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: CANBY, MN **COOP ID: 211263**

Climate Division: MN 4 **NWS Call Sign:** **Elevation: 1,243 Feet** **Lat: 44˚43N** **Lon: 96˚17W**

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	24.1	3.3	13.7	68	1981	24	26.5	1990	-33	1936	22	.9	1982	1589	0	.0	.0	.6	22.5	30.9	13.9
Feb	30.3	10.6	20.5	67	1981	16	33.2	1987	-32	1936	16	6.6	1979	1248	0	.0	.0	2.0	15.8	27.1	7.9
Mar	41.0	21.7	31.4	84	1939	23	41.0	2000	-28	1962	1	23.2	1984	1044	0	.0	.0	7.5	7.6	26.4	2.1
Apr	57.0	33.9	45.5	98	1980	21	53.3	1977	0+	1952	22	38.8	1975	589	3	.0	.2	20.8	.6	13.3	.0
May	71.1	46.8	59.0	98	1959	1	67.6	1977	10	1951	5	53.7	1997	232	45	.0	1.0	30.2	.0	1.9	.0
Jun	80.5	56.4	68.5	107+	1988	25	76.0	1988	33	1946	2	62.5	1982	47	150	.3	4.6	30.0	.0	.0	.0
Jul	85.2	61.2	73.2	111	1936	12	77.6	1983	38	1967	4	64.9	1992	15	269	.8	9.2	31.0	.0	.0	.0
Aug	83.1	58.9	71.0	108	1988	1	77.0	1983	35	1950	20	65.9	1992	23	210	.4	6.3	31.0	.0	.0	.0
Sep	74.1	48.8	61.5	99	1978	7	67.9	1978	22+	1974	22	56.2	1993	154	48	@	1.8	29.6	.0	1.0	.0
Oct	61.6	36.4	49.0	94+	1993	7	56.5	1973	12+	1991	30	44.5	1987	497	1	.0	.1	25.2	.3	10.6	.0
Nov	42.0	22.5	32.3	82	1999	9	42.6	1999	-16	1964	30	21.4	1985	982	0	.0	.0	7.7	8.7	24.8	1.3
Dec	28.7	9.1	18.9	72	1941	3	28.1	1979	-27+	1983	20	3.1	1983	1428	0	.0	.0	1.2	18.7	30.6	8.7
Ann	56.6	34.1	45.4	111	Jul 1936	12	77.6	Jul 1983	-33	Jan 1936	22	.9	Jan 1982	7848	726	1.5	23.2	216.8	74.2	166.6	33.9

+ 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: 1932-2001

(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	.88	.70	1.55	1944	27	3.30	1997	.00	1974
Feb	.75	.68	2.10	1944	26	2.14	1981	.08	1983
Mar	1.78	1.56	2.02	1977	12	5.18	1977	.17	1971
Apr	2.27	2.01	2.16	2001	23	5.66	1995	.13	1980
May	2.92	2.66	2.93	2000	8	6.18	1993	.39	1976
Jun	4.09	3.60	3.12	1980	25	10.22	1993	.32	1973
Jul	3.35	2.75	5.29	1963	27	6.64	1994	.51	1996
Aug	2.78	2.74	2.80	1940	5	5.25	1979	.74	1976
Sep	2.38	2.47	3.35	1986	17	5.65	1986	.25	1974
Oct	2.12	1.57	2.95	1979	31	6.62	1984	.13	1978
Nov	1.66	1.24	3.23	1975	20	5.45	1983	.00	1984
Dec	.70	.61	1.60	1959	28	1.74	1972	.00	1986
Ann	25.68	26.35	5.29	Jul 1963	27	10.22	Jun 1993	.00+	Dec 1986

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.9	2.6	.4	@
Feb	5.2	2.3	.3	.0
Mar	7.3	4.5	1.0	.2
Apr	8.0	5.1	1.3	.5
May	9.0	6.3	2.0	.5
Jun	9.2	6.4	3.0	1.2
Jul	8.4	5.9	2.2	.8
Aug	7.4	5.2	1.8	.7
Sep	6.7	4.5	1.7	.5
Oct	5.7	3.5	1.4	.5
Nov	5.6	3.5	1.1	.3
Dec	5.0	2.1	.3	@
Ann	83.4	51.9	16.5	5.2

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	.02	.08	.20	.33	.47	.63	.83	1.08	1.43	2.02	2.60
Feb	.14	.21	.32	.42	.53	.64	.77	.92	1.12	1.45	1.76
Mar	.34	.50	.77	1.01	1.25	1.51	1.81	2.17	2.65	3.41	4.14
Apr	.47	.68	1.01	1.31	1.62	1.95	2.32	2.76	3.35	4.29	5.18
May	.63	.90	1.33	1.71	2.10	2.52	2.99	3.55	4.29	5.47	6.59
Jun	.73	1.09	1.69	2.25	2.82	3.44	4.14	4.99	6.13	7.96	9.70
Jul	.77	1.08	1.57	2.01	2.45	2.92	3.44	4.06	4.89	6.19	7.42
Aug	.93	1.19	1.58	1.90	2.22	2.54	2.90	3.31	3.84	4.67	5.43
Sep	.49	.70	1.05	1.37	1.69	2.04	2.43	2.89	3.51	4.50	5.44
Oct	.18	.32	.60	.90	1.22	1.59	2.03	2.58	3.34	4.62	5.88
Nov	.04	.16	.38	.61	.88	1.18	1.55	2.02	2.68	3.78	4.87
Dec	.07	.15	.26	.37	.47	.58	.71	.86	1.07	1.40	1.72
Ann	15.92	17.71	20.06	21.88	23.52	25.13	26.81	28.69	30.99	34.38	37.36

