

Montana Weather/Precipitation Summary

July 1-15 2010 by NOAA's National Weather Service Great Falls Montana

The first one-half of July continued a trend of cooler-than-normal temperatures. Overall, temperatures ranged from 1.5 to 6 degrees below normal for this period (Fig. 2). Precipitation was variable as thunderstorms affected scattered areas in the state. The heaviest precipitation was from the northern Rocky Mountain Front, then across the hi-line to the Bears Paw Mountains. Another wetter area was in the southeast, with portions of Carter County recording above normal precipitation (Fig. 3). The below normal temperatures were influenced by a trough of low pressure over central North America during this period, a continuation of the pattern of the late spring (Fig. 1).

Jul 1-3

Severe weather was a big factor on the first two days of July. Funnel clouds, strong winds and large hail raked many areas in the state. Up to baseball-size hail fell in central Montana, near Hysham (Treasure County), while two-inch hail fell near Big Timber (Sweet Grass County). Large hail (up to 2.5 inches) also fell near Vida (McCone County). A tornado was spotted near Bonfield (Custer County). Strong thunderstorm winds caused power poles to snap near Tiber Dam (Liberty County). On the third, golf-ball-size hail fell near Dagmar (Sheridan County).

Jul 4-11

After warm temperatures and severe weather on the first three days of the month, a strong cold front brought cooler, and below normal temperatures through the 8th. Low temperatures on the 7th dropped as low as 24F at West Yellowstone (Gallatin County). With warmer air returning on the 9th and 10th, thunderstorms occurred again. Golf-ball size hail fell near Browning (Glacier County) and one-inch hail near Epsie (Powder River County). Heavy rain also occurred east of the Rocky Mountain Front. Amounts over one inch were common from Conrad through Shelby in Pondera and Toole Counties.

Jul 12-15

Very windy conditions prevailed on the 12th through 14th. Some of the windiest July days in over 15 years occurred. Gusts approaching 70 mph occurred along the Rocky Mountain front, with a gust to 87 mph at Logan Pass on the 13th. After the winds died down, under high pressure the overnight lows cooled to 23F at West Yellowstone on the 14th.

New Temperature Records for July 2010

Station	Record Type	New Record	Date	Previous Record	Year of Previous Record
Livingston	Low Daily Min	35	7	35	1952
Livingston	Low Daily Min	37	8	39	1988
Cut Bank	Low Daily Min	40	13	40	1979

Precipitation

Severe convective weather occurred on 5 of the 15 days in July. The average for July is 11 days. The highest reported thunderstorm gust was 70 mph near Hysham (Treasure) on the 1st and Chester (Liberty) on the 2nd. A tornado was reported near Bonfield (Custer) on the 1st, with several funnel clouds in Glacier and Blaine Counties. Large hail also occurred on several days, including baseball-size hail near Hysham on the 1st.

Precipitation was generally below normal across the state (Fig. 3). Small areas of the north central and southeastern portions have had above normal precipitation.

New Precipitation Records for July 2010

None Reported

Other Information

With the windy period from the 12th through 14th, July's winds have averaged close to normal. At Cut Bank, the winds have been above normal. Winds averaging 22.3 mph on the 13th produced the windiest July day since 2004. At Great Falls, the average wind of 19.2 mph on the 13th was the windiest July day since 1994.

Figure 4 shows the soil moisture trend at Great Falls. Soil moisture is beginning to dry out as it normally does in July, but is still wetter than normal at the four monitored levels.

July 1-15 summary information:

High Temperature	100°F at Bridger (2 nd)	Greatest Precip	1.77" at Dunkirk (Toole)
Low Temperature	23°F at West Yellowstone (15 th)		2.20" at Copper Camp SNOTEL (Lewis and Clark)
Warmest Ave Temp	70.0°F at Miles City	Peak Wind Gust	70 mph near Hysham (1 st) and Chester (2 nd) 87 mph at Logan Pass (13 th)
Coollest Ave Temp	51.5°F at West Yellowstone and Elk Park		
Range of Temp departures	-6.5°F at Three Forks to +0.8°F at Bredette	Highest Ave Wind	11.9 mph at Cut Bank

