

Montana Weather/Precipitation Summary

July 1-15 2011 by NOAA's National Weather Service Great Falls Montana

Temperatures turned around in early July, with near to above normal values across the state (Fig. 2). Though dry conditions prevailed for the first 10 days, a change in the weather patterns brought scattered thunderstorms, some with heavy rainfall to portions of the state from the 11th through 15th. Some local flash flooding occurred due to the heavy rains. Some areas do remain dry. Upper level flow returned to seasonal normals for July (Fig. 1).

Precipitation totals varied widely, with highest amounts scattered across the central and east (Fig. 3). With drying conditions, soil conditions also dried out (Fig. 4). Further at Cut Bank, the first half of July tied for the driest of record, as they have received only a trace of rain.

July 1-7

The first week of July was fairly typical for July in Montana. Scattered thunderstorms brought strong and gusty winds and hail to portions of the state. On the 2nd, hail to two inches fell near Savage (Richland). This occurred along a cold front that brought record low temperatures to Great Falls that morning. The morning low was 40F, which tied the record last set in 1992. Meanwhile, West Yellowstone fell to 28F. As this front continued across southern Montana, severe thunderstorms produced 67 mph wind gusts at Livingston and 68 mph gusts near Billings. Tree limbs were broken off and power lines downed at both locations. The warmest temperature of the month occurred on the 3rd, when Hardin warmed to 100F. On the 5th, another round of storms brought one-inch hail to Joliet (Carbon) and 1.5-inch hail in southern Valley and Garfield Counties. Unsettled conditions continued across eastern Montana on the 6th and 7th, with golf-ball size hail at Red Lodge (Carbon) and Molt (Stillwater). One and a quarter inches of rain fell in 30 minutes at Red Lodge, creating local flash flooding. As a cold front moved across the state on the 7th, thunderstorms caused some tree damage in southwest Glacier National Park, then golf-ball size hail fell near Roy (Fergus).

July 8-15

Over western Montana, cooler conditions brought high winds and temperatures in the 70s on the 8th and 9th. The daily wind average of 27.3 mph at Cut Bank on the 8th was the windiest day in July since 1959. Winds gusted to 58 mph at Cut Bank and 70 mph at Deep Creek (Pondera). The cold-front that produced these conditions continued to cause thunderstorms across eastern Montana, with wind gusts to 65 mph at Billings, and golf-ball sized hail at Sand Springs (Garfield). A short break ensued on the 9th and 10th, before some severe convection was again observed on the 11th. A well-developed funnel cloud was sighted south of Dillon on the 11th. Thunderstorms with hail and heavy rains continued nearly daily through the 15th.

Jul 16 85mph hell ck valley

New Temperature Records for the current month

Station	Record Type	New Record	Date	Previous Record	Year of Previous Record
Great Falls	Low Daily Min	40	2	40	1992
Livingston	Low Daily Min	40	10	40	1946

New Precipitation Records for the current month

None so far.

Several USDA SNOTEL stations recorded late season records for the highest snow-water-equivalent (SWE) so-late-in-the season. Some other records were set for the latest snow-melt dates of record. These records are listed in the following tables.

Latest Snow-melt records

Station	New record date	Old record date	Year	Records began
Badger Pass (Rockies)	Jul 17	Jul 15	2008	1950
Barker Lakes (Anaconda)	Jul 12	Jul 6	1995	1980
Black Bear (Rockies)	Jul 13	Jul 10	1999	1972
Boulder Mtn (Big Belt)	Jun 30	Jun 30	1982	1979
Clover Meadow (Snowcrest)	Jul 5	Jul 4	2008	1979
Copper Camp (Rockies)	Jul 6	Jun 29	2008	1976
Darkhorse Lake (Beaverhead)	Jul 21	Jul 18	1995	1981
Fisher Creek (Absaroka)	Jul 17	Jul 15	1982	1967
Flattop Mtn (Lewis)	Not yet	Jul 29	1972	1970
Mt Lockhart (Rockies)	Jul 2	Jun 29	2002	1969
Mule Creek (Pioneer)	Jul 2	Jul 2	1995	1981
Noisy Basin (Swan)	Not yet	Jul 19	1997	1975
Placer Basin (Beartooth)	Jul 7	Jul 5	1982/1983	1981
Skalkaho Summit (Sapphire)	Jul 2	Jun 30	1982	1977
Spur Park (Little Belts)	Jul 8	Jul 4	1970/1972	1969
Stahl Peak (Whitefish)	Not yet	Jul 23	1996	1976

