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: HAUGAN 3 E (DEBORGIA), MT **COOP ID: 243984**

Climate Division: MT 1 **NWS Call Sign:** **Elevation: 3,100 Feet** **Lat: 47˚23N** **Lon: 115˚21W**

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	31.4	13.3	22.4	57	1919	19	31.0	1994	-47	1937	20	5.3	1979	1322	0	.0	.0	@	11.1	29.5	4.0
Feb	38.2	17.4	27.8	63	1968	29	34.5	1991	-49	1933	9	15.7	1989	1042	0	.0	.0	2.6	4.4	26.4	1.9
Mar	46.6	23.4	35.0	76	1978	29	40.4	1992	-27	1955	5	30.1	1976	930	0	.0	.0	12.2	.6	26.8	.4
Apr	57.2	28.6	42.9	87+	1987	29	46.7	1987	-20	1936	2	37.6	1975	663	0	.0	.0	23.5	.0	19.4	.0
May	66.0	35.2	50.6	94+	1986	31	56.1	1993	14	1954	1	46.7	1974	446	0	.0	.2	30.0	.0	11.4	.0
Jun	73.4	40.9	57.2	98	1919	20	61.8	1992	20	1917	23	53.4	1976	240	5	.0	1.9	30.0	.0	2.1	.0
Jul	81.8	43.5	62.7	103+	1934	28	67.7	1998	27+	1972	4	56.5	1993	122	50	.0	7.9	31.0	.0	.9	.0
Aug	82.7	42.0	62.4	107	1961	4	66.4	1971	17	1914	28	56.5	1987	133	51	@	8.6	31.0	.0	1.2	.0
Sep	72.3	35.5	53.9	100	1950	3	59.7	1998	5	1926	24	49.4	1971	338	6	.0	1.3	29.8	.0	8.0	.0
Oct	57.5	28.2	42.9	91	1935	2	47.7	1988	-13	1935	31	39.7	1984	686	0	.0	.0	24.5	.1	18.8	.1
Nov	38.9	23.1	31.0	70	1931	1	37.8	1999	-28	1955	16	19.8	1985	1021	0	.0	.0	3.2	3.7	24.1	.5
Dec	31.1	15.5	23.3	55+	1957	9	28.8	1979	-41+	1964	17	12.6	1983	1293	0	.0	.0	.1	14.3	29.6	2.6
Ann	56.4	28.9	42.7	107	Aug 1961	4	67.7	Jul 1998	-49	Feb 1933	9	5.3	Jan 1979	8236	112	@	19.9	217.9	34.2	198.2	9.5

\+ 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: 1912-2001

(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	3.88	3.81	2.90	1989	15	8.54	1974	.34	1985
Feb	2.83	2.35	1.74	1972	27	7.03	1972	.20	1988
Mar	1.90	1.77	4.47	1935	25	4.30	1972	.34	1988
Apr	1.54	1.42	1.10	1960	20	3.21	1989	.07	1977
May	1.94	1.54	1.58	1957	20	5.58	1980	.64	1992
Jun	2.16	2.10	2.10	1928	27	4.28	1981	.14	1979
Jul	1.16	1.00	1.20	1987	22	3.45	1993	.00	1985
Aug	1.25	1.16	1.66	1966	27	3.23	1976	.01	1988
Sep	1.45	1.41	2.00	1940	4	3.83	1985	.10	1987
Oct	1.94	1.83	1.55	1950	29	4.44	1975	.01	1987
Nov	3.48	3.40	1.91	1930	12	7.02	1973	.60	1987
Dec	3.61	3.72	2.20	1964	22	8.39	1996	.21	1989
Ann	27.14	26.55	4.47	Mar 1935	25	8.54	Jan 1974	.00	Jul 1985

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	16.9	9.7	1.8	.4
Feb	14.5	7.2	1.2	.2
Mar	15.2	6.8	.4	@
Apr	13.1	5.2	.4	.0
May	14.0	5.8	.6	.2
Jun	12.7	6.2	.9	.2
Jul	8.2	3.4	.5	@
Aug	7.5	3.2	.6	@
Sep	8.7	4.4	.5	@
Oct	11.2	5.5	.8	.1
Nov	16.2	9.0	1.4	.2
Dec	16.3	8.8	1.8	.2
Ann	154.5	75.2	10.9	1.5

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	.87	1.23	1.80	2.31	2.83	3.37	3.98	4.71	5.67	7.19	8.63
Feb	.42	.65	1.06	1.45	1.86	2.31	2.82	3.45	4.30	5.69	7.02
Mar	.57	.75	1.02	1.25	1.48	1.71	1.97	2.28	2.67	3.29	3.86
Apr	.38	.53	.75	.95	1.15	1.36	1.59	1.86	2.22	2.79	3.33
May	.67	.85	1.12	1.35	1.56	1.78	2.03	2.31	2.67	3.23	3.75
Jun	.64	.84	1.15	1.42	1.67	1.94	2.24	2.59	3.05	3.76	4.42
Jul	.10	.22	.41	.58	.75	.94	1.16	1.43	1.78	2.36	2.91
Aug	.14	.23	.40	.58	.77	.98	1.22	1.53	1.95	2.65	3.32
Sep	.16	.27	.47	.67	.89	1.13	1.42	1.77	2.25	3.05	3.83
Oct	.18	.32	.58	.85	1.14	1.48	1.87	2.37	3.05	4.18	5.29
Nov	1.08	1.41	1.90	2.32	2.73	3.15	3.62	4.17	4.87	5.98	7.00
Dec	.76	1.09	1.62	2.10	2.59	3.10	3.69	4.39	5.31	6.78	8.18
Ann	19.07	20.63	22.62	24.14	25.49	26.80	28.15	29.64	31.46	34.09	36.37