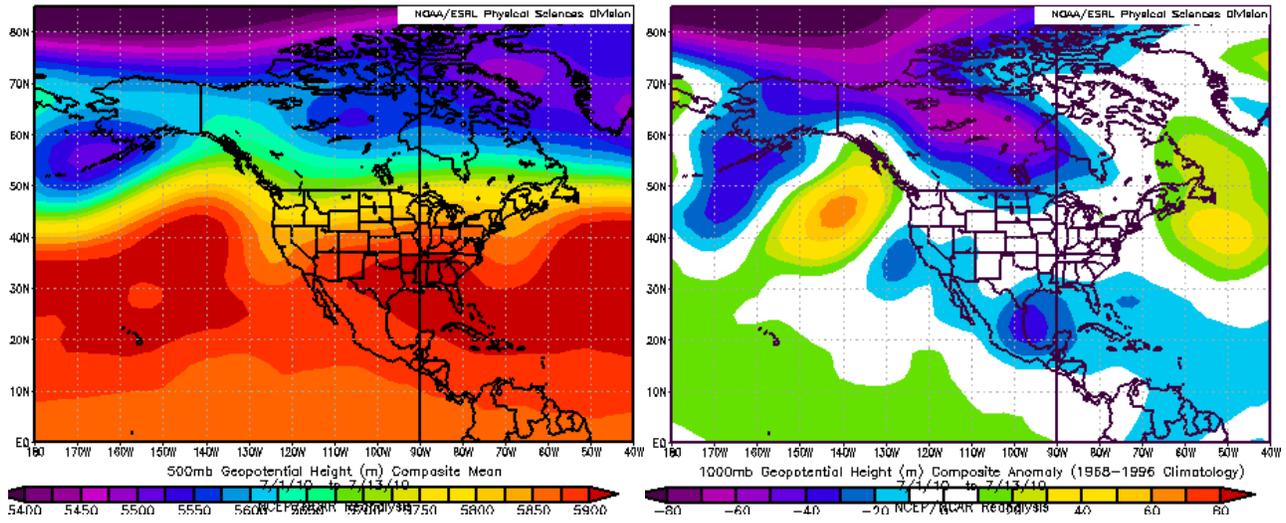
Historical Rank of Precipitation (inches) for the Current Month and Water Year to Date

Location	Jul 1-15	% of Norm	Oct1 – Jul 15	% of norm	Years
Baker	0.63	89%	11.85	135%	11
Billings	0.39	61%	12.83	107%	100
Bozeman	0.13	22%	11.32	98%	73
Butte	0.52	71%	11.43	119%	116
Cut Bank	0.40	51%	5.86	66%	102
Dillon	0.93	163%	9.35	128%	70
Glasgow	0.56	63%	10.58	130%	110
Great Falls	0.78	108%	13.18	117%	118
Havre	1.23	163%	10.49	124%	130
Helena	0.12	18%	8.05	97%	132
Jordan	0.42	50%	12.10	146%	12
Kalispell	0.46	65%	14.67	104%	116
Lewistown	0.94	90%	14.34	106%	114
Livingston	0.12	18%	10.93	90%	104
Miles City	1.10	137%	12.17	118%	133
Missoula	0.23	42%	10.64	96%	125
Mullan Pass	0.46	57%	27.12	87%	11
Wolf Point	0.10	10%	7.42	89%	12
Glendive	0.34	38%	15.70	158%	107
Sidney	0.79	74%	14.05	135%	69
BZN-MSU	0.25	35%	17.86	117%	127

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 July 1-14 (left). A trough of low pressure dominated central North America. This produced a significantly lower-than-normal pattern over central North America, which affected Montana.

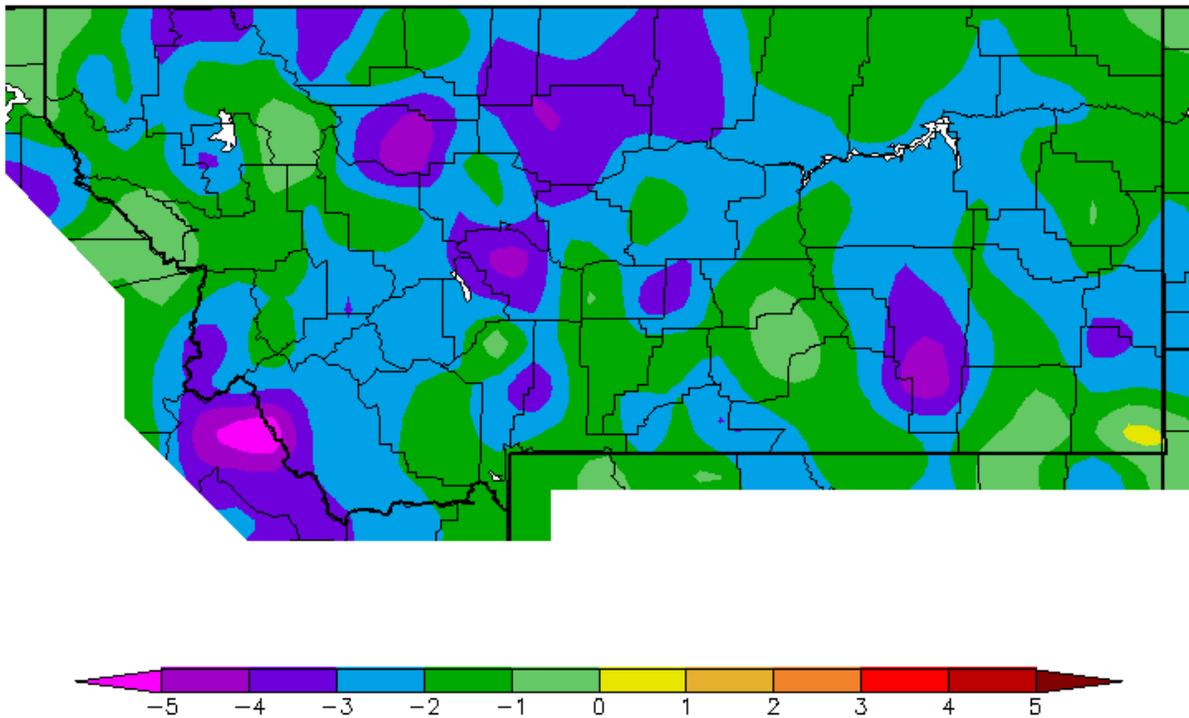


Figure 2. Temperature anomaly for July 1-14. Temperatures were below normal across the state. (Western Region Climate Center).

