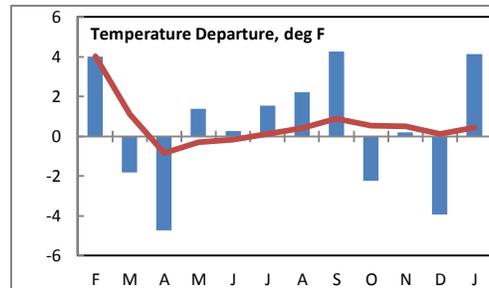


Montana Weather/Precipitation Summary

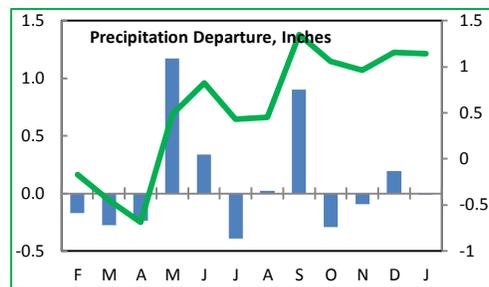
January 2014 by NOAA's National Weather Service Great Falls Montana

Temperatures averaged above normal across most of the state in January. A ridge of high pressure just off the west coast of North America brought sustained northwest flow to Montana. The trough of low pressure over central North America was stronger than normal (Figure 1). When the ridge was over the mainland, temperatures were warmer across the state.

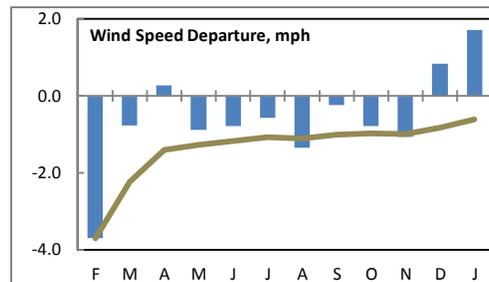
Statewide composite temperatures averaged 4.1°F above normal for the month. Figure 2 shows the areas of temperature anomalies. A small area of below normal temperatures was over the far southwest and far northeast corners of the state. Temperatures were up to 0.5°F below normal in northeast Montana, and over seven degrees above normal in Hill and Blaine Counties. The warmest average January temperature was 34.6°F at Big Timber, and the coolest was 11.0°F at Plentywood.



For the past 12-months, the statewide composite average temperature is 0.4°F above normal. This was the warmest January since 2012.



The monthly departure from normal for precipitation across Montana is shown in Figure 3. This figure shows above normal precipitation across the central part of the state, with areas of below normal across the northwest, southwest and northeast. The heaviest precipitation fell along the western border, receiving over five inches of precipitation. The precipitation figure to the right shows that this month had a 0.19" positive departure. The statewide composite precipitation for the past 12 months is over one inch above normal. Although the northeastern portion of the state recorded little snowfall, the statewide composite was close to the long-term normal.



On a statewide average, winds were above normal this month. This January was the 11th windiest of record, with an average speed of 10.9-mph. Only three of the past 12-months have had wind speeds averaging above normal. This was the windiest January since 1990. The fastest measured gust of the month, 119 mph, occurred at Logan Pass. For the past 12-months, winds are running 0.6-mph below average.

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

January 1-10

January started out as a typical January in Montana. Mild temperatures generally prevailed. Heavy snow had fallen across much of the central and southern portions on the first, with up to a foot at Windham and Big Sky, and seven inches at Billings and Roundup. On the second, mild and windy conditions produced gusts to 86 mph at Nye and 87 mph near Bynum. Meanwhile, heavy snow fell over western Montana. Up to two feet of snow fell at Essex and 6 inches at Columbia Falls. A strong frontal system brought snow to much of the state on the 4th and 5th. Hardin received 6.5 inches, Red Lodge 9 inches and Livingston 8 inches. After the front passed, temperatures plummeted into the -20F range across northeast Montana. Wind chills bottomed out at -61F at Navajo, while Mizpah recorded the lowest temperature for the month on the sixth, dropping to -34F. Temperatures gradually warmed again, with winds increasing along the continental divide. Gusts reached 63 mph at Sieben Flats on the 8th. By the 10th, westerly flow

began to increase across the state. This brought in large amounts of moisture west of the divide, with 12-18 inches of snow over the higher elevations of the west. Up to 10 inches fell at Lolo Pass.

