

Montana Weather/Precipitation Summary

June 2017 NOAA's National Weather Service Great Falls Montana

As an average during June, a weak ridge of high pressure was centered over western Montana. This ridge was stronger than normal. (Fig. 1). This produced above normal temperatures over much of the state (Fig. 2). Above normal precipitation fell across the west and southern portions of the state, with below normal most other areas (Fig. 3). Wind averages were near to above normal.

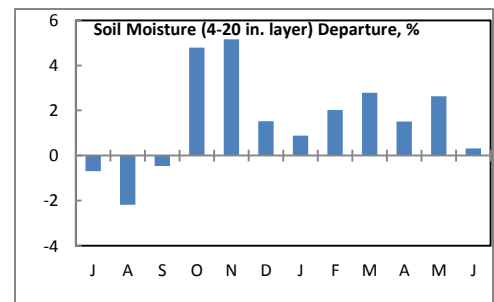
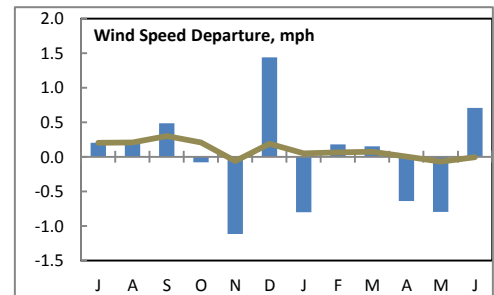
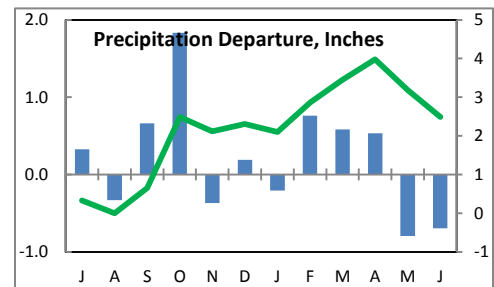
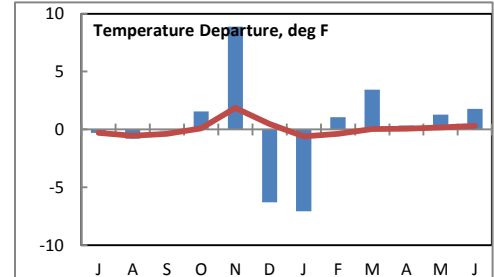
June temperatures averaged a little above normal. The statewide composite of 62.1° was 1.8°F above normal. The red line on the graph to the right shows the cumulative 12-month departure from normal, which is about 0.3°F above normal. The temperature anomalies ranged from 4.3°F above normal at Broadus to about one degree below normal at Plentywood (Fig. 2). The warmest average monthly temperature was 69.4°F at Broadus and the coolest was 45.5°F at Yellow Mule (Gallatin). This was the 43rd warmest June of record (of 138 years) and coolest since 2014. Seven of the last 12 months have had warmer than normal temperatures.

The monthly departure from normal for precipitation across Montana is shown in Figure 3. The wettest areas were over the northern Rockies and the Pintlar region. The highest precipitation amount recorded was 6.50-inches at Warm Spring SNOTEL, while 6.30-inches was reported at Badger Pass SNOTEL and at Saddle Mountain SNOTEL, with 5.10-inches reported at Philipsburg. Dry conditions persisted over northeast Montana. Many spots saw less than ½-inch of precipitation and ranked in their top 5 driest Junes of record. Statewide, this month averaged 1.66", or 0.69" below normal. This was the 24th driest of record. The statewide composite precipitation for the past 12 months is 2.49" above normal. The green line on the graph to the right shows the cumulative 12-month departure from normal. Seven of the past 12 months have measured above normal precipitation.

The statewide average winds were stronger normal over most of the state. Statewide, the month ranked as the 29th windiest June of record. The statewide composite average was 9.5-mph, 0.7-mph above normal. The brown line of the wind graph to the right shows the 12-month cumulative statewide wind departure from normal. The 12-month average is running near normal. Seven of the past 12 months have had above normal average speeds. The fastest average speed was 14.1-mph at Rock Springs MDT. At higher elevations, Deep Creek RAWs (Glacier) recorded an average speed of 15.6-mph. The strongest wind gust was 115 mph near Sunburst during a thunderstorm downburst on the 8th.

