

Montana Weather/Precipitation Summary

July 2008 by NOAA's National Weather Service Great Falls Montana

July 2008 was much cooler than July 2007, but temperatures still averaged a bit above normal (Fig 1). High temperatures were above normal, while low temperatures were a bit below normal across the state. This caused the average temperatures to be only slightly above normal across Montana (Fig. 2). At the same time, precipitation was below average (Fig. 3). A mean upper level ridge pattern (Fig. 4) prevailed over western North America during July that contributed to the above normal temperature and below normal precipitation.

With temperatures generally above normal during July, there were periods interspersed with slightly below normal conditions. The coldest day was probably on the 11th, after a cold front passed through and brought not only chilly temperatures, but also gusty winds across north central Montana. Great Falls dipped to 39F on the morning of the 11th, with high temperatures in the 60s. Elk Park fell to 26F by the morning of the 12th. There were a few record highs and record lows set during the month, but no large areas that were affected by either event.

The largest thunderstorm outbreak for the month occurred on July 4th. Billings also topped 100F on this date. Most areas of the state saw some type of severe weather, be it wind or hail on the 4th. Severe weather did occur on 19 days of the month, much above the average of 11 days. Another severe thunderstorm complex affected southeast Montana on the 18th, with gusts to 74 mph recorded near Otter.

Continuing the trend that began in late June, precipitation was largely lacking across the state (Fig. 3). Even with the lack of precipitation, the grasses and other vegetation retained more greenness than the state has become accustomed to by late July (Fig 5). This was also reflected in soil moisture conditions. Soil moisture at Great Falls measured a bit higher than the average conditions for the end of July.

The statewide mean temperature at 18 cities in July was 68.4F, with the normal of 66.3. The precipitation average was 1.01 inches or 66 percent of normal, with a normal value of 1.54. The wind average of 7.7 mph was below the long-term average of 8.5 mph.

Other record or notable information for July:

- Bozeman recorded their 4th calmest July of record with an average of 5.6 mph – normal is 6.3 mph.
- Butte recorded their 4th calmest July of record with an average of 5.9 mph – normal is 6.9 mph.
- Cut Bank and several other locations recorded above normal
- Glendive had their 4th driest July of record with 0.19 inches. Normal is 1.81 inches.
- Livingston recorded their 4th calmest July of record with an average of 9 mph – normal is 11 mph.
- Sidney had their 4th driest January through July period of record, receiving only 4.58 inches.

July summary information:

High Temperature	103°F at Billings & Huntley (4 th) and Roundup (21 st)	Greatest Precip	2.90" at Alzada
Low Temperature	26°F at Elk Park (12 th) and Gates Park (20 th)		2.3" at Nevada Ridge SNOTEL
Warmest Ave Temp	73.5°F at Glendive	Peak Wind Gust	80 mph at Logan Pass (29 th) and 74 mph near Otter (18 th)
Coollest Ave Temp	58.5°F at Wisdom		
Range of Temp departures	-1.6°F at Ekalaka to +3.5°F at Missoula	Highest Ave Wind	13.9 mph at Deep Creek and 12.0 at McDonalds (NE Montana)
18 city mean monthly Temperature/Normal	68.4/66.3	18 city mean monthly wind speed/Normal	7.7mph/8.5mph
18 city mean monthly precipitation/Normal	1.01"/1.54" – 66% of normal		

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

Location	Jul	% of Norm	Rank	Pcntl	Oct 1 – Jul 31	% of norm	Rank	Pcntl	Years
Baker	0.71	50%			9.40	99%			10
Billings	0.77	60%	52	52	10.10	80%	49	49	99
Belgrade	0.70	59%	34	46	12.71	105%	52	77	67
Butte	1.09	74%	63	54	8.47	82%	33	29	112
Cut Bank	1.99	126%	75	73	10.74	112%	79	79	100
Dillon	1.66	146%	59	85	7.74	98%	37	54	68
Glasgow	1.80	101%	75	67	12.25	136%	83	77	108
Great Falls	1.25	86%	66	58	12.84	107%	74	65	114
Havre	1.17	77%	62	48	8.42	91%	45	35	128
Helena	0.47	35%	37	28	7.73	86%	29	22	130
Jordan	0.44	26%			11.15	123%			9
Kalispell	1.81	128%	98	85	11.04	75%	66	58	114
Lewistown	0.30	14%	6	5	12.95	89%	39	34	112
Livingston	0.56	41%	19	17	11.24	88%	43	42	101
Miles City	0.88	55%	49	38	7.68	69%	18	13	131
Missoula	0.44	40%	36	28	9.36	81%	21	16	123
Mullan Pass	0.14	9%	10	13	33.32	104%	25	37	66
Wolf Point	1.96	96%			7.54	80%			10
Glendive	0.19	10%	4	3	7.48	69%	10	9	104
Sidney	0.86	40%	16	23	5.87	51%	4	5	66
BZN-MSU	1.68	117%	96	75	20.87	130%	117	94	125

