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: TWIN BRIDGES, MT **COOP ID: 248430**

Climate Division: MT 2 **NWS Call Sign:** **Elevation: 4,625 Feet** **Lat: 45˚33N** **Lon: 112˚20W**

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	34.4	10.5	22.5	57+	1981	22	31.2	1994	-39	1957	26	4.4	1979	1320	0	.0	.0	2.3	10.9	29.7	7.0
Feb	40.5	14.2	27.4	64+	1995	24	35.1	1991	-32	1989	5	10.8	1989	1055	0	.0	.0	6.1	5.4	26.9	3.5
Mar	48.4	20.8	34.6	78	1986	29	41.7	1992	-17+	1989	4	28.5	1976	942	0	.0	.0	14.6	2.2	28.5	.8
Apr	57.7	27.2	42.5	85+	1987	28	48.4	1987	2+	1997	12	33.3	1975	676	0	.0	.0	23.2	.3	21.5	.0
May	66.6	35.2	50.9	90+	1972	31	56.3	1992	15+	2001	3	47.3	1975	437	0	.0	@	29.4	.0	9.9	.0
Jun	75.6	42.0	58.8	95+	1990	30	65.0	1988	24+	1984	2	54.6	1998	202	17	.0	1.4	29.9	.0	1.9	.0
Jul	83.3	45.5	64.4	100	1960	20	68.2	1985	28	1981	8	57.4	1993	91	72	.0	6.5	31.0	.0	.2	.0
Aug	82.2	43.2	62.7	100	1961	4	67.2	1991	23	1992	25	58.8	1987	116	45	.0	4.8	31.0	.0	1.0	.0
Sep	72.0	35.1	53.6	95+	1998	5	59.4	1998	10	1985	29	49.0	1985	349	5	.0	.4	29.1	.0	11.1	.0
Oct	60.3	27.1	43.7	86+	1996	10	48.4	1988	-3	1991	29	40.2	1984	660	0	.0	.0	25.8	.3	23.2	.1
Nov	43.3	18.5	30.9	72	1999	12	39.5	1999	-27	1959	16	18.5	1985	1023	0	.0	.0	9.1	4.7	26.7	1.8
Dec	34.5	11.0	22.8	62+	1980	27	32.7	1980	-35	1990	22	11.0	1983	1309	0	.0	.0	2.6	11.1	29.6	5.4
Ann	58.2	27.5	42.9	100+	Aug 1961	4	68.2	Jul 1985	-39	Jan 1957	26	4.4	Jan 1979	8180	139	.0	13.1	234.1	34.9	210.2	18.6

\+ 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: 1950-2001

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

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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	.22	.15	.48	1997	1	.85	1995	.00	1991
Feb	.18	.16	.59	1959	17	.66	1981	.00+	1991
Mar	.48	.54	.84	1967	29	1.03	1983	.03	1978
Apr	.85	.79	.94	1957	1	2.00	1984	.13	1987
May	1.86	1.86	1.65	1995	6	3.74	1981	.26	1979
Jun	1.80	1.68	1.80	1969	10	4.07	1998	.14	1974
Jul	1.19	1.01	1.29	1976	18	3.58	1993	.00	1999
Aug	1.07	1.15	1.20	1960	23	2.79	1983	.05	1988
Sep	1.06	.92	1.25	1976	18	3.07	1976	.02	1994
Oct	.61	.53	1.22	2000	12	2.43	2000	.00	1987
Nov	.36	.31	.63	1969	7	1.04	1983	.02	1976
Dec	.23	.19	.80	1954	31	.70	1994	.00	1976
Ann	9.91	9.71	1.80	Jun 1969	10	4.07	Jun 1998	.00+	Jul 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	.4	.0	.0
Feb	3.6	.5	.0	.0
Mar	5.6	1.9	@	.0
Apr	8.5	2.8	.2	.0
May	12.1	5.7	.9	.2
Jun	10.7	5.1	.9	@
Jul	7.8	3.6	.4	@
Aug	8.0	3.3	.4	.0
Sep	6.6	3.0	.4	@
Oct	5.5	2.0	.2	@
Nov	5.2	1.0	@	.0
Dec	4.6	.7	.0	.0
Ann	82.3	30.0	3.4	.2

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	.01	.02	.05	.08	.12	.16	.21	.27	.36	.52	.67
Feb	.00	.00	.02	.06	.10	.14	.18	.24	.31	.42	.53
Mar	.08	.12	.19	.26	.33	.40	.48	.58	.72	.94	1.15
Apr	.23	.31	.43	.54	.64	.75	.88	1.02	1.21	1.51	1.79
May	.50	.67	.94	1.18	1.41	1.65	1.92	2.24	2.65	3.31	3.92
Jun	.43	.60	.86	1.09	1.33	1.57	1.85	2.17	2.60	3.28	3.92
Jul	.10	.23	.43	.60	.78	.98	1.20	1.47	1.84	2.42	2.99
Aug	.16	.25	.40	.55	.70	.87	1.06	1.30	1.62	2.14	2.64
Sep	.06	.11	.24	.38	.55	.74	.98	1.28	1.71	2.44	3.17
Oct	.02	.07	.15	.24	.34	.45	.58	.75	.98	1.37	1.75
Nov	.05	.08	.13	.18	.23	.29	.35	.43	.54	.72	.89
Dec	.01	.03	.06	.10	.13	.17	.22	.28	.36	.50	.63
Ann	6.00	6.71	7.64	8.37	9.02	9.66	10.34	11.09	12.02	13.39	14.59

