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: HYSHAM 25 SSE, MT **COOP ID: 244364**

Climate Division: MT 5 **NWS Call Sign:** **Elevation: 3,100 Feet** **Lat: 45˚56N** **Lon: 107˚08W**

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	31.7	5.4	18.6	62+	1963	7	32.6	1986	-44	1997	12	.8	1979	1441	0	.0	.0	3.2	12.6	30.4	11.0
Feb	38.2	12.2	25.2	77	1964	21	37.1	1991	-45	1996	2	8.7	1989	1114	0	.0	.0	6.9	8.5	27.4	6.3
Mar	47.4	21.5	34.5	80	1993	25	44.1	1986	-30	1989	4	25.3	1996	949	0	.0	.0	14.4	4.2	27.9	1.7
Apr	57.9	30.2	44.1	88	1980	21	50.6	1987	-2	1986	14	36.0	1975	629	0	.0	.0	22.3	1.0	18.0	@
May	68.0	39.0	53.5	99	1988	30	58.6	1988	17	1967	3	49.5	1996	363	6	.0	.5	29.1	.0	6.1	.0
Jun	78.3	47.4	62.9	107+	1988	27	75.0	1988	27+	1969	13	57.8	1998	144	79	.6	4.2	29.9	.0	.5	.0
Jul	87.1	51.9	69.5	109+	1966	16	74.6	2000	31	1973	2	61.6	1993	44	184	2.1	13.7	31.0	.0	@	.0
Aug	87.2	50.3	68.8	109	1961	5	74.9	1983	27	1992	25	62.4	1974	65	181	1.7	13.8	31.0	.0	.2	.0
Sep	74.3	40.0	57.2	103	1978	5	65.8	1998	16	1985	30	52.1	1984	268	32	.3	3.3	28.7	.1	5.4	.0
Oct	61.1	29.4	45.3	95	1963	4	48.8	1988	-15	1991	30	40.2	1984	613	0	.0	.3	25.2	.8	20.2	.1
Nov	44.0	18.1	31.1	81+	1999	13	42.1	1999	-34	1959	16	15.5	1985	1019	0	.0	.0	11.2	6.0	27.8	3.0
Dec	34.8	8.6	21.7	68	1995	2	32.8	1999	-50	1989	22	1.4	1983	1342	0	.0	.0	4.3	10.8	30.3	7.6
Ann	59.2	29.5	44.4	109+	Jul 1966	16	75.0	Jun 1988	-50	Dec 1989	22	.8	Jan 1979	7991	482	4.7	35.8	237.2	44.0	194.2	29.7

\+ 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: 1951-2001

(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	.65	.49	.53	1996	4	2.04	1971	.03	1992
Feb	.50	.44	.70	1974	23	1.13	1986	.14+	1990
Mar	.93	.81	.82	1995	25	2.24	1995	.03	1991
Apr	1.37	1.14	2.33	1969	26	3.77	1991	.03	1983
May	2.22	1.90	1.77	1978	18	6.28	1978	.72	1993
Jun	2.36	2.06	2.25	2001	5	6.47	1991	.68	1990
Jul	1.49	1.21	1.79	1974	3	7.31	1993	.19+	1988
Aug	.87	.88	1.92	1964	19	1.92	1980	.19	1993
Sep	1.32	1.02	1.71	1991	15	4.76	1978	.01	1979
Oct	1.29	1.27	1.89	1993	8	3.60	1971	.00	1987
Nov	.75	.76	1.07	1999	26	1.80	1999	.02	1972
Dec	.62	.46	.72	1984	23	1.69	1996	.06	1986
Ann	14.37	14.69	2.33	Apr 1969	26	7.31	Jul 1993	.00	Oct 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.6	2.1	@	.0
Feb	5.8	1.8	.1	.0
Mar	8.3	2.9	.3	.0
Apr	9.1	4.1	.7	.1
May	10.9	6.3	1.0	.2
Jun	10.2	5.8	1.2	.3
Jul	7.2	3.7	.8	.2
Aug	6.1	2.5	.4	@
Sep	6.3	3.3	.7	.2
Oct	6.5	3.7	.6	.1
Nov	6.7	2.9	.1	@
Dec	6.9	2.4	.1	.0
Ann	91.6	41.5	6.0	1.1

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	.09	.14	.23	.32	.42	.53	.65	.80	1.00	1.34	1.66
Feb	.12	.17	.24	.31	.37	.44	.52	.61	.73	.92	1.10
Mar	.14	.22	.36	.48	.62	.76	.93	1.14	1.41	1.86	2.29
Apr	.16	.26	.45	.64	.85	1.07	1.34	1.67	2.12	2.86	3.57
May	.76	.97	1.28	1.54	1.78	2.04	2.32	2.64	3.05	3.70	4.29
Jun	.73	.96	1.29	1.58	1.86	2.14	2.46	2.83	3.31	4.05	4.74
Jul	.13	.24	.44	.64	.87	1.13	1.43	1.81	2.34	3.21	4.07
Aug	.17	.25	.38	.50	.62	.74	.89	1.06	1.29	1.66	2.01
Sep	.10	.19	.36	.54	.74	.97	1.25	1.61	2.10	2.93	3.74
Oct	.23	.40	.62	.80	.97	1.15	1.35	1.58	1.88	2.36	2.81
Nov	.14	.21	.32	.42	.53	.64	.76	.91	1.11	1.43	1.74
Dec	.08	.13	.22	.31	.40	.50	.61	.76	.95	1.27	1.57
Ann	9.66	10.55	11.71	12.59	13.38	14.15	14.95	15.83	16.91	18.49	19.86

