Montana Weather/Precipitation Summary

April 2011 by NOAA's National Weather Service Great Falls Montana

As La Nina continued to weaken in April, below normal temperatures persisted over much of the area. In some sections, heavy snow continued to fall, pushing seasonal totals to new record highs at many locations across the north central and northeast. Westerly flow aloft (Fig. 2) continued to produce regular disturbances with moisture to provide ample snowfall to mainly western Montana. During April, temperatures were below to much below normal across the state. Precipitation and snowfall totals varied widely.

Temperatures across the state (Fig. 1) in April averaged 38.7F, over four degrees below average. This produced the 12th coolest April, and the coolest April since 1997. Some areas of central Montana recorded their coolest April since 1979. Temperatures averaged coolest across north central portion of the state (Fig. 3). This was the third consectutive month of below normal temperatures.

Precipitation and snowfall amounts for the month were above average most areas (Fig. 1). There were scattered areas of below normal precipitation. The statewide average of 1.80 inches was a 0.53-inch surplus or 142 percent of average for the month. This was the 10th wettest of record, and the sixth consecutive month of above normal precipitation. Snow and precipitation anomalies were greatest over the western border area, central and extreme eastern Montana (Fig. 4). Over the Rockies, deep snowpack remained at some locations. Snow-on-ground totals were 100-120 inches at a few locations in the Mission and Swan Ranges.

Wind speeds were near the monthly normal in April. continued dropped to below average values. Outside normally windy areas, the windiest region was along the North Dakota border and northeast Montana. The April average of 10.0 mph was right at the normal for April; the 30th calmest April of record.

Soil moisture conditions were above average in April. At Havre and Great Falls, some the coldest and wettest soil conditions since 1997 existed at the end of April.

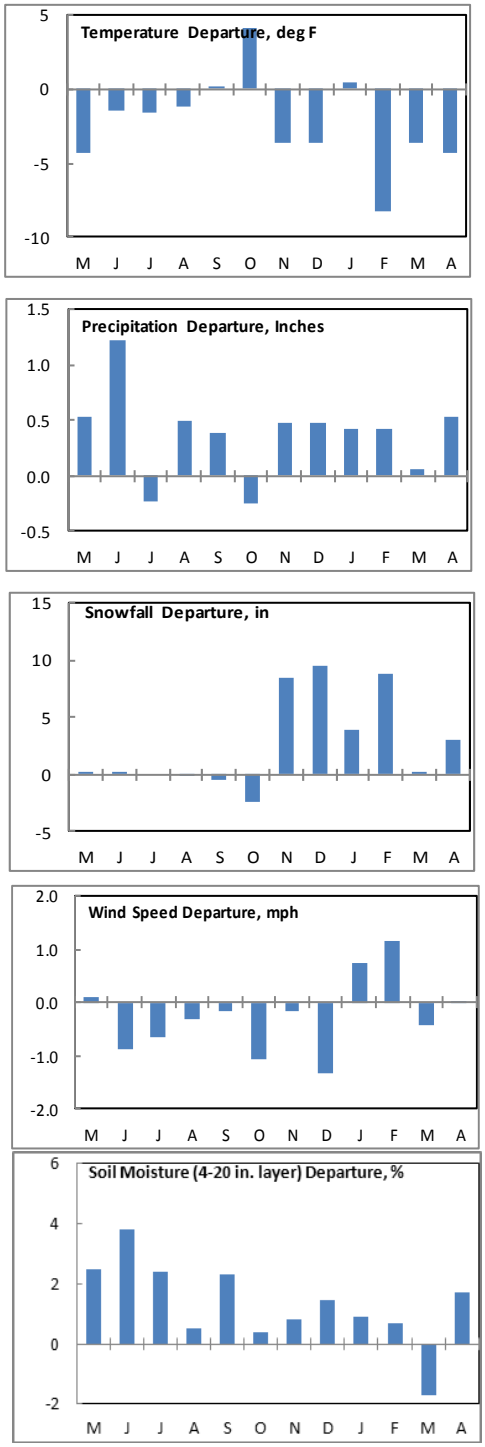


Figure 1. Statewide departures from normal for 18 locations.

