

Climatography of the United States

No. 20

1971-2000

Station: HARDIN, MT

COOP ID: 243915

Climate Division: MT 5

NWS Call Sign:

Elevation: 2,905 Feet Lat: 45°44N

Lon: 107°37W

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	35.4	10.9	23.2	68+	1992	31	35.4	1992	-42+	1963	19	5.4	1979	1297	0	.0	.0	5.1	10.9	29.8	9.1
Feb	42.7	15.9	29.3	74+	1992	29	40.2	1991	-38	1949	13	15.4	1989	999	0	.0	.0	9.7	6.8	26.5	4.9
Mar	52.2	24.2	38.2	84	1978	31	47.5	1986	-29+	1978	3	29.2	1996	831	0	.0	.0	18.6	2.6	26.0	1.4
Apr	63.0	33.3	48.2	96	1987	28	55.2	1987	1	1955	6	41.7	1997	505	1	.0	.1	25.7	.4	14.8	.0
May	73.0	42.5	57.8	97+	1984	30	62.9	1987	15	1953	12	53.1	1995	247	23	.0	1.6	30.1	.0	2.7	.0
Jun	82.5	50.3	66.4	106+	1988	26	76.8	1988	30+	1979	8	61.3	1998	84	125	1.2	7.4	30.0	.0	.1	.0
Jul	90.7	55.4	73.1	109	1989	5	78.6	1974	34	1969	27	65.2	1993	21	271	3.8	18.4	31.0	.0	.0	.0
Aug	90.2	54.1	72.2	109	1952	24	78.9	1983	32	1992	25	66.8	1977	35	256	2.9	17.2	31.0	.0	@	.0
Sep	78.6	43.7	61.2	104+	1991	1	68.5	1998	15	1984	24	56.4	1985	176	60	.3	4.7	29.3	.0	2.7	.0
Oct	65.3	33.6	49.5	94	1963	1	53.2	1973	-13	1991	30	45.5	1972	484	0	.0	.3	28.1	.4	15.8	.1
Nov	47.2	22.1	34.7	81	1999	12	45.5	1999	-31	1959	16	17.7	1985	912	0	.0	.0	13.2	4.3	27.1	2.1
Dec	37.2	13.2	25.2	69+	1995	1	36.4	1999	-47	1989	22	5.6	1983	1234	0	.0	.0	5.5	9.5	30.1	6.1
Ann	63.2	33.3	48.3	109+	Jul 1989	5	78.9	Aug 1983	-47	Dec 1989	22	5.4	Jan 1979	6825	736	8.2	49.7	257.3	34.9	175.6	23.7

+ 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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1948-2001

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

070-A

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: HARDIN, MT

COOP ID: 243915

Climate Division: MT 5

NWS Call Sign:

Elevation: 2,905 Feet Lat: 45°44N

Lon: 107°37W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.61	.38	1.17	1972	1	2.79	1972	.00+	1987	4.9	2.2	.1	.1	.00	.03	.12	.21	.31	.43	.57	.75	.99	1.41	1.82
Feb	.35	.18	1.20	2000	25	1.97	2000	.00+	1997	3.2	1.2	.1	@	.00	.00	.00	.05	.11	.19	.29	.42	.60	.92	1.24
Mar	.67	.59	1.50	2000	8	2.20	2000	.00+	1986	5.1	2.8	.2	@	.00	.08	.21	.31	.42	.54	.68	.84	1.06	1.42	1.76
Apr	1.37	1.10	3.17	1955	4	3.59	1991	.00+	1987	7.2	3.9	.7	.1	.00	.31	.59	.81	1.01	1.22	1.45	1.70	2.05	2.60	3.12
May	1.98	1.80	2.30	1988	7	6.47	1978	.24	1984	8.5	4.6	1.2	.4	.49	.68	.97	1.22	1.48	1.74	2.04	2.40	2.87	3.60	4.29
Jun	1.66	1.43	2.03	1963	15	3.58	1982	.07	1971	9.0	4.4	1.0	.3	.29	.43	.68	.90	1.14	1.39	1.68	2.03	2.49	3.25	3.97
Jul	1.14	.71	3.00	2001	14	7.84	1993	.07	1999	5.8	2.7	.6	.2	.07	.14	.28	.44	.61	.81	1.06	1.38	1.82	2.56	3.30
Aug	.65	.57	1.15	1973	23	2.64	1973	.00	1988	4.3	2.0	.3	@	.02	.06	.14	.24	.34	.46	.61	.79	1.06	1.50	1.94
Sep	1.28	1.14	3.10	1991	11	5.32	1991	.00	1997	5.7	2.7	.7	.2	.06	.17	.36	.54	.75	.97	1.24	1.57	2.03	2.79	3.53
Oct	1.29	1.16	1.98	1994	16	4.12	1971	.05	1987	5.9	3.0	.5	.2	.16	.27	.45	.63	.82	1.03	1.27	1.58	1.99	2.66	3.31
Nov	.60	.52	.90	1968	5	1.91	1978	.10	1982	5.3	2.2	.1	.0	.14	.19	.28	.36	.43	.52	.61	.72	.87	1.10	1.32
Dec	.47	.45	.80	1992	23	1.56	1989	.00+	1991	4.8	2.1	.1	.0	.00	.06	.15	.22	.30	.38	.48	.59	.75	1.00	1.24
Ann	12.07	11.65	3.17	Apr 1955	4	7.84	Jul 1993	.00+	Sep 1997	69.7	33.8	5.6	1.5	7.51	8.34	9.44	10.29	11.06	11.81	12.59	13.47	14.54	16.12	17.51

+ 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: 1948-2001

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

Complete documentation available from:

www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: HARDIN, MT

COOP ID: 243915

Climate Division: MT 5

NWS Call Sign:

Elevation: 2,905 Feet

Lat: 45° 44N

Lon: 107° 37W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	4.6	-99.9	3	1	9.0	1994	18	23.0	1972	13	1978	26	12	1972	1.8	1.2	.8	.4	.0	-9.9	-9.9	-9.9	-9.9
Feb	1.0	.0	1	#	4.5	1996	25	5.0	1975	12	1971	9	6	1975	.9	.6	.1	.0	.0	-9.9	-9.9	-9.9	-9.9
Mar	1.7	.5	1	#	6.5	1977	30	6.5	1977	12	1998	5	5	1995	1.2	.8	.3	.1	.0	-9.9	-9.9	-9.9	-9.9
Apr	1.1	.0	#	0	10.0	1972	18	10.0	1972	12	1975	9	1	1975	.4	.3	.3	.2	.1	.1	.1	.1	.1
May	.0	.0	#	0	.0	0	0	.0	0	7	1983	12	#+	1995	.0	.0	.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	.1	.0	#	0	2.2	1972	25	2.2	1972	2	1972	25	#	1972	.1	.1	.0	.0	.0	.1	.0	.0	.0
Oct	.3	.0	#	0	4.0	1971	28	4.0	1971	1	1976	18	#	1976	.1	.1	.1	.0	.0	.0	.0	.0	.0
Nov	1.3	-99.9	#	#	6.5	1976	29	6.5	1976	11	1977	23	3	2000	.3	.3	.1	.1	.0	-9.9	-9.9	-9.9	-9.9
Dec	1.5	-99.9	2	#	3.5	1972	30	5.9	1972	16	1978	12	14	1978	.7	.2	.1	.0	.0	-9.9	-9.9	-9.9	-9.9
Ann	11.6	-9.9	N/A	N/A	10.0	Apr 1972	18	23.0	Jan 1972	16	Dec 1978	12	14	Dec 1978	5.5	3.6	1.8	.8	.1	-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