\+ 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: 1912-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

Snow Fall >= Thresholds

Snow Depth >= Thresholds

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	16.2	-99.9	19	21	16.0	1989	15	48.5	1989	53	1972	25	40	1972	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Feb	48.5	-99.9	21	25	10.5	1986	15	48.5	1989	50	1975	9	45	1972	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Mar	1.7	-99.9	13	12	5.1	1989	17	5.1	1989	48	1972	5	31	1972	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Apr	3.6	1.5	#	0	6.5	1974	1	11.0	1982	19	1975	2	4	1975	1.2	1.2	.4	.1	.0	.2	.2	.0	.0
May	.1	.0	0	0	1.0	1982	4	1.0	1982	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.2	.0	0	0	2.5	1977	22	2.5	1977	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Oct	.5	.0	#	0	6.0	1984	28	6.0	1984	7	1984	31	1	1984	.4	.4	.2	.1	.0	.3	.3	.2	.0
Nov	2.0	-99.9	2	1	6.0	1984	28	6.0	1984	18	1973	7	10	1973	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Dec	6.5	-99.9	10	9	13.0	1971	14	13.0	1971	38	1971	14	27	1971	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Ann	79.3	-9.9	N/A	N/A	16.0	Jan 1989	15	48.5+	Feb 1989	53	Jan 1972	25	45	Feb 1972	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9

+ 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	8/05	7/27	7/21	7/15	7/10	7/05	6/30	6/23	6/15
32	7/20	7/09	7/02	6/25	6/19	6/13	6/07	5/30	5/20
28	6/21	6/12	6/06	6/01	5/27	5/23	5/17	5/11	5/03
24	5/28	5/18	5/11	5/05	4/30	4/24	4/18	4/11	4/02
20	5/03	4/24	4/17	4/11	4/05	3/31	3/25	3/18	3/09
16	4/15	4/05	3/29	3/22	3/17	3/11	3/05	2/26	2/16

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	7/30	8/07	8/14	8/19	8/24	8/29	9/04	9/10	9/19
32	8/13	8/21	8/26	8/31	9/05	9/09	9/14	9/20	9/27
28	8/30	9/06	9/12	9/16	9/21	9/25	9/30	10/05	10/12
24	9/12	9/21	9/28	10/04	10/09	10/14	10/20	10/27	11/05
20	9/27	10/07	10/14	10/20	10/26	11/01	11/07	11/14	11/24
16	10/08	10/17	10/24	10/30	11/04	11/10	11/15	11/22	12/02

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	91	75	63	53	44	35	25	14	0
32	124	108	96	86	77	67	57	46	29
28	155	142	132	123	115	107	99	89	75
24	212	194	182	171	161	152	141	128	111
20	254	237	224	213	203	193	182	169	151
16	278	262	251	241	232	223	213	202	186

***** 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	1322	1042	930	663	446	240	122	133	338	686	1021	1293	8236
60	1167	902	775	513	295	117	45	55	208	531	871	1138	6617
57	1074	818	682	423	213	64	19	26	142	438	781	1045	5725
55	1012	762	620	364	164	39	10	15	104	377	721	983	5171
50	857	622	465	226	72	6	0	2	37	227	571	828	3913
32	356	185	48	2	0	0	0	0	0	3	145	311	1050

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	57	68	141	330	578	755	951	941	658	340	114	41	4974
55	0	0	0	2	29	103	248	242	72	0	0	0	696
57	0	0	0	0	15	69	195	192	49	0	0	0	520
60	0	0	0	0	5	32	128	127	25	0	0	0	317
65	0	0	0	0	0	5	50	51	6	0	0	0	112
70	0	0	0	0	0	0	12	13	1	0	0	0	26

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	1	35	156	347	577	723	762	471	176	15	0	0	1	36	192	539	1116	1839	2601	3072	3248	3263	3263
45	0	0	1	67	206	428	568	607	327	77	1	0	0	0	1	68	274	702	1270	1877	2204	2281	2282	2282
50	0	0	0	19	99	281	413	453	198	24	0	0	0	0	0	19	118	399	812	1265	1463	1487	1487	1487
55	0	0	0	3	37	160	268	303	95	2	0	0	0	0	0	3	40	200	468	771	866	868	868	868
60	0	0	0	0	7	70	141	167	32	0	0	0	0	0	0	0	7	77	218	385	417	417	417	417
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	39	135	271	381	494	510	351	156	7	0	0	1	40	175	446	827	1321	1831	2182	2338	2345	2345

(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