U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: BIDDLE 8 SW, MT **COOP ID: 240743**

Climate Division: MT 7 **NWS Call Sign:** **Elevation: 3,597 Feet** **Lat: 45˚02N** **Lon: 105˚29W**

Temperature (˚F)

	Mean (1)			Extremes										Degree Days (1) Base Temp 65		Mean Number of Days (3)					
Month	Daily Max	Daily Min	Mean	Highest Daily(2)	Year	Day	Highest Month(1) Mean	Year	Lowest Daily(2)	Year	Day	Lowest Month(1) Mean	Year	Heating	Cooling	Max >= 100	Max >= 90	Max >= 50	Max <= 32	Min <= 32	Min <= 0
Jan	33.1	7.3	20.2	69	1992	31	31.2	1981	-32	1979	14	3.2	1979	1389	0	.0	.0	3.0	11.9	30.5	9.0
Feb	39.2	13.0	26.1	72	1982	21	35.8	1999	-37	1996	2	12.5	1978	1089	0	.0	.0	7.0	7.4	26.8	4.5
Mar	47.8	20.6	34.2	78+	1994	16	42.2	1986	-27	1989	4	26.3	1996	955	0	.0	.0	15.1	3.7	27.4	1.6
Apr	58.3	29.5	43.9	90	1980	21	50.7	1987	0	1997	12	37.1	1975	634	0	.0	@	22.9	.6	17.3	@
May	68.0	39.0	53.5	98	1969	27	59.2	1988	15+	1968	11	48.5	1983	366	10	.0	.4	29.5	.0	4.9	.0
Jun	78.3	48.4	63.4	107+	1988	23	76.2	1988	28+	1969	14	58.4	1982	138	88	.5	3.8	29.9	.0	.1	.0
Jul	86.7	54.5	70.6	109	1981	6	76.4	2000	36	1971	30	62.8	1993	41	215	1.8	12.6	31.0	.0	.0	.0
Aug	86.2	52.7	69.5	107	2000	13	76.5	1983	30	1966	22	63.4	1992	60	197	.9	12.5	31.0	.0	.1	.0
Sep	74.4	42.0	58.2	104	1978	5	66.8	1998	13	1984	25	52.8	1984	244	40	.3	3.3	28.9	.0	3.4	.0
Oct	61.2	31.1	46.2	89+	1997	2	49.6	1988	-17	1991	30	42.0	1971	585	0	.0	.0	25.8	.4	15.0	.1
Nov	44.3	18.7	31.5	79	1999	12	44.9	1999	-24	1985	23	14.9	1985	1005	0	.0	.0	11.4	5.3	27.3	1.8
Dec	34.9	9.7	22.3	69	1973	1	33.9	1999	-43	1989	22	2.7	1983	1324	0	.0	.0	4.1	10.5	30.2	6.2
Ann	59.4	30.5	45.0	109	Jul 1981	6	76.5	Aug 1983	-43	Dec 1989	22	2.7	Dec 1983	7830	550	3.5	32.6	239.6	39.8	183.0	23.2

\+ Also occurred on an earlier date(s)

@ Denotes mean number of days greater than 0 but less than .05

Complete documentation available from: www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1963-2001

(3) Derived from 1971-2000 serially complete daily data

Issue Date: February 2004

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Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	.46	.34	.58	1971	30	1.88	1971	.03	1992
Feb	.41	.40	.63	1999	26	.91	1999	.02	1992
Mar	.85	.70	1.00	1995	12	1.80	1977	.05	1979
Apr	1.56	1.44	2.00	1969	25	3.57	1984	.31	1977
May	2.55	2.25	2.70	1970	8	8.70	1978	.24	1998
Jun	2.58	2.34	2.85	1976	23	8.61	1976	.23	1988
Jul	1.60	1.55	2.63	1982	24	3.67	1987	.12	1980
Aug	.97	.69	1.96	1968	23	2.76	1980	.04	1989
Sep	1.38	1.01	3.12	1986	25	6.03	1986	.11	1989
Oct	1.26	.78	2.40	1971	2	5.42	1971	.07+	1987
Nov	.59	.53	1.59	1964	14	1.99	1978	.02+	1990
Dec	.51	.39	.50+	1984	23	1.22	1985	.01	1991
Ann	14.72	14.93	3.12	Sep 1986	25	8.70	May 1978	.01	Dec 1991