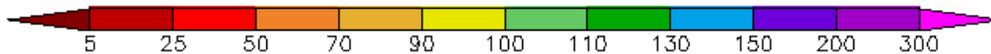
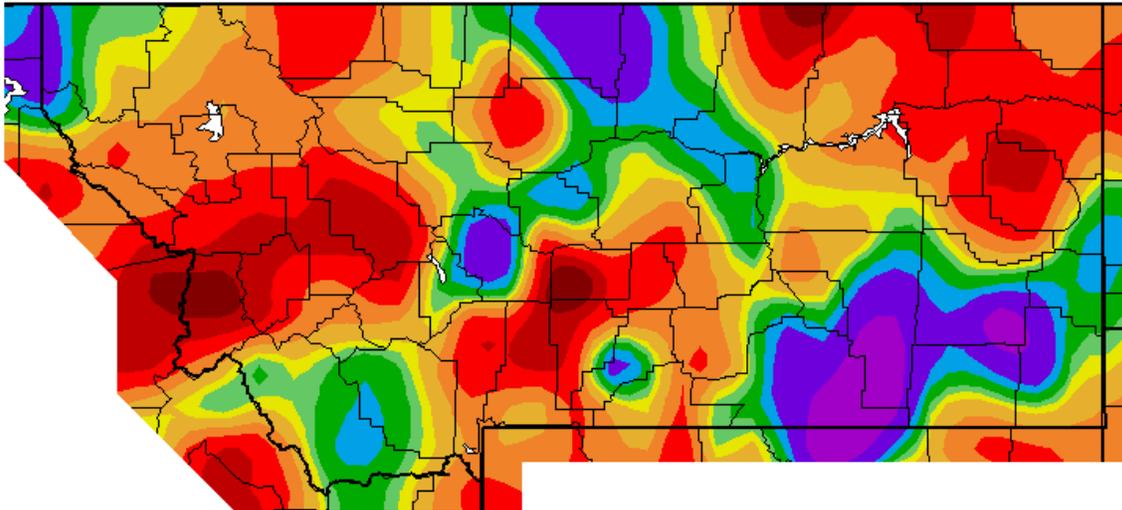


Figure 3. Precipitation anomaly (% of normal) for July 1-14. (Western Region Climate Center)

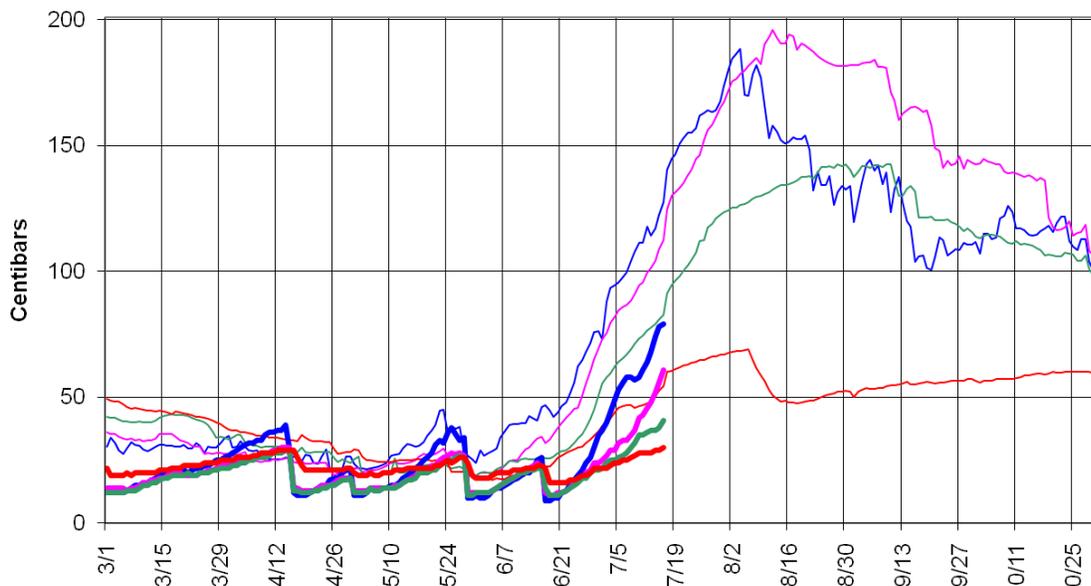


Figure 4. Soil moisture conditions at Great Falls. Soil moisture is starting to dry out as it normally does in July, but is still wetter than normal at the four monitored levels. The dark blue line is at 6 inches, pink – 12 inches; green – 18 inches and red – 30 inches. The heavy lines are for 2010, with the thinner lines the 2003-2009 climatology.

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>