January 11-21

A warmer and windy period prevailed mid-month. The 11th and 13th were very windy across much of the area. Gusts reached 115 mph at Logan Pass on the 11th, with Cut Bank gusting to 82 mph. This was the third highest gust of record in January at Cut Bank. Meanwhile, thunderstorms along a cold front brought up to 125 lightning strikes and pea size hail to central Montana. Winds continued on the 12th, with a gust to 100 mph at Logan Pass, and 79 mph in the Sweet Grass Hills. Another round of very strong winds returned on the 13th. Gusts reached 119 mph at Logan Pass, 117 mph at Augusta, 103 mph at Choteau, 70 mph at Livingston and Big Timber and 73 mph at Zortman. After the winds died down a bit, snow fell at Great Falls, producing a new daily record of 3.3 inches of snow. Snow continued over central and southern Montana on the 14th. Adel picked up a foot, Hobson 8 inches, and Red Lodge measured 16 inches. Windy conditions again on the 15th produced gusts to 66 mph at Harlowton, 71 mph at Cut Bank and Geysers and 59 mph at Zortman. Mild and windy conditions prevailed on the 17th. Great Falls reached 58 degrees, while winds preched 69 mph west of Bynum. As cold air spread across eastern Montana on the 20th, winds reached 62 mph at Bredette.

January 22-31

The end of the month was mild and windy during the first part, and then turned cold and snowy. Fort Benton reached 62F on the 25th, before a cold front pushed through the state. Dillon and Havre set daily high temperature records for the date. This next weather system brought heavy snow and gusty winds to much of the state once again. Gusts reached 70 mph near Bredette, 71 mph at Opheim, and 70 mph near Lindsay, while Red Lodge picked up another 11 inches of snow. Some of the mountains in south central Montana received 1.5 feet of snow. Butte also tied a daily record high on the 26th, reached 47 degrees. After this front passed through, cold air settled across the southwest valleys. Whiskey Creek bottomed out at -28F on the 28th. On the 29th, another weather system brought heavy snow to western and central Montana. Columbia Falls received 10 inches of snow, while 18 inches fell near Condon and Seeley Lake, 14 inches at Potomac, 16 inches at Stanford, and 5-7 inches in the Billings area. Cold air behind this system brought lows in the -20F range again to portions of the hi-line.

Precipitation/convection

Severe convective weather, other than pea size hail on the 11th, occurred on no days in January. This is normal for the month.

January summary information:

High Temperature	62°F at Fort Benton (25 th)	Greatest Precip	5.25" at Mullan Pass
Low Temperature	-34°F at Mizpah 4NNW (6 th)		9.20" at North Fork Jocko SNOTEL
Warmest Ave Temp	34.6° at Big Timber	Peak Wind Gust	119 mph at Logan Pass (Glacier) (13 th)
Coollest Ave Temp	11.0°F at Plentywood		117 mph at Augusta (13 th)
Range of Temp departures	-0.1°F at Plentywood to +6.9°F at Havre	Highest Ave Wind	26.0 mph at Deep Creek RAWS 23.1 mph at Big Timber
21 city mean monthly Temperature/Normal	24.6/20.5F 4.1F above normal. 22 nd warmest of record (since 1880). 81 st percentile. Oct-Jan 28.3/28.8 0.5F below normal. 55 th coolest of record.	20 city mean monthly wind speed/Normal	10.9 mph/9.2 mph; 11 th windiest of record (since 1936). 84 th percentile. Oct-Jan 9.2mph/9.0 0.2-mph above normal. 26 th calmest of record.
22 city mean monthly precipitation/Normal	0.77/0.78" – 99% of normal. 65 th driest of record (since 1880). 47 th percentile Oct-Jan 3.29"/3.50" 0.21" below normal. 53 rd driest of record.	20 city mean monthly snowfall and normal	10.3/10.8" – 0.5" below normal. 62 nd lowest. 46 th percentile. Oct-Jan 32.5"/33.4" 0.9" below normal. 63 rd highest.

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

Location	Jan	% of Norm	Rank	Pcntl	Oct 1 – Jan 31	% of norm	Rank	Pcntl	Years
Baker	0.17	91%			2.72	127%			16
Billings	1.02	126%	95	82	5.91	169%	110	97	113
Belgrade	0.29	57%	21	26	1.34	46%	4	4	77
Butte	0.23	49%	23	18	1.27	54%	14	11	120
Cut Bank	0.45	225%	80	74	1.57	131%	65	60	107
Dillon	0.02	8%	4	4	0.51	32%	1	1	74
Glasgow	0.13	35%	17	14	1.58	82%	38	32	116
Great Falls	1.29	253%	106	86	3.34	133%	83	68	122
Havre	0.42	127%	71	52	2.43	140%	84	62	134
Helena	0.55	153%	72	52	1.55	80%	23	16	136
Jordan	0.22	96%			2.63	146%			16
Kalispell	1.35	102%	66	54	5.80	109%	80	66	120
Lewistown	0.99	174%	91	76	3.07	100%	48	40	118
Livingston	0.41	84%	55	48	2.70	94%	50	45	111
Miles City	0.14	44%	26	18	1.82	95%	53	38	137
Missoula	0.87	102%	66	48	2.58	67%	19	14	134
Mullan Pass	5.31	94%	36	49	15.32	85%	21	28	73
Wolf Point	0.06	19%			0.62	34%			16
Glendive	0.26	72%	47	39	2.53	112%	76	66	115
Sidney	0.04	10%	3	3	2.42	94%	45	61	73
BZN-MSU	0.69	83%	50	37	3.87	83%	57	42	135

