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: POKEGAMA DAM, MN **COOP ID: 216612**

Climate Division: MN 2 **NWS Call Sign:** **Elevation: 1,280 Feet** **Lat: 47˚15N** **Lon: 93˚35W**

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	15.2	-6.0	4.6	53	1973	25	17.6	1990	-49	1950	30	-6.8	1982	1875	0	.0	.0	.1	27.4	31.0	18.4
Feb	24.0	1.8	12.9	60+	1976	24	28.3	1998	-42	1951	1	.0	1989	1459	0	.0	.0	.5	19.5	27.9	12.5
Mar	36.2	15.6	25.9	71+	1986	29	35.1	2000	-39	1962	1	17.0	1996	1212	0	.0	.0	4.9	9.5	28.7	4.8
Apr	52.5	29.3	40.9	92	1980	21	48.7	1987	-13	1954	3	33.5	1975	722	0	.0	.1	19.0	.7	19.8	.2
May	66.2	42.0	54.1	91+	1964	22	61.8	1977	16	1966	1	47.1	1979	356	19	.0	.2	29.7	.0	4.3	.0
Jun	74.4	51.4	62.9	97	1961	29	68.8	1995	26	1964	1	57.8	1982	121	58	.0	.6	29.9	.0	.1	.0
Jul	78.3	56.3	67.3	99	1988	28	71.4	1983	36	1967	4	60.4	1992	45	116	.0	1.7	31.0	.0	.0	.0
Aug	76.5	54.5	65.5	98	1976	19	71.6	1983	32	1950	25	59.5	1977	86	101	.0	1.1	31.0	.0	.0	.0
Sep	66.3	44.7	55.5	95	1976	7	61.5	1998	19	1965	26	49.7	1993	296	9	.0	.3	29.1	.0	1.8	.0
Oct	53.6	33.3	43.5	88	1963	5	48.2	1973	5	1952	17	36.9	1988	669	0	.0	.0	20.9	.5	13.1	.0
Nov	34.4	19.0	26.7	72+	1978	3	36.6	1999	-25	1964	30	18.9	1985	1150	0	.0	.0	3.7	12.9	27.3	2.0
Dec	19.6	1.8	10.7	60	1962	1	22.2	1997	-42	1955	19	-2.0	1983	1684	0	.0	.0	.2	25.0	30.9	13.5
Ann	49.8	28.6	39.2	99	Jul 1988	28	71.6	Aug 1983	-49	Jan 1950	30	-6.8	Jan 1982	9675	303	.0	4.0	200.0	95.5	184.9	51.4

\+ 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: 1948-2001

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

Issue Date: February 2004

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Climate Division: MN 2 **NWS Call Sign:** **Elevation: 1,280 Feet** **Lat: 47˚15N** **Lon: 93˚35W**

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	.90	.78	1.06	1997	5	3.18	1975	.12	1981
Feb	.61	.53	.80	1977	24	1.62	1979	.04	1993
Mar	1.21	1.15	1.11	1957	15	2.30	1979	.42	1996
Apr	1.64	1.32	2.12	1960	24	4.08	1986	.10	1988
May	2.92	2.76	3.25	1955	1	6.72	1999	.44	1976
Jun	4.50	4.37	4.43	1994	17	11.75	1994	.76	1987
Jul	4.64	4.37	3.81	1999	5	10.53	1999	1.58	1984
Aug	3.83	4.14	5.03	1983	3	10.15	1988	1.26	1994
Sep	3.18	2.99	3.49	1951	10	6.57	1988	.77	1995
Oct	2.66	2.45	5.62	1973	10	7.39	1973	.22	1992
Nov	1.48	1.45	1.52	1977	9	3.58	2000	.04	1999
Dec	.82	.76	.86	1968	13	1.49	1977	.13	1999
Ann	28.39	28.84	5.62	Oct 1973	10	11.75	Jun 1994	.04+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.4	2.7	.2	@
Feb	7.3	1.9	.1	.0
Mar	7.9	3.6	.5	.1
Apr	7.5	4.1	.9	.3
May	11.3	6.5	1.6	.5
Jun	12.8	8.3	2.9	1.0
Jul	12.2	8.0	2.9	1.3
Aug	11.4	6.1	2.3	1.0
Sep	11.5	6.6	2.2	.8
Oct	9.9	5.3	1.5	.7
Nov	8.9	3.8	.8	.1
Dec	8.8	2.8	.2	.0
Ann	118.9	59.7	16.1	5.8

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	.21	.29	.43	.54	.66	.79	.93	1.09	1.31	1.66	1.99
Feb	.09	.14	.22	.31	.40	.49	.60	.74	.92	1.22	1.51
Mar	.46	.57	.73	.87	.99	1.12	1.26	1.42	1.63	1.95	2.24
Apr	.30	.44	.68	.90	1.13	1.38	1.65	1.99	2.44	3.17	3.86
May	.68	.95	1.38	1.76	2.14	2.55	3.00	3.55	4.26	5.39	6.46
Jun	1.46	1.89	2.52	3.06	3.57	4.11	4.69	5.38	6.26	7.63	8.90
Jul	1.37	1.81	2.47	3.04	3.60	4.18	4.81	5.57	6.54	8.06	9.47
Aug	.97	1.33	1.89	2.38	2.87	3.38	3.96	4.63	5.52	6.93	8.24
Sep	1.13	1.43	1.86	2.23	2.57	2.93	3.32	3.78	4.36	5.25	6.07
Oct	.34	.55	.92	1.30	1.69	2.12	2.63	3.25	4.10	5.49	6.84
Nov	.18	.29	.50	.71	.93	1.17	1.46	1.81	2.29	3.08	3.85
Dec	.21	.29	.41	.51	.62	.73	.85	1.00	1.19	1.49	1.77
Ann	21.23	22.65	24.44	25.80	26.99	28.14	29.33	30.63	32.20	34.46	36.41

