

Montana Weather/Precipitation Summary

July 1-16 2006 By NOAA's National Weather Service Great Falls Montana

Above normal temperatures and below normal precipitation has continued for the first half of July. Temperatures have ranged as high as 8 degrees above normal over northern Montana. Only the west and portions of the southwest have received above normal precipitation to this point in July. Most of the state has had much below normal rainfall for the month (see Figure 3). An illustration of the above normal temperatures may be seen at Havre (Figure 1). Havre, and much of Montana, has recorded above normal temperatures since late June. Accompanying the heat has been a bit higher than average winds. Havre has had their 7th warmest July-of-record-to-date for the first half of the month. They have also had their windiest July-to-date since 1999. Glasgow has seen their 5th warmest first half of July of record, and Helena has had their 6th warmest. Glendive has recorded their 3rd warmest July-to-date of record. Their warmest Julys-to-date were in 1936 (82.6°F average) and 2002 (80.3°F). The 0.10" at Glendive this month has made it the 7th driest July-to-date since records began in 1893.

During one very warm period on the 12th, Pine Hill, near Glendive, recorded 105°F. Winds were gusting up to 35 mph during this heat. Many new record high temperatures were set across the state on the 12th and 13th. Then a cold front brought cooler air and some scattered precipitation to the state. Clover Meadow (in the southwest) fell to 26°F on the 13th. Heat soon returned. Over the weekend of the 15th and 16th, temperatures soared into the 100 degree range again. Fort Howes reached 107°F on the 15th, with Glendive at 105°F on both the 15th and 16th. Additional record high temperatures were set over portions of eastern Montana on the 15th.

Severe weather has occurred on 6 days so far. The average for July is 10 days. Severe thunderstorms brought hail, heavy rain and strong winds to northwest Montana on the 6th and 10th. Thunderstorms along a cold front on the 12th and 13th brought high winds and hail to portions of central and south central Montana. Winds reached 79 mph at Bighorn Mountain as thunderstorms passed early in the morning on the 13th. Billings had a gust of 68 mph during this event. The dryness in the east has brought on the wildfire season, with several fire starts over central and south central Montana (Figure 4).

Figure 2 shows the average flow pattern during the first half of July. An upper level ridge has continued to dominate the weather over the western US during July. It brought very warm and drier conditions to most of Montana. It has been a stronger-than-normal ridge for early July. This is shown in Figure 2b. Above normal heights associated with the upper air ridge have contributed to the above normal temperatures across the state.

Month's summary information (to date):

High Temperature	107°F at Fort Howes (15 th) (se Montana)	Greatest Precip	2.04" at Cooke City
Low Temperature	26°F at Clover Meadow (13 th) (sw Montana)		3.00" at Monument Pk (SC Montana)
Warmest Ave Temp	79.3°F at Glendive	Peak Wind Gust	79 mph at Bighorn Mtn (13 th)
Coolest Ave Temp	56.7°F at Cooke City		
Range of Temp Departures	+2.0°F at Cooke City to +7.4°F at Havre and Glendive	Highest Ave Wind	10.1 mph at Havre

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

Location	Jul 1-16	% of Norm	Oct1 – Jul 16	% of norm	Years
Baker	0.15	21%	8.47	96%	7
Billings	0.35	55%	10.11	85%	96
Bozeman	0.51	86%	12.11	105%	64
Butte	0.72	98%	11.91	124%	111
Cut Bank	0.15	19%	3.52	40%	97
Dillon	0.48	84%	8.11	111%	65
Glasgow	0.27	30%	7.27	90%	105
Great Falls	0.21	29%	15.49	137%	114
Havre	0.07	9%	7.38	87%	126
Helena	0.38	57%	11.19	135%	128
Jordan	0.31	37%	8.94	108%	7
Kalispell	1.24	176%	15.84	113%	112
Lewistown	0.40	38%	14.82	110%	110
Livingston	0.57	84%	11.33	93%	100
Miles City	0.67	83%	10.35	100%	129
Missoula	0.32	59%	14.19	128%	121
Mullan Pass	1.37	169%	43.17	138%	64
Wolf Point	0.21	21%	7.20	86%	8
Glendive	0.10	11%	10.61	107%	103
Sidney	0.02	2%	11.10	106%	65
BZN-MSU	1.10	153%	17.44	114%	123

