

Montana Weather/Precipitation Summary

May 2012 by NOAA's National Weather Service Great Falls Montana

May temperatures were mostly below normal across the state. A small area of above normal temperatures was over extreme southeast Montana (Fig. 3). High temperatures were at or above normal averages for the month, while lows were closer to average, even a little below (Fig. 1). For the past 12-months, statewide composite temperatures are running a 1.9F positive anomaly. Precipitation was below normal over much of the state. The hi-line from Havre to North Dakota received above normal precipitation (Fig. 4). For the past 12-months, the statewide precipitation average has a 0.50-inch deficit. In May, statewide precipitation averages peaked on the fifth, with a secondary maximum on the tenth (Fig. 1) and a third near the end of the month. Winds were lighter than normal. A gust to 67 mph was recorded at Roy, with the highest gust of 72 mph in Glacier National Park. Montana was under a ridge of high pressure during May (Fig. 2). Upper level features were near normal for May, with general westerly flow aloft. Soil moisture conditions reflected the drier than normal precipitation of the spring. The composite for the state shows a slight deficit (Fig. 6) Refer to NCEP's State of the Climate report for the latest monthly discussion: <http://www.ncdc.noaa.gov/sotc/>.

May 1-7

Generally below normal temperatures occurred during the first week of May. Thunderstorms scattered across the state produced locally heavy rainfall and some small hail. Up to 7/8 inch hail was reported near Reserve (Sheridan) and Lost Trail Pass (Ravalli). On the fifth, nearly one inch of rain fell near Sioux Pass (Richland). Otherwise, precipitation over the central Montana Island ranges on the sixth produced up to nine inches of snow in the Bears Paws and 1.13 inches of rain near Lloyd (Blaine).

May 8-16

Much warmer conditions occurred during this period. Both record high and record low temperatures were recorded across the state. On the ninth, Bozeman and Dillon set new record high temperatures. A storm system brought gusty winds and precipitation across the area on the 10th. Up to eight inches of snow fell in the Little Belts, and 4.3 inches in Bozeman. Colder air followed, with low temperatures on the 11th as low as 10F at Wisdom, 20F at Cut Bank, 21F at Kalispell and 22F at Bozeman. A rapid warm-up produced record warm conditions in Montana on the 15th and 16th. Cut Bank reached 87F on the 15th, and Butte topped out at 83F on the 16th. Huntley and Culbertson had the warmest high temperature at 92F. Thunderstorm winds gusted to 59 mph at Columbus on the 16th.

May 17-28

The stormiest period of the month was near the end of the month. A storm system brought cooler temperatures to the state, and heavy rain to central and south central Montana on the 17th and 18th. Crystal Lake (Fergus) picked up 1.30 inches of rain, while Rocky Boy (Hill) measured 1.14 inches. By the 21st, temperatures rebounded. Joliet reached 89F, while a station in Musselshell County hit 90F. Meanwhile, thunderstorms along a cold front moving through the state produced 59 mph wind gusts near Harlowton and Grant (Beaverhead). When the front reached eastern Montana on the 22nd, three-quarter inch hail fell near Plentywood. The start of a cool and wet period began on the 25th. Great Falls fell to 31F on the 25th, tying the record low for the date originally set in 1918. Heavy rain and snow fell over the state over the next three days. Up to three inches of liquid precipitation fell over the Bridger Mountains, and over northern Valley County. Widespread amounts of one to two inches were common across the state (Fig. 4). Heavy snow also fell over the mountains. Up to two feet of snow fell in the Little Belt and Tobacco Root Mountains. Up to a foot fell in the Red Lodge area. Billings recorded 3.5 inches of snow, which was their latest measurable snowfall since 1975. Other record low temperatures and record cold maximum temperatures were measures across the state during this Memorial Day weekend. Figure 7 shows conditions at Boulder Hill on May 27. These conditions were typical at many locations in central and southwest Montana on the morning of May 27.

May 29-31

Drier conditions prevailed the last few days of the month. A cold front with thunderstorms swept through central Montana on the 29th, with gusts to 59 mph at Geyser, and several reports of pea-sized hail.

Precipitation/convection

Severe convective weather occurred on two days in May, the normal is five days.

