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: HINSDALE 4 SW, MT **COOP ID: 244180**

Climate Division: MT 6 **NWS Call Sign:** **Elevation: 2,675 Feet** **Lat: 48˚21N** **Lon: 107˚09W**

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	20.9	6.0	13.5	58	1992	31	29.2	1987	-33	1996	30	-3.8	1982	1599	0	.0	.0	.7	19.9	29.7	12.1
Feb	28.5	12.8	20.7	69	1992	27	33.7	1984	-34	1996	1	3.3	1979	1242	0	.0	.0	2.6	13.6	26.1	6.9
Mar	40.6	22.3	31.5	78	1993	23	41.0	1986	-21	1996	8	20.2	1996	1039	0	.0	.0	9.6	7.0	26.3	2.0
Apr	55.8	33.1	44.5	90	1980	20	51.3	1987	-3	1975	1	35.4	1975	618	1	.0	@	21.7	1.0	14.0	.1
May	67.5	43.4	55.5	101	1988	29	62.2	1988	24+	1996	9	49.7	1974	312	17	@	.5	29.5	@	2.2	.0
Jun	76.5	51.7	64.1	107+	1988	26	75.5	1988	31	1998	2	59.1	1998	115	88	.3	2.7	30.0	.0	@	.0
Jul	83.0	56.8	69.9	105	1996	4	74.3	1989	39	1972	3	61.9	1993	43	194	.6	7.4	31.0	.0	.0	.0
Aug	82.6	55.8	69.2	106	1983	6	75.8	1983	37	1992	24	62.2	1977	77	207	.8	8.2	31.0	.0	.0	.0
Sep	69.6	45.3	57.5	101	1983	1	65.9	1998	20	1972	28	49.5	1985	279	52	@	1.3	28.5	.0	2.3	.0
Oct	56.1	35.0	45.6	87	1992	1	49.3	1974	-4+	1991	30	41.3	1984	604	0	.0	.0	23.1	1.0	11.2	.1
Nov	36.5	21.3	28.9	76	1999	12	41.0	1999	-25	1985	27	11.7	1985	1083	0	.0	.0	6.5	9.3	25.2	2.2
Dec	25.0	10.0	17.5	62	1980	16	30.4	1999	-37	1983	24	-2.0	1983	1472	0	.0	.0	1.6	17.4	29.7	8.6
Ann	53.6	32.8	43.2	107+	Jun 1988	26	75.8	Aug 1983	-37	Dec 1983	24	-3.8	Jan 1982	8483	559	1.7	20.1	215.8	69.2	166.7	32.0

+ 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: 1971-2001

(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	.42	.35	.50+	2001	13	1.16	1996	.03+	1985
Feb	.35	.27	.40	1984	22	1.18	1979	.05+	1997
Mar	.74	.75	.79	2000	29	1.54	1987	.10	1994
Apr	1.23	1.11	1.64	1979	18	3.96	1979	.10	1983
May	2.74	2.44	3.27	1982	28	6.65	1982	.34	1998
Jun	2.85	2.69	2.36	1974	21	6.36	1991	.36	1985
Jul	1.89	1.48	2.87	1983	10	7.23	1993	.08	1984
Aug	1.50	1.11	2.85	1985	2	7.12	1985	.13	1979
Sep	1.45	.98	2.35	1986	25	6.48	1986	.11	1990
Oct	.90	.72	1.28	1981	12	2.89	1998	.06	1987
Nov	.64	.49	.81	2000	6	1.72	1996	.00	1971
Dec	.45	.44	.48	1972	1	1.06	1973	.01	1987
Ann	15.16	14.79	3.27	May 1982	28	7.23	Jul 1993	.00	Nov 1971

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.0	1.4	@	.0
Feb	5.6	1.1	.0	.0
Mar	7.4	2.1	.1	.0
Apr	7.4	3.0	.6	.1
May	10.1	5.5	1.5	.5
Jun	9.6	5.7	1.8	.7
Jul	7.5	4.2	1.0	.3
Aug	6.3	3.6	.8	.2
Sep	6.2	3.4	.8	.2
Oct	5.2	2.2	.4	.1
Nov	5.9	2.1	.2	.0
Dec	6.5	1.4	.0	.0
Ann	84.7	35.7	7.2	2.1

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	.05	.08	.14	.20	.26	.33	.41	.51	.65	.87	1.09
Feb	.04	.07	.12	.17	.22	.27	.34	.42	.53	.71	.89
Mar	.19	.26	.37	.46	.56	.66	.77	.90	1.07	1.34	1.59
Apr	.15	.25	.42	.59	.77	.97	1.21	1.50	1.89	2.54	3.17
May	.52	.77	1.17	1.54	1.92	2.33	2.78	3.34	4.07	5.26	6.38
Jun	.69	.95	1.37	1.74	2.11	2.49	2.93	3.45	4.12	5.20	6.20
Jul	.20	.34	.60	.86	1.15	1.47	1.84	2.30	2.94	3.99	5.01
Aug	.13	.23	.43	.64	.87	1.13	1.44	1.83	2.36	3.26	4.14
Sep	.11	.21	.40	.60	.82	1.07	1.38	1.76	2.29	3.18	4.06
Oct	.11	.18	.31	.43	.57	.71	.89	1.10	1.39	1.87	2.33
Nov	.04	.10	.20	.29	.39	.50	.63	.78	1.00	1.35	1.69
Dec	.05	.08	.14	.21	.28	.35	.44	.55	.70	.96	1.20
Ann	9.03	10.13	11.59	12.73	13.75	14.76	15.82	17.01	18.47	20.63	22.54