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.2	1.6	@	.0
Feb	4.1	1.6	@	.0
Mar	6.1	2.8	.4	@
Apr	7.4	4.6	.7	.2
May	9.4	6.0	1.8	.4
Jun	9.1	5.5	1.7	.5
Jul	6.5	4.0	.9	.2
Aug	4.6	2.9	.6	.0
Sep	5.0	3.1	.9	.3
Oct	5.1	2.9	.7	.3
Nov	5.1	1.9	.1	.0
Dec	4.7	1.8	.1	.0
Ann	72.3	38.7	7.9	1.9

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.05	.09	.15	.22	.29	.36	.45	.56	.72	.97	1.21
Feb	.06	.09	.15	.20	.26	.33	.40	.50	.62	.83	1.03
Mar	.15	.22	.34	.46	.58	.71	.85	1.03	1.27	1.66	2.03
Apr	.32	.46	.69	.90	1.11	1.34	1.59	1.90	2.30	2.95	3.56
May	.57	.81	1.18	1.52	1.85	2.21	2.61	3.09	3.72	4.72	5.66
Jun	.44	.67	1.04	1.40	1.76	2.15	2.60	3.15	3.88	5.06	6.18
Jul	.20	.33	.55	.78	1.01	1.28	1.58	1.95	2.46	3.30	4.11
Aug	.10	.17	.31	.44	.59	.75	.95	1.19	1.52	2.06	2.59
Sep	.11	.20	.38	.57	.78	1.02	1.31	1.67	2.18	3.03	3.86
Oct	.09	.17	.33	.50	.69	.92	1.18	1.52	1.99	2.79	3.57
Nov	.07	.11	.20	.28	.37	.46	.58	.72	.91	1.23	1.54
Dec	.05	.09	.16	.23	.31	.39	.49	.62	.79	1.07	1.35
Ann	8.45	9.57	11.04	12.20	13.26	14.29	15.38	16.61	18.13	20.37	22.36

\+ Also occurred on an earlier date(s)
\# Denotes amounts of a trace
@ Denotes mean number of days greater than 0 but less than .05
****** Statistics not computed because less than six years out of thirty had measurable precipitation

(1) From the 1971-2000 Monthly Normals
(2) Derived from station's available digital record: 1963-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Climate Division: MT 7 **NWS Call Sign:** **Elevation: 3,597 Feet** **Lat: 45°02N** **Lon: 105°29W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	7.6	6.1	5	4
Feb	6.9	6.0	4	2
Mar	6.7	6.0	2	1
Apr	6.0	3.3	#	#
May	.9	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.7	.0	#	0
Oct	2.0	.7	#	#
Nov	5.7	5.8	1	1
Dec	6.4	4.5	3	3
Ann	42.9	32.4	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	8.0	1975	26	26.6	1971	20	1977	31	14	1977
Feb	8.0	1978	11	18.1	1978	26	1979	23	19	1979
Mar	10.0	1977	29	23.0	1977	26	1978	6	17	1978
Apr	14.0	1984	26	38.0	1984	36	1984	27	4	1984
May	8.0	1986	9	9.5	1986	8	1984	1	1	1984
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	8.0	1984	23	16.0	1984	6	1984	23	1	1984
Oct	8.0	1971	2	12.0	1971	5	1991	23	1	1991
Nov	9.0	1977	18	14.0	1978	12	1978	15	7	1978
Dec	12.0	1982	2	15.5	1975	16	1983	23	12	1983
Ann	14.0	Apr 1984	26	38.0	Apr 1984	36	Apr 1984	27	19	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.7	2.5	.7	.3	.0
Feb	2.9	2.2	.7	.1	.0
Mar	2.9	2.2	.9	.3	.1
Apr	1.5	1.1	.6	.2	.2
May	.2	.2	.1	@	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.2	.2	.1	@	.0
Oct	1.0	.7	.3	.1	.0
Nov	2.6	1.9	.6	.2	.0
Dec	3.2	2.6	.8	.2	@
Ann	18.2	13.6	4.8	1.4	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	21.1	16.4	9.9	1.4
Feb	11.4	8.1	6.7	3.4
Mar	5.2	2.6	1.6	.3
Apr	1.4	.9	.6	.5
May	.2	.1	.1	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.2	.1	.1	.0
Oct	.8	.4	@	.0
Nov	6.4	3.3	1.6	.9
Dec	11.9	7.6	4.6	.5
Ann	58.6	39.5	25.2	7.0

