

Montana Weather/Precipitation Summary

May 2010 by NOAA's National Weather Service Great Falls Montana

In May, temperatures were below normal across most of the state. The smallest departure was over portions of Petroleum, Garfield and Musselshell Counties in central Montana, with the largest departures scattered across the southwest and north central portions (Fig. 2). Statewide, it was the 26th coolest May of average. As a whole, precipitation was above normal. Some areas of the east recorded over seven inches of precipitation. Areas of below normal precipitation persisted across the west, with some below normal areas in the south central (Fig. 3). A trough of low dominated western North America. Lower than normal 500 hPa heights persisted along the west coast of North America (Fig. 1). This contributed to the below normal temperatures over Montana.

May 1-4

Snow showers lingering from a late April storm continued over portions of central Montana on the 1st. Over 4 feet of snow had fallen. Even so, isolated thunderstorms moved across south central Montana on the 1st associated with a cold front. Warmer air returned by the 3rd, with gusty winds across the state. A very strong cold front produced strong winds statewide. Gusts over 50 mph were reported west of the divide, up to 110 mph at Logan Pass, and 81 mph near Ismay (Custer County) as the cold front raced across the state. The strong winds did produce some damage and overturned a semi trailer near Harlowton. The gust at Logan Pass set a new Montana May wind gust record. The old record was set in 2004.

May 5-11

Heavy snow fell over higher terrain in the southwest on the 5th and 6th as a storm moved through the state. After the storm moved out, clearing skies and cold air caused temperatures to drop to 4F at Beaver Creek SNOTEL. Even at Butte, the temperature fell to 15F. A series of disturbances continued to move across the state during this period of below normal temperatures. On the 10th and 11th, over three feet of snow fell in the Absarokees and other mountains of south central Montana.

May 12-19

Warmer temperatures melted the snow at middle elevations in the mountains, and rivers and streams responded. Belt Creek and other streams in central Montana reached their flood stages. Temperatures reached 80F on the 14th at Park City, then continued to rise to the month's high of 93F at Judith River on the 18th. Severe thunderstorms in eastern Montana on the 19th produced hail of 1.5 inches at Sun Prairie (Phillips County). Other strong thunderstorms affected Yellowstone and Wheatland Counties. Another thunderstorm on the 19th produced 7/8 inch hail near Larslan in Valley County.

May 20-31

The rest of the month brought variable and unsettled weather. While some thunderstorms continued in the Saco area on the 20th, strong winds also prevailed over much of north central and northeast Montana. Gusts to 63 mph occurred at Logan Pass, and 56 mph at McDonalds (northeast MT). Cooler temperatures and a stronger storm brought snow to portions of southwest Montana, and heavy rain to central portions. Twelve inches of snow fell at Walkerville (Silver Bow County) on the 23rd, with up to 16 inches at Lemhi Ridge west of Grant (Beaverhead County). Five to nine inches were common in the Butte area. In central Montana, 1.24 inches of rain fell north of Havre, with 1.50 inches at Rocky Boy. This storm, one of the deepest in 30 years in May, tracked along the North Dakota-Montana border and produced heavy rainfall over eastern Montana. Nearly four inches fell in the Miles City area, two inches near Baker, and 3.76 inches near Volborg (Powder River County). As the storm moved north, strong winds developed over northeast Montana on the 24th. Gusts to 70 mph were recorded at McDonalds (Roosevelt County) on the 24th. This storm continued to dump heavy rain across northeast Montana on the 24th and 25th. Glasgow recorded 1.12 inches of rain on the 25th.

Thunderstorms resumed over eastern Montana on the 26th, accompanied by warmer temperatures. A funnel cloud was spotted near Ashland (Rosebud County), along with 1.75-inch hail. Heavy rains fell in central Montana with up to 1.5 inches reported at Grass Range. On the 27th, severe thunderstorms produced one-inch hail in Treasure County near Hysham, and a tornado near Brockway in Prairie County. Near the tornado, 2.50-inch hail fell. Severe thunderstorms occurred again on the 28th, with golf-ball size hail reported near Glasgow. Another strong storm continued to bring heavy precipitation to central Montana on the 29th and 29th. Snow fell over higher elevations. Figure 4 shows some camera shots from across north central and southwest Montana on the morning of the 29th.

