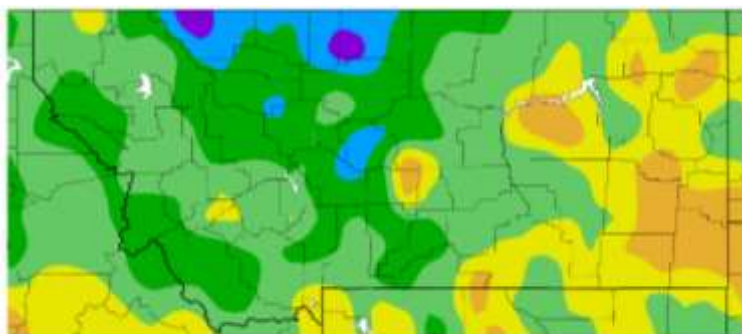


Montana Weather/Precipitation Summary

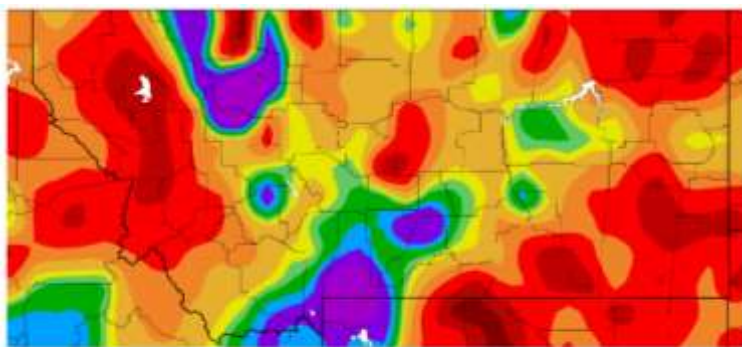
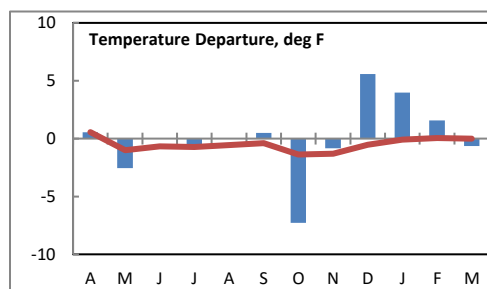
March 2020 NOAA's National Weather Service Great Falls Montana

For March, the upper level flow over Montana was generally from the west-northwest. There was a ridge off the western coast of North America, which was a little stronger than normal (Fig. 1). March's average temperatures were slightly below normal. Precipitation amounts were mostly below normal, with areas of above normal along the Rocky Mountain Front and the southern mountains. Winds averaged above normal.

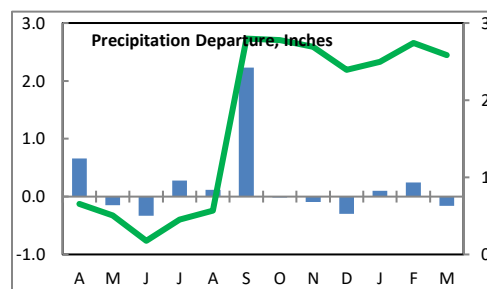
March temperature anomalies ranged from 3.9°F below normal at Cut Bank to 2.5°F above normal at Havre. The map below shows the variation. The warmest average temperatures were in southeast Montana. The warmest average temperature was at Yellowtail Dam, with an average of 39.6°F, while the coolest was 19.0°F at Point Six (Missoula). The highest temperature was 76°F at Billings, Forsyth, and Hysham on the 6th. The coldest temperature was -17°F at Polebridge on the 16th. The statewide temperature average of 32.6°F was the 62nd coolest of record. The red line on the graph shows the cumulative 12-month departure from normal, which is at normal. See the state summary and temperature tables below for more details.