May summary information:

High Temperature	92°F at Culbertson and Huntley (16 th)	Greatest Precip	2.18" at Zortman RAWS (Phillips) 10.00" at South Fork Shields SNOTEL (Park)
Low Temperature	7°F at Placer Basin (7 th) (Sweet Grass)		
Warmest Ave Temp	57.0°F at Glendive	Peak Wind Gust	67 mph at Roy (6 th) 72 mph at Garden Wall (9 th)
Coollest Ave Temp	38.5°F at Lake View		
Range of Temp departures	-5.2°F at Bozeman Apt to +0.8°F at Boulder	Highest Ave Wind	13.5 mph at Fort Belknap 17.8 mph at Deep Creek
21 city mean monthly Temperature/Normal	50.5/52.1; 35 th coolest of record (since 1880) Spring: 45.6/42.8; 16 th warmest of record.	20 city mean monthly wind speed/Normal	9.6 mph/9.8 mph; 20 th calmest of record. (since 1936) Spring: 9.8/9.8; 27 th calmest of record.
22 city mean monthly precipitation/Normal	1.98/2.16" – 92% normal; 59 th driest of record. (since 1880) Spring: 4.89/4.44 – 31 st wettest of record.	19 city mean monthly snow/Normal	3.4"/6.7"; 42 nd lowest of record. (since 1881) Spring: 13.0/18.8; 34 th lowest of record.

Spring conditions were heavily influence by the temperatures and precipitation of March and April, which were warmer and generally drier than normal. Statewide, the spring was the sixteenth warmest of record and the 31st wettest of record. Figure 5 shows the departures from normal for the spring period. Even though it was a little wetter than normal, more precipitation fell as rain, so the snowfall was the 34th lowest of record.

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

Location	May	% of Norm	Rank	Pcntl	Oct 1 – May 31	% of norm	Rank	Pcntl	Years
Baker	1.63	104%			4.97	89%			14
Billings	1.96	79%	74	64	6.48	69%	42	37	111
Belgrade	1.60	65%	24	31	6.83	82%	23	30	75
Butte	1.20	58%	31	25	5.16	76%	27	22	118
Cut Bank	0.94	48%	25	23	5.62	121%	69	65	105
Dillon	1.21	63%	22	29	4.46	83%	20	27	72
Glasgow	3.06	159%	95	82	7.50	140%	90	80	112
Great Falls	2.27	94%	68	56	9.14	118%	84	70	120
Havre	2.56	147%	104	78	7.61	148%	111	84	132
Helena	1.35	72%	48	35	6.05	107%	57	42	134
Jordan	1.61	70%			5.11	86%			14
Kalispell	1.52	77%	64	53	9.91	93%	56	47	118
Lewistown	2.68	94%	59	50	11.41	130%	93	80	116
Livingston	2.10	79%	41	37	7.20	83%	38	35	107
Miles City	1.01	46%	26	19	3.82	61%	13	9	135
Missoula	1.68	83%	73	54	10.33	118%	102	78	131
Mullan Pass	2.93	109%	49	67	41.95	134%	66	93	71
Wolf Point	2.69	151%			5.24	101%			14
Glendive	2.31	104%	78	66	5.95	90%	51	45	111
Sidney	0.75	37%	10	13	3.11	47%	5	6	71
BZN-MSU	2.40	75%	56	41	11.71	95%	78	58	133

