

Climatography of the United States

No. 20

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: ST PETER 2 SW, MN

1971-2000

COOP ID: 217405

Climate Division: MN 8

NWS Call Sign:

Elevation: 850 Feet

Lat: 44° 18N

Lon: 93° 59W

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	22.8	2.2	12.5	60	1981	24	26.0	1990	-38+	1972	15	-2.6	1977	1628	0	.0	.0	.2	22.2	30.8	13.3
Feb	29.2	8.1	18.7	64	1981	17	32.2	1987	-34	1996	2	7.6	1979	1297	0	.0	.0	1.4	15.6	27.3	8.2
Mar	41.4	21.2	31.3	84	1968	31	40.2	2000	-29	1962	1	20.8	1975	1045	0	.0	.0	7.9	6.8	25.4	2.4
Apr	57.6	33.2	45.4	94	1980	21	53.8	1987	4+	1982	5	37.2	1975	593	4	.0	.1	22.1	.6	12.0	.0
May	71.0	46.6	58.8	99	1988	28	66.1+	1988	21	1967	3	51.4	1997	251	60	.0	1.2	30.4	.0	1.3	.0
Jun	79.8	56.6	68.2	104	1988	21	75.8	1988	37	1983	6	62.7	1982	55	151	.3	4.1	30.0	.0	.0	.0
Jul	83.6	61.2	72.4	105	1948	6	77.2	1988	40	1967	4	64.1	1992	22	251	.4	6.3	31.0	.0	.0	.0
Aug	81.1	58.9	70.0	102	1988	1	76.9	1983	36	1950	20	64.1	1992	36	190	.1	3.2	31.0	.0	.0	.0
Sep	73.3	47.9	60.6	98	1960	5	65.2	1988	25	1974	22	54.1	1993	170	37	.0	1.4	29.7	.0	1.0	.0
Oct	60.6	35.9	48.3	92	1963	6	53.5	1973	9	1972	19	42.4	1976	521	0	.0	@	26.2	.1	9.7	.0
Nov	41.0	22.6	31.8	79	1999	9	40.5	1999	-15	1977	26	23.5	1996	996	0	.0	.0	7.9	7.5	24.2	.8
Dec	27.1	8.9	18.0	69	1998	2	26.4	1997	-32	1983	19	1.7	1983	1458	0	.0	.0	.6	19.3	30.6	8.6
Ann	55.7	33.6	44.7	105	Jul 1948	6	77.2	Jul 1988	-38+	Jan 1972	15	-2.6	Jan 1977	8072	693	.8	16.3	218.4	72.1	162.3	33.3

+ 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/normal/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

090-A

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Elevation: 850 Feet Lat: 44°18N

Lon: 93°59W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.86	.69	1.87	1949	4	2.73	1996	.00	1974	5.4	2.8	.3	.1	.04	.12	.24	.37	.51	.66	.84	1.06	1.36	1.86	2.36
Feb	.53	.44	1.21	1955	18	1.85	1971	.00+	1996	3.6	2.1	.2	.0	.00	.06	.16	.24	.33	.42	.53	.66	.84	1.14	1.42
Mar	1.93	1.64	1.40	1995	25	5.36	1977	.06	1994	7.0	4.6	1.5	.2	.35	.53	.81	1.07	1.34	1.63	1.96	2.36	2.89	3.74	4.55
Apr	2.42	2.41	2.52	1967	2	5.12	1999	.04	1987	9.5	5.6	1.6	.3	.45	.67	1.03	1.35	1.69	2.05	2.46	2.95	3.61	4.67	5.68
May	3.55	3.20	4.20	2000	18	8.20	2000	.74	1976	10.7	7.1	2.3	.8	1.19	1.53	2.02	2.44	2.84	3.25	3.71	4.23	4.91	5.96	6.93
Jun	4.83	4.43	4.60	1996	17	11.50	1971	.73	1988	10.4	7.3	2.9	1.3	1.25	1.71	2.41	3.03	3.64	4.28	4.99	5.83	6.93	8.67	10.29
Jul	3.94	4.22	3.20	1966	14	6.97	1993	.48	1975	9.1	6.3	2.5	1.3	1.10	1.47	2.04	2.53	3.02	3.52	4.08	4.74	5.60	6.94	8.20
Aug	4.12	3.96	8.62	1968	7	9.04	1993	1.04	1971	8.9	6.2	2.7	1.1	1.40	1.79	2.36	2.84	3.30	3.78	4.30	4.90	5.68	6.88	7.99
Sep	2.76	2.47	3.76	1991	14	9.58	1986	.48	2000	7.8	5.0	2.1	.6	.63	.89	1.29	1.65	2.01	2.40	2.83	3.34	4.02	5.09	6.11
Oct	2.15	1.57	3.10	1996	17	5.53	1984	.25	1978	6.4	4.1	1.5	.5	.19	.34	.63	.93	1.26	1.63	2.07	2.62	3.38	4.65	5.90
Nov	1.69	1.56	1.73	1992	2	4.43	1975	.00	1976	5.9	3.9	1.1	.4	.19	.39	.68	.92	1.17	1.43	1.73	2.09	2.56	3.32	4.05
Dec	.89	.66	1.64	1965	12	3.00	1982	.00	1991	4.9	2.5	.4	.2	.04	.12	.25	.38	.52	.68	.86	1.09	1.41	1.93	2.43
Ann	29.67	30.39	8.62	Aug 1968	7	11.50	Jun 1971	.00+	Feb 1996	89.6	57.5	19.1	6.8	18.74	20.76	23.40	25.44	27.28	29.07	30.95	33.04	35.60	39.36	42.66