New Temperature Records for May 2010

| Station | Record Type | New Record | Date | Previous Record | Year of Previous Record |
|-------------|---------------|------------|------|-----------------|-------------------------|
| Great Falls | Low Daily Max | 35 | 5 | 43 | 1975 |
| Butte | Low Daily Min | 15 | 5 | 18 | 1996 |
| Missoula | Low Daily Min | 22 | 5 | 22 | 1996 |
| Valier | Low Daily Max | 41 | 28 | 41 | 1982 |

Precipitation

Severe convective weather occurred on six days in May. The average is 5 days. A thunderstorm produced wind gusts to 59 mph near Ismay (Custer County) on the 28th. A tornado occurred near Brockway on the 27th. Large hail also occurred on several days.

Precipitation was generally above normal across the state (Fig. 3). It was the 15th wettest May of record. Statewide, the water year average has been 7.84 inches, which is only 0.43 inches below normal. This ranks as the 51st driest of record. For the calendar-year-so-far, the statewide average precipitation is 5.84 inches, which is 0.15 inches above normal. Of note...Spur Park SNOTEL in the Little Belts, has collected 28.7 inches of precipitation. This is the highest amount at the end of May since the wet winter of 1996-97. In that year, Spur Park had received 30.5 inches of precipitation through the end of May.

New Precipitation Records for May 2010

| Station | Record Type | New Record (in) | Date | Previous Record | Year of Prev Record |
|-------------|--------------------|-----------------|------|-----------------|---------------------|
| Great Falls | Daily Max Snowfall | 2.4 | 5 | 1.7 | 1960 |
| Glasgow | Daily Max Precip | 1.12 | 25 | 0.55 | 1916 |
| Cut Bank | Daily Max Precip | 1.04 | 28 | 0.98 | 1987 |

Other Information

May saw wind speeds return closer to long-term averages. Wind speeds averaged 9.7 mph, or 0.2 mph lower than normal. This was the highest May average since 2004. For the water-year-to-date, considering the light winds of the past several months, the statewide wind average ranks as the second calmest of record.

New Wind Records for May 2010

| Station | Record Type | New Record (mph) | Date | Previous Record | Year of Prev Record |
|---------|-------------------|------------------|------|-----------------|---------------------|
| Bozeman | Monthly Wind Gust | 69 | 3 | 63 | 2009 |
| Havre | Monthly Wind Gust | 64 | 4 | 61 | 2001 |

May summary information:

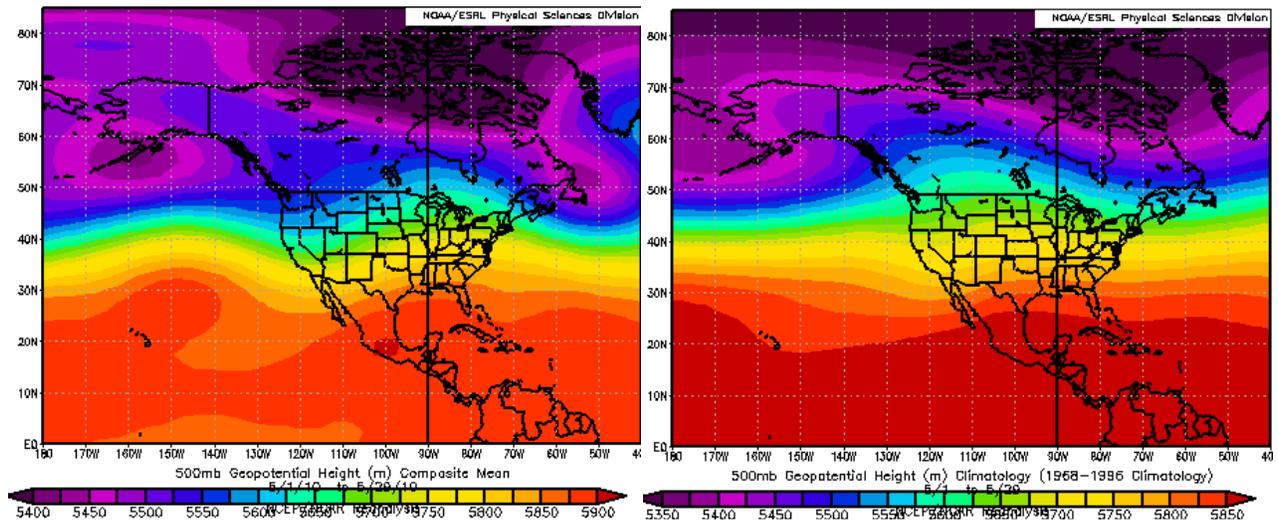
| | | | |
|--|---|---|--|
| High Temperature | 93°F at Judith River (18 th) | Greatest Precip | 8.20" near Volborg (Powder River Co) |
| Low Temperature | 4°F at Beaver Creek SNOTEL (5 th) | | 10.70" at Albro Lake SNOTEL |
| Warmest Ave Temp | 54.0°F at Hardin | Peak Wind Gust | 110 mph at Logan Pass (3 rd) and 81 mph near Ismay (Custer) (4 th) |
| Coollest Ave Temp | 35.6°F at Cooke City | | |
| Range of Temp departures | -7.5°F at Ennis to -1.5°F at Nashua and Bozeman | Highest Ave Wind | 16.8 mph at Logan Pass; 14.6 mph at Badger Peak (Rosebud County) |
| 18 city mean monthly Temperature/Normal | 45.2/49.3; 26 th coolest of record (since 1880) | 18 city mean monthly wind speed/Normal | 9.7 mph/9.9 mph; 39 th calmest of record (since 1936) |
| 18 city mean monthly precipitation/Normal | 2.93"/2.34" – 125% of normal; 15 th wettest of record (since 1880) | | |

