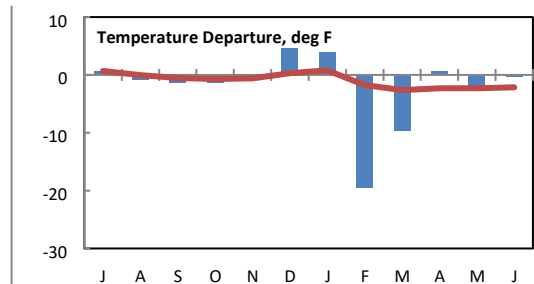
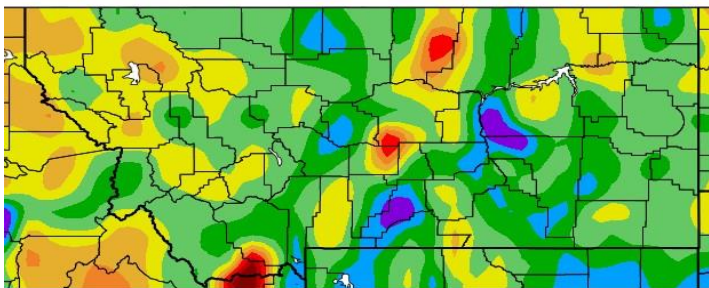


Montana Weather/Precipitation Summary

June 2019 NOAA's National Weather Service Great Falls Montana

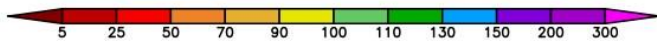
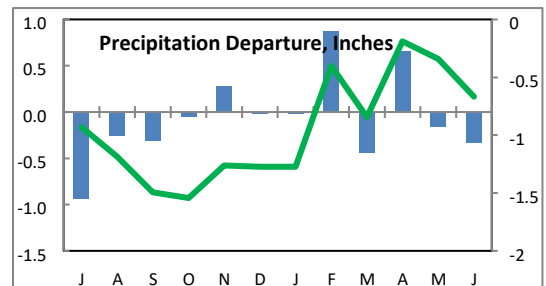
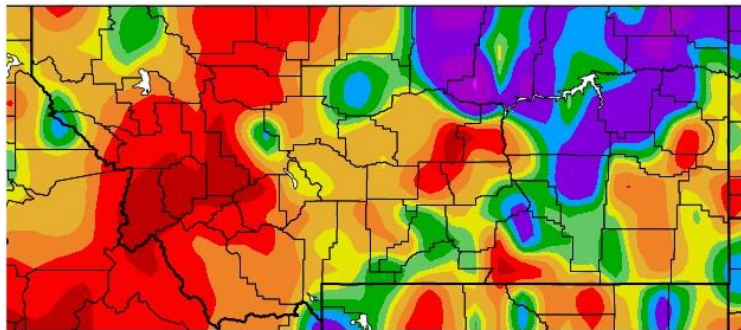
June's average temperatures were a couple of degrees above or below normal. Precipitation was variable with above normal amounts across the northeast and below normal over portions of the west. Winds averaged below normal. The upper level flow was generally from the west (Fig. 1), which was normal for the month.

June temperature anomalies ranged from 2.7°F below normal at West Yellowstone to 1.9°F above normal at Billings. The map below shows the variation. The warmest average temperatures were in eastern Montana. The warmest average temperature was at Billings, with an average of 66.6°F, while the coolest was 44.4°F at Placer Basin (Sweet Grass). The highest temperature was 95°F at Glasgow on the 6th. The coldest temperature was 21°F at Yellow Mule (Gallatin) on the 8th. This absolute range of 74°F was below average for June (June's record is 97°F) and smallest since 2014. The statewide temperature average of 60.3°F was normal and coolest since 2014. The red line on the graph shows the cumulative 12-month departure from normal, which is 2.1°F below normal. See the state summary and temperature tables below for more details.