+ Also occurred on an earlier date(s) #Denotes trace amounts

@ Denotes mean number of days greater than 0 but less than .05

-9/-9.9 represents missing values
Annual statistics for Mean/Median snow depths are not appropriate

(1) Derived from Snow Climatology and 1971-2000 daily data

(2) Derived from 1971-2000 daily data

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Freeze Data

Spring Freeze Dates (Month/Day)

Temp (F)	Probability of later date in spring (thru Jul 31) than indicated(*)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	6/23	6/16	6/10	6/05	6/01	5/28	5/23	5/17	5/10
32	6/02	5/28	5/25	5/22	5/19	5/16	5/13	5/09	5/04
28	5/19	5/14	5/11	5/08	5/05	5/03	4/30	4/27	4/22
24	5/09	5/05	5/02	4/29	4/26	4/24	4/21	4/18	4/14
20	4/28	4/22	4/18	4/15	4/12	4/08	4/05	4/01	3/27
16	4/19	4/13	4/09	4/06	4/02	3/30	3/27	3/22	3/17

Fall Freeze Dates (Month/Day)

Temp (F)	Probability of earlier date in fall (beginning Aug 1) than indicated(*)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	9/02	9/05	9/08	9/11	9/13	9/15	9/17	9/20	9/24
32	9/08	9/12	9/15	9/17	9/19	9/22	9/24	9/27	10/01
28	9/13	9/18	9/22	9/25	9/28	10/01	10/04	10/08	10/13
24	9/21	9/28	10/02	10/06	10/10	10/13	10/17	10/22	10/28
20	9/25	10/02	10/07	10/11	10/15	10/19	10/23	10/28	11/04
16	10/12	10/18	10/23	10/27	10/30	11/02	11/06	11/11	11/17

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	127	119	113	108	103	98	93	87	79
32	145	137	132	127	123	119	114	109	101
28	167	160	154	149	145	141	136	131	123
24	185	178	173	169	166	162	158	153	147
20	211	203	196	191	185	180	175	168	159
16	235	226	220	215	210	205	200	194	185

***** Probability of observing a temperature as cold, or colder, later in the spring or earlier in the fall than the indicated date.

0/00 Indicates that the probability of occurrence of threshold temperature is less than the indicated probability.

Derived from 1971-2000 serially complete daily data

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Degree Days to Selected Base Temperatures (˚F)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1389	1089	955	634	366	138	41	60	244	585	1005	1324	7830
60	1234	949	800	485	236	67	13	22	142	430	855	1169	6402
57	1141	868	707	399	171	39	5	12	94	340	765	1076	5617
55	1080	817	645	344	134	25	2	6	68	281	711	1014	5127
50	931	686	497	219	62	7	0	1	24	155	570	871	4023
32	447	292	100	8	0	0	0	0	0	3	182	397	1429

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	80	127	167	365	667	940	1197	1160	786	442	166	96	6193
55	0	9	0	11	88	275	486	453	164	6	5	0	1497
57	0	3	0	6	63	228	427	397	130	3	0	0	1257
60	0	0	0	2	35	167	342	314	88	1	0	0	949
65	0	0	0	0	10	88	215	197	40	0	0	0	550
70	0	0	0	0	2	36	121	109	14	0	0	0	282

