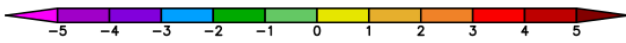
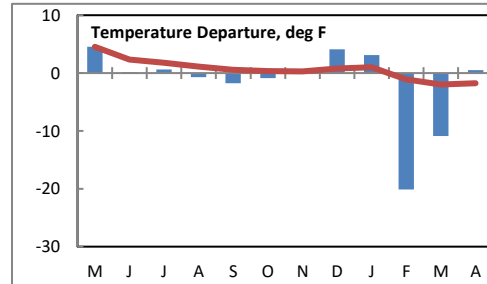
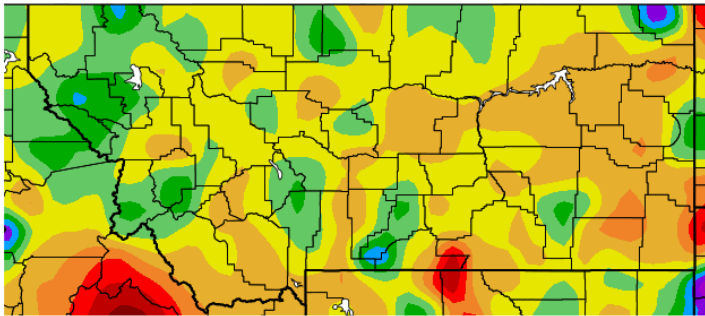


Montana Weather/Precipitation Summary

April 2019 NOAA's National Weather Service Great Falls Montana

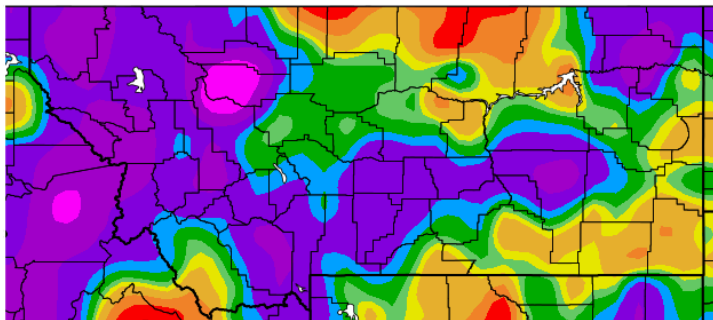
April 2019 had temperatures near normal. The upper level flow was generally from the west (Fig. 1). This kept a steady stream of weather systems progressing through the state. Precipitation was generally above normal with winds at near normal levels.

April temperature anomalies ranged from just below normal west to 2.2°F above normal at Billings. The map below shows the variation. The warmest average temperatures were in eastern Montana. The warmest, Yellowtail Dam had an average temperature of 48.6°F, while the coolest was 28.1°F at Yellow Mule (Gallatin). The highest temperature was 84°F at Wolf Point on the 19th. The coldest temperature was -8°F at Placer Basin on the 29th. This absolute range of 91°F below the average of 95°F (April's record is 122°F). The state-wide temperature average of 43.46°F was 0.6°F above normal and warmest since 2016. The red line on the graph shows the cumulative 12-month departure from normal, which is 1.5°F below normal. See the state summary and temperature tables below for more details.

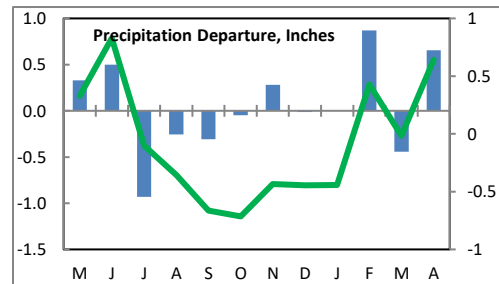


Temperature departure from normal

Precipitation was heaviest along the western border. The highest amount (9.30-inches) fell at Brackett Creek SNOTEL. The highest amount elsewhere was 6.49-inches near Livingston. The statewide composite average of 2.08-inches was 0.66" above and the wettest since 2006. The green line on the precipitation graph shows the cumulative 12-month departure from normal, which is 0.64" above normal. See state summary and precipitation tables below for more details.