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

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.8	-99.9	2	1
Feb	5.3	-99.9	1	0
Mar	2.9	-99.9	1	0
Apr	.6	.0	#	0
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.2	.0	#	0
Nov	5.0	-99.9	#	0
Dec	2.5	-99.9	1	0
Ann	22.3	-9.9	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	6.0	1996	3	11.5	1972	13	1989	12	6	1989
Feb	6.0	2000	15	10.5	1972	11	1972	29	7	1972
Mar	10.0	1999	31	14.5	1999	11	1972	5	4	1972
Apr	4.0	1999	3	4.0	1999	3	1996	11	#+	1996
May	#	1996	10	#	1996	#	1996	10	#	1996
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	.0	0	0	.0	0	0	0	0	0	0
Oct	2.0	1997	13	2.0	1997	#+	1997	23	#+	1997
Nov	15.0	2000	6	15.0	2000	3	1988	15	1	1988
Dec	7.0	1998	29	7.5	1971	10	1972	2	5	1972
Ann	15.0	Nov 2000	6	15.0	Nov 2000	13	Jan 1989	12	7	Feb 1972

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	-9.9	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9	-9.9
Mar	2.0	1.5	.6	.3	.1
Apr	.2	.2	.1	.0	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.1	.1	.0	.0	.0
Nov	-9.9	-9.9	-9.9	-9.9	-9.9
Dec	-9.9	-9.9	-9.9	-9.9	-9.9
Ann	-9.9	-9.9	-9.9	-9.9	-9.9

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	.1	.0	.0	.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	.0	.0	.0	.0
Nov	-9.9	-9.9	-9.9	-9.9
Dec	-9.9	-9.9	-9.9	-9.9
Ann	-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	6/02	5/28	5/25	5/22	5/19	5/17	5/14	5/10	5/05
32	5/22	5/17	5/13	5/10	5/08	5/05	5/02	4/29	4/24
28	5/10	5/06	5/03	4/30	4/28	4/26	4/23	4/20	4/16
24	5/03	4/28	4/25	4/22	4/19	4/16	4/13	4/09	4/04
20	4/19	4/14	4/10	4/07	4/04	3/31	3/28	3/24	3/19
16	4/14	4/09	4/05	4/02	3/30	3/27	3/24	3/21	3/15

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	9/08	9/11	9/14	9/17	9/19	9/21	9/24	9/26	9/30
32	9/11	9/15	9/18	9/21	9/23	9/25	9/28	10/01	10/05
28	9/21	9/26	9/30	10/03	10/06	10/09	10/12	10/15	10/20
24	9/28	10/05	10/09	10/13	10/17	10/20	10/24	10/28	11/04
20	10/11	10/17	10/21	10/24	10/27	10/30	11/02	11/06	11/11
16	10/19	10/25	10/30	11/04	11/08	11/12	11/16	11/21	11/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	140	134	129	125	122	118	115	110	104
32	153	148	144	141	138	134	131	127	122
28	182	175	169	164	160	156	151	145	138
24	202	194	189	184	180	176	171	166	158
20	230	222	216	210	206	201	196	190	181
16	250	240	233	227	222	216	210	203	193

***** 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	1599	1242	1039	618	312	115	43	77	279	604	1083	1472	8483
60	1444	1104	884	475	193	49	13	34	178	450	933	1317	7074
57	1353	1030	792	393	136	25	6	20	128	359	843	1224	6309
55	1295	977	733	342	104	16	1	13	100	300	787	1162	5830
50	1152	846	589	228	45	3	0	4	45	169	648	1020	4749
32	660	438	186	19	0	0	0	0	0	5	238	531	2077

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	84	119	169	393	728	962	1175	1153	763	424	145	82	6197
55	5	15	4	25	119	288	463	453	173	6	4	0	1555
57	2	12	1	17	89	238	406	398	141	3	0	0	1307
60	0	2	0	8	52	172	320	319	101	1	0	0	975
65	0	0	0	1	17	88	194	207	52	0	0	0	559
70	0	0	0	0	4	33	105	122	23	0	0	0	287

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	9	43	209	493	735	940	920	548	249	37	3	0	9	52	261	754	1489	2429	3349	3897	4146	4183	4186
45	0	1	15	117	349	585	785	765	407	148	12	0	0	1	16	133	482	1067	1852	2617	3024	3172	3184	3184
50	0	0	0	58	220	436	630	610	274	72	2	0	0	0	0	58	278	714	1344	1954	2228	2300	2302	2302
55	0	0	0	20	122	289	475	458	168	25	0	0	0	0	0	20	142	431	906	1364	1532	1557	1557	1557
60	0	0	0	4	51	167	326	312	87	6	0	0	0	0	0	4	55	222	548	860	947	953	953	953
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	6	33	142	299	446	598	587	333	153	25	0	0	6	39	181	480	926	1524	2111	2444	2597	2622	2622

(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