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: FARMINGTON 3 NW, MN **COOP ID: 212737**

Climate Division: MN 9 **NWS Call Sign:** **Elevation: 980 Feet** **Lat: 44˚40N** **Lon: 93˚11W**

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	22.3	3.8	13.1	59	1981	24	27.0	1990	-36	1972	15	-1.7	1977	1611	0	.0	.0	.1	24.1	30.9	13.0
Feb	29.0	11.2	20.1	59+	2000	29	31.8	1998	-33	1996	2	7.6	1979	1257	0	.0	.0	.8	16.1	27.0	7.9
Mar	41.3	23.0	32.2	81	1968	30	41.6	2000	-28	1962	1	22.5	1975	1019	0	.0	.0	7.0	6.8	25.0	2.0
Apr	58.6	35.8	47.2	93	1980	21	53.6	1987	5+	1995	4	39.1	1975	539	4	.0	.1	22.4	.4	10.7	.0
May	72.2	47.9	60.1	95+	1969	28	67.5	1977	20	1967	3	54.7	1997	213	60	.0	1.0	30.6	.0	1.1	.0
Jun	80.0	57.0	68.5	102	1985	8	75.2	1988	38+	1992	21	63.6	1982	38	144	@	2.8	30.0	.0	.0	.0
Jul	83.6	60.8	72.2	104	1988	31	77.0	1988	40	1984	6	65.7	1992	14	236	.1	4.7	31.0	.0	.0	.0
Aug	81.1	58.4	69.8	101	1988	1	75.1	1983	37	1950	20	65.4	1992	25	171	@	2.5	31.0	.0	.0	.0
Sep	72.7	49.6	61.2	97	1948	12	67.5	1998	25	1983	23	55.2	1993	156	42	.0	.5	29.8	.0	.8	.0
Oct	60.1	38.5	49.3	91	1997	3	55.1	1973	12	1972	19	44.0	1976	488	1	.0	@	25.9	.1	9.1	.0
Nov	40.7	24.4	32.6	77	1999	8	42.6	1999	-19	1977	26	24.8	1991	973	0	.0	.0	6.7	8.0	23.9	1.1
Dec	26.9	10.2	18.6	67	1998	1	28.0	1997	-35	1983	19	2.3	1983	1440	0	.0	.0	.5	20.7	30.5	8.4
Ann	55.7	35.1	45.4	104	Jul 1988	31	77.0	Jul 1988	-36	Jan 1972	15	-1.7	Jan 1977	7773	658	.1	11.6	215.8	76.2	159.0	32.4

\+ 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

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

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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	.92	.81	1.35	1996	18	2.62	1975	.09	1981
Feb	.74	.55	1.05	1981	27	2.82	1971	.00	1987
Mar	1.95	1.63	1.70	1965	1	4.15+	1998	.33	1978
Apr	2.65	2.38	2.25	1975	27	6.22	1986	.29	1987
May	3.61	3.57	2.20	1988	8	6.23	1991	.74	1976
Jun	4.48	4.77	4.54	1994	5	8.85	1998	.30	1988
Jul	4.13	3.80	5.10	1955	8	11.57	1997	1.23	1996
Aug	4.54	4.32	4.65	1984	7	6.92	1980	1.47	1990
Sep	3.14	2.74	6.05	1992	16	8.12	1986	.67	1974
Oct	2.21	1.97	2.84	1996	17	5.40	1984	.35	1978
Nov	2.02	1.56	1.80+	1973	20	5.26	1996	.10	1976
Dec	1.04	.86	2.00	1959	28	4.92	1982	.08	1989
Ann	31.43	31.97	6.05	Sep 1992	16	11.57	Jul 1997	.00	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.1	3.0	.4	.1
Feb	5.2	2.5	.3	.1
Mar	7.8	4.8	1.4	.2
Apr	8.6	6.3	1.7	.4
May	10.3	8.2	2.5	.7
Jun	10.4	8.0	3.1	1.0
Jul	9.2	6.7	2.8	1.1
Aug	9.8	7.0	3.1	1.5
Sep	8.3	5.9	1.9	.7
Oct	7.2	5.0	1.3	.6
Nov	7.2	4.6	1.3	.4
Dec	6.2	2.6	.4	.1
Ann	96.3	64.6	20.2	6.9