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>

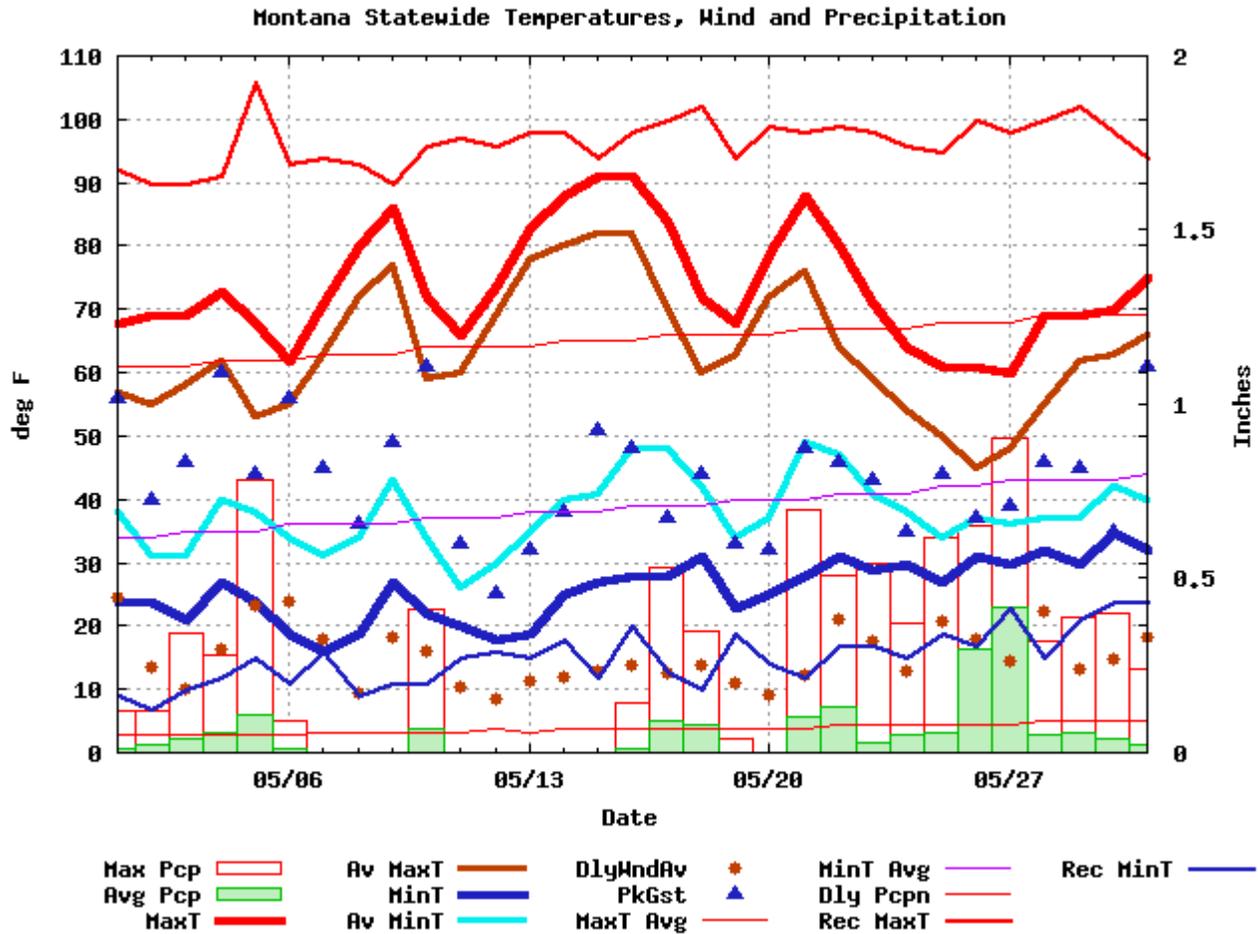
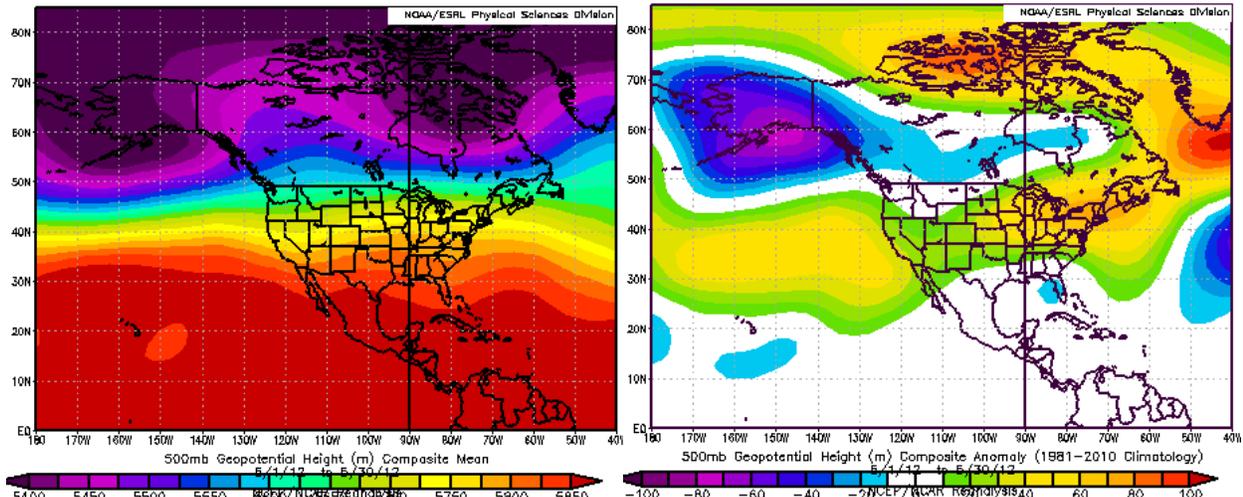


Figure 1. Composite Daily Highest and Lowest Temperature, Averages, Daily Maximum Precipitation and Averages, Daily average wind speed and gust from 43 Airport stations from across Montana.



Figures 2a (left); 2b (right). Mean flow at 500 millibars (~18,000 ft) for May 2012 (left). The ridge over the western portion of the continent was near normal for May. The slightly below normal heights across southern Canada contributed to cooler temperatures across Montana, while the slightly above normal heights in southeast Montana contributed to the warmer than normal conditions in the southeast (right).