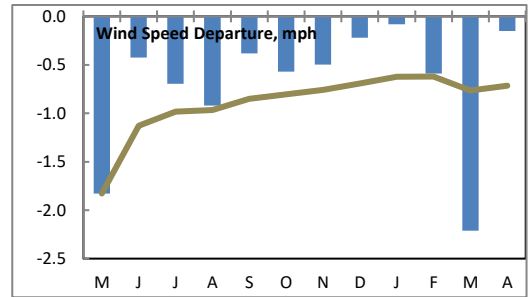


The heaviest monthly snow amount was 42.0-inches at Mystic Lake. The state average snowfall was 4.6-inches, which is the lowest since 2016.

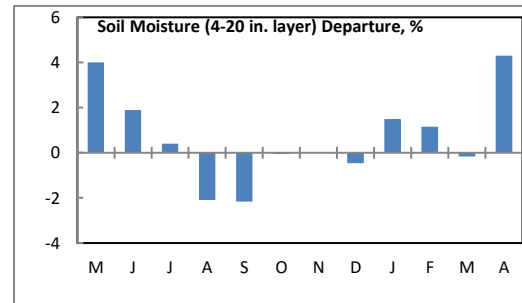


Percent of normal precipitation

Winds averaged near to slightly above normal over the state. Statewide, the month ranked as the 24th calmest April, with an average speed of 9.6-mph. The strongest averages were along the northern Rocky Mountain Front. The composite statewide average was 0.1-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 average soil moisture conditions are above normal for April (right). At the end of the month, these were the wettest conditions since 2007 and the 4th wettest of record (records began in 1995).



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

April's weather was somewhat typical. Temperatures averaged near normal. There were a few stormy periods.

A storm system moved into western Montana on the 9th, producing up to two inches of precipitation. This system continued eastward and produced rain and snow across much of the rest of the state. Over three-inches of water-equivalent was reported in areas along the Rocky Mountain Front. Badger Pass reported 23-inches of snow, with 18-inches at Heart Butte. Fourteen inches of snow fell near Fishtail, with 13-inches at Albion. Temperatures dropped into the teens at many locations on the morning of the 13th. Placer Basin fell to -3°F.

The weather warmed after this cold and snowy spell. Winds picked up as well. Deep Creek gusted to 70 mph on the 14th, with 63 mph gusts at Two Medicine. There were days with weak thunderstorms. On the 17th, winds gusted to 60 mph near Glasgow, and dime-size hail fell in eastern Great Falls. Windy conditions continued on the 19th. Gusts reached 59 mph at Dillon, while the warmest temperatures of the month were recorded. Wolf Point reached 84°F, with 80s into central Montana as well. Isolated thunderstorms along a cold front produced dime and nickel-size hail at Columbus and near Reed Point on the 20th.

As colder air moved into the state, widespread precipitation fell. Amounts from one to two-inches of rain fell over a wide area of central Montana. A point near Livingston measured 2.16-inches. The coldest air of the month moved in on the 28th. Blizzard conditions raged across north central Montana as high temperatures struggled to reach freezing. Although snow was light most areas, winds of 35 to 60 mph blew what fell. There were several accidents reported with this blizzard. Gusts reached 71 mph at the N Bar Ranch (Fergus) and 70 mph at Big Timber. Heavy snow to 29-inches fell in the Highwoods and one to two feet in the Little Belts and Snowys. Afterwards, very cold minimum temperatures were observed. Record lows were set in north central Montana on the 29th and 30th. Lewistown reached 10°F on the 29th and Great Falls dropped to 15°F on the 30th. Placer Basin SNOTEL fell to -8°F on the 29th.

Precipitation/convection

Severe convective weather occurred on 0 days in April, which is normal.

Water year (Oct-Apr)

For the water year, the temperature average was 27.7°F, 3.1°F below normal. The cold February and March brought the average down, as both December and January had above average temperatures. This was the 22nd coolest such season, and the coolest since 2018.

Composite precipitation totaled 7.83-inches, 1.31" above normal. This was the 20th wettest of record. Last water year was even wetter, ranking 3rd wettest. Although April's snowfall was concentrated in the higher terrain, heavy snow has fallen in most areas over the water year. The composite snowfall was 58.3-inches, ranking 40th highest and more than 4-inches above normal. At this point last winter, it was the 3rd snowiest with 83.58-inches.

Although December was windy, February had very light winds so the season's average of 8.5-mph is the 3rd calmest of record and calmest such period since 2008.