\+ 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: 1932-2001
(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	8.3	5.5	7	5
Feb	6.3	6.0	7	5
Mar	9.1	8.5	4	3
Apr	3.1	1.0	#	#
May	#	.0	#	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	#	0
Oct	.6	.0	#	0
Nov	8.0	7.0	2	1
Dec	6.5	6.1	5	3
Ann	41.9	34.1	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	9.0	1996	18	29.0	1979	31	1997	19	25	1997
Feb	9.0	1990	16	14.7	1971	29	1979	25	28	1979
Mar	14.0	1985	4	25.5	1989	26	1979	5	16	1979
Apr	11.0	1998	1	17.3	1995	10+	1998	1	2	1979
May	#	1990	1	#	1990	2	1994	1	#	1994
Jun	.0	0	0	.0	0	#	1975	3	#	1975
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	#	1995	22	#+	1995	#+	1995	22	#+	1995
Oct	4.0	1995	24	6.0	1976	3	1976	24	#+	1997
Nov	16.0	1975	20	25.5	1975	24	1975	22	9	1975
Dec	14.0	1981	1	18.0	1981	23	1985	2	16	1985
Ann	16.0	Nov 1975	20	29.0	Jan 1979	31	Jan 1997	19	28	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.8	3.2	.9	.4	.0
Feb	4.0	2.5	.6	.2	.0
Mar	4.0	3.0	1.2	.6	.1
Apr	1.5	1.1	.2	.2	@
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	.3	.3	.1	.0	.0
Nov	3.4	2.6	1.0	.5	.1
Dec	3.9	2.7	.7	.2	@
Ann	21.9	15.4	4.7	2.1	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	25.2	19.3	14.0	6.0
Feb	22.0	17.6	13.0	4.8
Mar	15.4	11.6	6.9	2.3
Apr	2.3	.8	.4	.1
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	.4	@	.0	.0
Nov	9.1	5.4	3.9	1.2
Dec	21.0	15.1	10.7	4.0
Ann	95.4	69.8	48.9	18.4

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

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	9/11	9/15	9/18	9/21	9/24	9/26	9/29	10/02	10/06
32	9/17	9/22	9/25	9/28	10/01	10/04	10/07	10/10	10/15
28	9/26	10/01	10/04	10/07	10/10	10/13	10/16	10/19	10/24
24	10/05	10/11	10/14	10/17	10/20	10/23	10/27	10/30	11/04
20	10/16	10/21	10/25	10/29	11/01	11/04	11/07	11/11	11/17
16	10/25	10/30	11/02	11/05	11/08	11/11	11/14	11/18	11/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	150	144	139	135	131	128	124	119	112
32	166	160	156	153	149	146	142	138	132
28	188	181	176	171	167	163	159	154	147
24	212	205	200	196	192	188	184	179	172
20	231	223	218	214	210	205	201	196	188
16	250	242	237	233	228	224	220	214	207

***** 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	1589	1248	1044	589	232	47	15	23	154	497	982	1428	7848
60	1434	1108	889	448	136	13	2	4	71	348	832	1273	6558
57	1341	1024	796	369	92	5	0	1	38	267	742	1180	5855
55	1279	968	734	320	68	2	0	0	23	218	684	1118	5414
50	1124	835	588	212	28	0	0	0	5	117	545	965	4419
32	606	396	169	16	0	0	0	0	0	3	158	468	1816

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	40	72	148	420	836	1093	1277	1210	884	529	166	63	6738
55	0	0	1	34	192	405	564	497	217	31	2	0	1943
57	0	0	0	23	153	348	502	436	172	18	0	0	1652
60	0	0	0	12	104	266	411	346	114	6	0	0	1259
65	0	0	0	3	45	150	269	210	48	1	0	0	726
70	0	0	0	0	15	68	152	106	14	0	0	0	355

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	4	42	227	604	866	1043	973	652	306	45	1	0	4	46	273	877	1743	2786	3759	4411	4717	4762	4763
45	0	1	13	138	455	716	888	818	503	191	18	0	0	1	14	152	607	1323	2211	3029	3532	3723	3741	3741
50	0	0	5	74	317	566	733	663	362	106	7	0	0	0	5	79	396	962	1695	2358	2720	2826	2833	2833
55	0	0	0	37	199	420	578	508	237	50	0	0	0	0	0	37	236	656	1234	1742	1979	2029	2029	2029
60	0	0	0	17	105	281	423	359	136	16	0	0	0	0	0	17	122	403	826	1185	1321	1337	1337	1337
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	31	153	372	558	692	641	403	197	31	0	0	1	32	185	557	1115	1807	2448	2851	3048	3079	3079

(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