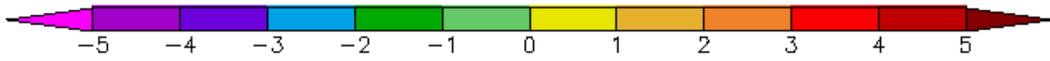
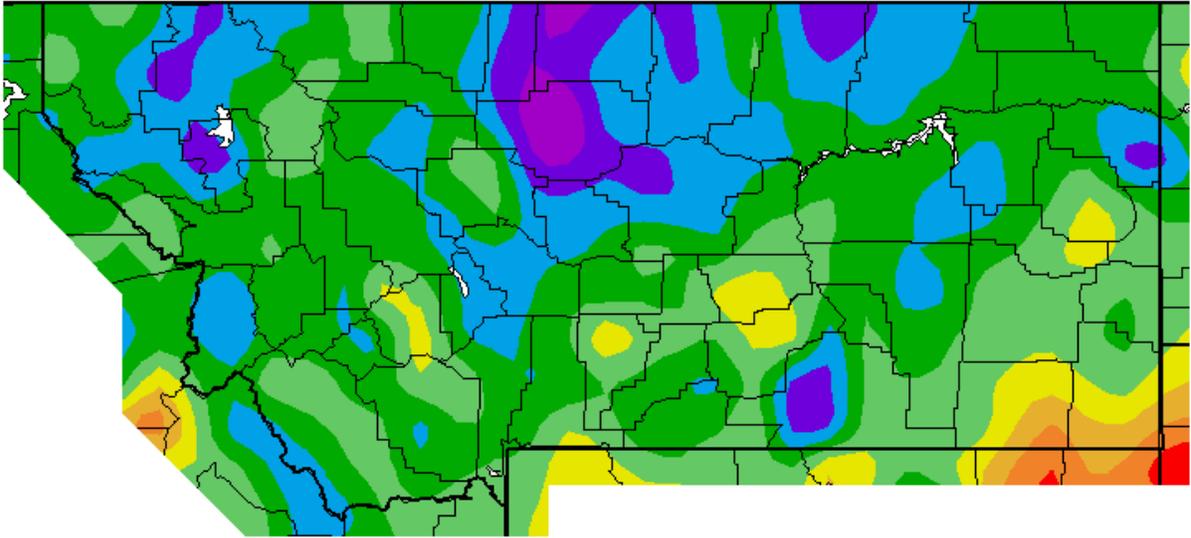


Figure 3. Temperature anomaly for May 2012 (Western Region Climate Center).

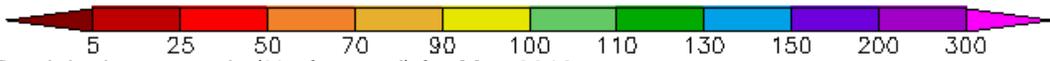
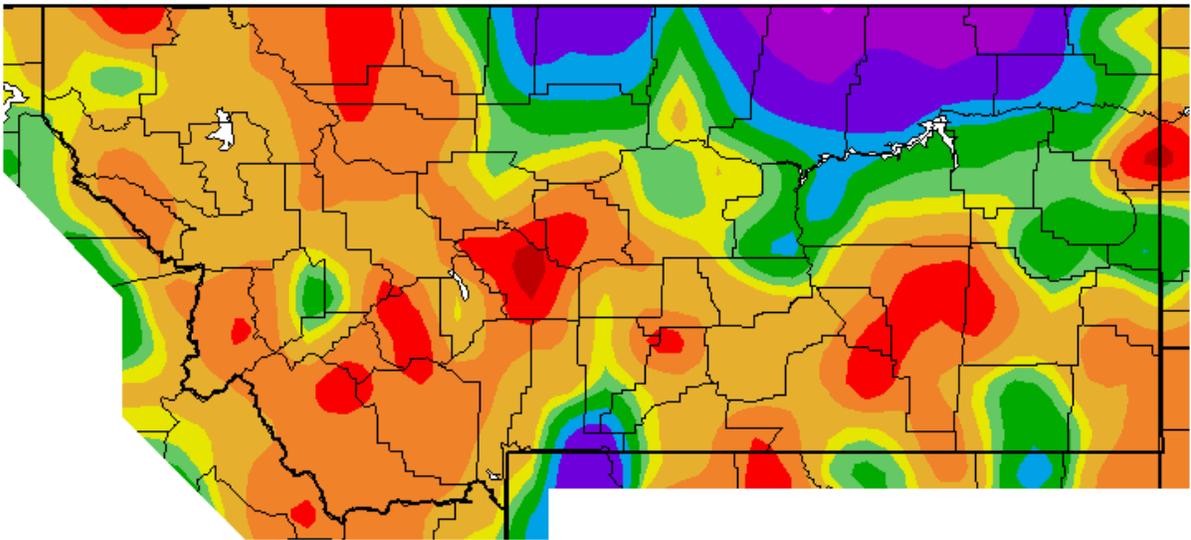


Figure 4. Precipitation anomaly (% of normal) for May 2012.

