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: SUPERIOR, MT **COOP ID: 248043**

Climate Division: MT 1 **NWS Call Sign:** **Elevation: 2,710 Feet** **Lat: 47˚12N** **Lon: 114˚53W**

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	35.0	19.5	27.3	72	1915	3	35.9	1994	-36	1937	20	9.9	1979	1171	0	.0	.0	.9	9.6	28.1	3.1
Feb	43.0	22.1	32.6	69	1932	27	39.5	1991	-39	1936	15	20.7	1989	908	0	.0	.0	5.4	3.7	25.3	1.4
Mar	52.8	27.3	40.1	79	1978	29	46.3	1992	-9	1950	11	35.5	1976	773	0	.0	.0	18.6	.7	24.9	.1
Apr	61.9	32.4	47.2	90	1987	28	52.3	1987	2	1936	2	41.6	1975	536	0	.0	@	26.5	.0	15.5	.0
May	70.4	39.1	54.8	99	1936	30	60.3	1993	20	1916	2	50.2	1996	322	4	.0	.6	30.6	.0	4.7	.0
Jun	77.9	45.7	61.8	102	1955	22	66.8	1992	20	1998	17	56.0	1981	139	43	.0	3.4	30.0	.0	.2	.0
Jul	86.6	49.4	68.0	108	1935	15	72.5+	1998	30+	1944	1	60.0	1993	51	145	.7	11.0	31.0	.0	.0	.0
Aug	86.8	49.0	67.9	106	1961	4	71.6+	1994	24	1918	13	62.6	1980	49	140	.3	11.2	31.0	.0	.0	.0
Sep	75.9	41.0	58.5	103	1950	3	65.6	1998	3	1956	2	53.6	1985	227	29	.1	1.6	29.9	.0	3.2	.0
Oct	61.2	33.2	47.2	90+	1943	4	52.4	1988	-3	1935	31	44.3	1971	552	0	.0	.0	26.7	.2	14.8	.0
Nov	42.6	26.8	34.7	74	1999	12	39.9	1999	-15	1959	16	28.2	1978	910	0	.0	.0	5.5	3.2	22.8	.3
Dec	33.7	20.3	27.0	61	1956	3	33.9	1979	-28	1924	18	17.3	1983	1178	0	.0	.0	.7	11.8	28.1	1.5
Ann	60.7	33.8	47.3	108	Jul 1935	15	72.5+	Jul 1998	-39	Feb 1936	15	9.9	Jan 1979	6816	361	1.1	27.8	236.8	29.2	167.6	6.4

\+ 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: 1914-2001

(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	1.48	1.10	2.80	1914	26	5.05	1974	.33	1985
Feb	1.14	.86	1.17	1949	10	3.35	1986	.17	1973
Mar	1.26	1.10	.91	1918	10	2.57	1972	.28	2000
Apr	1.19	1.11	1.19	1925	23	2.52	1996	.00	1977
May	1.86	1.74	1.84	1957	20	6.22	1980	.45	1973
Jun	1.75	1.52	1.58	2001	4	3.83	1992	.38	1972
Jul	1.05	.92	1.22	1987	22	2.87	1998	.00	1985
Aug	1.32	1.37	1.69	1947	22	3.04	1985	.15	1973
Sep	1.10	1.09	1.17	1947	16	3.11	1985	.00	1990
Oct	1.14	.94	1.51	1994	27	2.55	1994	.00	1987
Nov	1.66	1.68	1.17+	1994	1	3.98	1973	.17	1987
Dec	1.63	1.43	1.40	2000	14	4.97	1996	.06	1976
Ann	16.58	16.09	2.80	Jan 1914	26	6.22	May 1980	.00+	Sep 1990

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.3	4.7	.5	@
Feb	9.7	3.6	.3	.0
Mar	11.0	4.6	.2	.0
Apr	9.3	4.4	.2	@
May	10.2	5.3	.7	.2
Jun	9.3	4.9	.8	.1
Jul	6.5	3.0	.5	@
Aug	6.4	3.9	.5	.2
Sep	7.1	3.3	.5	.1
Oct	7.5	3.6	.4	.1
Nov	12.4	5.8	.5	@
Dec	10.5	5.4	.6	@
Ann	111.2	52.5	5.7	.7

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	.22	.34	.56	.76	.97	1.21	1.48	1.81	2.26	2.98	3.68
Feb	.21	.32	.48	.64	.80	.97	1.16	1.39	1.70	2.20	2.67
Mar	.39	.51	.69	.84	.99	1.14	1.31	1.50	1.76	2.16	2.52
Apr	.36	.54	.72	.87	1.00	1.13	1.27	1.44	1.64	1.96	2.25
May	.46	.63	.90	1.14	1.38	1.63	1.91	2.25	2.68	3.38	4.03
Jun	.55	.71	.96	1.17	1.38	1.59	1.82	2.10	2.45	3.00	3.51
Jul	.12	.25	.42	.57	.73	.89	1.08	1.30	1.59	2.06	2.51
Aug	.24	.35	.55	.73	.91	1.11	1.34	1.61	1.98	2.57	3.13
Sep	.08	.20	.37	.53	.70	.88	1.10	1.36	1.71	2.28	2.83
Oct	.08	.20	.38	.55	.72	.92	1.14	1.41	1.78	2.38	2.96
Nov	.35	.51	.75	.97	1.20	1.43	1.70	2.02	2.44	3.12	3.76
Dec	.26	.41	.64	.87	1.10	1.35	1.64	1.99	2.46	3.22	3.95
Ann	11.24	12.26	13.57	14.57	15.47	16.34	17.24	18.25	19.47	21.25	22.79

