

Climatography of the United States

No. 20

1971-2000

Station: MARQUETTE, MI

COOP ID: 205178

Climate Division: MI 1

NWS Call Sign:

Elevation: 665 Feet Lat: 46° 33N Lon: 87° 23W

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	25.1	11.0	18.1	49	1989	28	26.7	1990	-22+	1994	18	7.9	1994	1456	0	.0	.0	.0	24.0	30.9	5.4
Feb	28.8	13.6	21.2	62	1976	24	32.7	1998	-24	1996	3	11.4	1979	1227	0	.0	.0	.6	18.4	27.4	4.4
Mar	36.8	22.3	29.6	77	2000	8	38.0	2000	-13	1962	1	22.6	1972	1099	0	.0	.0	3.2	10.3	27.5	1.1
Apr	48.0	32.7	40.4	91	1990	25	46.8	1987	4+	1954	3	34.5	1996	740	0	.0	@	11.1	1.8	16.9	@
May	61.0	42.0	51.5	100	1969	28	58.6	1977	22	1954	5	45.6	1973	427	8	.0	@	25.6	.0	3.5	.0
Jun	69.7	50.7	60.2	101	1963	30	64.7	1999	31	1980	8	55.2	1982	174	29	.0	.9	29.7	.0	@	.0
Jul	75.6	57.1	66.4	104	1977	19	71.5	1999	41+	1967	5	60.2	1992	70	111	.1	1.6	31.0	.0	.0	.0
Aug	74.4	57.1	65.8	101	1948	24	70.3	1983	40	1979	16	61.2	1977	75	99	.0	1.0	31.0	.0	.0	.0
Sep	65.9	49.4	57.7	97	1983	3	64.0	1998	30+	1965	27	52.5	1974	234	13	.0	.3	29.3	.0	.2	.0
Oct	54.7	39.5	47.1	86	1950	18	53.3	1971	19+	1981	23	42.3	1988	556	0	.0	.0	21.8	@	5.7	.0
Nov	40.4	28.4	34.4	74+	1978	3	41.6	1999	-2+	1976	29	27.2	1995	919	0	.0	.0	5.2	6.1	21.1	.1
Dec	29.5	17.0	23.3	60	1982	3	30.4	1997	-13	1990	26	14.3	1976	1295	0	.0	.0	.5	18.5	29.6	2.4
Ann	50.8	35.1	43.0	104	Jul 1977	19	71.5	Jul 1999	-24	Feb 1996	3	7.9	Jan 1994	8272	260	.1	3.8	189.0	79.1	162.8	13.4

+ 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

069-A

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: MARQUETTE, MI

COOP ID: 205178

Climate Division: MI 1

NWS Call Sign:

Elevation: 665 Feet Lat: 46°33N

Lon: 87°23W

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	2.04	1.67	1.28	1996	18	5.40	1997	.62	1991	17.4	6.5	.6	.1	.70	.89	1.17	1.41	1.64	1.87	2.12	2.42	2.80	3.39	3.93
Feb	1.35	1.21	1.28	1984	12	2.82	1984	.18	1993	12.1	4.1	.4	@	.36	.49	.68	.85	1.02	1.20	1.39	1.62	1.93	2.40	2.85
Mar	2.24	2.09	1.41	1977	12	4.09	1977	.39	1980	12.8	5.3	1.2	.3	.60	.81	1.14	1.42	1.70	2.00	2.32	2.71	3.21	4.00	4.74
Apr	2.35	2.30	1.88	1980	8	4.82	1996	.59	2000	10.6	5.8	1.5	.3	.79	1.01	1.34	1.62	1.88	2.16	2.46	2.81	3.26	3.95	4.59
May	2.66	2.50	2.25	1973	1	7.16	1973	.05	1986	9.8	5.7	1.3	.6	.53	.77	1.16	1.51	1.88	2.27	2.71	3.24	3.94	5.06	6.13
Jun	2.74	2.55	2.14	1979	16	5.59	1979	.77	1988	11.0	5.8	1.8	.6	.92	1.18	1.56	1.88	2.19	2.51	2.86	3.26	3.78	4.59	5.33
Jul	2.64	2.25	3.93	1949	28	5.20	1979	.51	1998	10.7	5.8	1.7	.3	.65	.89	1.28	1.62	1.96	2.32	2.72	3.19	3.81	4.80	5.72
Aug	3.01	2.84	2.76	1988	2	11.76	1988	.50	1976	11.5	6.5	1.8	.7	.87	1.15	1.58	1.96	2.32	2.70	3.13	3.62	4.27	5.27	6.21
Sep	3.42	3.55	2.72	1968	9	8.25	1980	1.13	2000	13.6	7.8	2.2	.6	1.16	1.48	1.95	2.35	2.74	3.14	3.57	4.08	4.73	5.73	6.66
Oct	3.03	2.94	4.06	1959	24	5.85	1983	1.29	1999	13.5	7.5	1.7	.4	1.16	1.44	1.85	2.18	2.50	2.82	3.17	3.58	4.09	4.88	5.61
Nov	2.60	2.40	1.95	2001	27	7.30	1988	.77	1986	14.2	6.6	1.2	.4	.81	1.05	1.42	1.74	2.04	2.35	2.70	3.11	3.63	4.45	5.21
Dec	1.95	1.90	1.11+	1975	14	3.44	1981	.41	1994	15.5	6.0	.7	.1	.69	.87	1.14	1.37	1.58	1.80	2.04	2.32	2.68	3.23	3.74
Ann	30.03	31.02	4.06	Oct 1959	24	11.76	Aug 1988	.05	May 1986	152.7	73.4	16.1	4.4	22.08	23.64	25.62	27.12	28.45	29.73	31.05	32.50	34.25	36.79	38.98

