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: MOSBY 4 ENE, MT **COOP ID: 245872**

Climate Division: MT 6 **NWS Call Sign:** **Elevation: 2,790 Feet** **Lat: 47˚01N** **Lon: 107˚49W**

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	30.4	5.3	17.9	65	1981	22	33.0	1992	-43	1969	24	.9	1979	1461	0	.0	.0	3.9	12.6	30.1	10.1
Feb	38.1	12.4	25.3	76	1992	28	39.7	1991	-39	1996	2	6.6	1989	1113	0	.0	.0	8.6	8.4	26.0	5.4
Mar	47.6	22.7	35.2	80	1993	24	44.7	1986	-27	1960	3	25.5	1996	926	0	.0	.0	15.6	3.5	26.0	1.3
Apr	58.6	31.9	45.3	90+	1987	29	52.2	1980	-5	1986	14	36.9	1975	593	0	.0	.1	24.2	.7	14.7	@
May	68.3	41.6	55.0	99	1988	28	60.7	1985	21+	1991	1	48.7	1996	328	16	.0	.8	29.5	.0	2.6	.0
Jun	78.7	50.4	64.6	107	1988	27	75.7	1988	30	1969	13	59.1	1998	110	97	.5	5.0	30.0	.0	.1	.0
Jul	86.2	55.6	70.9	107+	1966	16	75.3	2000	33	1994	14	62.2	1993	33	215	1.8	14.0	31.0	.0	.0	.0
Aug	86.3	54.5	70.4	108	1995	8	76.1	1971	34	1992	25	63.9	1987	53	219	1.7	14.2	31.0	.0	.0	.0
Sep	74.0	43.7	58.9	101	1978	4	66.8	1998	20+	1995	21	52.5	1985	235	50	.1	3.2	28.8	@	2.4	.0
Oct	62.2	33.8	48.0	94	1992	1	51.5	1999	1	1972	30	43.1	1984	527	0	.0	.1	26.8	.4	12.1	.1
Nov	44.1	19.8	32.0	80+	1999	12	41.8	1999	-27	1985	28	13.9	1985	992	0	.0	.0	12.1	5.6	25.6	2.0
Dec	34.4	9.6	22.0	72	1979	4	34.2	1999	-43	1989	22	1.4	1983	1334	0	.0	.0	5.6	10.6	29.0	6.7
Ann	59.1	31.8	45.5	108	Aug 1995	8	76.1	Aug 1971	-43+	Dec 1989	22	.9	Jan 1979	7705	597	4.1	37.4	247.1	41.8	168.6	25.6

+ 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: 1959-2001

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

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Climate Division: MT 6 **NWS Call Sign:** **Elevation: 2,790 Feet** **Lat: 47°01N** **Lon: 107°49W**

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	.50	.42	.63	1971	31	2.21	1971	.00	1992
Feb	.34	.22	.72	1986	4	1.13	1979	.00+	1992
Mar	.67	.67	1.02	1987	23	1.83	1998	.10	1992
Apr	1.09	.89	1.62	1970	28	2.96	1991	.08	1981
May	2.60	2.25	1.87	1975	6	5.45	1986	.87	1992
Jun	2.11	1.98	2.17	1965	16	6.13	1991	.42	1985
Jul	1.68	1.30	2.33	1966	28	8.62	1993	.04	1984
Aug	1.12	1.02	2.65	1964	20	3.35	1985	.10	2000
Sep	1.28	.83	3.30	1986	25	6.72	1986	.00	1990
Oct	.84	.73	1.32	1980	22	2.50	1980	.00	1987
Nov	.43	.41	.55	1984	26	1.12	1978	.00+	2000
Dec	.42	.32	.66	1977	3	2.02	1977	.00+	1987
Ann	13.08	12.74	3.30	Sep 1986	25	8.62	Jul 1993	.00+	Nov 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.6	2.1	.1	.0
Feb	3.0	1.2	@	.0
Mar	4.8	2.2	.3	@
Apr	6.1	3.3	.4	.1
May	9.4	5.8	1.5	.5
Jun	8.2	5.1	1.2	.3
Jul	5.8	3.7	.8	.3
Aug	5.4	2.8	.6	.2
Sep	5.0	3.0	.6	.2
Oct	4.0	2.2	.3	.1
Nov	3.4	1.7	@	.0
Dec	4.2	1.5	@	.0
Ann	63.9	34.6	5.8	1.7

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	.11	.19	.27	.34	.42	.51	.62	.76	1.00	1.22
Feb	.00	.06	.13	.18	.24	.29	.35	.42	.52	.67	.81
Mar	.15	.21	.31	.40	.49	.58	.69	.82	.99	1.25	1.51
Apr	.15	.24	.39	.54	.70	.88	1.08	1.33	1.67	2.22	2.75
May	.98	1.23	1.57	1.86	2.14	2.42	2.72	3.08	3.53	4.22	4.85
Jun	.57	.77	1.08	1.34	1.61	1.88	2.18	2.55	3.02	3.75	4.44
Jul	.13	.24	.46	.69	.95	1.25	1.60	2.05	2.67	3.70	4.73
Aug	.16	.26	.42	.57	.74	.91	1.12	1.37	1.71	2.26	2.79
Sep	.04	.13	.30	.48	.68	.92	1.20	1.56	2.06	2.89	3.72
Oct	.07	.16	.29	.41	.54	.68	.84	1.04	1.30	1.72	2.13
Nov	.00	.00	.13	.20	.28	.36	.45	.55	.69	.92	1.14
Dec	.00	.00	.11	.19	.26	.34	.43	.54	.68	.92	1.15
Ann	7.50	8.49	9.81	10.85	11.79	12.72	13.70	14.79	16.15	18.16	19.94