**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 | 3.65 | 232% | | | 7.88 | 142% | | | 12 |
| Billings | 1.92 | 77% | 68 | 66 | 7.34 | 78% | 55 | 54 | 101 |
| Belgrade | 2.67 | 107% | 52 | 70 | 7.04 | 82% | 29 | 39 | 73 |
| Butte | 2.89 | 143% | 100 | 85 | 6.85 | 101% | 65 | 56 | 116 |
| Cut Bank | 2.09 | 94% | 68 | 66 | 2.81 | 51% | 10 | 9 | 103 |
| Dillon | 1.84 | 102% | 39 | 54 | 6.08 | 122% | 56 | 80 | 70 |
| Glasgow | 4.06 | 236% | 103 | 91 | 6.93 | 138% | 83 | 75 | 110 |
| Great Falls | 2.74 | 108% | 78 | 65 | 9.75 | 117% | 94 | 79 | 118 |
| Havre | 2.58 | 140% | 105 | 80 | 7.15 | 123% | 102 | 78 | 130 |
| Helena | 2.13 | 120% | 89 | 67 | 5.08 | 87% | 31 | 23 | 132 |
| Jordan | 3.74 | 267% | | | 8.00 | 164% | | | 12 |
| Kalispell | 2.43 | 119% | 93 | 79 | 10.01 | 91% | 17 | 14 | 116 |
| Lewistown | 3.23 | 111% | 77 | 67 | 8.64 | 90% | 55 | 48 | 114 |
| Livingston | 2.83 | 109% | 68 | 63 | 7.41 | 80% | 40 | 38 | 105 |
| Miles City | 5.23 | 239% | 129 | 97 | 8.81 | 124% | 110 | 83 | 133 |
| Missoula | 1.66 | 85% | 70 | 52 | 6.29 | 72% | 16 | 12 | 129 |
| Mullan Pass | 4.61 | 161% | 66 | 93 | 20.78 | 75% | 6 | 7 | 69 |
| Wolf Point | 2.38 | 126% | | | 3.90 | 84% | | | 12 |
| Glendive | 6.23 | 304% | 116 | 101 | 10.87 | 168% | 103 | 94 | 109 |
| Sidney | 5.49 | 272% | 71 | 100 | 10.55 | 161% | 68 | 99 | 69 |
| BZN-MSU | 3.69 | 115% | 98 | 73 | 13.09 | 112% | 106 | 81 | 131 |

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 May (left). A trough of low pressure dominated western North America. Note the normal pattern (right) for May. Typically, a ridge of high pressure dominates the area including the Rocky Mountains.