Temperature departure from normal

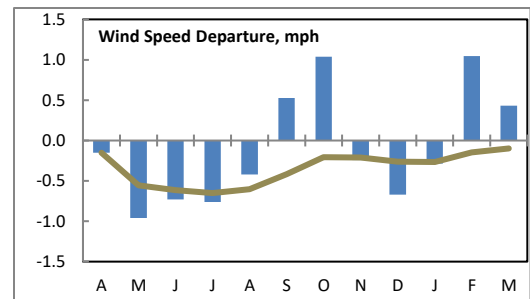


Percent of normal precipitation

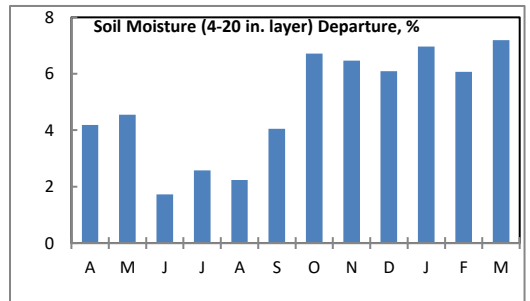


Precipitation was heaviest over the northern Rockies and northwest Montana. The highest amount (7.60-inches) fell at Flattop Mountain SNOTEL (Flathead). St Mary recorded the most at a lower elevation location (3.49"). The statewide composite of 0.79-inches was 0.16" below normal. This ranks as the 50th wettest March of record for Montana. The green line on the precipitation graph shows the cumulative 12-month departure from normal, which is 2.58" above normal. See state summary and precipitation tables below for more details. Snowfall was above normal in many areas, but averaged below normal for the state. The heaviest monthly snowfall was 45.5-inches at Mystic Lake.

Wind speed averages were above normal. Statewide, the month ranked as the 43rd windiest March, with an average speed of 9.9-mph. The strongest averages were in along the Rocky Mountain Front and Livingston areas. The composite statewide average was 0.4-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 0.1-mph below normal.



Statewide soil moisture averages continued above normal for March (right). This data is from 33 NRCS SCAN and SNOTEL, NOAA CRN and MT Mesonet stations. For March, this was the wettest of record, replacing 2007. 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/>

March started with above normal temperatures and the warmest temperatures of the month. It was a windy period as well. Gusts reached 87 mph at Deep Creek RAWS and 63 mph at Comertown (Sheridan) on the 1st. Winds continued on the 2nd through 4th. Gusts reached 80 mph at Deep Creek RAWS, 78 mph at Hornet Mountain and 75 mph at Ginger RAWS. Gusts in eastern Montana reached 71 mph near Zortman and 68 mph at Reed Point. After a brief cooler period, winds returned on the 10th and 11th. Gusts reached 82 mph at Deep Creek RAWS, 71 mph at Cut Bank and 65 mph at Ingomar. Snowfall of 6-inches fell near Utica and 11-inches at Red Lodge. Strong easterly winds caused widespread downing of trees from Woods Bay north to Creston. Wind gusts reached 75 mph at Point Six, 72 mph at Lake Blaine (near Kalispell) and 70 mph near Woods Bay. Highway 35 on the east shore of Flathead Lake was closed for part of the day on the 13th. A strong weather system moved south through the eastern plains on the 14th, with blizzard conditions and power outages along the Rocky Mountain Front. Snowfall totals of around a foot or more fell from Helena to Lewistown to Zortman, then to Cut Bank and back to the Rocky Mountain Front. Heavy amounts also fell over the southern mountains with 21 inches at Cooke City and 12 inches at Gardiner. The rest of the month was more tranquil with temperatures varying a few degrees either side of normal. Another winter system moved into the state on the 31st. Some areas reported up to six to 12 inches of snow, with temperatures returning to cooler than normal.

Precipitation/convection

Severe convective weather occurred on zero days in March, which is normal.

New Snowfall Records established this season...

Although December, January and February have had below to much below normal snowfall, several locations have exceeded their seasonal average snowfall. Snowfall in September, October and November was heavy. Following is a table showing several sites with their snowfall through February, along with their seasonal normal snowfall. If they have already exceeded their seasonal normal, the amount in the current season is denoted with an *. If they have set a new seasonal record, it is denoted with ^^.

Location	Current Season Snow (in)	Normal for whole season	Record for season (inches)
Bozeman	59.7	40.2"	97.8 (1947-48)
Bozeman MSU	84.9	91.0"	158.5 (1996-97)
Chinook	42.5*	31.2"	66.0 (2010-11)
Choteau	100.3^^	39.8"	92.9 (2017-18)
Cut Bank	90.3^^	33.6"	76.2 (1946-47)
Dillon	47.3*	37.9"	90.8 (1988-89)
East Glacier	210.8*	176.6"	319.0 (1971-72)
Great Falls	91.1*	63.5"	117.5 (1988-89)
Havre	66.0*	39.5"	93.3 (1981-82)
Helena	36.9	38.1"	112.8 (1880-81)
Lewistown	69.0	63.1"	111.1 (1927-28)
Loma	62.8*	38.4"	91.0 (1977-78)
Sun River	78.9*	23.5"	93.8 (1966-67)
Turner	78.3^^	24.6"	74.2 (2010-11)
W Yellowstone	125.4	162.7"	316.6 (1994-95)

Water-year-to-Date (Oct-Mar)

The water-year average temperature for Montana was 29.2°F and 0.4°F above normal. This was the 57th warmest of record and warmest since 2016.

This season's composite precipitation was 4.75-inches and 0.20-inches below normal. This was the driest such period since 2010 and the 55th driest of record.

