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: CAMPBELL, MN **COOP ID: 211245**

Climate Division: MN 4 **NWS Call Sign:** **Elevation: 972 Feet** **Lat: 46˚06N** **Lon: 96˚25W**

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	17.1	-3.7	6.7	58	1987	13	20.9	1990	-41	1977	16	-6.7	1982	1808	0	.0	.0	.1	26.3	31.0	18.3
Feb	24.1	4.0	14.1	62	1958	26	28.5	1987	-41	1994	9	-.3	1979	1428	0	.0	.0	.6	19.2	27.8	12.1
Mar	36.1	17.9	27.0	79	1967	31	37.6	1973	-34	1962	1	17.8	1975	1178	0	.0	.0	3.7	10.4	27.8	3.9
Apr	55.0	32.2	43.6	100	1980	21	52.0	1987	-5+	1975	4	35.4	1975	644	2	@	.2	19.3	.9	16.3	.1
May	70.0	45.0	57.5	98	1969	28	67.8	1977	20	1961	1	51.4	1979	278	44	.0	.9	29.7	.0	2.7	.0
Jun	78.2	54.3	66.3	102	1988	25	73.6	1988	30	1969	3	59.9	1982	79	116	.1	2.5	30.0	.0	.0	.0
Jul	83.0	58.3	70.7	106	1988	7	75.3	1974	37	1971	30	63.3	1992	26	200	.3	5.3	31.0	.0	.0	.0
Aug	82.0	56.1	69.1	105+	1988	17	74.1	1976	30	1964	13	63.9	1992	40	165	.3	4.5	31.0	.0	.0	.0
Sep	71.9	46.0	59.0	102	1959	9	64.8	1998	20+	1974	22	53.3	1993	210	29	.0	1.3	29.4	.0	2.0	.0
Oct	58.5	33.3	45.9	93+	1963	6	53.6	1973	5	1951	31	41.1	1976	593	0	.0	.1	24.1	.3	14.1	.0
Nov	37.6	18.6	28.1	77	2001	4	38.7	1999	-25	1964	30	17.1	1985	1107	0	.0	.0	5.9	10.9	27.5	2.1
Dec	22.8	3.4	13.1	57	1962	4	23.1+	1997	-35+	1993	28	-1.8	1983	1610	0	.0	.0	.5	23.0	30.9	12.8
Ann	53.0	30.5	41.8	106	Jul 1988	7	75.3	Jul 1974	-41+	Feb 1994	9	-6.7	Jan 1982	9001	556	.7	14.8	205.3	91.0	180.1	49.3

\+ 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: 1948-2001

(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	.74	.56	1.28	1952	15	1.52+	1996	.00	1983
Feb	.49	.39	1.42	1952	20	1.38	2000	.00+	1983
Mar	1.13	.86	1.25	1965	18	3.39	1995	.22	1982
Apr	1.77	1.31	2.05	1954	26	7.44	1986	.10	1980
May	2.44	2.11	2.21	1985	31	6.89	1985	.51	1976
Jun	3.72	3.20	3.12	1953	16	7.87	1991	.77+	1974
Jul	3.58	3.35	3.10	1950	9	7.97	1993	1.05	1976
Aug	2.59	2.62	3.20	1956	3	4.73	1983	.32	1976
Sep	2.16	1.50	5.43	1991	8	7.59	1991	.08	1979
Oct	1.85	1.37	2.30	1984	15	6.44	1984	.10+	1993
Nov	.95	.65	1.36	1953	21	3.25	2000	.00	1982
Dec	.44	.38	1.14	1949	11	1.48	1972	.00	1982
Ann	21.86	20.60	5.43	Sep 1991	8	7.97	Jul 1993	.00+	Feb 1983

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.2	2.3	.2	.1
Feb	5.3	2.1	@	.0
Mar	5.4	3.3	.4	.1
Apr	7.8	4.4	1.1	.2
May	9.5	5.7	1.4	.4
Jun	10.2	6.6	2.4	1.0
Jul	9.9	6.3	2.1	1.0
Aug	8.4	4.7	1.6	.5
Sep	7.7	4.2	1.5	.3
Oct	6.6	4.1	1.2	.4
Nov	5.1	2.2	.4	@
Dec	4.7	1.5	@	.0
Ann	86.8	47.4	12.3	4.0

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	.07	.15	.27	.38	.49	.61	.75	.91	1.14	1.50	1.84
Feb	.00	.08	.18	.26	.34	.42	.51	.61	.75	.98	1.20
Mar	.23	.34	.50	.65	.81	.97	1.15	1.37	1.66	2.13	2.57
Apr	.20	.34	.59	.84	1.10	1.39	1.74	2.16	2.74	3.69	4.62
May	.57	.79	1.15	1.47	1.79	2.13	2.51	2.96	3.55	4.50	5.39
Jun	.97	1.32	1.86	2.34	2.81	3.30	3.85	4.50	5.34	6.68	7.93
Jul	1.44	1.77	2.23	2.62	2.98	3.35	3.75	4.21	4.79	5.69	6.50
Aug	.82	1.06	1.43	1.74	2.04	2.35	2.69	3.09	3.61	4.42	5.16
Sep	.30	.47	.78	1.08	1.40	1.74	2.14	2.64	3.30	4.39	5.44
Oct	.09	.19	.41	.66	.94	1.28	1.70	2.23	2.98	4.26	5.55
Nov	.03	.09	.22	.35	.50	.68	.89	1.16	1.53	2.16	2.78
Dec	.02	.06	.13	.19	.26	.34	.43	.54	.70	.96	1.21
Ann	13.00	14.60	16.71	18.36	19.85	21.31	22.84	24.57	26.69	29.82	32.58