Complete documentation available from:

www.ncdc.noaa.gov/oa/climate/normal/usnormals.html

**Climatography
of the United States
No. 20
1971-2000**

Station: HARDIN, MT

COOP ID: 243915

Climate Division: MT 5

NWS Call Sign:

Elevation: 2,905 Feet

Lat: 45° 44N

Lon: 107° 37W

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	6/09	6/04	6/01	5/28	5/25	5/21	5/17	5/11
32	5/27	5/22	5/18	5/15	5/12	5/08	5/05	5/01	4/26
28	5/07	5/03	5/01	4/28	4/26	4/24	4/21	4/18	4/15
24	5/01	4/26	4/23	4/20	4/17	4/14	4/11	4/08	4/03
20	4/23	4/17	4/13	4/09	4/06	4/02	3/30	3/26	3/20
16	4/13	4/06	3/31	3/27	3/23	3/19	3/14	3/09	3/02
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	9/11	9/13	9/15	9/17	9/18	9/21	9/24
32	9/08	9/13	9/16	9/19	9/22	9/24	9/27	9/30	10/05
28	9/17	9/22	9/26	9/29	10/02	10/05	10/09	10/12	10/18
24	9/30	10/06	10/10	10/14	10/17	10/20	10/24	10/28	11/03
20	10/07	10/14	10/18	10/22	10/26	10/29	11/02	11/07	11/13
16	10/12	10/19	10/24	10/28	11/01	11/05	11/09	11/14	11/21
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	128	121	117	113	109	105	101	96	90
32	152	145	140	136	132	128	124	119	112
28	180	173	167	163	159	155	150	145	138
24	206	198	192	187	182	178	172	166	158
20	230	221	214	208	202	197	191	184	174
16	247	238	232	227	223	218	213	207	199

* 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

Complete documentation available from:

www.ncdc.noaa.gov/oa/climate/normal/usnormals.html

**Climatography
of the United States
No. 20
1971-2000**

Station: HARDIN, MT

COOP ID: 243915

Climate Division: MT 5

NWS Call Sign:

Elevation: 2,905 Feet Lat: 45° 44N Lon: 107° 37W

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	1297	999	831	505	247	84	21	35	176	484	912	1234	6825
60	1145	871	677	363	137	32	6	12	89	330	767	1079	5508
57	1057	792	591	284	87	16	1	5	52	244	683	988	4800
55	1001	740	532	235	61	9	0	2	34	192	627	931	4364
50	856	615	393	135	20	1	0	0	9	90	493	787	3399
32	410	263	76	3	0	0	0	0	0	2	151	343	1248

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	137	188	268	488	799	1031	1273	1245	874	541	229	132	7205
55	15	21	11	31	147	350	560	534	218	19	15	7	1928
57	9	17	8	19	111	297	498	474	176	8	11	2	1630
60	3	12	1	8	68	223	411	389	123	2	5	0	1245
65	0	0	0	1	23	125	271	256	60	0	0	0	736
70	0	0	0	0	5	57	158	152	24	0	0	0	396

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	3	34	102	269	551	796	1022	994	629	310	59	7	3	37	139	408	959	1755	2777	3771	4400	4710	4769	4776
45	0	10	43	162	401	647	867	839	483	182	18	1	0	10	53	215	616	1263	2130	2969	3452	3634	3652	3653
50	0	0	12	81	264	499	712	684	344	90	2	0	0	0	12	93	357	856	1568	2252	2596	2686	2688	2688
55	0	0	1	31	145	350	557	529	219	32	0	0	0	0	1	32	177	527	1084	1613	1832	1864	1864	1864
60	0	0	0	9	63	216	404	376	116	7	0	0	0	0	0	9	72	288	692	1068	1184	1191	1191	1191
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	13	40	109	213	360	499	625	611	415	256	63	14	13	53	162	375	735	1234	1859	2470	2885	3141	3204	3218

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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