\+ 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: 1950-2001
(3) Derived from 1971-2000 serially complete daily data

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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	1.4	-99.9	1	0
Feb	.5	.0	#	0
Mar	1.0	.0	#	0
Apr	.0	.0	0	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.2	.0	0	0
Sep	#	.0	0	0
Oct	.1	.0	#	0
Nov	1.2	-99.9	#	0
Dec	1.0	-99.9	1	0
Ann	5.4	-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	2.0	1971	8	4.1	1971	6	1980	11	3	1989
Feb	2.0	1992	16	2.0+	1992	1	1971	9	#	1971
Mar	3.0	1974	8	3.0	1974	3	1977	30	1	1977
Apr	.0	0	0	.0	0	18	1984	26	2	1984
May	.0	0	0	.0	0	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	3.0	1992	23	3.0	1992	0	0	0	0	0
Sep	#	1984	26	#	1984	0	0	0	0	0
Oct	1.0	1973	31	1.0	1973	8	1985	7	#+	1997
Nov	6.0	1971	27	6.0	1971	5	1973	26	1	1973
Dec	2.0	2000	17	2.0	2000	5	1982	31	5	1982
Ann	6.0	Nov 1971	27	6.0	Nov 1971	18	Apr 1984	26	5	Dec 1982

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	-9.9	-9.9	-9.9	-9.9	-9.9
Apr	-9.9	-9.9	-9.9	-9.9	-9.9
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.1	.1	.1	.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	.5	.0	.0	.0
Mar	-9.9	-9.9	-9.9	-9.9
Apr	.0	.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
Nov	.5	.4	.0	.0
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	7/26	7/19	7/14	7/10	7/05	7/01	6/27	6/22	6/15
32	7/05	6/28	6/23	6/20	6/16	6/12	6/08	6/03	5/28
28	6/16	6/09	6/04	5/31	5/27	5/24	5/20	5/15	5/08
24	6/02	5/26	5/21	5/17	5/13	5/09	5/05	4/30	4/23
20	5/12	5/06	5/02	4/28	4/25	4/22	4/18	4/14	4/08
16	4/28	4/21	4/16	4/12	4/08	4/04	3/31	3/26	3/19

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	8/05	8/10	8/14	8/17	8/20	8/23	8/26	8/30	9/04
32	8/14	8/20	8/23	8/27	8/30	9/02	9/05	9/09	9/14
28	8/30	9/04	9/07	9/09	9/12	9/14	9/17	9/20	9/24
24	9/07	9/11	9/14	9/17	9/20	9/22	9/25	9/28	10/03
20	9/18	9/23	9/26	9/29	10/02	10/05	10/08	10/12	10/17
16	9/27	10/03	10/07	10/10	10/14	10/17	10/20	10/25	10/30

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	72	63	56	50	45	39	33	27	17
32	101	92	85	80	74	69	63	57	48
28	129	121	116	111	107	102	98	92	85
24	154	146	139	134	129	124	119	112	104
20	184	175	169	164	160	155	150	144	136
16	219	209	201	194	188	182	175	167	157

***** 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	1320	1055	942	676	437	202	91	116	349	660	1023	1309	8180
60	1165	915	787	526	288	97	28	41	216	505	873	1154	6595
57	1072	831	694	439	207	53	11	18	149	412	783	1061	5730
55	1010	775	632	382	160	32	6	9	111	350	723	999	5189
50	855	635	479	250	71	6	0	1	42	203	581	844	3967
32	352	219	75	12	0	0	0	0	0	4	171	344	1177

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	55	88	156	327	586	804	1004	952	646	367	139	58	5182
55	0	0	0	7	33	146	297	248	67	1	0	0	799
57	0	0	0	3	18	108	240	195	46	0	0	0	610
60	0	0	0	0	6	61	164	125	22	0	0	0	378
65	0	0	0	0	0	17	72	45	5	0	0	0	139
70	0	0	0	0	0	3	19	9	0	0	0	0	31

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	7	39	145	361	580	771	717	426	178	32	3	2	9	48	193	554	1134	1905	2622	3048	3226	3258	3261
45	0	0	5	70	223	430	616	562	283	82	7	0	0	0	5	75	298	728	1344	1906	2189	2271	2278	2278
50	0	0	0	23	112	287	462	409	164	25	0	0	0	0	0	23	135	422	884	1293	1457	1482	1482	1482
55	0	0	0	4	45	161	310	258	72	3	0	0	0	0	0	4	49	210	520	778	850	853	853	853
60	0	0	0	0	8	67	169	127	19	0	0	0	0	0	0	0	8	75	244	371	390	390	390	390
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	13	53	147	269	391	511	497	341	190	34	1	0	13	66	213	482	873	1384	1881	2222	2412	2446	2447

(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