

Climatography of the United States

No. 20

1971-2000

Station: MILACA, MN

COOP ID: 215392

Climate Division: MN 6

NWS Call Sign:

Elevation: 1,102 Feet Lat: 45°46N

Lon: 93°38W

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	18.4	-2.5	8.0	52	1981	25	20.7	1990	-38	1977	9	-6.9	1982	1769	0	.0	.0	@	26.1	31.0	16.8
Feb	25.8	4.5	15.2	58	1958	23	30.0	1998	-48	1996	1	2.1	1979	1395	0	.0	.0	.6	17.8	27.6	10.9
Mar	37.5	17.8	27.7	78	1968	30	38.0	2000	-32	1962	1	19.0	1975	1158	0	.0	.0	4.5	8.0	27.5	3.2
Apr	54.2	31.3	42.8	94	1980	22	52.3	1987	-2	1975	2	34.6	1975	668	1	.0	@	19.8	.6	16.3	.1
May	67.8	43.4	55.6	94	2001	16	63.6	1977	15	1967	3	48.9	1979	316	25	.0	.2	30.1	.0	2.9	.0
Jun	76.5	52.7	64.6	103	1988	20	70.7	1988	33	1995	8	58.7	1982	96	83	.1	1.6	30.0	.0	.0	.0
Jul	80.9	57.5	69.2	104	1988	7	73.5	1988	38	1969	1	63.5	1992	32	162	.2	4.0	31.0	.0	.0	.0
Aug	78.5	54.9	66.7	102	1950	16	70.5	1983	34	1950	20	62.8	1985	55	107	@	2.1	31.0	.0	.0	.0
Sep	68.9	45.0	57.0	98	1976	7	63.4	1998	22	1974	22	51.9	1993	255	13	.0	.4	29.6	.0	1.9	.0
Oct	56.1	33.0	44.6	90	1992	3	50.2	1973	5	1976	27	40.0	1976	633	0	.0	@	23.4	.1	13.5	.0
Nov	37.7	20.5	29.1	72+	1999	14	37.6	1999	-20	1964	30	21.5	1985	1078	0	.0	.0	5.5	9.4	26.7	1.7
Dec	23.0	4.7	13.9	61	1998	4	24.9	1997	-39	1983	19	-1.8	1983	1587	0	.0	.0	.3	23.2	30.8	11.1
Ann	52.1	30.2	41.2	104	Jul 1988	7	73.5	Jul 1988	-48	Feb 1996	1	-6.9	Jan 1982	9042	391	.3	8.3	205.8	85.2	178.2	43.8

+ 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

063-A

Climatology 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: MILACA, MN

COOP ID: 215392

Climate Division: MN 6

NWS Call Sign:

Elevation: 1,102 Feet Lat: 45°46N

Lon: 93°38W

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	.74	.57	1.51	1997	5	2.71	1975	.05	1974	6.4	2.4	.2	@	.06	.11	.21	.31	.42	.55	.71	.90	1.17	1.62	2.06
Feb	.57	.41	1.33	1971	27	2.46	1971	.00	1993	4.4	1.8	.1	@	.01	.05	.12	.20	.29	.40	.53	.69	.92	1.31	1.70
Mar	1.36	1.08	1.50	1985	5	2.95	1983	.30	1974	6.3	4.0	.8	.2	.34	.46	.66	.84	1.01	1.20	1.40	1.64	1.96	2.47	2.94
Apr	2.00	1.84	5.05	1954	26	5.55	1986	.10	1987	7.9	4.8	1.4	.2	.34	.52	.81	1.08	1.37	1.67	2.02	2.44	3.01	3.92	4.79
May	3.16	2.97	3.60	1979	10	7.13	1999	1.06	1994	10.7	6.9	2.2	.7	1.11	1.41	1.84	2.20	2.55	2.91	3.30	3.75	4.33	5.23	6.05
Jun	4.34	4.25	5.05	1954	25	10.57	1984	.69	1988	11.4	7.9	2.5	1.0	1.12	1.53	2.16	2.72	3.27	3.84	4.48	5.24	6.23	7.79	9.25
Jul	3.92	3.61	4.30	1970	14	9.14	1972	.94	1976	10.8	6.9	2.8	1.0	1.25	1.62	2.17	2.64	3.10	3.57	4.08	4.69	5.46	6.67	7.79
Aug	4.04	3.91	5.38	1955	26	8.69	1995	1.18	1996	10.1	6.4	3.1	1.0	1.61	1.99	2.52	2.95	3.36	3.78	4.24	4.76	5.42	6.44	7.36
Sep	2.91	2.21	3.37	1968	23	7.82	1985	.61	1976	9.8	6.1	1.9	.7	.82	1.09	1.51	1.88	2.23	2.61	3.02	3.51	4.14	5.13	6.06
Oct	2.29	1.75	3.23	1950	1	6.89	1971	.22	1976	8.4	4.8	1.5	.5	.36	.55	.89	1.20	1.53	1.88	2.29	2.79	3.46	4.55	5.59
Nov	1.68	1.40	2.05	1974	1	5.19	2000	.07	1976	6.7	3.8	1.2	.3	.17	.29	.52	.76	1.01	1.30	1.63	2.05	2.63	3.58	4.51
Dec	.72	.64	2.23	1985	5	2.28	1985	.01	1994	5.8	2.2	.4	.1	.05	.09	.18	.28	.39	.52	.68	.88	1.15	1.63	2.10
Ann	27.73	27.61	5.38	Aug 1955	26	10.57	Jun 1984	.00	Feb 1993	98.7	58.0	18.1	5.7	17.09	19.03	21.59	23.57	25.36	27.12	28.95	31.00	33.51	37.22	40.47