July summary information:

High Temperature	103°F at Fort Benton and Hardin (18 th)	Greatest Precip	2.84" at Fisher River (Lincoln)
Low Temperature	28°F at West Yellowstone (4 th)		3.00" at Black Bear (Gallatin)
Warmest Ave Temp	74.3°F at Glendive (Dawson)	Peak Wind Gust	85 mph near Hell Creek Rec Area (Valley) (16 th) 78 mph at Logan Pass (1 st)
Coollest Ave Temp	55.7°F at Mullan Pass and Elk Park		
Range of Temp departures	-2.0°F at Olney to +4.8°F at Superior	Highest Ave Wind	11.0 mph at Baker (Fallon)

Summary of lake level and other information...

Deep snow cover at some higher locations established late snowpack record. This also contributed to establishing a new record for late opening of the Going-to-the-Sun Road in Glacier Park. Since the road first opened in 1933, because of snow conditions, this year is the latest opening yet. In 1933, the grand opening of the road was on July 15. This year, the road opened on July 13.

With the large amounts of rainfall in the past two months, and high snowfall over the past winter, several lake levels reached record or near-record highs across the state. Some lakes reached their high point in June, while others continued to rise in July. The following table lists the highest levels reached in July, along with some information as to when the last peak was reached. The table also lists the old record high or highest level of record. With so many years of low water flows in memory, the most recent lowest elevation is also listed.

Lake	Highest elevation in July		Old High	Most Recent low	Records began
Canyon Ferry	3799.70-ft (100)	Highest since July 1975	3800-ft (Jun 1964)	3776.27-ft (Apr 2006)	1953

Clark Canyon	5555.81-ft (15)	Highest since July and August 1984	5564.70-ft (Jun 1984)	5490.01-ft (Aug 2003)	1964
Tiber Res	3011.30-ft (15)	Highest ever	3005.59-ft (Jul 1965)	2973.92-ft (Apr 2008)	1956

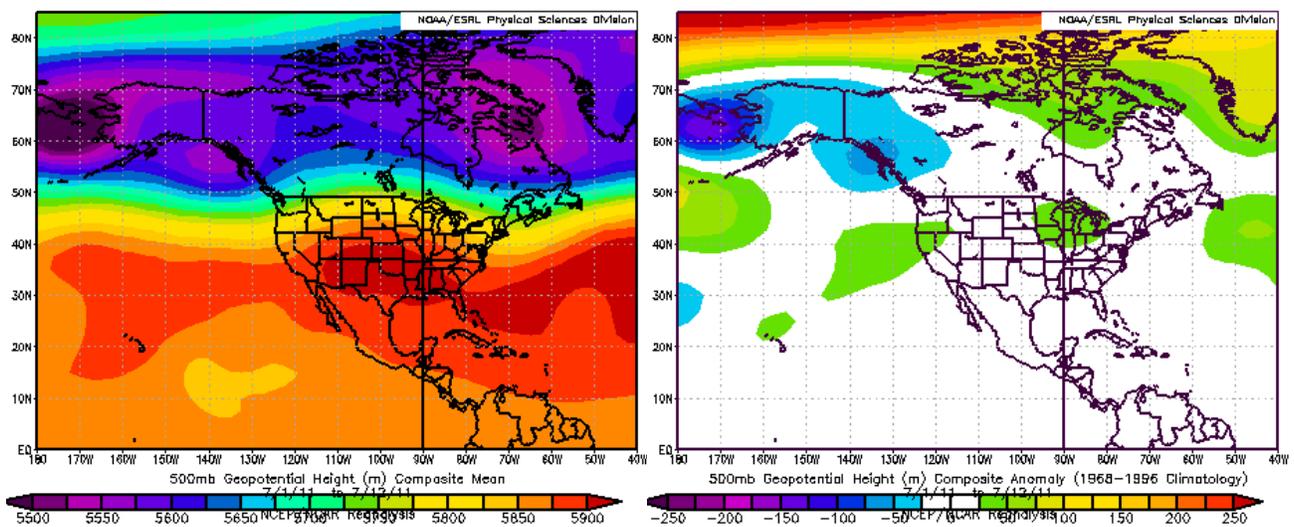
**Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date**