Soil moisture in June ranks as the 10th highest of record (records from 1995). The 30 locations included in the soil moisture composite are shown in Figure 5.

Refer to NEIC's State of the Climate report for the latest monthly discussion:
<http://www.ncdc.noaa.gov/sotc/>



June 1-9

The first days of June had mostly above normal temperatures and scattered thunderstorms. Brandenburg warmed to 99°F on the 8th. This was ahead of a strong cold front that brought severe thunderstorms to western and central Montana. One thunderstorm produced a downburst with widespread damage across an area from Cut Bank to Havre. A gust to 115-mph was measured near Sunburst.

June 10-18

A storm system brought heavy rain and some snow to portions of the state on the 12th and 13th. Rainfall amounts of over three-inches fell in the Hamilton and Philipsburg areas. Scattered severe thunderstorms brought hail to 1.5-inches at Kremlin, while snowfall of 2-6-inches fell in the higher elevations around Nye, Cooke City and Polaris.

June 19-30

The rest of the month saw variable conditions. Temperatures warmed to near 90°F on the 20th, then cooled to below normal values from the 22nd-25th. Widely scattered thunderstorms produced some severe wind gusts over central and eastern Montana. The strongest gust was 66-mph at Reynolds Pass on the 26th. Warmer conditions returned on the 26th. Loma peaked at 99°F on the 26th. Another round of severe thunderstorms brought 1.5-inch hail at Whitehall on the 28th.

Precipitation/convection

Severe convective weather occurred on 10 days in June, which is below normal. This is the lowest number of days of severe weather in Montana since 2012.

Water-year-to-date and calendar-year summary

The composite statewide average temperature for the water year through June was 37.0°F (0.6°F above normal). This was the 50th warmest of record but the coolest since 2013. The calendar year average temperature is 39.0° (0.2°F above normal) and the 42nd warmest of record.

The composite precipitation for the water year was 12.75", or 1.83" above normal. September, October, February, March and April were particularly wet. This is the 27th wettest such period of record, and the wettest since 2013. The calendar year composite precipitation is 7.98" (0.16" below normal) and the 56th driest of record.

For winds, the average state wind speed for the water year was 9.0-mph, or 0.1-mph below normal. This was the 17th calmest of record. The calendar year average wind speed was 9.2-mph (normal) and the 21st lowest of record.

June summary information:

High Temperature	99°F at Brandenburg (8 th) & Loma (26 th)	Greatest Precip	6.50" at Warm Springs SNOTEL
Low Temperature	21°F at Wisdom (1 st)		
Warmest Ave Temp	69.4°F at Broadus	Peak Wind Gust	115 mph near Sunburst (8 th)
Coollest Ave Temp	45.5°F at Yellow Mule (Gallatin)		
Range of Temp departures	-1.1°F at Plentywood to 4.3°F at Broadus (Powder River)	Highest Ave Wind	14.1 mph at Rock Springs MDT (Rosebud) and 15.6 mph at Deep Creek RAWS (Glacier)
21 city mean monthly Temperature/Normal	62.1/60.3F normal. 43 rd warmest of record (since 1880). 69 th percentile.	20 city mean monthly wind speed/Normal	9.5 mph/8.8 mph; 29 th windiest of record (since 1936). 65 th percentile.
22 city mean monthly precipitation/Normal	1.66"/2.35" – 70% of normal. 24 th driest of record (since 1880). 18 th percentile.		