April information:

High Temperature	84°F at Wolf Point (19 th)	Greatest Precip	6.49" near Livingston
Low Temperature	-8°F at Placer Basin SNOTEL (29 th)		9.3" at Brackett Creek SNOTEL
Warmest Ave Temp	48.6°F at Yellowtail Dam	Peak Wind Gust	71 mph at N Bar Ranch (28 th)
Coollest Ave Temp	28.1°F at Yellow Mule		
Range of Temp departures	-0.6°F at Missoula to +2.2 at Billings	Highest Ave Wind	13.4 mph at Browning 16.6 mph at Deep Creek RAWS
21 city mean monthly Temperature/Normal	43.4/42.8F normal. 66 th coldest of record (since 1880). 53 rd percentile.	20 city mean monthly wind speed/Normal	9.6 mph/9.8 mph; 24 th calmest of record (since 1936). 30 th percentile.
22 city mean monthly precipitation/Normal	2.08"/1.42" – 146% of normal. 3 rd wettest of record (since 1880). 97 th percentile.	20 city mean monthly snowfall/Normal	2.0"/5.5" -3.5" 17 th percentile.

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

Location	Apr	% of Norm	Rank	Pcntl	Oct 1 - Apr	% of norm	Rank	Pcntl	Years
Baker	1.77	198%			4.56	114%			21
Billings	1.98	114%	26	21	7.15	103%	27	22	118
Belgrade	2.70	172%	5	5	6.75	117%	26	31	82
Butte	1.81	155%	15	11	5.33	113%	44	35	124
Cut Bank	1.40	179%	19	16	5.89	219%	5	4	112
Dillon	1.63	152%	13	15	3.81	110%	26	32	79
Glasgow	0.87	102%	46	36	5.35	155%	20	16	119
Great Falls	1.92	135%	27	20	7.72	145%	17	13	127
Havre	0.73	87%	75	53	3.81	112%	87	62	139
Helena	1.26	129%	37	26	5.94	156%	33	23	140
Jordan	1.36	126%			5.99	164%			21
Kalispell	2.27	183%	3	2	9.12	106%	48	38	125
Lewistown	1.79	127%	32	25	5.84	99%	71	57	124
Livingston	3.44	194%	3	2	8.97	150%	5	3	116
Miles City	2.13	155%	21	14	4.82	117%	57	40	142
Missoula	2.81	232%	4	2	10.71	160%	10	7	138
Mullan Pass	4.95	164%	5	5	28.48	99%	42	53	78
Wolf Point	1.28	136%			3.53	103%			21
Glendive	1.66	130%	32	25	5.28	119%	31	25	120
Sidney	1.29	123%	30	37	4.54	100%	33	41	79
BZN-MSU	3.93	171%	4	2	12.68	139%	7	4	142
W ellowstone	2.74	169%	14	12	15.93	123%	21	21	98

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	Apr	Normal	Rank	Pcntl	Oct 1 - Apr	Normal	Rank	Pcntl	Years
Baker	44.3	42.7	44	40	26.7	30.2	84	79	106
Billings	48.4	46.2	21	24	32.5	36.0	70	82	85
Belgrade	42.8	42.7	33	39	26.7	30.7	75	89	84
Butte	40.0	39.0	49	38	25.6	28.3	106	85	125
Cut Bank	41.1	41.0	52	46	26.5	30.6	93	84	110
Dillon	42.3	41.6	27	35	27.6	31.4	73	97	75
Glasgow	46.8	44.9	35	29	26.4	28.6	64	52	123
Great Falls	43.6	43.1	72	57	29.4	33.3	113	93	122
Havre	44.7	44.4	65	46	26.7	30.1	100	72	139
Helena	45.6	44.9	46	32	29.2	33.1	117	84	139
Jordan	45.1	44.0	49	48	27.3	30.0	77	80	96
Kalispell	43.1	43.6	65	54	29.9	32.4	29	24	119
Lewistown	42.1	41.4	52	42	27.9	31.8	105	90	117
Livingston	43.5	42.1	53	44	31.0	34.1	110	95	116
Miles City	46.6	46.0	67	47	28.6	31.9	105	76	137
Missoula	45.1	45.7	54	42	31.1	34.6	106	84	126
Mullan Pass	34.0	34.6	20	46	27.2	27.5	24	56	42
Wolf Point	45.6	43.8			25.2	27.2			21
Glendive	47.9	47.0	47	38	29.4	32.3	77	63	122
Sidney	44.0	47.3	49	51	25.8	31.3	26	27	96
W ellowstone	34.7	33.6	34	37	21.4	21.8	72	77	93