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>

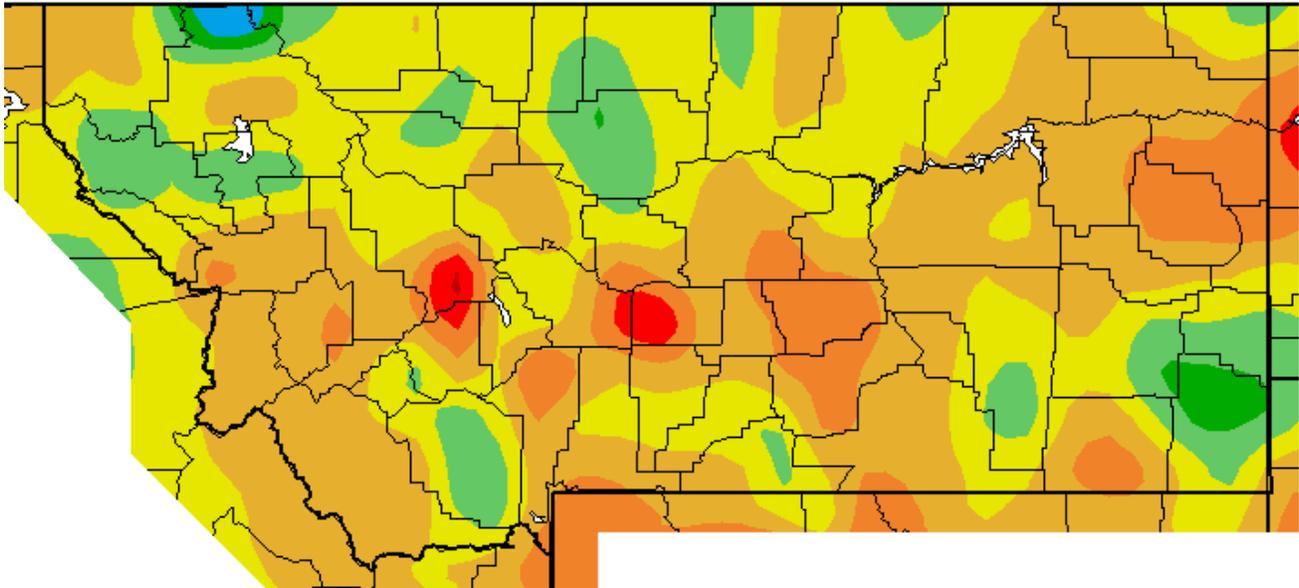


Figure 1. Temperature anomaly for July. Montana experienced temperatures slightly above normal across most of the state, with pockets of below normal temperatures. (Western Regional Climate Center).

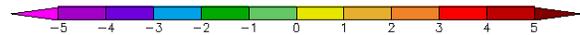
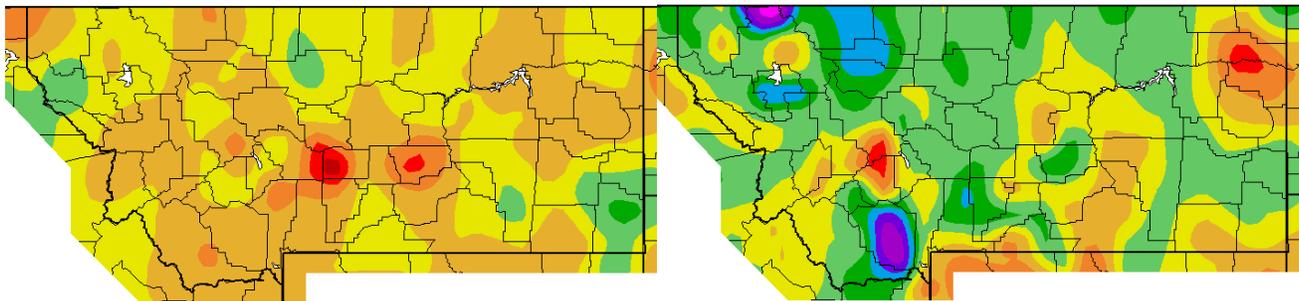