\+ 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: 1951-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Climate Division: MT 5 **NWS Call Sign:** **Elevation: 3,100 Feet** **Lat: 45°56N** **Lon: 107°08W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	12.1	12.8	5	4
Feb	6.7	5.5	3	2
Mar	8.7	5.3	2	1
Apr	5.9	3.2	1	#
May	1.6	.0	#	0
Jun	#	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	#	0
Sep	1.0	.0	#	0
Oct	2.7	.1	#	#
Nov	7.8	5.4	1	1
Dec	11.3	7.5	3	2
Ann	57.8	39.8	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	10.0	1991	2	32.5	1994	23	1985	2	15	1985
Feb	10.0	1974	23	18.1	1978	19	1978	12	13	1978
Mar	15.0	1977	30	31.0	1977	24	1977	30	6	1989
Apr	24.0	1984	27	30.5	1984	24	1984	27	3	1997
May	15.0	1983	12	21.0	1983	13	1983	13	1	1983
Jun	#	1998	2	#	1998	#	1998	2	#	1998
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	#	1989	25	#	1989
Sep	6.0	1984	24	11.0	1984	7	1984	24	1	1984
Oct	10.0	1993	8	12.5	1996	10	1996	27	1	1996
Nov	12.0	1984	26	21.5	1985	17	1985	30	7	1985
Dec	21.0	1984	23	35.0	1984	27	1984	24	11	1984
Ann	24.0	Apr 1984	27	35.0	Dec 1984	27	Dec 1984	24	15	Jan 1985

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.7	4.2	1.3	.5	@
Feb	4.7	2.7	.7	.2	@
Mar	5.3	3.0	.9	.3	.1
Apr	2.2	1.7	.8	.2	.1
May	.5	.4	.2	.1	@
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.3	.3	.2	.1	.0
Oct	1.1	.7	.3	.2	.1
Nov	4.4	2.8	.9	.3	@
Dec	6.2	4.0	1.2	.4	.1
Ann	31.4	19.8	6.5	2.3	.4

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	19.0	14.3	10.6	4.4
Feb	13.2	10.3	7.5	3.0
Mar	8.5	4.9	3.1	.9
Apr	2.7	1.5	.9	.3
May	.4	.2	.1	.1
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.4	.1	.1	.0
Oct	1.4	.8	.5	.1
Nov	8.1	4.6	3.0	.9
Dec	16.5	11.4	6.8	1.7
Ann	70.2	48.1	32.6	11.4

+ 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	7/06	6/29	6/25	6/21	6/17	6/13	6/09	6/05	5/29
32	6/13	6/08	6/04	5/31	5/28	5/25	5/21	5/17	5/11
28	5/24	5/20	5/17	5/14	5/12	5/09	5/06	5/03	4/29
24	5/16	5/11	5/07	5/03	4/30	4/27	4/24	4/20	4/14
20	5/03	4/28	4/24	4/21	4/17	4/14	4/11	4/07	4/01
16	4/21	4/15	4/10	4/06	4/02	3/29	3/25	3/20	3/14

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	8/17	8/23	8/27	8/31	9/03	9/06	9/10	9/14	9/20
32	9/02	9/06	9/09	9/11	9/14	9/16	9/18	9/21	9/25
28	9/08	9/13	9/16	9/19	9/22	9/25	9/27	10/01	10/05
24	9/15	9/21	9/26	9/29	10/03	10/06	10/10	10/14	10/20
20	9/26	10/02	10/06	10/10	10/13	10/16	10/20	10/24	10/30
16	10/11	10/17	10/21	10/24	10/27	10/31	11/03	11/07	11/13

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	100	92	87	82	77	73	68	62	55
32	128	121	116	112	108	104	100	95	89
28	154	147	141	137	133	128	124	119	111
24	176	169	164	159	155	151	146	141	134
20	196	190	186	182	178	175	171	166	160
16	231	223	217	212	208	203	198	192	184

***** 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	1441	1114	949	629	363	144	44	65	268	613	1019	1342	7991
60	1286	980	794	480	228	70	13	24	160	458	869	1187	6549
57	1197	903	701	394	160	40	5	12	109	366	779	1094	5760
55	1139	850	640	339	121	26	2	7	80	306	727	1033	5270
50	996	720	495	215	51	7	0	1	30	174	586	891	4166
32	522	335	110	9	0	0	0	0	0	5	198	420	1599

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	105	144	184	370	666	925	1164	1139	754	415	169	101	6136
55	8	15	2	11	75	261	453	433	144	4	8	1	1415
57	4	12	0	6	51	215	393	377	112	1	0	0	1171
60	0	6	0	1	26	155	309	296	74	0	0	0	867
65	0	0	0	0	6	79	184	181	32	0	0	0	482
70	0	0	0	0	1	31	95	96	11	0	0	0	234

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	61	196	434	693	925	903	530	224	44	5	0	17	78	274	708	1401	2326	3229	3759	3983	4027	4032
45	0	1	20	108	292	543	770	748	393	125	15	0	0	1	21	129	421	964	1734	2482	2875	3000	3015	3015
50	0	0	3	47	181	397	615	594	262	58	2	0	0	0	3	50	231	628	1243	1837	2099	2157	2159	2159
55	0	0	0	15	88	265	461	444	158	19	0	0	0	0	0	15	103	368	829	1273	1431	1450	1450	1450
60	0	0	0	3	37	149	316	298	77	4	0	0	0	0	0	3	40	189	505	803	880	884	884	884
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	26	74	162	294	437	576	565	370	205	51	7	2	28	102	264	558	995	1571	2136	2506	2711	2762	2769

(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