Apr 1-6

April started out warm across the state, with temperatures as warm as 76F at Billings. Meanwhile heavy rain and some snow fell along and west of the divide. Up to one inch fell at Essex. Gusty winds up to 58 mph caused some damage across the west and southwest. As cooler conditions settled across the area, heavy snow fell over the northern portions on the third. Up to 11 inches of snow fell at East Glacier and 10 inches south of Lloyd (Blaine County). After the system passed through the state, winds increased along the Rocky Mountains. Gusts to 85 and 87 mph were observed at Logan pass on the 4th and 5th. Colder air settled into the southwest valleys. West Yellowstone dropped to 0F on the 6th.

Apr 7-18

A period of variable conditions prevailed during the second week of April. Heavy snow fell over much of central Montana on the 7th and 8th. Up to 26 inches fell near Montana City, with two feet falling in the Stanford area. Flooding began to affect much of the Milk drainage area by the 7th in north central Montana. This continued into late April. On the 11th, winds again increased with warmer conditions. Logan Pass reached 72 mph on the 11th. Again on the 14th, strong winds blew over the Rockies, with Logan Pass peaking at 110 mph. Meanwhile, an area of heavy snow fell across central Montana, with Winifred (Fergus County), collecting six inches. A larger storm affected much of Montana on the 17th. Heavy snow fell across northwest Montana. Many Glacier received 1.5 feet, while Marias Pass measured a foot.

Apr 19-30

Again, a changeable period dominated the last part of April. Cold temperatures settled in behind the storm of the 17th, with St Mary dropping to -2F on the 19th and Elk Park reaching -8F on the 20th. Snow continued across southeast Montana, with Billings and Bozeman collecting 6-8 inches, and a foot falling in the higher mountains of south central Montana. On the 21st and 22nd, another snow system moved through Montana. Up to a foot of snow fell around Great Falls, with higher amounts in the area mountains (Fig 5). With below normal temperatures continued through the end of the month, precipitation continued to fall mainly as snow. On the 30th, a major blizzard developed over North Dakota, with affects felt along the border regions of Montana. Up to 8 inches of snow fell around Bainville, with strong winds to 60 mph piling the snow into 4-6 foot drifts (Fig. 5).

Figure 5. Pictures from April. The one of the left was taken in Great Falls on April 22 after nearly a foot of snow fell. The picture on the right was taken on May 1, showing the line of vehicles parked and slowly moving on I-94 near the North Dakota/Montana border after the major blizzard of April 30. The line of vehicles stretched for three miles.

New Temperature Records for the current month

Station	Record Type	New Record	Date	Previous Record	Year of Previous Record
Dillon	High Daily Min	44	1	41	1959
Bozeman	Low Daily Min	16	22	17	1968
Bozeman	Low Daily Max	35	22	38	1937
Lewistown	Low Daily Max	33	22	33	1931

Precipitation / convection

Severe convective weather did not occur on any days in April. At Sidney, the 2.92 inches recorded was the 3th wettest April of record, and the wettest since 2006.

New Precipitation Records for the current month

Station	Record Type	New Record	Date	Previous Record	Year of Previous Record
Butte	High Daily Precip	0.41	13	0.36	2010
Great Falls	High Daily Precip	0.63	21	0.35	1967
Great Falls	High Daily Snow	8.0	22	4.3	1960
Lewistown	High Daily Precip	0.91	22	0.90	1904

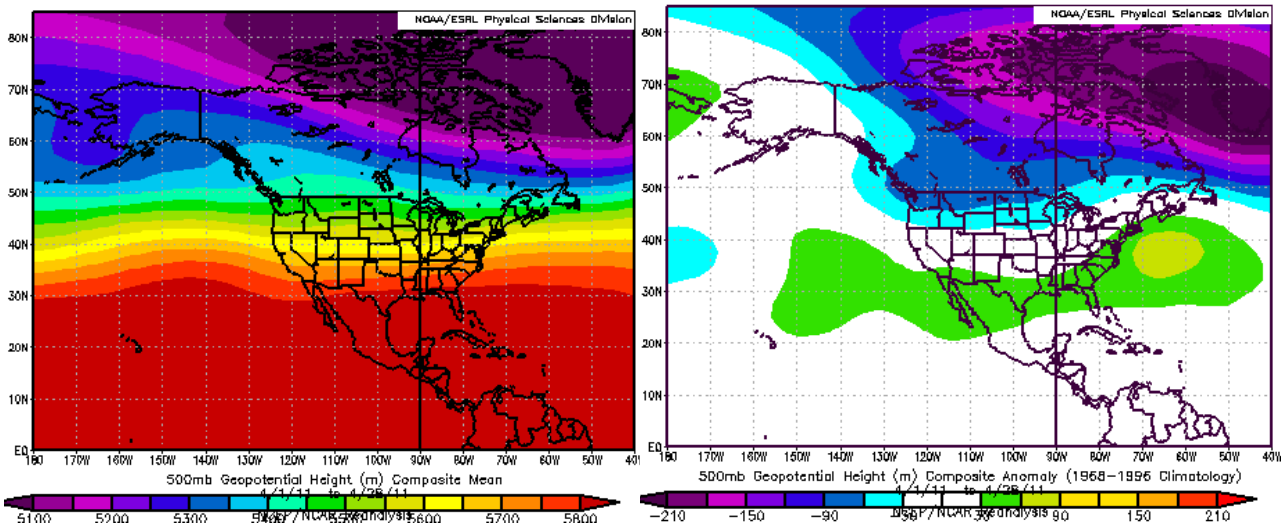
April summary information:

High Temperature	76°F at Billings (2nd)	**Greatest Precip**	8.11" at Mullan Pass
Low Temperature	-8°F at Elk Park (20th)		11.2" at Badger Pass SNOTEL
Warmest Ave Temp	44.5°F at Glendives	**Peak Wind Gust**	110 mph at Logan Pass (14th) 62 mph at Choteau (5th) and near Bynum (11th)
Coolest Ave Temp	26.5°F at Mullan Pass		
Range of Temp departures	-1.2°F at Roundup to -7.6°F at Harlem	**Highest Ave Wind**	20.4 mph at Logan Pass and 15.5 mph at Livingston
18 city mean monthly Temperature / Normal	42.7/46.1; 17th coolest of record (since 1880)	**18 city mean monthly wind speed / Normal**	10.0 mph/10.0 mph; 30th calmest of record (since 1936)
18 city mean monthly precipitation / Normal	1.80/1.27" – 142% normal; 10th wettest of record (since 1880)	**19 city mean monthly snow / Normal**	8.5/3.0"; 17th snowiest (since 1880)

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

Location	Apr	% of Norm	Rank	Pcntl	Oct 1 – Apr 30	% of norm	Rank	Pcntl	Years
Baker	1.99	222%			4.18	105%			13
Billings	1.82	105%	74	72	6.93	100%	76	74	102
Belgrade	1.34	96%	42	56	5.26	87%	36	48	74
Butte	0.89	87%	49	41	4.00	84%	43	36	117
Cut Bank	1.20	133%	86	82	3.00	90%	55	52	104
Dillon	0.75	79%	32	44	3.14	99%	37	51	71
Glasgow	0.46	61%	34	29	5.58	169%	97	87	111
Great Falls	2.83	202%	115	96	9.24	160%	117	98	119
Havre	0.84	97%	67	50	5.57	140%	112	85	131
Helena	0.78	86%	64	48	4.88	121%	77	58	133
Jordan	0.91	92%			5.38	151%			13
Kalispell	1.84	151%	107	91	11.79	131%	16	13	117
Lewistown	3.69	267%	114	98	9.04	136%	107	93	115
Livingston	0.53	37%	14	12	3.68	55%	13	11	108
Miles City	2.02	144%	111	83	4.10	83%	55	41	134
Missoula	0.88	81%	63	47	9.16	134%	110	84	130
Mullan Pass	8.11	297%	72	103	45.71	184%	69	99	70
Wolf Point	0.28	33%			2.42	89%			13
Glendive	2.89	237%	112	96	7.35	160%	107	96	111
Sidney	2.92	273%	71	99	8.94	197%	70	100	70
BZN-MSU	3.52	171%	130	96	10.38	122%	110	83	132

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 2a (top-left); 2b (top-right. Mean flow at 500 millibars (~18,000 ft) for April (top-left). Generally, westerly flow dominated for the month (1a), with a suppressed ridge across the west. This produced below normal heights across most of Montana in April. (1b)