Seasonal snowfall (Jul-Mar) was 55.4-inches and 6-inches above normal. This was the 32nd highest amount for the season and snowiest since last year.

Winds averaged 9.2-mph, which was 0.2-mph above normal. This was the 29th calmest such period.

March information:

High Temperature	76°F at Billings, Forsyth, and Hysham (6 th)	Greatest Precip	3.49" at St Mary
Low Temperature	-17°F at Polebridge (16 th)		7.60" at Flattop Mtn SNOTEL (Flathead)
Warmest Ave Temp	39.6°F at Yellowtail Dam	Peak Wind Gust	87 mph at Deep Creek RAWS (1 st and 10 th) and 76 mph at Browning (2 nd)
Coollest Ave Temp	19.0°F at West Yellowstone		
Range of Temp departures	-3.9°F at Cut Bank to +2.5°F at Baker	Highest Ave Wind	18.8 mph at Deep Creek RAWS 15.6 mph at Livingston
21 city mean monthly Temperature/Normal	32.6/33.2F normal. 62 nd coolest of record (since 1880). 56 th percentile.	20 city mean monthly wind speed/Normal	9.9 mph/9.4 mph; 43 rd windiest of record (since 1936). 50 th percentile.
22 city mean monthly precipitation/Normal	0.79"/0.95" - 86% of normal. 50 th wettest of record (since 1880). 36 th percentile.	20 city mean monthly snowfall/Normal	8.6"/9.6" - 69 th lowest of record (since 1880). 51 st percentile

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

Location	Mar	% of Norm	Rank	Pcntl	Oct 1 – Mar 31	% of norm	Rank	Pcntl	Years
Baker	0.25	35%			2.09	61%			22
Billings	1.00	94%	43	35	3.78	87%	70	58	119
Belgrade	1.18	130%	20	23	3.76	89%	49	59	83
Butte	0.48	63%	95	75	1.68	47%	108	86	126
Cut Bank	0.75	150%	22	19	3.34	175%	22	19	113
Dillon	0.23	43%	62	76	1.75	74%	59	73	80
Glasgow	0.40	95%	45	36	3.05	117%	48	39	121
Great Falls	0.89	98%	55	42	4.07	105%	79	61	128
Havre	0.63	117%	51	36	3.45	135%	62	44	140
Helena	0.95	161%	39	27	3.10	110%	102	72	141
Jordan	0.56	108%			3.98	155%			22
Kalispell	0.30	28%	122	96	5.44	74%	107	85	126
Lewistown	0.41	41%	103	82	4.27	95%	79	63	124
Livingston	1.20	143%	26	21	4.15	99%	68	58	117
Miles City	0.25	42%	117	82	1.31	48%	139	97	143
Missoula	0.22	23%	136	94	4.25	77%	120	86	140
Mullan Pass	3.73	83%	37	47	27.66	108%	36	45	79
Wolf Point	0.10	22%			1.24	50%			22
Glendive	0.52	87%	69	55	2.66	84%	80	65	122
Sidney	0.40	67%	39	48	2.53	72%	51	63	80
BZN MSU	0.81	59%	108	75	6.78	99%	60	42	143
W Yellowst	2.16	133%	26	25	10.15	90%	57	56	101

Rankings and Percentiles are 1=wettest, higher numbers=drier.

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	Mar	Normal	Rank	Pcntl	Oct 1 – Mar 31	Normal	Rank	Pcntl	Years
Baker	34.1	34.1	26	23	28.1	28.1	48	44	107
Billings	36.6	37.7	39	45	34.1	34.3	41	47	86
Belgrade	33.1	34.1	39	45	29.2	28.7	32	37	85
Butte	31.3	31.4	49	38	26.9	26.5	64	50	126
Cut Bank	27.6	31.5	74	66	27.2	28.9	61	55	111
Dillon	31.3	34.3	47	61	28.0	29.7	61	80	76
Glasgow	33.4	31.7	30	24	27.4	25.8	28	22	124
Great Falls	31.7	34.2	78	62	31.4	31.7	78	63	123
Havre	29.5	32.8	78	55	27.6	27.8	60	42	140
Helena	34.6	36.3	67	47	32.6	31.2	31	22	140
Jordan	36.1	33.2	29	28	30.5	27.7	25	25	97
Kalispell	34.5	35.4	60	49	31.9	30.5	27	22	120
Lewistown	30.7	32.9	62	50	29.4	30.2	66	56	118
Livingston	35.0	35.6	60	50	33.8	32.8	55	47	117
Miles City	36.0	34.7	43	30	30.7	29.6	43	31	138
Missoula	37.6	38.8	50	38	33.2	32.8	31	24	127
Mullan Pass	25.9	27.6	27	63	26.3	26.3	20	45	43
Wolf Point	33.0	30.6			26.3	24.5			22
Glendive	33.9	34.6	44	35	30.9	29.8	25	20	124
Sidney	32.7	34.1	32	33	27.1	28.6	27	28	97
W Yellowst	25.7	24.6	28	29	20.2	19.9	62	65	95