+ 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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Station: ST PETER 2 SW, MN

COOP ID: 217405

Climate Division: MN 8

NWS Call Sign:

Elevation: 850 Feet

Lat: 44° 18N

Lon: 93° 59W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	10.7	8.5	6	5	14.0	1988	20	26.8	1988	24	1979	31	20	1988	4.0	2.6	.8	.4	.1	-9.9	-9.9	-9.9	-9.9
Feb	4.6	5.0	6	4	5.0	1991	18	9.6	1971	29	1979	25	26	1979	2.4	1.7	.4	@	.0	13.7	11.6	9.4	4.8
Mar	5.7	4.5	2	1	12.1	1977	3	21.5	1985	25	1979	1	12	1979	2.1	1.5	.7	.4	.1	4.6	2.8	1.9	.5
Apr	1.1	.0	#	0	6.0	1983	14	6.0	1983	5+	1994	29	5	1994	.4	.4	.2	.1	.0	.4	.2	.1	.0
May	#	.0	0	0	#	1976	2	#+	1976	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	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.1	.0	#	0	2.0	1981	24	2.0	1981	3	1991	31	#+	1991	@	@	.0	.0	.0	@	.0	.0	.0
Nov	2.8	.6	#	#	7.0	1993	25	16.3	1977	13	1991	8	3	1991	1.3	.9	.6	.2	.0	1.3	.3	.0	.0
Dec	6.5	5.9	3	1	14.0	1982	28	18.5	1985	24	1985	3	19	1985	2.8	1.8	.9	.3	.1	-9.9	-9.9	-9.9	-9.9
Ann	31.5	24.5	N/A	N/A	14.0+	Jan 1988	20	26.8	Jan 1988	29	Feb 1979	25	26	Feb 1979	13.0	8.9	3.6	1.4	.3	-9.9	-9.9	-9.9	-9.9

+ 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

Complete documentation available from:

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NWS Call Sign:

Elevation: 850 Feet

Lat: 44° 18N

Lon: 93° 59W

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	5/21	5/17	5/14	5/11	5/08	5/05	5/01	4/26
32	5/12	5/08	5/05	5/02	4/30	4/27	4/24	4/21	4/17
28	5/06	5/01	4/27	4/23	4/20	4/17	4/14	4/10	4/05
24	4/20	4/16	4/13	4/10	4/08	4/05	4/02	3/30	3/26
20	4/16	4/10	4/07	4/03	3/31	3/28	3/25	3/22	3/16
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	9/23	9/25	9/28	10/01	10/05
32	9/18	9/23	9/26	9/30	10/03	10/06	10/09	10/12	10/18
28	9/27	10/02	10/06	10/10	10/13	10/16	10/19	10/23	10/29
24	10/08	10/14	10/18	10/21	10/24	10/28	10/31	11/04	11/09
20	10/19	10/25	10/28	11/01	11/04	11/07	11/10	11/14	11/20
16	10/29	11/03	11/06	11/09	11/12	11/14	11/17	11/21	11/25
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	154	147	143	138	134	130	126	121	115
32	175	168	164	159	155	151	147	142	135
28	199	191	185	180	175	170	165	159	150
24	220	213	208	203	199	195	190	185	178
20	242	233	227	222	217	212	207	200	192
16	252	245	240	236	232	228	224	219	212

* 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

Complete documentation available from:
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Elevation: 850 Feet Lat: 44°18N Lon: 93°59W

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	1628	1297	1045	593	251	55	22	36	170	521	996	1458	8072
60	1473	1157	890	453	157	18	6	10	79	372	846	1303	6764
57	1380	1073	797	375	112	8	0	2	44	290	756	1210	6047
55	1318	1017	737	326	87	4	0	1	27	240	697	1148	5602
50	1163	877	593	219	41	0	0	0	5	136	555	993	4582
32	643	430	181	19	0	0	0	0	0	4	159	488	1924

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	38	57	159	420	831	1086	1252	1177	857	506	153	52	6588
55	0	0	2	37	205	400	539	465	194	29	1	0	1872
57	0	0	0	26	168	344	477	405	151	17	0	0	1588
60	0	0	0	14	120	264	390	319	96	6	0	0	1209
65	0	0	0	4	60	151	251	190	37	0	0	0	693
70	0	0	0	0	24	72	143	97	9	0	0	0	345

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	2	48	247	610	867	1019	944	642	310	47	2	0	2	50	297	907	1774	2793	3737	4379	4689	4736	4738
45	0	0	19	146	460	717	864	789	494	194	20	1	0	0	19	165	625	1342	2206	2995	3489	3683	3703	3704
50	0	0	6	79	318	567	709	634	353	104	3	0	0	0	6	85	403	970	1679	2313	2666	2770	2773	2773
55	0	0	1	40	196	419	554	479	228	46	1	0	0	0	1	41	237	656	1210	1689	1917	1963	1964	1964
60	0	0	0	15	106	280	401	327	131	17	0	0	0	0	0	15	121	401	802	1129	1260	1277	1277	1277
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	35	162	374	563	680	622	406	196	30	1	0	1	36	198	572	1135	1815	2437	2843	3039	3069	3070

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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