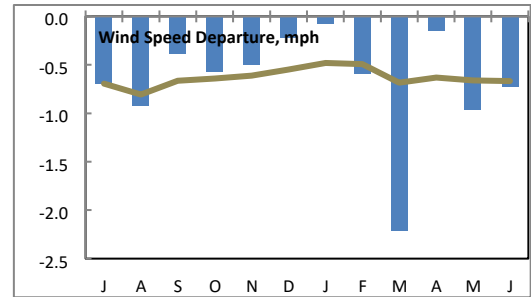
Temperature departure from normal

Precipitation was heaviest over the Little Rockies. The highest amount (9.89-inches) fell at Zortman. The statewide composite of 2.04-inches was 0.33" below normal. The green line on the precipitation graph shows the cumulative 12-month departure from normal, which is 0.67" below normal. See state summary and precipitation tables below for more details. The heaviest monthly snow amount was 6.0-inches at Mystic Lake. A trace of snow at Bozeman MSU was the latest snowfall since June 23, 1993. There have been only 4-times when snow fell later than this year. The latest was July 19, 1972.

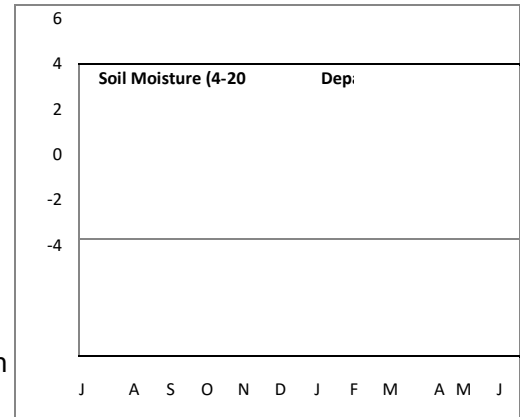


Precipitation percentage of normal

Wind speed averages were below normal. Statewide, the month ranked as the 8th calmest June, with an average speed of 8.1-mph. The strongest averages were in eastern Montana. The composite statewide average was 0.7-mph below 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 0.7-mph below normal. All months since January 2018 have had below average wind speeds.



Statewide soil moisture averages continued above normal for June (right). This data is from NRCS SCAN and SNOTEL, NOAA CRN and MT Mesonet stations. For June, this was the 9th wettest of record. The record began in 1995.



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

June started out with below normal temperatures, but then warmed to above normal. The month’s warmest (95°F) occurred on the 6th at Glasgow. Thunderstorms were widespread on the 6th, with many reports of wind gusts exceeding 60 mph. The strongest, 69 mph was near Poplar. Thunderstorms continued on the 7th, with 1.75” hail reported at Broadus. Cooler air and a storm system brought snow to Red Lodge (7”) and near Livingston (9.5”) on the 8th. Warmer air and rain caused flooding around Harlowton on the 13th. Severe thunderstorms again brought large hail to north central Montana on the 14th. A long-lasting storm moved from near Babb to the Highwoods producing up to 2.5” hail at Dutton. A strong thunderstorm produced a gust of 63 mph at Havre on the 19th, which caused tree damage. As these thunderstorms continued in northeast Montana, up to 4” of rain fell near Vida. Cooler air brought snow to higher elevations on the 21st. Seven inches of snow fell at Shower Falls, 2” at Cooke City and about one inch at Bozeman. Two-day rainfall on the 21st and 22nd brought up to 7” fell over the Little Rockies causing flash flooding. A period of severe weather occurred from the 25th to the end of the month. On the 26th, hail to 2.75” fell near Powderville and Moorhead, with 70-mph winds near Broadus. On the 27th, a small tornado caused minor damage near Moccasin, while 2.5” of rain fell at Holter Dam and wind gusts reached 74-mph near Fort Belknap and 72-mph at Bluff Creek. On the 28th, severe thunderstorms produced wind gusts to 71-mph near Suffolk. On the 30th, a small tornado occurred west of Judith Gap, while 1.25” hail fell near Greycliff.

Precipitation/convection

Severe convective weather occurred on 12 days in June, which is normal.

Crop season (Apr-Jun)

The crop-year average temperature was 51.1°F, 0.6°F below normal. This was the 37th coolest such period and coolest since 2014.

Composite crop-year precipitation totaled 6.27-inches, 0.18” above normal. This was the 52nd wettest such season.

Winds averaged 9.1-mph, which is 0.3-mph below normal. This was the 9th calmest crop-year.

Water year (Oct-Jun)

For the water year, the temperature average was 33.8°F, 2.6°F below normal. The cold February, March and May kept the average down, as both December and January had above average temperatures. This was the 14th coolest such season, and the coolest since 2011.

Composite precipitation totaled 12.01-inches, 0.82" above normal. This was the 53rd wettest of record.