Figure 2. Maximum (left) and minimum (right) temperature anomaly for July. Though high temperatures were largely above normal, large portions of the state recorded low temperatures that averaged even more below normal. (Western Regional Climate Center).

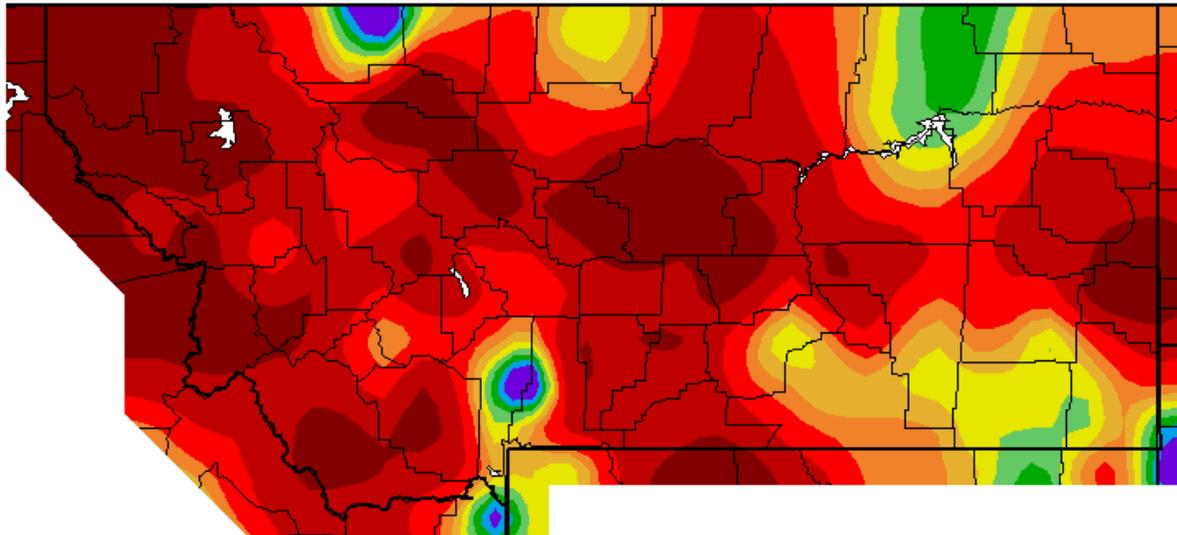


Figure 3. Precipitation anomaly (% of normal) for July. (Western Regional Climate Center).