+ 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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Station: MARQUETTE, MI

COOP ID: 205178

Climate Division: MI 1

NWS Call Sign:

Elevation: 665 Feet

Lat: 46°33N

Lon: 87°23W

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	29.9	27.9	14	14	13.6	1996	27	64.5	1997	37	1997	25	29	1997	18.9	8.7	2.8	1.0	.2	29.4	27.9	26.2	19.1
Feb	20.1	18.9	18	18	10.8	1983	3	42.8	1985	36	1971	21	32	1971	13.4	5.5	1.7	.8	.1	27.9	27.9	27.7	24.0
Mar	20.6	18.0	15	13	17.3	1997	14	44.3	1976	41+	1997	14	31	1972	11.2	5.0	1.9	1.2	.3	27.6	25.9	24.5	17.8
Apr	6.9	4.4	3	1	10.2	1993	16	26.9	1982	30	1972	13	23	1972	5.0	1.9	1.0	.4	@	7.2	4.8	3.2	.6
May	1.1	.0	#	0	10.6	1990	10	12.0	1990	9	1990	10	1	1972	.7	.3	.1	@	@	.3	.2	.1	.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	.2	.0	#	0	4.4	1974	22	5.1	1974	2	1974	22	#+	1995	.1	.1	@	.0	.0	@	.0	.0	.0
Oct	1.9	.2	#	#	6.3	1976	25	17.5	1976	5	1976	28	1	1976	1.5	.6	.1	.1	.0	.8	.2	.0	.0
Nov	12.2	11.2	1	1	8.6	1991	24	24.7	1995	10	1985	30	4	1975	9.8	4.0	1.1	.3	.0	10.6	5.5	1.9	@
Dec	25.2	24.8	7	6	14.3	1996	24	44.8	1981	26	2000	28	16	2000	16.4	7.8	2.6	.8	.1	26.8	22.4	16.3	7.2
Ann	118.1	105.4	N/A	N/A	17.3	Mar 1997	14	64.5	Jan 1997	41+	Mar 1997	14	32	Feb 1971	77.0	33.9	11.3	4.6	.7	130.6	114.8	99.9	68.7

+ 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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Climate Division: MI 1

NWS Call Sign:

Elevation: 665 Feet

Lat: 46°33N

Lon: 87°23W

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	6/12	6/06	6/02	5/30	5/26	5/23	5/20	5/15	5/10
32	5/26	5/21	5/17	5/14	5/11	5/08	5/05	5/01	4/26
28	5/15	5/09	5/06	5/03	4/30	4/27	4/24	4/20	4/15
24	4/29	4/24	4/20	4/17	4/13	4/10	4/07	4/03	3/28
20	4/17	4/13	4/09	4/06	4/04	4/01	3/29	3/26	3/21
16	4/10	4/05	4/02	3/30	3/28	3/25	3/23	3/19	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	9/18	9/22	9/26	9/29	10/01	10/04	10/07	10/10	10/15
32	9/27	10/02	10/06	10/10	10/13	10/16	10/19	10/23	10/28
28	10/11	10/17	10/21	10/24	10/28	10/31	11/04	11/08	11/13
24	10/27	10/31	11/03	11/06	11/08	11/10	11/13	11/16	11/20
20	10/31	11/05	11/09	11/13	11/16	11/19	11/23	11/27	12/02
16	11/07	11/13	11/18	11/22	11/26	11/29	12/03	12/08	12/15
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	151	143	137	132	127	123	118	112	103
32	175	168	162	158	154	149	145	140	132
28	205	196	190	185	180	175	170	164	156
24	232	224	218	213	208	203	198	192	184
20	251	242	236	231	226	221	215	209	200
16	269	260	253	247	242	237	231	225	216

* 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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Climate Division: MI 1 NWS Call Sign: Elevation: 665 Feet Lat: 46° 33N Lon: 87° 23W

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	1456	1227	1099	740	427	174	70	75	234	556	919	1295	8272
60	1301	1087	944	591	292	82	20	22	122	406	769	1140	6776
57	1208	1003	851	503	222	45	8	9	73	322	679	1047	5970
55	1146	947	789	445	181	28	4	4	49	270	619	985	5467
50	991	807	634	309	99	6	0	0	13	159	471	830	4319
32	453	344	167	25	1	0	0	0	0	4	79	320	1393

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	21	41	90	275	605	845	1064	1047	769	471	151	48	5427
55	0	0	0	5	72	183	354	337	128	24	0	0	1103
57	0	0	0	3	51	141	297	281	93	14	0	0	880
60	0	0	0	1	27	88	216	201	51	6	0	0	590
65	0	0	0	0	8	29	111	99	13	0	0	0	260
70	0	0	0	0	0	6	41	34	2	0	0	0	83

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	20	104	354	601	824	810	541	248	39	1	0	1	21	125	479	1080	1904	2714	3255	3503	3542	3543
45	0	1	5	53	227	451	669	655	393	142	16	0	0	1	6	59	286	737	1406	2061	2454	2596	2612	2612
50	0	0	0	28	131	311	514	500	256	65	6	0	0	0	0	28	159	470	984	1484	1740	1805	1811	1811
55	0	0	0	13	69	189	360	346	146	26	1	0	0	0	0	13	82	271	631	977	1123	1149	1150	1150
60	0	0	0	2	30	101	218	205	71	4	0	0	0	0	0	2	32	133	351	556	627	631	631	631
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	10	64	193	342	509	500	295	113	14	0	0	1	11	75	268	610	1119	1619	1914	2027	2041	2041

(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