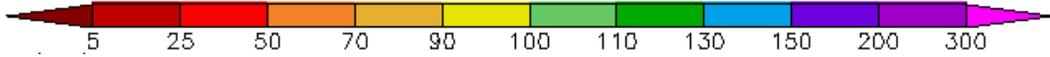
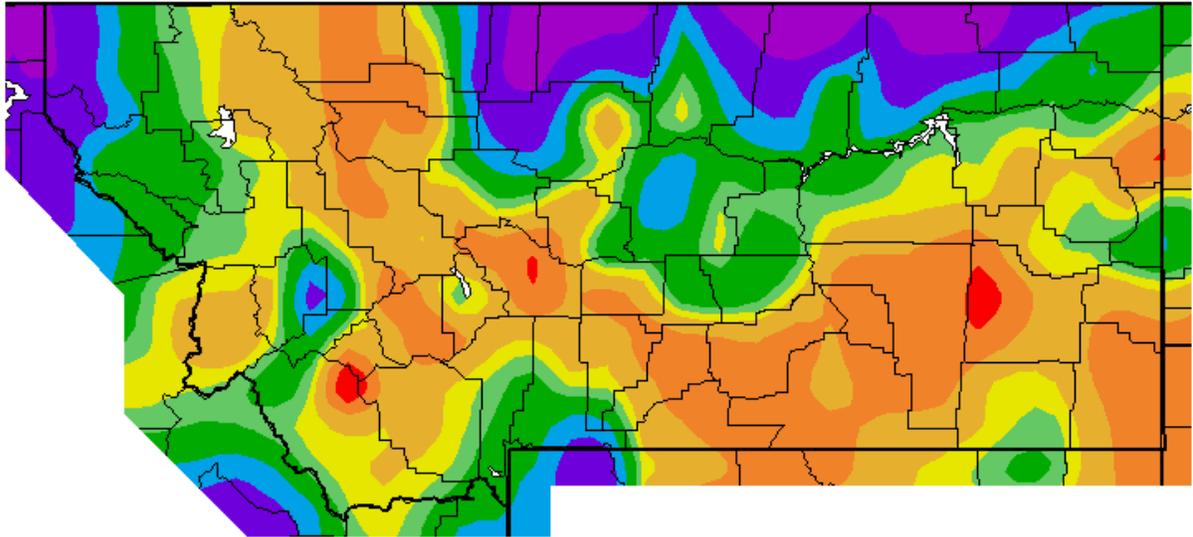


Figure 5. Precipitation percent of normal for the March through May 2012 period.

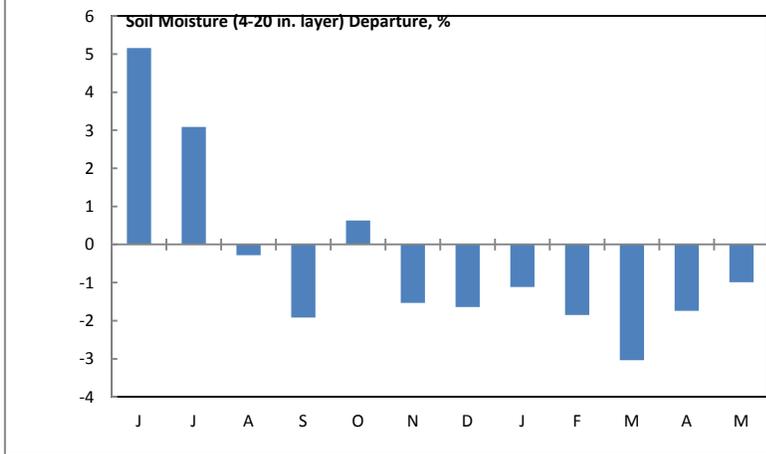


Figure 6. Statewide monthly composite soil moisture departures from normal for the past 12-months. Note the below average departures from November through May.



Figure 7. Camera image from Boulder Hill MDT on May 27, 2012 (Montana Department of Transportation).

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_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=tfx>. The climatological record for normals is 1981-2010. 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.