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: TAHQUAMENON FALLS STPK, MI **COOP ID: 208043**

Climate Division: MI 2 **NWS Call Sign:** **Elevation: 745 Feet** **Lat: 46˚36N** **Lon: 85˚13W**

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	21.9	5.1	13.5	47	1996	19	24.6	1990	-25	1982	14	1.4	1994	1596	0	.0	.0	.0	25.8	30.8	9.9
Feb	24.1	4.1	14.1	56	2000	27	29.7	1998	-36	1979	17	1.9	1979	1425	0	.0	.0	.2	20.5	28.0	10.2
Mar	34.1	12.3	23.2	68	1990	15	32.0	2000	-25+	1972	3	16.3	1972	1295	0	.0	.0	2.8	10.6	29.1	5.2
Apr	47.4	25.4	36.4	85	1985	23	42.2	1987	-5+	1972	6	30.5	1996	858	0	.0	.0	13.4	1.8	23.5	.2
May	62.4	36.8	49.6	90	1988	31	55.9	1977	14	1983	5	42.8	1997	485	7	.0	@	27.8	.0	10.9	.0
Jun	71.5	44.5	58.0	94	1988	14	64.8	1995	21	1986	17	51.9	1982	232	22	.0	.4	29.9	.0	2.8	.0
Jul	76.6	49.7	63.2	98+	1988	6	68.0	1983	28	2001	2	56.5	1992	114	58	.0	1.1	31.0	.0	.3	.0
Aug	74.9	48.6	61.8	94+	1975	1	67.4	1995	25	1976	30	57.1	1982	150	49	.0	.4	31.0	.0	.5	.0
Sep	65.9	42.0	54.0	92	1976	8	57.9	1998	21	1993	30	50.4	1993	334	2	.0	@	29.2	.0	5.2	.0
Oct	54.0	32.8	43.4	79+	1971	2	54.4	1973	14	1985	27	37.6	1981	670	0	.0	.0	20.6	.1	15.6	.0
Nov	39.1	23.5	31.3	70	1999	10	37.1	1999	-9	1976	29	24.8	1995	1011	0	.0	.0	4.5	6.3	25.0	.2
Dec	27.7	12.1	19.9	56	2001	6	27.9	1994	-32	1976	30	8.2	1989	1399	0	.0	.0	.3	19.8	30.7	4.2
Ann	50.0	28.1	39.0	98+	Jul 1988	6	68.0	Jul 1983	-36	Feb 1979	17	1.4	Jan 1994	9569	138	.0	1.9	190.7	84.9	202.4	29.9

\+ 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

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Issue Date: February 2004

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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	3.47	3.34	1.24	1997	17	5.92	1996	1.50	1984
Feb	1.82	1.42	1.05	1977	1	3.81	1996	.60	1983
Mar	2.19	2.08	1.88	1996	25	5.11	1977	.55	1984
Apr	2.18	1.98	1.80	1993	15	4.68	1995	.10	1986
May	2.79	2.40	1.85	1990	10	7.13	1973	.97	2000
Jun	3.18	3.45	3.14	1969	27	5.68	1981	.48	1988
Jul	3.25	2.90	2.15	1987	19	6.20	1999	1.44	2000
Aug	3.60	3.59	3.87	1969	29	7.07	1973	.47	2000
Sep	3.77	3.67	2.90	1990	4	6.71	1990	1.52	1989
Oct	3.48	3.08	1.75	2001	14	8.04	1995	1.28	1980
Nov	3.05	3.01	1.62	1998	11	5.64	1992	1.25	1999
Dec	3.02	3.08	1.00	1982	1	5.81	1982	.28	1994
Ann	35.80	33.95	3.87	Aug 1969	29	8.04	Oct 1995	.10	Apr 1986

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	20.4	8.6	.9	.1
Feb	13.9	5.5	.4	.1
Mar	12.6	5.8	1.0	.2
Apr	9.3	5.4	1.2	.3
May	9.3	5.9	1.8	.3
Jun	11.0	6.9	2.0	.5
Jul	9.6	6.5	2.0	.6
Aug	9.9	6.5	2.2	.8
Sep	11.5	8.0	2.5	.6
Oct	13.6	8.8	2.3	.4
Nov	13.1	7.5	1.3	.3
Dec	19.3	8.6	.7	@
Ann	153.5	84.0	18.3	4.2

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	1.57	1.88	2.31	2.65	2.97	3.30	3.64	4.04	4.54	5.29	5.97
Feb	.54	.71	.97	1.20	1.41	1.64	1.89	2.19	2.57	3.17	3.72
Mar	.67	.88	1.19	1.46	1.72	1.98	2.28	2.62	3.07	3.77	4.41
Apr	.45	.65	.97	1.26	1.55	1.87	2.22	2.65	3.21	4.11	4.97
May	.91	1.17	1.56	1.90	2.22	2.55	2.91	3.34	3.88	4.73	5.52
Jun	.94	1.24	1.70	2.09	2.47	2.87	3.30	3.82	4.48	5.52	6.49
Jul	1.33	1.63	2.05	2.40	2.72	3.05	3.41	3.82	4.33	5.13	5.85
Aug	1.11	1.45	1.96	2.40	2.82	3.26	3.74	4.31	5.05	6.19	7.25
Sep	1.77	2.10	2.55	2.92	3.25	3.59	3.96	4.37	4.89	5.68	6.38
Oct	1.30	1.63	2.09	2.48	2.85	3.23	3.64	4.11	4.72	5.65	6.50
Nov	1.31	1.58	1.97	2.28	2.58	2.88	3.20	3.57	4.04	4.75	5.39
Dec	1.02	1.31	1.72	2.08	2.42	2.77	3.15	3.60	4.17	5.06	5.87
Ann	26.56	28.38	30.70	32.44	33.99	35.48	37.01	38.69	40.73	43.67	46.20