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>

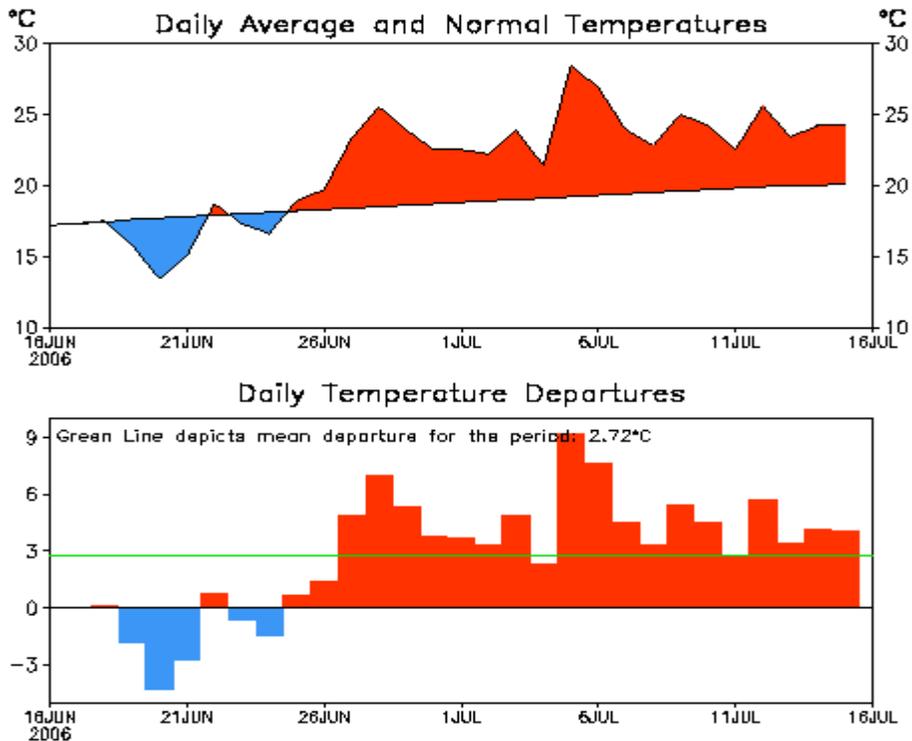
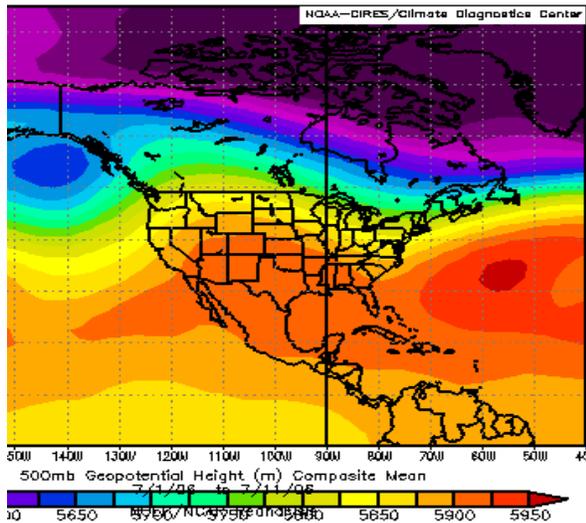
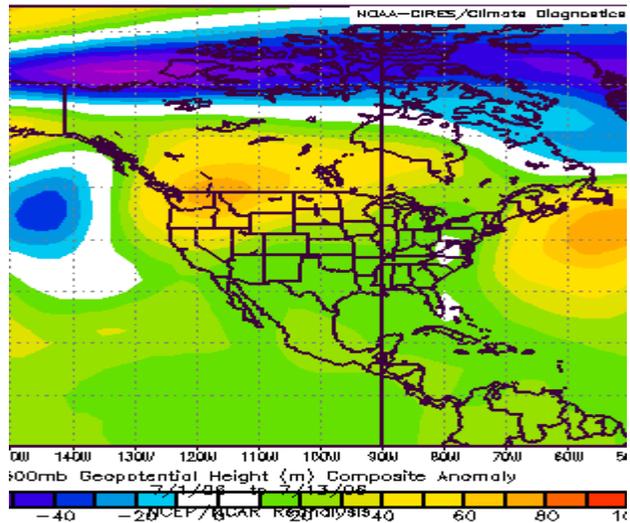