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>

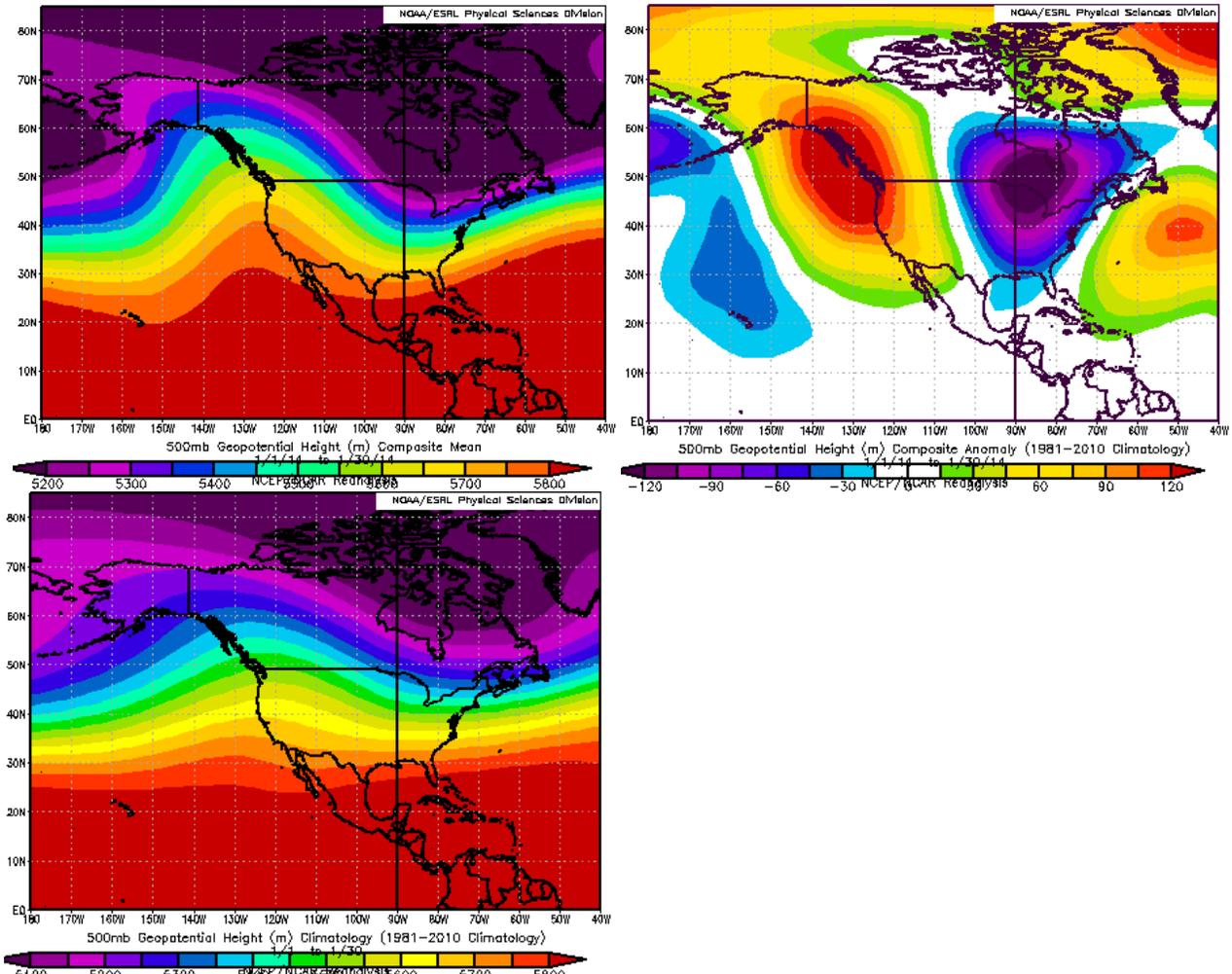


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (left) and departure from normal (right). The west coast ridge and eastern trough are normal, but they were just stronger than normal.