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

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: MILACA, MN

COOP ID: 215392

Climate Division: MN 6

NWS Call Sign:

Elevation: 1,102 Feet

Lat: 45°46N

Lon: 93°38W

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	10.4	9.0	9	8	13.0	1997	5	28.3	1975	37	1997	30	30	1997	4.5	3.4	1.2	.4	.1	-9.9	-9.9	-9.9	-9.9
Feb	5.7	3.8	9	10	10.5	1990	16	21.0	1991	26	1996	1	22	1997	2.9	2.1	.7	.2	.1	-9.9	-9.9	-9.9	-9.9
Mar	6.2	4.5	6	3	9.5	1999	9	17.8	1975	24	1997	17	20	1997	2.0	1.7	.6	.2	.0	-9.9	-9.9	-9.9	-9.9
Apr	1.8	.6	1	0	8.0	1996	13	8.0	1996	15	1975	2	7	1994	.6	.4	.2	.1	.0	1.6	1.1	.9	.6
May	#	.0	0	0	#	1976	3	#	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	.2	.0	#	0	2.0	1984	30	2.0	1984	1	1976	19	#+	2000	.1	.1	.0	.0	.0	.1	.0	.0	.0
Nov	4.9	2.0	1	#	11.5	1991	1	18.5	1982	12+	1994	28	12	1991	2.1	1.8	.7	.3	.1	-9.9	-9.9	-9.9	-9.9
Dec	8.2	7.0	4	4	10.0	1982	28	16.3	1972	15	2000	31	10	2000	4.1	2.5	.7	.2	.1	-9.9	-9.9	-9.9	-9.9
Ann	37.4	26.9	N/A	N/A	13.0	Jan 1997	5	28.3	Jan 1975	37	Jan 1997	30	30	Jan 1997	16.3	12.0	4.1	1.4	.4	-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:

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

Climatography of the United States

No. 20 1971-2000

Station: MILACA, MN

COOP ID: 215392

Climate Division: MN 6

NWS Call Sign:

Elevation: 1,102 Feet

Lat: 45° 46N

Lon: 93° 38W

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	6/08	6/03	5/30	5/27	5/24	5/21	5/18	5/14	5/09
32	5/24	5/19	5/15	5/12	5/09	5/06	5/03	4/29	4/23
28	5/11	5/06	5/02	4/29	4/26	4/23	4/20	4/16	4/11
24	5/04	4/28	4/23	4/20	4/16	4/13	4/09	4/05	3/30
20	4/21	4/16	4/13	4/10	4/07	4/05	4/02	3/29	3/25
16	4/16	4/11	4/07	4/03	3/31	3/28	3/25	3/21	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	9/09	9/12	9/14	9/17	9/18	9/20	9/23	9/25	9/28
32	9/14	9/18	9/21	9/23	9/25	9/28	9/30	10/03	10/07
28	9/20	9/24	9/28	9/30	10/03	10/06	10/09	10/12	10/17
24	10/03	10/08	10/12	10/16	10/19	10/23	10/26	10/30	11/05
20	10/11	10/16	10/20	10/23	10/26	10/30	11/02	11/06	11/11
16	10/20	10/26	10/30	11/02	11/05	11/09	11/12	11/16	11/21
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	135	129	124	121	117	113	109	105	99
32	159	152	147	143	139	135	131	126	119
28	180	173	168	164	159	155	151	146	138
24	214	204	197	191	185	180	174	167	157
20	220	214	209	205	201	198	194	189	183
16	241	233	228	223	219	214	209	204	196

* 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:

www.ncdc.noaa.gov/oa/climate/normal/usnormals.html

**Climatography
of the United States
No. 20
1971-2000**

Station: MILACA, MN

COOP ID: 215392

Climate Division: MN 6

NWS Call Sign:

Elevation: 1,102 Feet Lat: 45°46N Lon: 93°38W

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	1769	1395	1158	668	316	96	32	55	255	633	1078	1587	9042
60	1614	1255	1003	524	202	36	7	13	141	480	928	1432	7635
57	1521	1171	910	440	146	17	1	4	89	391	838	1339	6867
55	1459	1115	848	388	115	9	0	1	62	334	778	1277	6386
50	1304	975	695	268	56	1	0	0	20	208	628	1122	5277
32	764	515	240	29	0	0	0	0	0	8	186	597	2339

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	18	43	106	352	732	977	1153	1075	747	398	99	34	5734
55	0	0	0	21	134	296	440	364	120	11	0	0	1386
57	0	0	0	13	103	244	379	304	87	5	0	0	1135
60	0	0	0	7	65	173	292	221	49	2	0	0	809
65	0	0	0	1	25	83	162	107	13	0	0	0	391
70	0	0	0	0	7	27	73	37	2	0	0	0	146

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	1	21	184	526	765	939	864	550	224	24	0	0	1	22	206	732	1497	2436	3300	3850	4074	4098	4098
45	0	0	6	101	378	615	784	709	402	126	8	0	0	0	6	107	485	1100	1884	2593	2995	3121	3129	3129
50	0	0	0	53	245	467	629	554	266	57	0	0	0	0	0	53	298	765	1394	1948	2214	2271	2271	2271
55	0	0	0	24	140	324	474	399	153	23	0	0	0	0	0	24	164	488	962	1361	1514	1537	1537	1537
60	0	0	0	7	67	195	320	251	77	6	0	0	0	0	0	7	74	269	589	840	917	923	923	923
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	11	125	325	485	618	552	330	146	18	0	0	0	11	136	461	946	1564	2116	2446	2592	2610	2610

(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