\+ 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: 1959-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Climate Division: MT 6 **NWS Call Sign:** **Elevation: 2,790 Feet** **Lat: 47°01N** **Lon: 107°49W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	7.5	6.0	4	1
Feb	5.2	4.0	4	#
Mar	6.2	7.0	2	#
Apr	3.2	.5	#	0
May	1.5	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	#	0
Sep	.2	.0	0	0
Oct	2.1	.0	#	0
Nov	5.2	4.0	#	#
Dec	7.5	4.8	2	#
Ann	38.6	26.3	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	1971	31	29.5	1971	24	1978	31	19	1978
Feb	9.0	1986	4	17.5	1986	27	1978	12	23	1978
Mar	8.0	1977	29	12.0	1982	25	1978	1	17	1978
Apr	12.0	1973	20	15.5	1975	9	1975	8	1	1975
May	12.0	1983	13	18.0	1983	0	0	0	0	0
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	#	1992	4	#	1992
Sep	2.0	1984	23	3.0	1984	0	0	0	0	0
Oct	10.0	1981	12	10.0+	1985	6	1972	29	#+	1981
Nov	6.0	1975	25	16.5	1975	12	1975	29	4	1978
Dec	7.0	1977	3	32.2	1977	17	1977	31	10	1977
Ann	12.0+	May 1983	13	32.2	Dec 1977	27	Feb 1978	12	23	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.3	3.2	.3	.2	.0
Feb	2.7	2.0	.5	.1	.0
Mar	2.8	2.3	.5	.2	.0
Apr	1.0	1.0	.4	.1	.1
May	.2	.2	.2	.2	.1
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	.0	.0	.0
Oct	.5	.5	.3	.1	.1
Nov	2.2	1.6	.4	.2	.0
Dec	3.1	2.1	.7	.2	.0
Ann	16.9	13.0	3.3	1.3	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	14.8	11.9	8.8	5.8
Feb	9.3	6.9	6.2	4.1
Mar	5.1	4.0	3.0	2.0
Apr	.6	.4	.2	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.2	.2	@	.0
Nov	3.2	1.7	1.3	.2
Dec	10.8	6.1	4.2	1.8
Ann	44.0	31.2	23.7	13.9

+ 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	6/15	6/08	6/04	5/31	5/27	5/23	5/19	5/14	5/08
32	5/27	5/22	5/19	5/15	5/12	5/09	5/06	5/02	4/27
28	5/14	5/09	5/05	5/02	4/29	4/25	4/22	4/18	4/13
24	5/05	4/29	4/25	4/21	4/18	4/15	4/11	4/07	4/02
20	4/20	4/15	4/11	4/08	4/05	4/02	3/29	3/26	3/20
16	4/15	4/08	4/04	3/30	3/26	3/22	3/18	3/13	3/07

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	9/06	9/09	9/12	9/14	9/16	9/18	9/20	9/23	9/26
32	9/13	9/16	9/19	9/21	9/23	9/25	9/28	9/30	10/04
28	9/17	9/23	9/26	9/30	10/03	10/06	10/09	10/13	10/18
24	9/23	9/30	10/05	10/10	10/14	10/18	10/22	10/27	11/04
20	10/02	10/10	10/15	10/20	10/24	10/28	11/01	11/07	11/14
16	10/16	10/23	10/28	11/01	11/05	11/09	11/13	11/18	11/25

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	132	125	120	116	112	108	103	98	91
32	151	145	141	137	133	130	126	122	116
28	180	172	166	161	156	152	147	141	133
24	207	197	190	184	178	172	166	159	148
20	230	220	213	207	201	196	190	183	173
16	254	243	236	229	223	217	210	203	192

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1461	1113	926	593	328	110	33	53	235	527	992	1334	7705
60	1308	985	771	448	205	47	10	20	138	374	842	1179	6327
57	1218	906	679	364	145	25	2	10	92	285	758	1087	5571
55	1160	854	619	312	112	15	0	6	67	230	702	1031	5108
50	1017	727	475	196	50	3	0	1	25	115	562	887	4058
32	543	352	106	7	0	0	0	0	0	2	187	426	1623

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	105	164	204	405	711	976	1205	1189	805	498	185	115	6562
55	8	21	3	19	110	302	493	482	182	12	10	7	1649
57	5	17	2	11	82	251	433	424	147	5	6	1	1384
60	2	13	0	5	48	184	347	342	102	2	0	0	1045
65	0	0	0	0	16	97	215	219	50	0	0	0	597
70	0	0	0	0	3	39	118	126	20	0	0	0	306

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	2	29	77	234	509	764	995	972	597	307	63	14	2	31	108	342	851	1615	2610	3582	4179	4486	4549	4563
45	0	6	32	138	362	614	840	817	456	188	27	1	0	6	38	176	538	1152	1992	2809	3265	3453	3480	3481
50	0	0	7	67	228	465	685	662	320	102	9	0	0	0	7	74	302	767	1452	2114	2434	2536	2545	2545
55	0	0	0	24	125	320	532	508	202	42	1	0	0	0	0	24	149	469	1001	1509	1711	1753	1754	1754
60	0	0	0	4	53	193	379	358	110	12	0	0	0	0	0	4	57	250	629	987	1097	1109	1109	1109
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	4	36	77	178	321	477	627	609	386	228	59	18	4	40	117	295	616	1093	1720	2329	2715	2943	3002	3020

(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