Although December was windy, February, March and May had very light winds so the season's average of 8.5-mph is the 2nd calmest of record and calmest such period since 2010.

June information:

High Temperature	95°F at Glasgow (6 th)	Greatest Precip	9.89" at Zortman
Low Temperature	21°F at Yellow Mule RAWS (8 th)		
Warmest Ave Temp	66.6°F at Billings	Peak Wind Gust	74 mph near Fort Belknap (27 th)
Coollest Ave Temp	44.4°F at Placer Basin		
Range of Temp departures	-2.7°F at West Yellowstone to +1.9 at Billings	Highest Ave Wind	15.1 mph at Deep Creek RAWS 12.0 mph at Hillside
21 city mean monthly Temperature/Normal	60.3/60.3F normal. 61 st coldest of record (since 1880). 44 th percentile.	20 city mean monthly wind speed/Normal	8.1 mph/8.8 mph; 8 th calmest of record (since 1936). 11 th percentile.
22 city mean monthly precipitation/Normal	2.04"/2.37" – 86% of normal. 50 th driest of record (since 1880). 36 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	1.25	49%			8.99	111%			21
Billings	2.08	110%	44	36	11.64	103%	38	32	118
Belgrade	2.03	84%	55	66	10.57	100%	40	48	82
Butte	0.81	36%	110	87	8.67	96%	62	50	124
Cut Bank	0.94	37%	98	87	8.98	125%	32	28	111
Dillon	1.22	62%	58	72	6.52	89%	44	55	79
Glasgow	2.90	124%	43	35	9.45	123%	43	36	119
Great Falls	1.46	58%	99	77	11.37	111%	53	41	127
Havre	2.20	100%	68	48	7.69	105%	83	59	139
Helena	0.78	38%	124	88	9.16	118%	54	38	140
Jordan	2.57	103%			11.01	131%			21
Kalispell	2.80	109%	41	32	12.80	97%	53	42	125
Lewistown	2.47	80%	82	66	10.73	91%	83	67	124
Livingston	2.26	95%	52	44	13.95	127%	19	16	114
Miles City	1.50	60%	110	77	9.17	104%	75	52	142
Missoula	0.66	31%	130	92	13.17	121%	26	18	137
Mullan Pass	4.12	158%	10	11	35.38	104%	33	42	78
Wolf Point	4.49	166%			9.39	119%			21
Glendive	0.81	34%	119	96	8.64	95%	69	59	117
Sidney	2.47	88%	39	48	9.08	97%	37	46	79
BZN-MSU	3.60	116%	41	28	17.89	116%	15	10	141
W Yellowstone	1.41	65%	79	73	20.06	116%	22	23	94

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>

**Historical Rank of Average Temperature (°F)
for the Current Month and Water Year to Date**

Location	Jun	Normal	Rank	Pcntl	Oct 1 – Jun 30	Normal	Rank	Pcntl	Years
Baker	61.9	59.1	66	61	32.8	35.7	93	88	105
Billings	66.6	64.7	16	18	38.6	41.4	69	81	85
Belgrade	58.9	59.1	37	44	32.9	36.1	76	90	84
Butte	56.0	55.7	51	40	31.4	33.5	102	81	125
Cut Bank	57.5	57.8	56	50	32.3	35.8	91	83	110
Dillon	56.6	58.1	52	68	33.2	36.4	74	99	75
Glasgow	65.7	64.0	32	26	33.7	35.4	67	54	123
Great Falls	59.9	59.8	81	64	35.0	38.3	115	94	122
Havre	61.3	62.2	87	62	33.1	36.4	110	79	139
Helena	63.0	62.1	29	20	35.5	38.7	111	80	139
Jordan	63.1	62.5	63	62	33.7	36.1	85	88	96
Kalispell	59.1	58.3	43	35	35.8	37.4	34	28	118
Lewistown	57.4	58.1	67	55	33.2	36.7	107	92	116
Livingston	59.5	58.7	53	45	36.1	38.7	110	96	114
Miles City	64.1	65.6	96	69	35.0	38.3	117	85	137
Missoula	61.0	60.9	43	33	37.0	39.7	101	81	125

Mullan Pass	51.6	49.7	9	20	31.9	31.6	17	39	42
Wolf Point	64.1	63.3	9	40	32.4	34.2	14	65	21
Glendive	66.1	66.5	63	51	36.0	38.8	85	71	119
Sidney	63.8	66.1	49	51	32.7	38.1	33	34	96
W Yellowstone	49.3	51.8	72	74	26.5	27.6	81	88	92