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

Location	Jun	% of Norm	Rank	Pcntl	Oct 1 – Jun 30	% of norm	Rank	Pcntl	Years
Baker	0.56	22%			4.76	59%			19
Billings	2.31	122%	34	28	16.50	146%	6	4	116
Belgrade	2.57	104%	41	50	11.45	106%	27	33	80
Butte	2.78	123%	35	28	11.51	127%	25	20	122
Cut Bank	2.48	97%	56	50	9.83	137%	19	17	109
Dillon	1.37	70%	53	68	8.39	114%	19	24	77
Glasgow	0.14	6%	111	92	6.28	82%	92	78	117
Great Falls	2.10	83%	78	61	12.45	121%	32	25	125
Havre	0.68	31%	126	91	7.20	98%	96	70	137
Helena	1.25	61%	103	74	8.06	104%	72	52	138
Jordan	0.77	31%			5.49	65%			19
Kalispell	1.48	58%	87	70	18.23	138%	3	2	123
Lewistown	1.75	57%	99	81	13.00	110%	50	41	121
Livingston	1.65	69%	78	68	14.75	134%	13	11	112
Miles City	0.74	29%	131	94	4.27	48%	136	97	140
Missoula	2.02	94%	61	43	14.72	136%	13	9	135
Mullan Pass	2.89	111%	31	38	50.89	150%	4	4	76
Wolf Point	1.71	63%			5.16	65%			19
Glendive	1.66	69%	95	77	6.72	74%	99	86	115
Sidney	1.45	52%	65	83	6.81	73%	61	79	77
BZN-MSU	2.78	89%	75	53	18.13	118%	13	9	137
W Yellowstone	1.37	63%	80	75	25.96	150%	6	5	92

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/tx/dx.php?wfo=tx&type=&loc=products&fx=PCPNTOTALS>

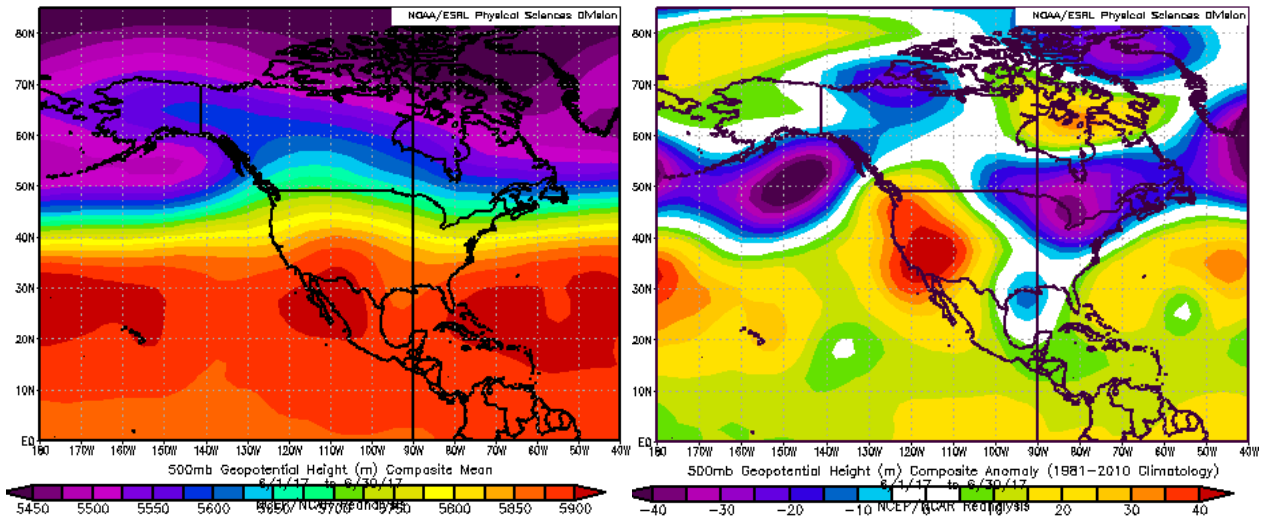


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (upper left) and departure from normal (upper right).

