2010

Station	Record Type	New Record (in)	Date	Previous Record	Year of Prev Record
Butte	Daily Max Precip	1.22	16	0.96	1993
Dillon	Daily Max Precip	0.77	16	0.42	1942
Helena	Daily Max Precip	1.15	16	0.70	1897
Kalispell	Daily Max Precip	1.13	17	0.67	1900

### Other Information

June's winds were relatively light. Wind speeds averaged 7.7 mph, or 1.6 mph lower than normal. This was the third calmest June of record. For the water-year-to-date, considering the light winds of the past several months, the statewide wind average ranks as the second calmest of record.

**June summary information:**

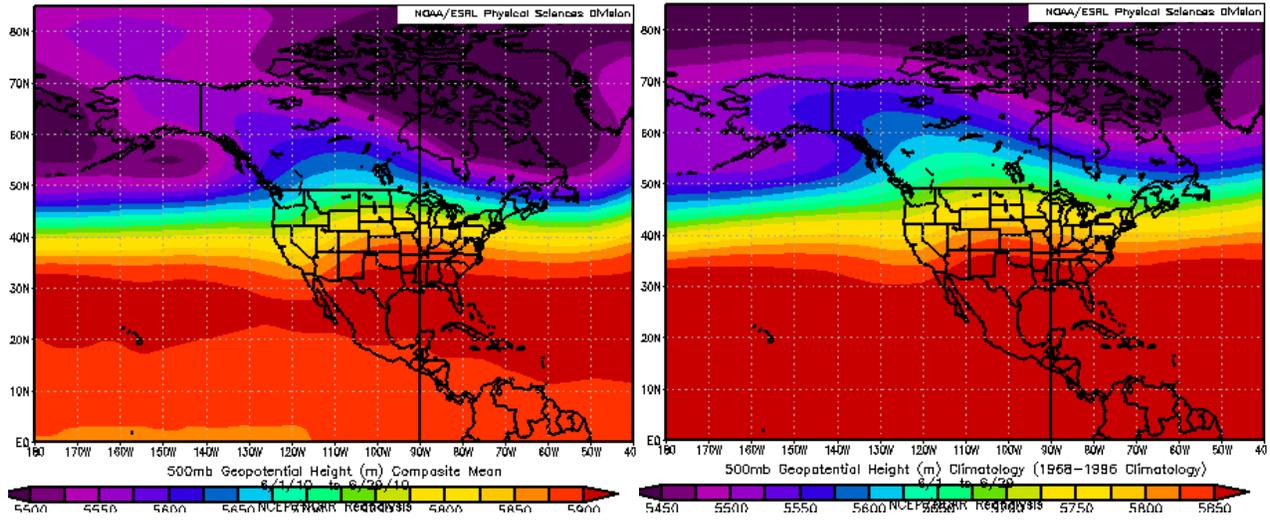
<b>High Temperature</b>	102°F at Hardin (29 <sup>th</sup> )	<b>Greatest Precip</b>	8.26" at Shenango RAWS (Gallatin Co)
<b>Low Temperature</b>	21°F at Gates Park (12 <sup>th</sup> )		9.90" at Noisy Basin SNOTEL (Flathead Co)
<b>Warmest Ave Temp</b>	66.3°F at Hardin	<b>Peak Wind Gust</b>	88 mph near Lincoln (29 <sup>th</sup> )
<b>Coollest Ave Temp</b>	47.7°F at Mullan Pass		
<b>Range of Temp departures</b>	-4.8°F at Chester to +1.8°F at Drummond	<b>Highest Ave Wind</b>	17.1 mph at Logan Pass; 12.2 mph at Sweet Grass (Toole County)
<b>18 city mean monthly Temperature/Normal</b>	55.8/57.2; 74 <sup>th</sup> coolest of record (since 1880)	<b>18 city mean monthly wind speed/Normal</b>	7.7 mph/9.3 mph; 3 <sup>rd</sup> calmest of record (since 1936)
<b>18 city mean monthly precipitation/Normal</b>	3.57"/2.36" – 151% of normal; 21 <sup>st</sup> wettest of record (since 1880) Water year 107% of normal		