Figure 1. Average daily and normal temperatures at Havre since mid June 2006. Note the above normal temperatures since June 25. Graphics courtesy NOAA’s Climate Prediction Center.

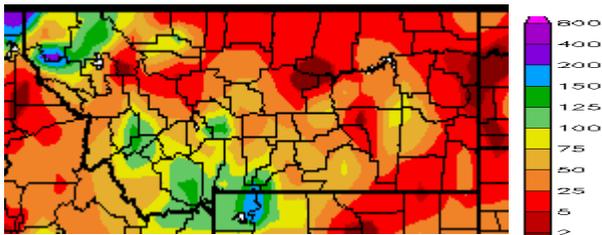


a. July 1-14



b. July 1-14 Departure from Normal

Figure 2. Mean flow at 500 millibars (~18,000 ft), (a) July 1-14 2006. The strength of the ridge over the northwestern U.S. was somewhat above the normal for the first half July, as shown in b. Upper air heights are 40 to 70 meters above normal across the state.



a. July 1-14

Figure 3. Precipitation anomaly (% of normal) for (a) July. (courtesy High Plains Climate Center).

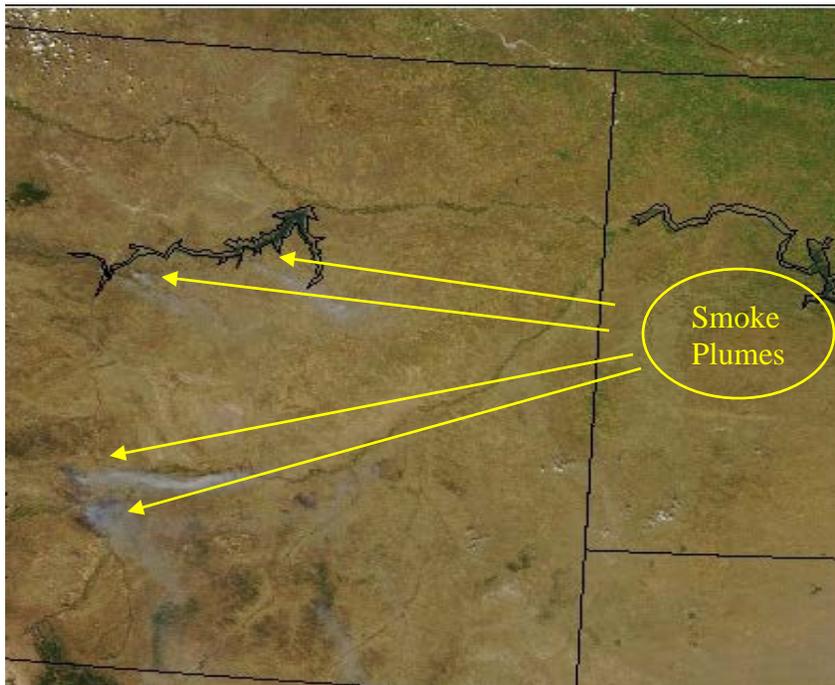


Figure 4. Smoke from fires over eastern Montana. Note the smoke plumes south of Fort Peck Lake and in south central Montana between the Bull Mountains and the Yellowstone River. MODIS satellite imagery from July 16 2006 (courtesy University of Wisconsin Space Science and Engineering Center).

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=txf&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>

All reported data is preliminary. Further inquiries about the moisture conditions can be directed to Dave Bernhardt or Gina Loss at (406) 453-2081. Many more links can be found on the Drought Information Page of the NWS Great Falls web site at

<http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tx>