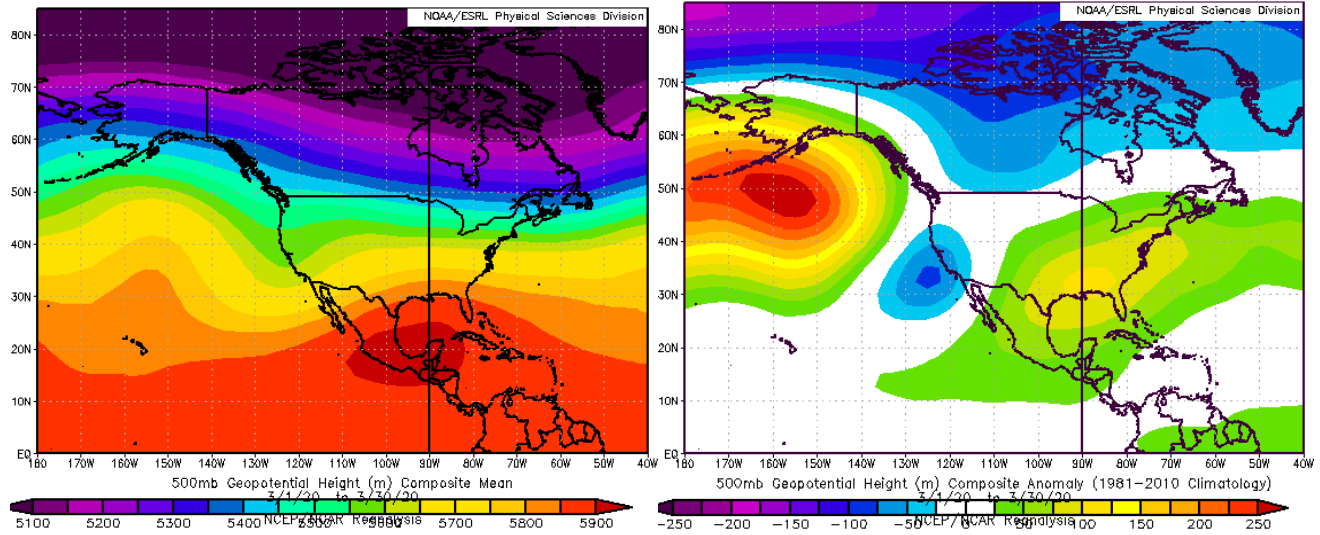
Rankings and Percentiles are 1=coldest, higher numbers=warmer.

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

Location	Mar	Normal	Rank	Pcntl	Oct 1 – Mar 31	Normal	Rank	Pcntl	Years
Baker	10.9	12.0			10.8	10.9			22
Billings	11.2	10.7	46	54	12.7	11.7	18	20	84
Belgrade	6.8	6.2	21	36	5.3	5.4	30	54	55
Butte	6.1	6.9	41	71	4.8	5.9	46	82	56
Cut Bank	15.5	13.0	12	15	15.2	13.6	14	17	78
Dillon	11.0	9.8	21	30	10.2	9.4	19	28	66
Glasgow	11.6	11.0	14	17	10.0	9.9	35	46	75
Great Falls	12.8	12.2	37	44	13.5	13.5	43	52	82
Havre	11.2	9.2	13	9	11.0	9.2	8	5	131
Helena	8.3	7.5	61	43	6.6	6.4	102	73	140
Jordan	9.2	8.4	7	18	8.3	7.5	9	23	36
Kalispell	8.4	6.1	11	8	5.2	4.8	112	93	121
Lewistown	10.9	9.5	23	29	10.3	9.9	36	45	78
Livingston	15.6	15.1	25	44	18.6	17.1	16	29	53
Miles City	10.5	10.7	41	31	9.8	9.9	36	27	129
Missoula	6.8	6.1	28	32	4.3	4.8	70	82	85
Mullan Pass	5.6	6.3	23	73	5.2	5.9	27	93	29
Wolf Point	8.5	8.8			7.7	7.7			22
Glendive	9.7	10.7	24	86	9.7	10.1	18	64	28
Sidney	8.8	9.5	23	71	8.33	9.1	28	90	31
W Yellowst	8.1	8.7			6.25	6.6			6

Rankings and Percentiles are 1=windiest, higher numbers=calmer.

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



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.