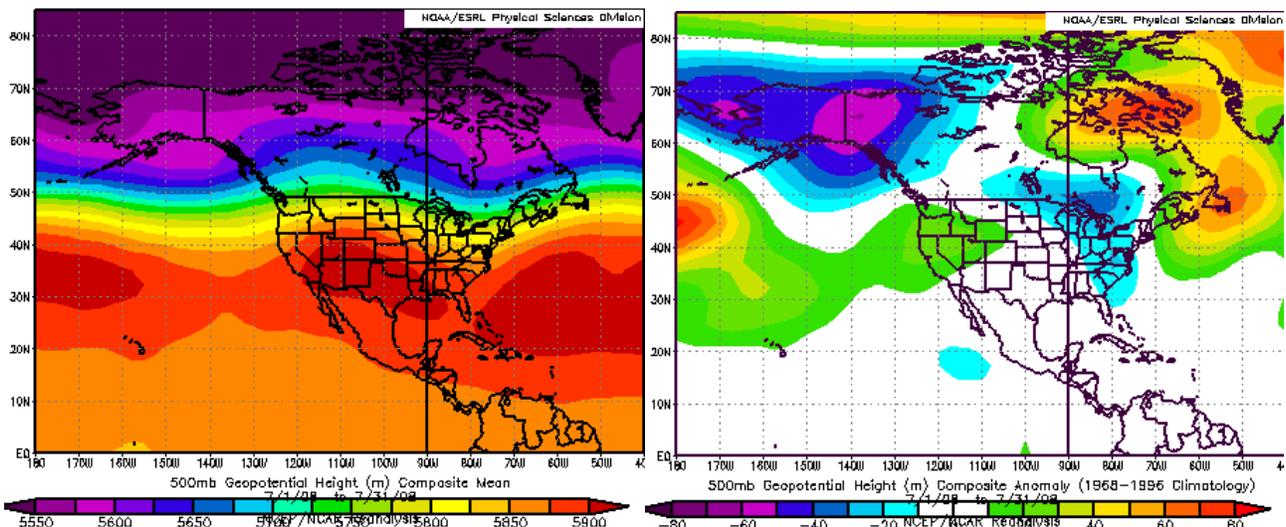
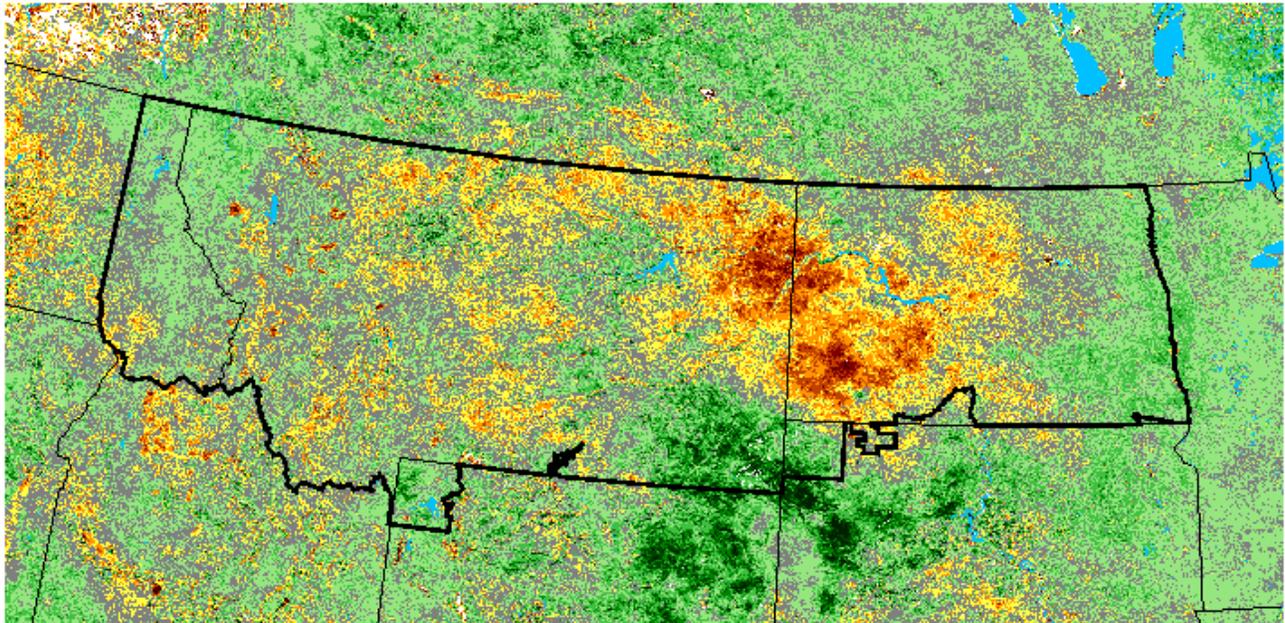


Figure 4. Mean flow at 500 millibars (~18,000 ft) July 2008 (left). There was a ridge over the Rocky Mountain region for the month, which was a bit above normal for the month. This contributed to the general slightly above normal temperatures across the state.



LEGEND		
Black	< 65	95-105
Dark Red	65-64	106-115
Orange	65-74	116-125
Yellow	75-84	126-135
Light Yellow	85-94	136-150
Dark Green	> 160	Clouds, Snow
Blue	Water	

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Figure 5. Departure from Average Greenness. July 22-28, 2008. This image shows that many portions of the state were near to above normal in average greenness at the end of July. Some areas (especially the northeast and east central) were much below normal in the greenness for late July.

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_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=tfx>