Location	Jul 1-15	% of Norm	Oct1 – Jul 15	% of norm	Years
Baker	0.12		13.96		13
Billings	0.90	141%	18.83	158%	102
Bozeman	0.74	124%	11.13	96%	74
Butte	0.69	94%	11.22	117%	117
Cut Bank	T	0%	9.98	113%	103
Dillon	0.44	77%	8.71	119%	71
Glasgow	1.45	163%	19.20	237%	111
Great Falls	0.46	63%	16.40	145%	119
Havre	0.49	65%	12.54	148%	131
Helena	1.02	152%	12.76	154%	133
Jordan	2.00		16.17		13
Kalispell	0.20	28%	17.00	121%	117
Lewistown	0.70	67%	20.59	152%	115
Livingston	0.24	36%	12.43	102%	105
Miles City	1.00	124%	17.07	165%	134
Missoula	0.41	75%	14.02	127%	126
Mullan Pass	0.10		52.12		13
Wolf Point	1.74	171%	15.93	191%	13
Glendive	1.00	110%	19.70	195%	108
Sidney	0.32	30%	16.41	157%	70
BZN-MSU	0.67	93%	18.07	118%	128

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=txf&type=&loc=products&fx=PCPNTOTALS>



Figures 1a (left); 1b (right). Mean flow at 500 millibars (~18,000 ft) for early July (left). Conditions were close to seasonal normals.

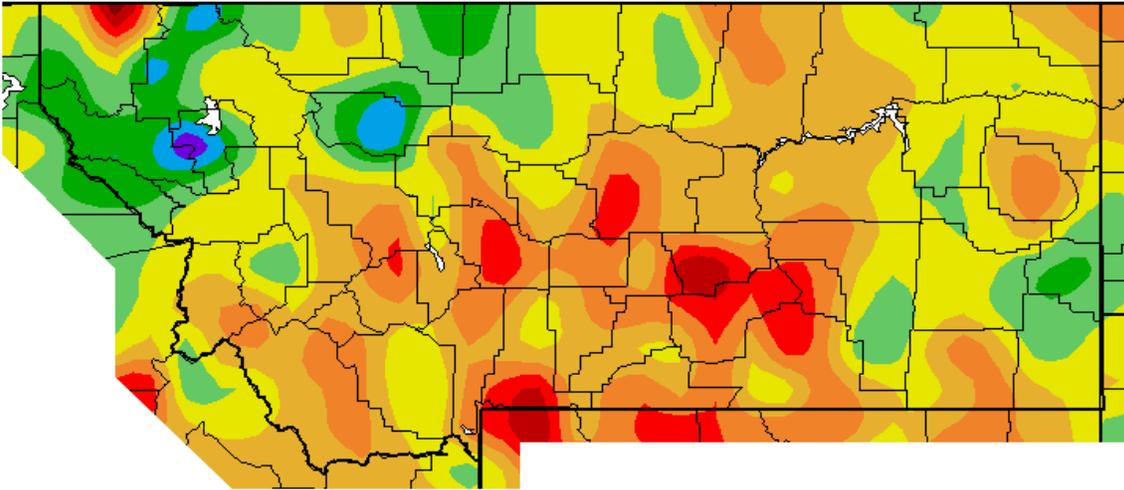


Figure 2. Temperature anomaly for July 1-15. Temperatures were near to above normal across the state (Western Region Climate Center).