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	.11	.18	.31	.44	.57	.72	.90	1.12	1.42	1.91	2.38
Feb	.04	.12	.23	.34	.46	.58	.73	.92	1.17	1.58	1.97
Mar	.43	.61	.90	1.15	1.41	1.68	1.99	2.36	2.85	3.62	4.35
Apr	.61	.85	1.24	1.59	1.94	2.31	2.72	3.22	3.87	4.90	5.88
May	1.52	1.84	2.30	2.68	3.04	3.40	3.78	4.23	4.79	5.64	6.42
Jun	1.20	1.63	2.27	2.84	3.40	3.98	4.63	5.40	6.41	7.98	9.45
Jul	1.29	1.68	2.26	2.76	3.25	3.75	4.30	4.95	5.78	7.08	8.28
Aug	2.23	2.61	3.14	3.57	3.96	4.35	4.76	5.24	5.83	6.72	7.52
Sep	.69	.98	1.44	1.85	2.27	2.71	3.21	3.81	4.60	5.86	7.04
Oct	.37	.56	.88	1.19	1.50	1.84	2.23	2.70	3.33	4.35	5.33
Nov	.28	.45	.74	1.02	1.31	1.64	2.01	2.47	3.08	4.09	5.06
Dec	.15	.23	.38	.53	.68	.84	1.03	1.27	1.58	2.10	2.60
Ann	21.65	23.52	25.93	27.77	29.40	30.99	32.63	34.45	36.67	39.89	42.69

\+ 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)

Extremes (2)

Mean Number of Days (1)

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	10.6	9.6	8	7	17.0	1982	20	22.2	1975	40	1982	23	22	1979	5.8	3.5	1.3	.4	.1	26.0	23.4	18.2	8.1
Feb	7.4	7.0	8	6	7.0	1983	2	17.5	1983	30	1979	5	26	1979	4.5	3.0	1.0	.2	.0	22.7	17.3	13.7	9.0
Mar	7.8	7.4	3	2	14.0	1985	31	19.5	1989	21	1975	4	13	1975	4.0	2.9	1.1	.4	.1	12.1	9.1	6.6	2.8
Apr	3.2	1.1	#	#	16.0	1983	14	24.5	1983	16	1983	14	4	1975	1.2	.8	.3	.2	.1	1.4	.9	.7	.1
May	#	.0	0	0	#	1989	6	#+	1989	0	0	0	0	0	.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	.0	.0	0	0	.5	1985	24	.5	1985	0	0	0	0	0	@	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.2	.0	#	0	3.6	1991	31	3.6	1991	4	1991	31	#+	1992	.1	@	@	.0	.0	@	@	.0	.0
Nov	7.1	6.1	1	1	17.5	1991	1	32.6	1991	29	1983	30	8	1991	3.5	2.5	.8	.3	.1	7.0	4.1	2.3	.5
Dec	7.6	5.7	5	3	16.0	1982	29	20.0	1983	46	1983	29	37	1983	5.3	3.1	.9	.3	@	19.4	11.7	7.7	4.0
Ann	43.9	36.9	N/A	N/A	17.5	Nov 1991	1	32.6	Nov 1991	46	Dec 1983	29	37	Dec 1983	24.4	15.8	5.4	1.8	.4	88.6	66.5	49.2	24.5

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	153	148	144	141	138	135	131	128	122
32	170	165	161	158	155	152	149	145	139
28	201	192	186	181	176	171	166	159	151
24	223	216	211	207	202	198	194	189	181
20	237	230	225	221	217	213	209	204	197
16	256	248	242	237	233	228	223	217	209

***** 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	1611	1257	1019	539	213	38	14	25	156	488	973	1440	7773
60	1456	1117	864	400	123	9	0	4	72	341	823	1285	6494
57	1363	1033	771	323	83	3	0	1	39	262	733	1192	5803
55	1301	977	711	276	61	1	0	0	24	214	674	1130	5369
50	1146	841	567	174	24	0	0	0	5	116	532	976	4381
32	624	398	166	9	0	0	0	0	0	2	142	479	1820

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	36	64	170	464	870	1096	1245	1169	875	539	159	61	6748
55	0	0	2	41	218	407	532	456	209	38	1	0	1904
57	0	0	0	28	178	349	470	395	164	23	0	0	1607
60	0	0	0	15	126	265	377	305	107	10	0	0	1205
65	0	0	0	4	60	144	236	171	42	1	0	0	658
70	0	0	0	0	22	60	122	75	10	0	0	0	289

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	249	612	854	997	916	625	307	43	2	0	4	46	295	907	1761	2758	3674	4299	4606	4649	4651
45	0	1	18	149	462	704	842	761	479	187	16	1	0	1	19	168	630	1334	2176	2937	3416	3603	3619	3620
50	0	0	7	78	323	554	687	606	337	100	5	0	0	0	7	85	408	962	1649	2255	2592	2692	2697	2697
55	0	0	1	39	199	404	533	451	211	46	1	0	0	0	1	40	239	643	1176	1627	1838	1884	1885	1885
60	0	0	0	13	108	265	378	300	116	15	0	0	0	0	0	13	121	386	764	1064	1180	1195	1195	1195
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	26	156	376	552	667	600	383	179	25	0	0	1	27	183	559	1111	1778	2378	2761	2940	2965	2965

(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