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

Location	Apr	Normal	Rank	Pcntl	Oct 1 - Apr	Normal	Rank	Pcntl	Years
Baker	12.9	12.3			10.9	11.1			21
Billings	10.2	10.5	65	77	11.5	11.5	63	76	83
Belgrade	7.0	7.0	33	60	4.6	5.6	45	83	54
Butte	6.6	7.9	45	80	5.0	6.2	51	93	55
Cut Bank	13.2	13.5	40	52	12.3	13.5	70	91	77
Dillon	9.7	10.1	40	60	8.6	9.5	60	92	65
Glasgow	11.7	12.0	21	27	9.8	10.2	57	77	74
Great Falls	12.5	12.1	41	51	11.6	13.3	77	96	80
Havre	11.2	9.9	17	12	10.4	9.3	28	21	130
Helena	8.0	8.4	110	78	5.4	6.7	139	100	139
Jordan	8.9	9.3	25	71	7.6	7.8	25	71	35
Kalispell	6.5	7.0	90	75	5.0	5.1	106	89	119
Lewistown	10.7	9.8	31	39	9.0	9.9	65	84	77
Livingston	14.1	13.2	24	43	15.9	16.5	44	84	52
Miles City	10.6	11.4	58	45	9.4	10.1	65	50	128
Missoula	5.9	6.9	72	86	4.7	5.1	64	76	84
Mullan Pass	4.7	5.8	27	90	4.8	5.9	28	100	28
Wolf Point	9.9	10.0			8.0	8.0			21
Glendive	10.7	11.6	20	74	9.5	10.3	23	85	27
Sidney	10.4	10.1	10	31	9.1	9.2	18	60	30
W Yellowstone	7.2	7.0			5.6	6.7			5

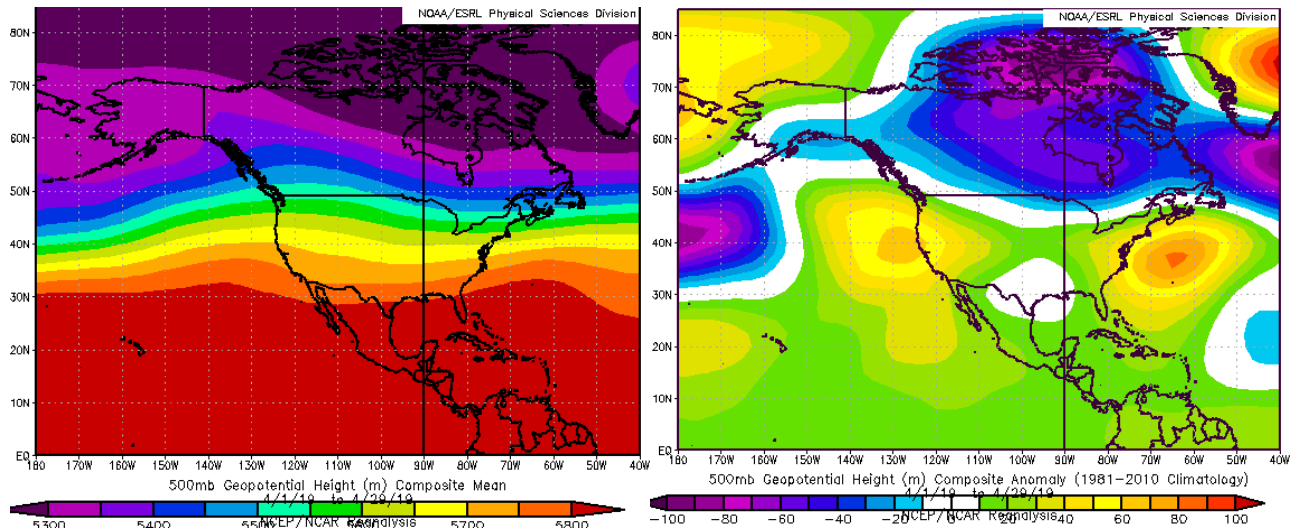


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (upper left) and departure from normal (upper right).

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.