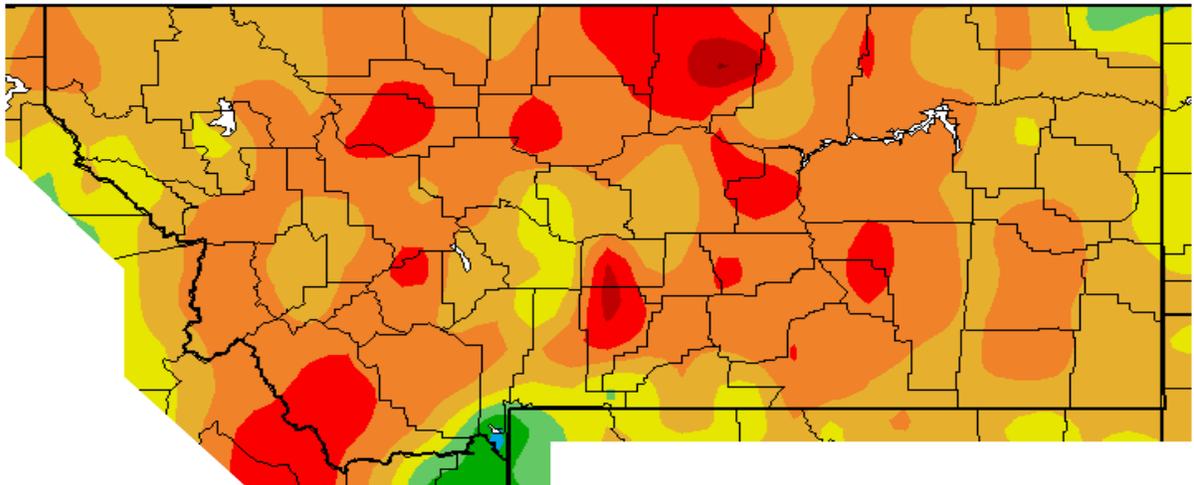


Figure 2. January 2014 temperature departures from normal (°F) (Western Region Climate Center).

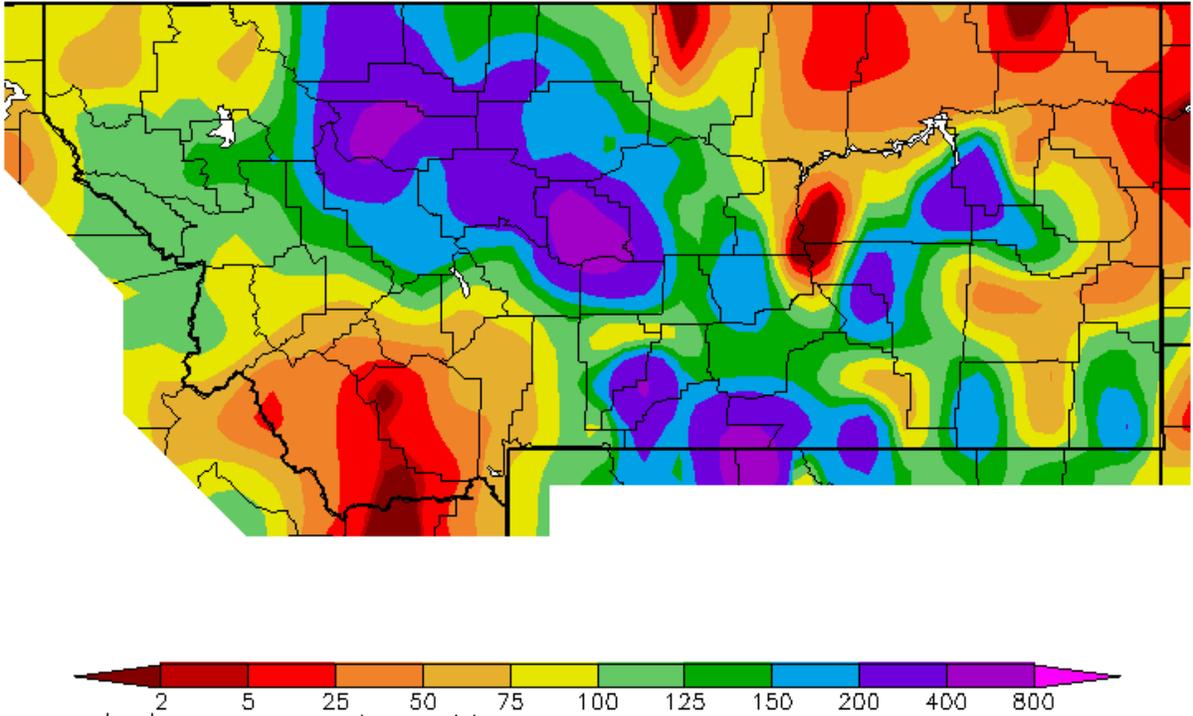


Figure 3. January 2014 precipitation departures from normal (percent) (Western Region Climate Center).

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 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.