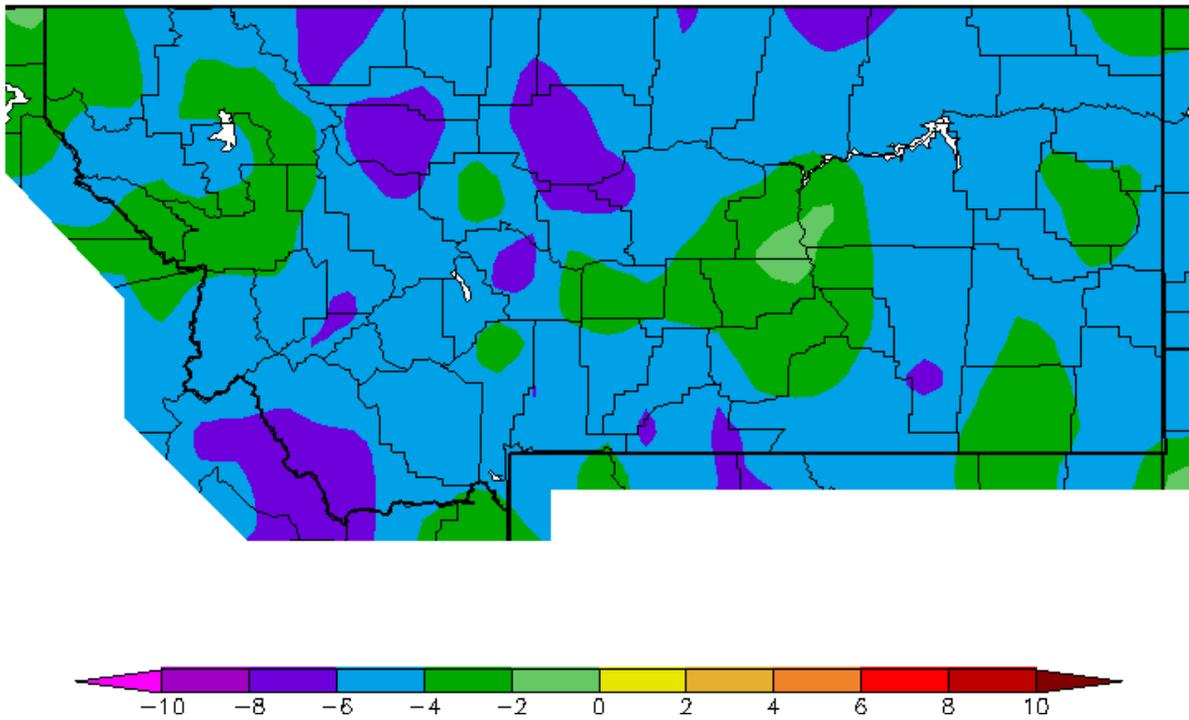


Figure 2. Temperature anomaly for May. Temperatures were below normal across the state. (Western Region Climate Center).

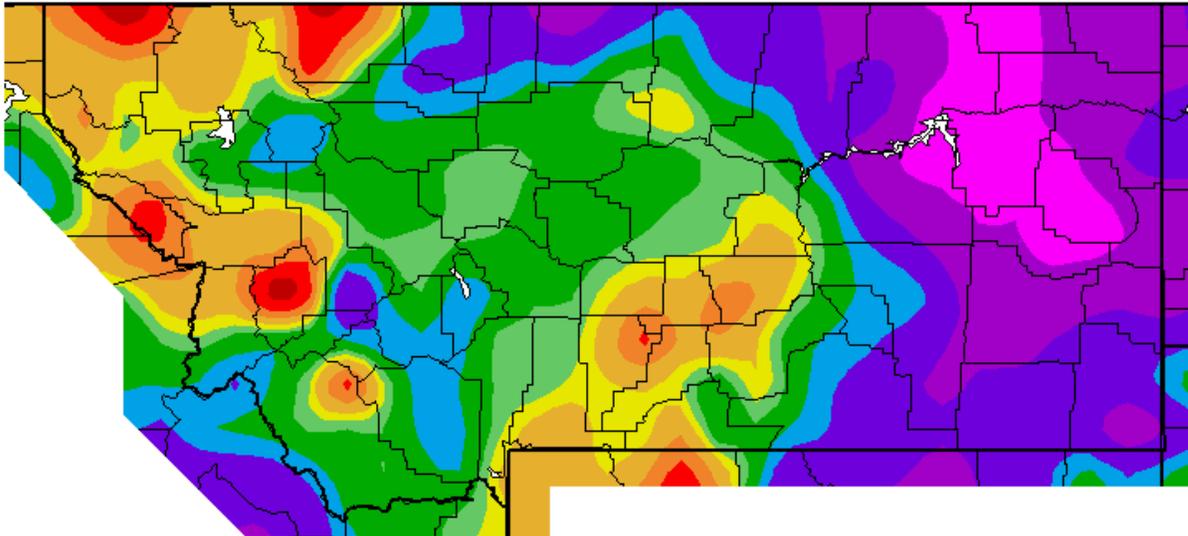


Figure 3. Precipitation anomaly (% of normal) for May. Areas of below normal precipitation were across the west and scattered in the south central.(Western Region Climate Center)

Figure 4. Camera images from around 6 am MDT 29 May 2010. (Montana Dept of Transportation and National Park Service)



Big Hole Pass – 7400 feet (elevation)



Boulder Hill – 5600 feet



MacDonald Pass – 6320 feet



Monarch Canyon – 5200 feet



Pendroy – 4199 feet



Sweet Grass – 3690 feet



Rogers Pass – 5406 feet



Two Medicine – 4600 feet

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>