+ 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: 1914-2001
(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	13.7	10.3	5	4
Feb	4.8	2.8	3	2
Mar	2.9	1.0	#	#
Apr	.5	.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
Oct	.1	.0	#	0
Nov	5.4	.5	1	#
Dec	9.2	1.0	3	1
Ann	36.6	15.6	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	13.0	1980	9	28.0	1980	36	1997	1	13+	1997
Feb	9.0	1972	24	16.0	1976	18	1975	9	10	1975
Mar	6.5	1980	4	9.0	1975	9	1989	3	2	1989
Apr	6.5	1975	4	7.5	1975	0	0	0	0	0
May	.5	1975	24	.5	1975	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	.0	0	0	.0	0	0	0	0	0	0
Sep	#	1978	19	#	1978	0	0	0	0	0
Oct	2.0	1975	21	2.0	1975	1	1973	31	#+	1975
Nov	12.0	1996	19	25.0	1973	21	1996	25	6	1996
Dec	10.0	1975	1	29.0	1977	44	1996	30	17	1996
Ann	13.0	Jan 1980	9	29.0	Dec 1977	44	Dec 1996	30	17	Dec 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.1	3.7	1.5	.7	.1
Feb	1.9	1.7	.6	.3	.0
Mar	1.3	1.1	.2	.1	.0
Apr	.2	.2	.1	.1	.0
May	@	.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	1.9	1.6	.7	.3	.1
Dec	3.4	2.9	1.0	.2	.1
Ann	12.9	11.3	4.1	1.7	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	14.9	12.2	9.9	3.8
Feb	9.2	8.1	7.3	2.7
Mar	2.3	1.2	.6	.0
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	3.4	1.6	.8	.1
Dec	8.1	4.6	3.5	.1
Ann	37.9	27.7	22.1	6.7

+ 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	7/02	6/25	6/19	6/15	6/11	6/06	6/02	5/27	5/20
32	6/01	5/28	5/25	5/22	5/19	5/17	5/14	5/11	5/06
28	5/19	5/14	5/10	5/07	5/04	5/01	4/28	4/25	4/19
24	5/05	4/28	4/23	4/18	4/14	4/10	4/05	3/31	3/24
20	4/13	4/06	4/01	3/27	3/23	3/19	3/15	3/09	3/02
16	3/30	3/21	3/15	3/09	3/04	2/26	2/21	2/14	2/05

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	8/30	9/03	9/06	9/08	9/11	9/13	9/16	9/18	9/23
32	9/09	9/13	9/16	9/18	9/20	9/22	9/24	9/27	10/01
28	9/22	9/27	10/01	10/04	10/06	10/09	10/12	10/16	10/20
24	10/04	10/09	10/13	10/16	10/19	10/22	10/25	10/29	11/03
20	10/17	10/23	10/28	11/01	11/04	11/08	11/12	11/16	11/22
16	10/29	11/05	11/10	11/14	11/18	11/22	11/27	12/02	12/08

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	116	107	101	96	91	87	82	76	67
32	141	135	130	127	123	120	116	111	105
28	174	167	162	158	155	151	147	142	135
24	214	205	198	193	187	182	176	170	161
20	249	241	235	230	225	221	216	210	201
16	292	280	272	265	259	253	246	238	226

***** 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	1171	908	773	536	322	139	51	49	227	552	910	1178	6816
60	1016	768	618	387	188	58	14	13	124	397	760	1023	5366
57	923	684	525	302	123	28	5	4	77	306	670	930	4577
55	861	628	463	248	88	15	2	2	53	248	610	868	4086
50	711	491	315	132	29	2	0	0	15	120	461	713	2989
32	251	111	15	0	0	0	0	0	0	0	76	222	675

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	103	127	265	454	705	895	1117	1114	792	472	156	67	6267
55	0	0	0	12	80	220	405	403	155	6	0	0	1281
57	0	0	0	6	53	172	347	343	119	3	0	0	1043
60	0	0	0	1	24	112	263	259	76	1	0	0	736
65	0	0	0	0	4	43	145	140	29	0	0	0	361
70	0	0	0	0	0	11	64	59	8	0	0	0	142

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	10	74	218	454	648	859	854	550	240	32	0	0	10	84	302	756	1404	2263	3117	3667	3907	3939	3939
45	0	0	18	115	304	498	704	699	402	120	8	0	0	0	18	133	437	935	1639	2338	2740	2860	2868	2868
50	0	0	1	45	173	350	549	544	262	49	0	0	0	0	1	46	219	569	1118	1662	1924	1973	1973	1973
55	0	0	0	16	83	215	394	391	144	14	0	0	0	0	0	16	99	314	708	1099	1243	1257	1257	1257
60	0	0	0	0	31	110	246	241	61	1	0	0	0	0	0	0	31	141	387	628	689	690	690	690
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	12	72	177	309	411	536	536	373	181	15	0	0	12	84	261	570	981	1517	2053	2426	2607	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