\+ 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

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	11.2	9.5	12	11
Feb	7.1	6.0	14	14
Mar	9.7	7.4	10	9
Apr	2.1	.7	2	#
May	.2	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	.9	.0	#	0
Nov	5.9	4.8	2	2
Dec	9.1	10.1	6	5
Ann	46.2	38.5	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	12.0	1975	11	35.5	1975	29	1996	31	21+	1997
Feb	11.0	1971	27	20.3	1979	32+	1975	7	27+	1975
Mar	14.0	1985	4	24.5	1982	31	1971	2	22	1979
Apr	5.0	1974	1	14.5	1972	25	1975	2	11	1975
May	4.0	1971	19	4.0	1971	4	1971	19	#+	1983
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	#	1984	26	#+	1984	0	0	0	0	0
Oct	5.0	1995	24	7.0	1995	4	1995	24	#+	1995
Nov	8.0	1993	5	18.5	1985	15	1985	30	5	1993
Dec	7.2	1995	14	14.2	1978	20	1983	16	15	1983
Ann	14.0	Mar 1985	4	35.5	Jan 1975	32+	Feb 1975	7	27+	Feb 1975

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.7	4.3	1.6	.3	@
Feb	6.0	2.5	.6	.3	@
Mar	5.6	3.3	1.1	.4	@
Apr	1.2	.9	.3	@	.0
May	@	@	@	.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	.6	.3	@	@	.0
Nov	5.2	3.0	.7	.2	.0
Dec	7.4	3.7	.7	.2	.0
Ann	33.7	18.0	5.0	1.4	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	30.2	29.3	26.4	17.1
Feb	27.4	27.0	25.2	19.2
Mar	20.2	17.8	16.4	12.6
Apr	4.5	3.1	2.4	1.0
May	@	@	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.5	@	.0	.0
Nov	13.4	7.9	5.1	.5
Dec	29.5	24.0	19.2	7.0
Ann	125.7	109.1	94.7	57.4

+ 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	6/13	6/08	6/05	6/02	5/31	5/28	5/25	5/22	5/17
32	5/26	5/23	5/20	5/17	5/15	5/13	5/11	5/08	5/04
28	5/15	5/11	5/08	5/06	5/04	5/01	4/29	4/26	4/22
24	5/05	5/01	4/28	4/26	4/23	4/21	4/19	4/16	4/12
20	4/24	4/20	4/17	4/15	4/12	4/10	4/08	4/05	4/01
16	4/15	4/11	4/08	4/06	4/04	4/01	3/30	3/27	3/24

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	9/02	9/06	9/09	9/11	9/14	9/16	9/19	9/21	9/26
32	9/14	9/18	9/21	9/23	9/25	9/27	9/30	10/02	10/06
28	9/19	9/24	9/27	9/30	10/03	10/06	10/09	10/12	10/17
24	10/03	10/09	10/13	10/16	10/20	10/23	10/27	10/31	11/06
20	10/15	10/20	10/24	10/27	10/30	11/02	11/05	11/08	11/13
16	10/25	10/29	11/01	11/04	11/07	11/09	11/12	11/15	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	121	116	112	109	105	102	99	95	90
32	148	143	139	135	132	129	126	122	116
28	170	164	159	155	152	148	144	140	134
24	203	194	189	183	179	174	169	163	154
20	220	213	208	204	200	196	192	187	180
16	234	228	224	220	216	213	209	205	198

***** 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	1875	1459	1212	722	356	121	45	86	296	669	1150	1684	9675
60	1720	1319	1057	575	235	50	9	30	173	514	1000	1529	8211
57	1627	1235	964	489	175	25	2	13	114	424	910	1436	7414
55	1565	1179	902	434	140	15	0	7	82	365	850	1374	6913
50	1410	1039	748	306	72	3	0	0	29	233	700	1219	5759
32	860	565	276	36	1	0	0	0	0	12	241	684	2675

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	8	30	87	304	687	926	1094	1038	704	366	81	23	5348
55	0	0	0	12	113	251	381	332	96	7	0	0	1192
57	0	0	0	7	86	201	321	276	68	3	0	0	962
60	0	0	0	3	53	137	235	199	37	1	0	0	665
65	0	0	0	0	19	58	116	101	9	0	0	0	303
70	0	0	0	0	5	15	40	37	1	0	0	0	98

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	147	485	717	875	816	497	196	14	0	0	0	14	161	646	1363	2238	3054	3551	3747	3761	3761
45	0	0	3	74	343	567	720	661	351	105	5	0	0	0	3	77	420	987	1707	2368	2719	2824	2829	2829
50	0	0	0	36	217	420	565	506	224	48	0	0	0	0	0	36	253	673	1238	1744	1968	2016	2016	2016
55	0	0	0	15	121	276	410	354	120	14	0	0	0	0	0	15	136	412	822	1176	1296	1310	1310	1310
60	0	0	0	3	59	155	263	211	55	0	0	0	0	0	0	3	62	217	480	691	746	746	746	746
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	11	117	313	449	566	518	292	115	10	0	0	0	11	128	441	890	1456	1974	2266	2381	2391	2391

(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