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

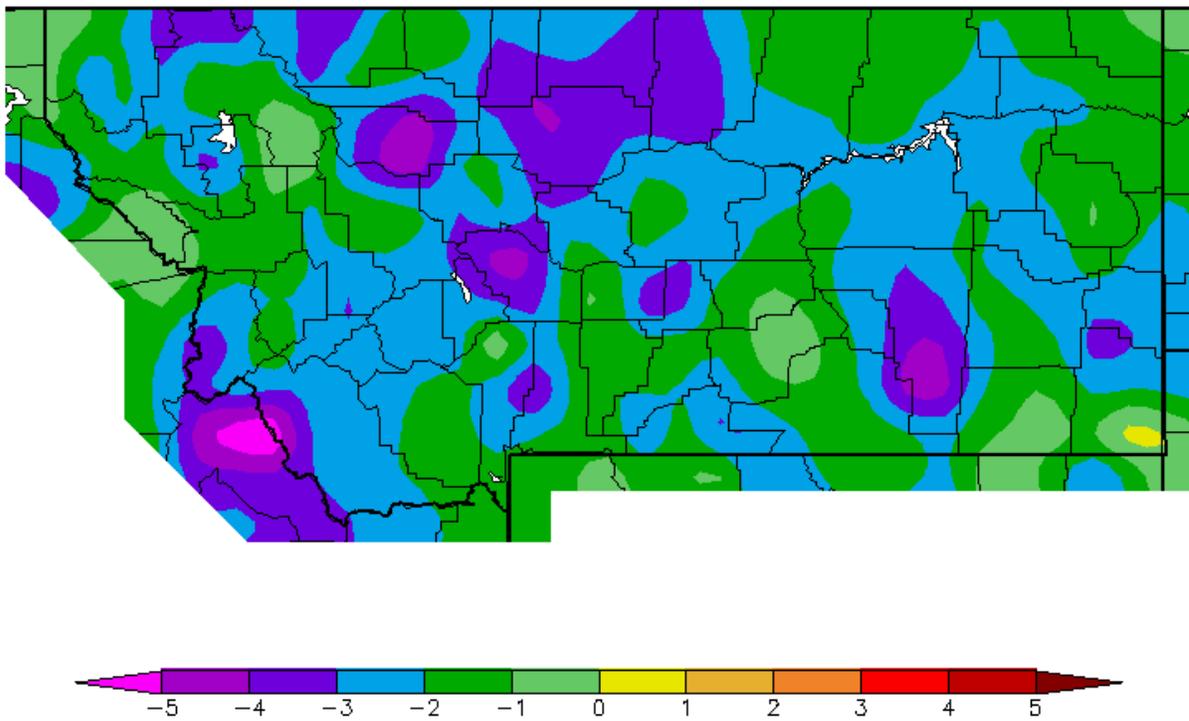
Location	Jun	% of Norm	Rank	Pcntl	Oct 1 – Jun 30	% of norm	Rank	Pcntl	Years
Baker	3.34	132%			11.22	139%			12
Billings	5.10	270%	95	93	12.44	110%	80	80	100
Belgrade	4.15	172%	69	93	11.19	102%	45	61	73
Butte	4.06	196%	103	88	10.91	123%	83	71	116
Cut Bank	2.65	107%	57	55	5.46	68%	24	23	102
Dillon	2.34	132%	50	70	8.42	125%	53	75	70
Glasgow	3.09	140%	75	66	10.02	139%	79	72	110
Great Falls	2.65	118%	62	52	12.40	117%	88	74	118
Havre	2.11	111%	63	48	9.26	120%	86	66	130
Helena	2.85	157%	95	72	7.93	104%	62	47	132
Jordan	3.68	145%			11.68	157%			12
Kalispell	4.20	183%	113	97	14.21	106%	79	68	116
Lewistown	4.76	162%	88	76	13.40	107%	74	65	114
Livingston	3.40	152%	94	87	10.81	94%	58	55	105
Miles City	2.26	93%	61	45	11.07	116%	94	70	133
Missoula	4.12	238%	127	96	10.41	99%	59	46	128
Mullan Pass	5.88	216%	73	101	26.66	88%	12	16	69
Wolf Point	3.42	125%			7.32	100%			12
Glendive	4.49	175%	91	79	15.36	170%	104	97	107
Sidney	2.71	97%	42	59	13.26	142%	66	96	69
BZN-MSU	4.52	159%	120	90	17.61	121%	117	90	130