Growing Degree Units (2)

Base	Growing Degree Units (Monthly)												Growing Degree Units (Accumulated Monthly)											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
40	0	17	64	203	460	726	973	941	588	268	48	6	0	17	81	284	744	1470	2443	3384	3972	4240	4288	4294
45	0	1	21	109	315	576	818	786	442	151	18	0	0	1	22	131	446	1022	1840	2626	3068	3219	3237	3237
50	0	0	3	50	190	427	663	631	310	71	0	0	0	0	3	53	243	670	1333	1964	2274	2345	2345	2345
55	0	0	0	17	94	289	508	477	191	25	0	0	0	0	0	17	111	400	908	1385	1576	1601	1601	1601
60	0	0	0	3	37	166	355	325	100	7	0	0	0	0	0	3	40	206	561	886	986	993	993	993
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	27	70	164	295	451	609	592	382	206	52	9	2	29	99	263	558	1009	1618	2210	2592	2798	2850	2859

(1) Derived from the 1971-2000 Monthly Normals
(2) Derived from 1971-2000 serially complete daily data
Note: For corn, temperatures below 50 are set to 50, and temperatures above 86 are set to 86

Complete documentation available from:
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Notes

a. The monthly means are simple arithmetic averages computed by summing the monthly values for the period 1971-2000 and dividing by thirty. Prior to averaging, the data are adjusted if necessary to compensate for data quality issues, station moves or changes in station reporting practices. Missing months are replaced by estimates based on neighboring stations.

b. The median is defined as the middle value in an ordered set of values. The median is being provided for the snow and precipitation elements because the mean can be a misleading value for precipitation normals.

c. Only observed validated values were used to select the extreme daily values.

d. Extreme monthly temperature/precipitation means were selected from the monthly normals data.
Monthly snow extremes were calculated from daily values quality controlled to be consistent with the Snow Climatology.

e. Degree Days were derived using the same techniques as the 1971-2000 normals.
Compete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

f. Mean "number of days statistics" for temperature and precipitation were calculated from a serially complete daily data set .
Documentation of the serially complete data set is available from the link below:

g. Snowfall and snow depth statistics were derived from the Snow Climatology.
Documentation for the Snow Climatology project is available from the link under references.

Data Sources for Tables

Several different data sources were used to create the Clim20 climate summaries. In some cases the daily extremes appear inconsistent with the monthly extremes and or the mean number of days statistics. For example, a high daily extreme value may not be reflected in the highest monthly value or the mean number of days threshold that is less than and equal to the extreme value. Some of these difference are caused by different periods of record. Daily extremes are derived from the station's entire period of record while the serial data and normals data were are for the 1971-2000 period. Therefore extremes observed before 1971 would not be included in the 1971-2000 normals or the 1971-2000 serial daily data set. Inconsistencies can also occur when monthly values are adjusted to reflect the current observing conditions or were replaced during the 1971-2000 Monthly Normals processing and are not reconciled with the Summary of the Day data.

a. Temperature/ Precipitation Tables
   1. 1971-2000 Monthly Normals
   2. Cooperative Summary of the Day
   3. National Weather Service station records
   4. 1971-2000 serially complete daily data

b. Degree Day Table
   1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals
   2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data

c. Snow Tables
   1. Snow Climatology
   2. Cooperative Summary of the Day

d. Freeze Data Table
   1971-2000 serially complete daily data

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normals.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normals/usnormalsprods.html
Snow Climatology Project Description, www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html
Eischeid, J. K., P. Pasteris, H. F. Diaz, M. Plantico, and N. Lott, 2000: Creating a serially complete, national daily time series of temperature and precipitation for the Western United States. J. Appl. Meteorol., 39, 1580-1591,
www1.ncdc.noaa.gov/pub/data/special/ serialcomplete_jam_0900.pdf