\+ 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

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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	8.2	7.4	6	5
Feb	6.2	5.1	7	6
Mar	4.9	3.0	4	1
Apr	1.9	1.5	#	#
May	#	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.3	.0	#	0
Nov	5.5	2.6	1	#
Dec	5.6	5.6	4	1
Ann	32.6	25.2	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	10.5	1989	7	18.2	1975	21	1986	3	18	1986
Feb	5.0	1991	23	12.8+	1994	24	1994	13	21	1986
Mar	9.0	1995	5	16.0+	1995	21	1989	15	17	1978
Apr	6.0	1994	29	6.0	1994	9	1975	9	3	1975
May	#	1976	2	#	1976	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	.0	0	0	.0	0	0	0	0	0	0
Oct	3.1	1995	24	3.7	1995	2	1995	24	#+	1995
Nov	8.0	1992	20	17.4	1992	16	1993	30	4	1985
Dec	3.9	1993	17	10.8	2000	20	1985	31	19	1985
Ann	10.5	Jan 1989	7	18.2	Jan 1975	24	Feb 1994	13	21	Feb 1986

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.2	2.7	.7	.2	.1
Feb	3.5	2.0	.6	.1	.0
Mar	1.8	1.4	.6	.3	.0
Apr	.9	.6	.2	.1	.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	.2	.2	@	.0	.0
Nov	2.7	1.5	.7	.1	.0
Dec	3.7	2.0	.3	.0	.0
Ann	17.0	10.4	3.1	.8	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	23.9	17.5	14.9	1.7
Feb	19.7	14.7	12.4	1.8
Mar	9.6	7.4	5.7	2.4
Apr	1.4	.8	.6	.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	.1	.0	.0	.0
Nov	6.7	3.2	1.3	.3
Dec	15.8	7.6	5.1	1.8
Ann	77.2	51.2	40.0	8.0

+ 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	5/29	5/24	5/21	5/18	5/15	5/13	5/10	5/06	5/01
32	5/20	5/16	5/13	5/10	5/08	5/05	5/03	4/30	4/26
28	5/10	5/05	5/01	4/28	4/25	4/22	4/19	4/15	4/10
24	4/30	4/24	4/20	4/17	4/14	4/10	4/07	4/03	3/28
20	4/17	4/12	4/09	4/06	4/04	4/01	3/29	3/26	3/22
16	4/11	4/06	4/03	3/31	3/29	3/26	3/23	3/20	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	9/07	9/10	9/13	9/15	9/17	9/19	9/21	9/24	9/28
32	9/15	9/19	9/22	9/25	9/27	9/30	10/03	10/06	10/10
28	9/20	9/25	9/28	10/01	10/04	10/07	10/10	10/13	10/18
24	9/30	10/06	10/10	10/14	10/17	10/21	10/24	10/28	11/03
20	10/06	10/13	10/17	10/22	10/25	10/29	11/02	11/07	11/14
16	10/23	10/28	10/31	11/03	11/06	11/09	11/12	11/16	11/20

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	142	136	131	128	124	121	117	113	106
32	161	154	150	146	142	138	134	129	122
28	185	177	171	166	161	157	152	146	138
24	211	202	196	191	186	181	176	170	161
20	229	220	214	209	204	199	194	188	179
16	244	236	231	226	222	217	213	208	200

***** 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	1808	1428	1178	644	278	79	26	40	210	593	1107	1610	9001
60	1653	1288	1023	499	177	28	6	11	110	440	957	1455	7647
57	1560	1204	930	417	127	14	0	3	66	352	867	1362	6902
55	1498	1148	868	366	99	7	0	1	45	297	807	1300	6436
50	1343	1008	722	249	47	1	0	0	12	178	662	1145	5367
32	807	551	269	25	0	0	0	0	0	8	232	626	2518

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	21	47	115	373	789	1027	1198	1148	808	438	115	39	6118
55	0	0	0	24	175	344	485	436	163	14	0	0	1641
57	0	0	0	16	141	291	423	376	125	7	0	0	1379
60	0	0	0	8	98	215	336	291	78	2	0	0	1028
65	0	0	0	2	44	116	200	165	29	0	0	0	556
70	0	0	0	0	17	47	102	77	7	0	0	0	250

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	0	14	177	549	795	948	902	566	229	23	0	0	0	14	191	740	1535	2483	3385	3951	4180	4203	4203
45	0	0	4	94	404	645	793	747	422	131	10	0	0	0	4	98	502	1147	1940	2687	3109	3240	3250	3250
50	0	0	0	52	271	495	638	592	288	63	1	0	0	0	0	52	323	818	1456	2048	2336	2399	2400	2400
55	0	0	0	21	164	347	484	437	173	25	0	0	0	0	0	21	185	532	1016	1453	1626	1651	1651	1651
60	0	0	0	9	81	214	335	288	95	8	0	0	0	0	0	9	90	304	639	927	1022	1030	1030	1030
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	12	127	340	500	624	582	357	157	18	0	0	0	12	139	479	979	1603	2185	2542	2699	2717	2717

(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