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

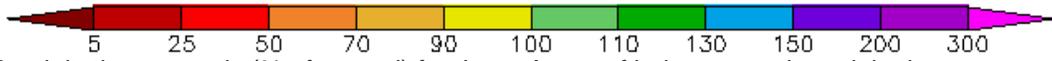
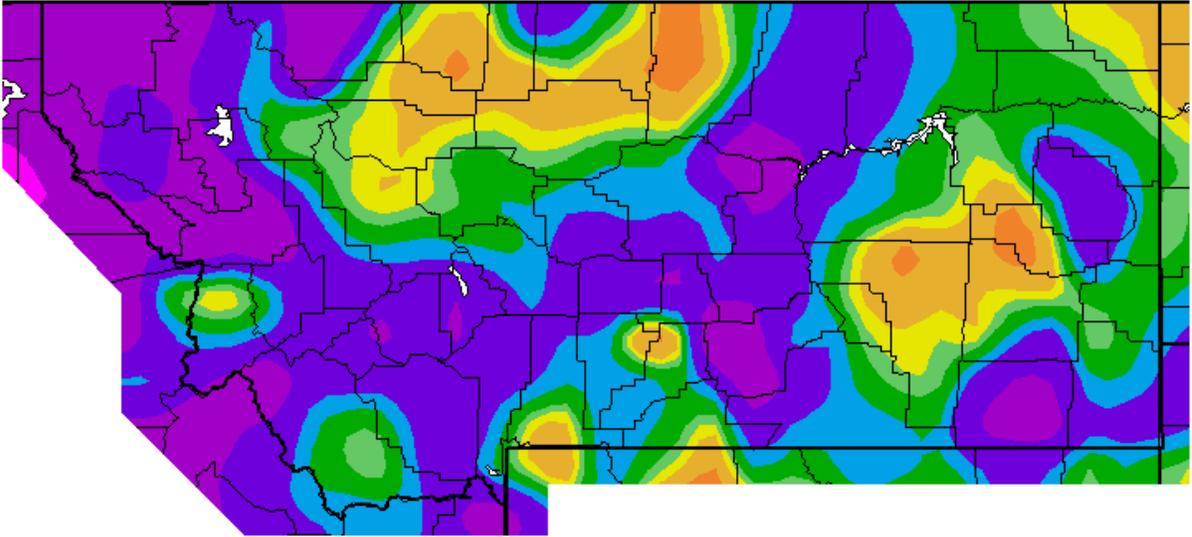
For an automated version of this chart, updated daily, go to  
<http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS>



**Figures 1a (left) and 1b (right).** Mean flow at 500 millibars (~18,000 ft) for June (left). A weak trough of low pressure dominated western North America. Note the normal pattern (right) for June. There was little deviation from the normal flow in June.



**Figure 2.** Temperature anomaly for June. Temperatures were below normal across the state. (Western Region Climate Center).



**Figure 3.** Precipitation anomaly (% of normal) for June. Areas of below normal precipitation were across the north central and portions of the east.(Western Region Climate Center)

**Figure 4.** Camera image from around 6 am MDT 17 June 2010. (Montana Dept of Transportation)



Big Hole Pass – 7400 feet (elevation)



**Figure 5.** Billings tornado 20 June 2010 (courtesy Darrel Buszmann).

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\\_pcbtnorm.png](http://www.wrh.noaa.gov/tfx/image.php?wfo=tx&type=data&loc=hydro&fx=watyr_pcbtnorm.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>