**Historical Rank of Average Wind Speed (mph) for
the Current Month and Water Year to Date**

Location	Jun	Normal	Rank	Pcntl	Oct 1 – Jun 30	Normal	Rank	Pcntl	Years
Baker	10.4	11.6			10.8	11.3			21
Billings	9.5	9.3	54	63	11.1	11.1	63	76	83
Belgrade	6.0	6.2	34	62	5.0	5.8	46	85	54
Butte	6.0	7.6	53	95	5.2	6.5	52	94	55
Cut Bank	10.6	12.2	63	83	11.9	13.3	72	93	77
Dillon	7.8	8.4	52	77	8.7	9.4	61	94	65
Glasgow	9.9	10.9	30	39	10.0	10.5	58	78	74
Great Falls	9.2	10.6	72	88	11.2	12.8	81	100	81
Havre	9.0	9.0	58	44	10.2	9.3	32	24	130
Helena	7.5	7.9	116	83	5.8	7.0	139	100	139
Jordan	8.4	8.8	21	59	7.8	8.1	26	74	35
Kalispell	5.8	6.2	84	69	5.4	5.5	108	91	119
Lewistown	7.4	8.6	69	89	8.8	9.7	67	87	77
Livingston	10.7	10.4	35	63	14.9	15.3	44	84	52
Miles City	9.1	10.2	71	55	9.4	10.3	69	54	128
Missoula	5.9	6.8	70	83	5.0	5.5	65	77	84
Mullan Pass	3.8	5.4			4.4	5.8			28
Wolf Point	8.0	8.5			8.1	8.2			21
Glendive	9.8	10.3			9.6	10.4			27
Sidney	8.9	8.9	15	50	9.1	9.3	21	70	30
W Yellowstone	5.5	6.7			5.3	6.6			5

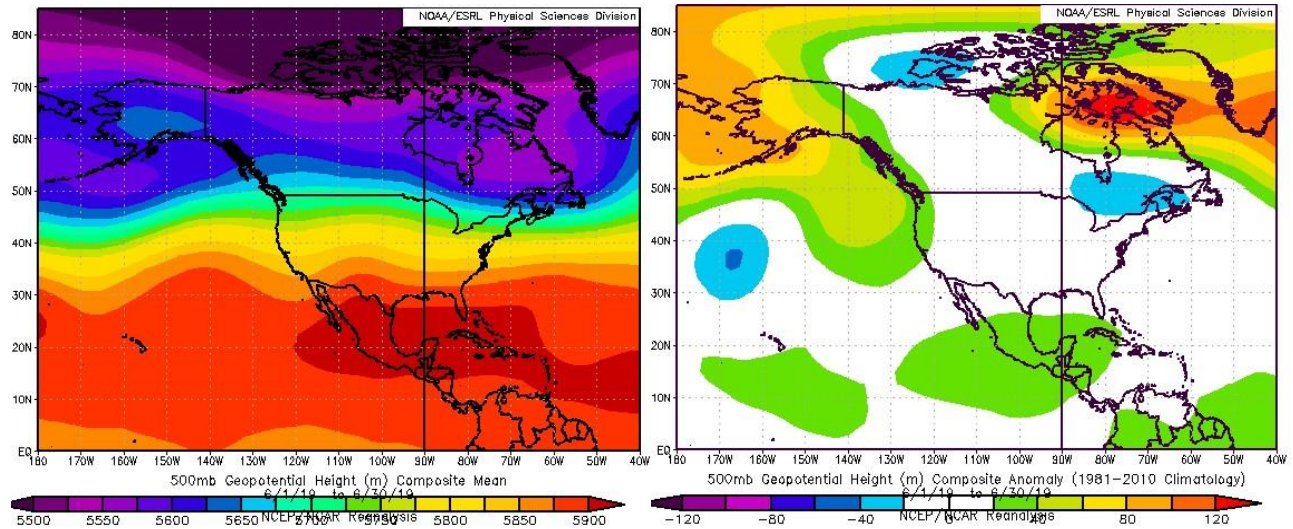


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (upper left) and departure from normal (upper right).

For the latest information on mountain snowpack from the NRCS, go to: <https://www.wcc.nrcs.usda.gov/gis/snow.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.ncei.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.