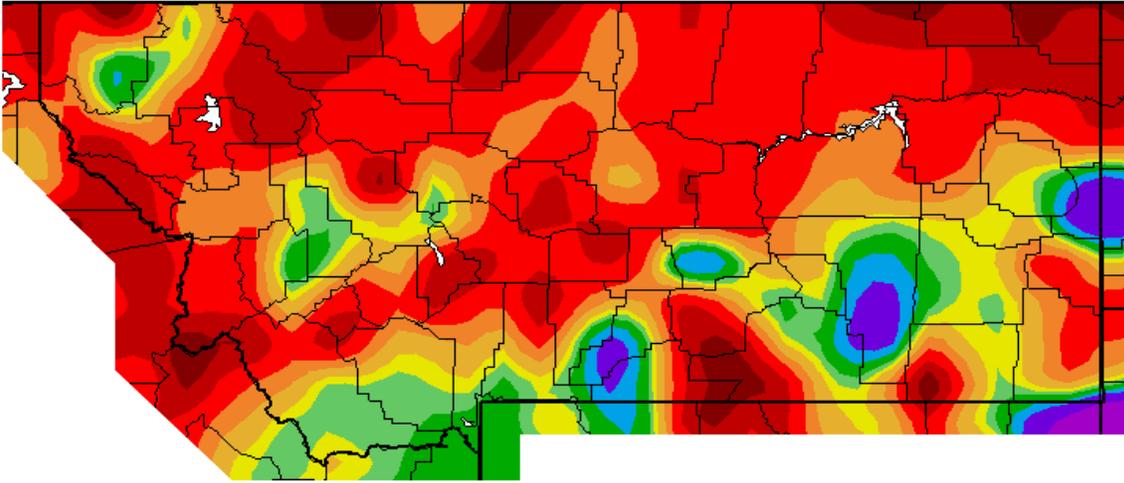


Figure 3. Precipitation anomaly (% of normal) for July 1-15.

Great Falls Soil Moisture 2011 Average is 2003-2010

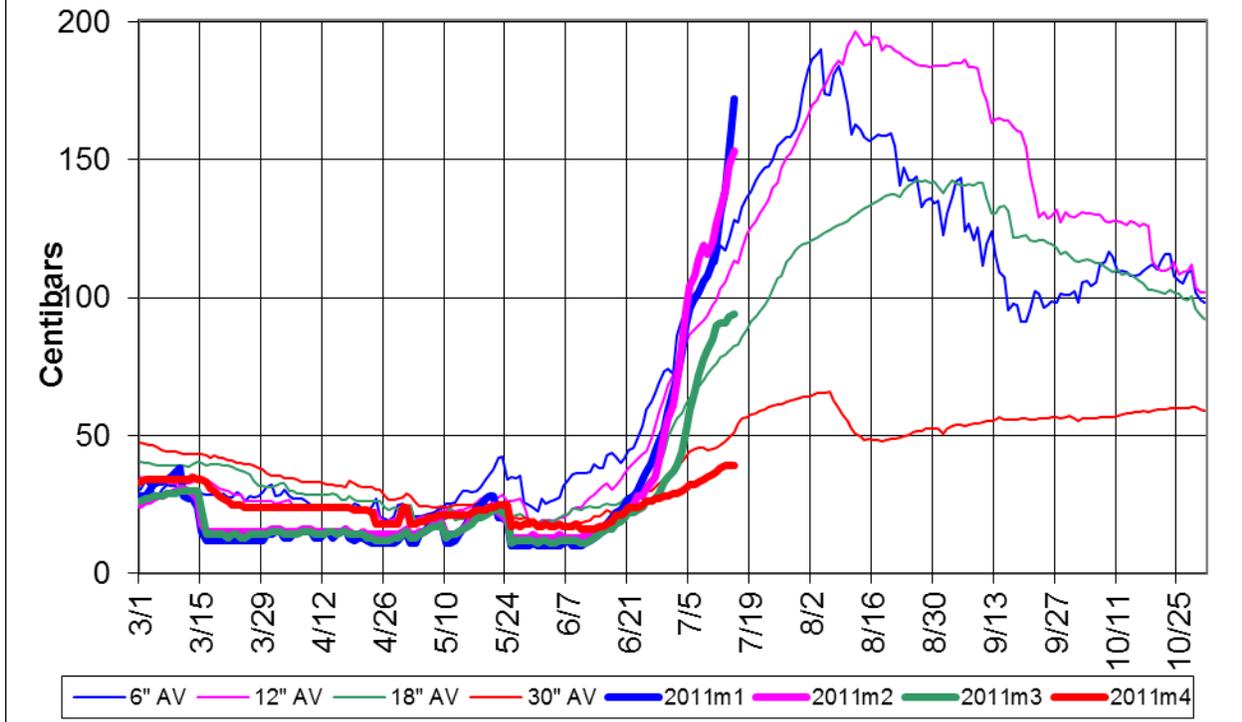


Figure 4. Soil moisture conditions at Great Falls. The bolder lines are average soil moisture conditions in 2011. Note that the 6, 12 and 18 inch levels are now drier than the 8-year average.

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=tfx&type=data&loc=hydro&fx=watyr_pctnorm.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 1971-2000. 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.