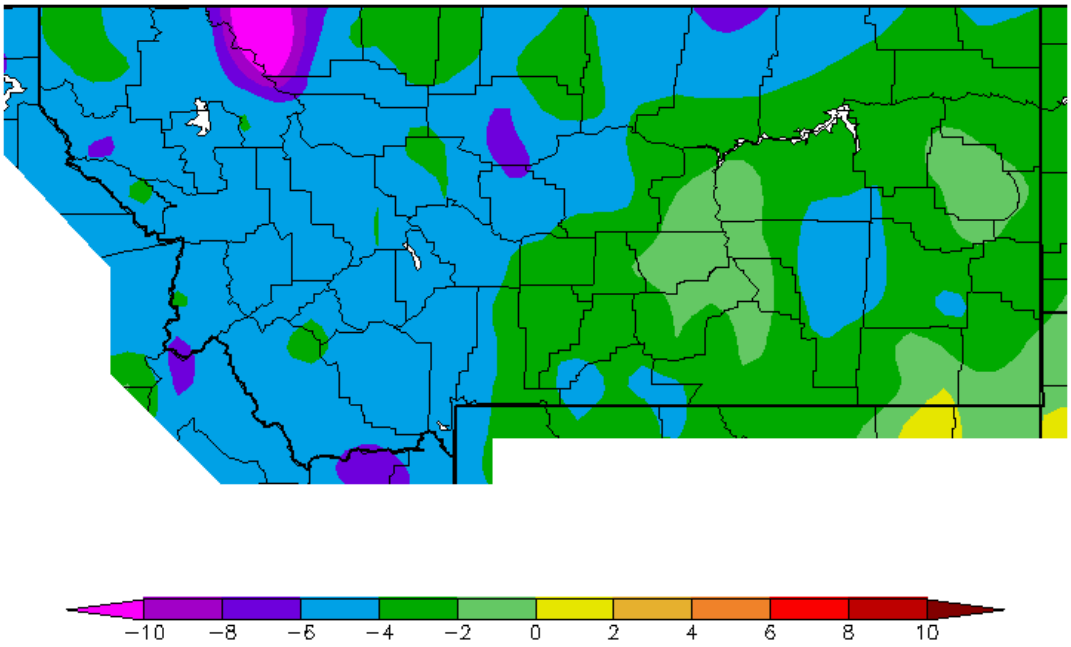


Figure 3. Temperature anomaly for April. Temperatures were below to much below normal across the state (Western Region Climate Center).

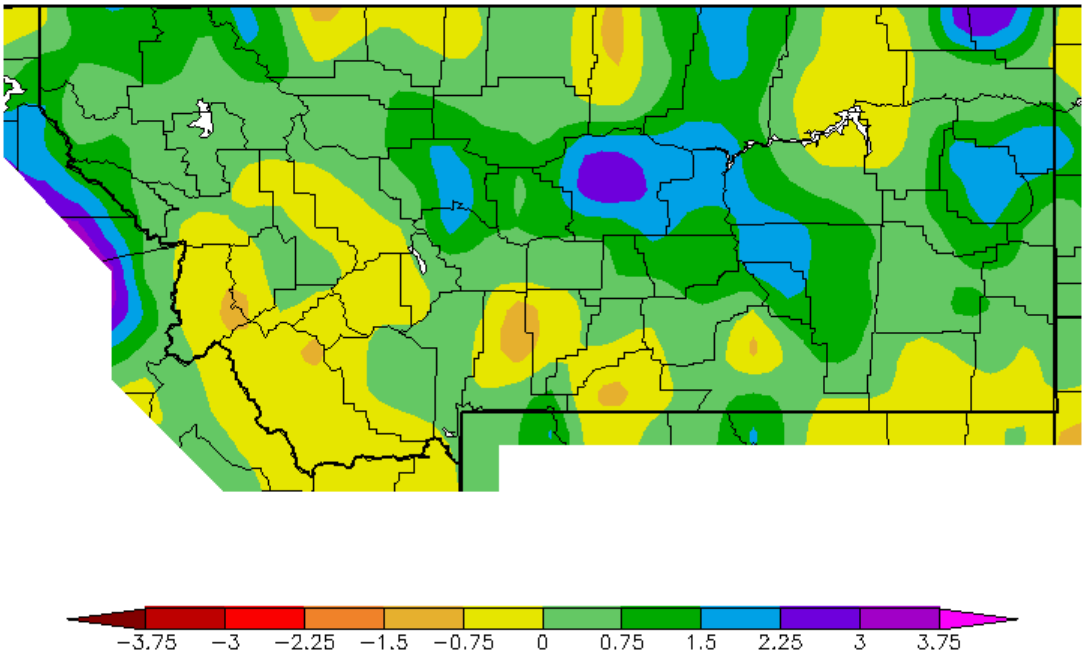


Figure 4. Precipitation anomaly (% of normal) for April (Western Region Climate Center).

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. The climatological record for normals is 1971-2000. 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.