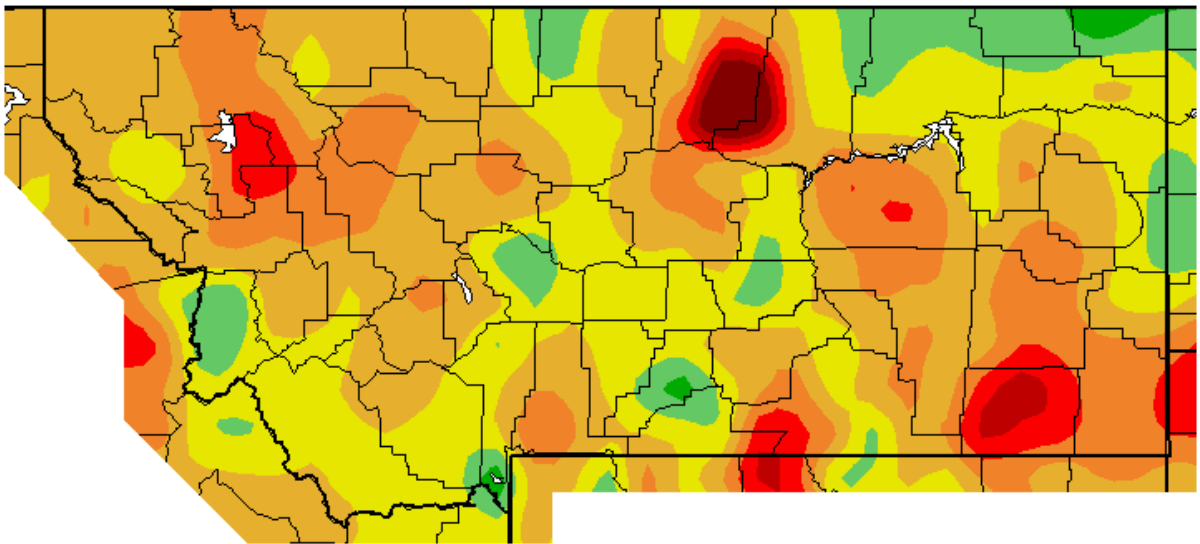


Figure 3. June 2017 temperature departures from normal (°F) (Western Region Climate Center).

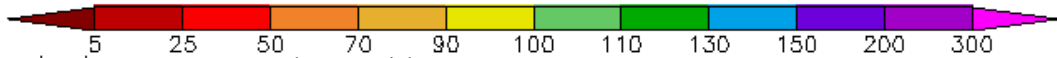
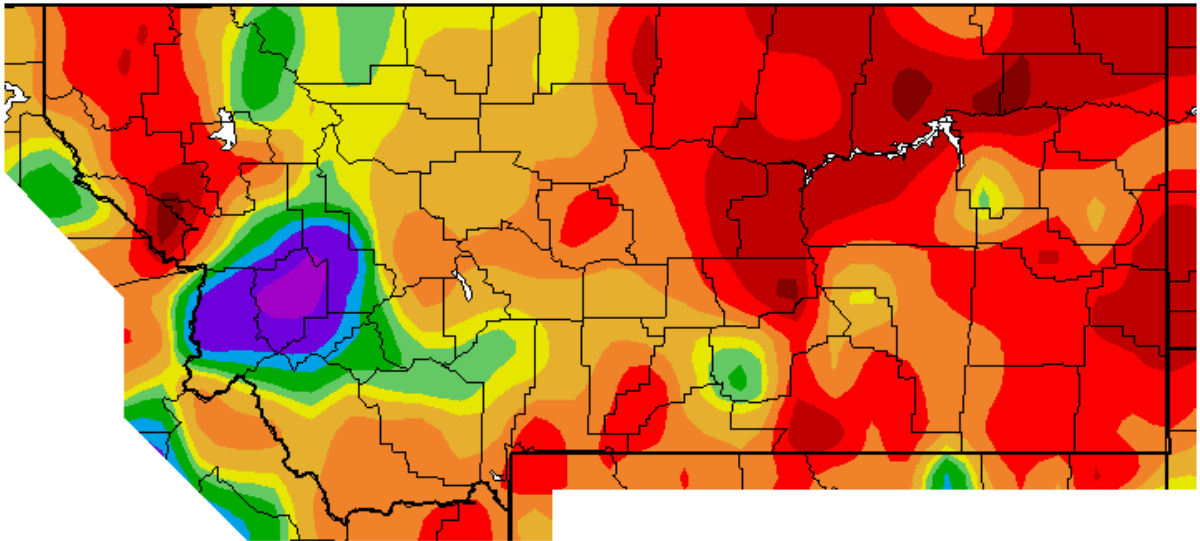


Figure 4. June 2017 precipitation departures from normal (percent) (Western Region Climate Center).



Figure 5. Locations included in soil moisture composite computation.

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/climate/monthlysum/climatesum.php?wfo=txf>

For the latest information on mountain snowpack from the NRCS, go to: <http://www3.wcc.nrcs.usda.gov/snow/index.html>

For the latest U.S. Drought Monitor, issued weekly by the National Drought Mitigation Center, USDA and NOAA, go to: <http://droughtmonitor.unl.edu/>

These data are preliminary and have not undergone final QC by NEIC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Environmental Information Center (NEIC) <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.