\+ 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: 1968-2001
(3) Derived from 1971-2000 serially complete daily data

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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	15.0	-99.9	23	23
Feb	18.8	14.4	28	26
Mar	13.7	11.0	24	23
Apr	9.0	8.7	11	8
May	.4	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	1.3	.0	#	0
Nov	19.7	15.0	2	1
Dec	20.9	-99.9	11	8
Ann	98.8	-9.9	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	14.0	2000	3	75.1	2000	52	1977	31	39	1977
Feb	10.5	1977	1	32.8	1978	55	1977	4	49	1977
Mar	13.2	1983	18	24.2	1977	61	1977	6	46	1971
Apr	13.2	1977	5	20.9	1977	47	1977	6	33	1972
May	3.4	1990	10	3.4	1990	10	1972	1	1	1972
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	#	1974	22	#	1974	0	0	0	0	0
Oct	8.5	1972	18	9.3	1972	9	1972	18	1	1972
Nov	13.0	1982	14	66.0	1976	18	1976	26	9	1976
Dec	15.8	1995	7	83.4	1983	37	1976	28	27	1989
Ann	15.8	Dec 1995	7	83.4	Dec 1983	61	Mar 1977	6	49	Feb 1977

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	20.6	14.5	6.9	3.2	.1
Feb	13.4	8.4	3.3	1.0	.1
Mar	8.7	5.4	1.8	.7	.1
Apr	3.2	2.2	.6	.3	@
May	.2	.2	@	.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	1.0	.3	.1	@	.0
Nov	7.9	5.3	1.7	.7	.1
Dec	15.8	11.4	5.4	2.2	.2
Ann	70.8	47.7	19.8	8.1	.6

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	-9.9	-9.9	-9.9	-9.9
May	.1	.1	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.5	.2	.1	.0
Nov	10.6	6.2	4.2	1.9
Dec	-9.9	-9.9	-9.9	-9.9
Ann	-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

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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	7/31	7/24	7/18	7/14	7/09	7/05	6/30	6/25	6/17
32	7/11	7/03	6/28	6/23	6/18	6/14	6/09	6/03	5/26
28	6/21	6/16	6/12	6/08	6/05	6/02	5/29	5/25	5/20
24	5/23	5/17	5/13	5/10	5/07	5/03	4/30	4/26	4/20
20	5/07	5/02	4/28	4/25	4/22	4/18	4/15	4/11	4/06
16	4/28	4/23	4/19	4/16	4/13	4/10	4/06	4/02	3/28

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	8/03	8/10	8/15	8/19	8/23	8/27	9/01	9/06	9/13
32	8/18	8/24	8/28	9/01	9/05	9/08	9/12	9/17	9/23
28	9/02	9/08	9/13	9/17	9/21	9/24	9/28	10/03	10/10
24	9/27	10/03	10/07	10/10	10/13	10/16	10/20	10/24	10/29
20	10/15	10/20	10/24	10/27	10/30	11/02	11/05	11/09	11/14
16	10/27	11/02	11/06	11/09	11/13	11/16	11/19	11/23	11/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	81	68	59	51	44	37	29	20	7
32	108	98	90	84	78	72	66	58	48
28	134	125	118	112	107	102	96	89	80
24	184	176	169	164	159	154	148	142	133
20	210	203	198	194	191	187	183	178	171
16	237	229	223	218	213	209	204	198	190

***** 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	1596	1425	1295	858	485	232	114	150	334	670	1011	1399	9569
60	1441	1285	1140	708	346	129	41	67	198	518	861	1244	7978
57	1348	1201	1047	619	271	83	18	34	131	431	771	1151	7105
55	1286	1145	985	560	227	59	10	20	94	375	711	1089	6561
50	1131	1005	830	415	134	20	0	4	34	249	562	934	5318
32	582	523	309	55	4	0	0	0	0	17	111	407	2008

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	10	22	37	187	549	780	967	922	658	370	90	32	4624
55	0	0	0	1	60	149	264	229	63	15	0	0	781
57	0	0	0	1	42	113	210	181	39	9	0	0	595
60	0	0	0	0	23	69	140	121	17	4	0	0	374
65	0	0	0	0	7	22	58	49	2	0	0	0	138
70	0	0	0	0	1	6	15	13	0	0	0	0	35

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	7	72	343	557	734	691	437	167	21	0	0	0	7	79	422	979	1713	2404	2841	3008	3029	3029
45	0	0	1	27	216	413	580	536	298	81	7	0	0	0	1	28	244	657	1237	1773	2071	2152	2159	2159
50	0	0	0	12	127	274	425	383	178	34	0	0	0	0	0	12	139	413	838	1221	1399	1433	1433	1433
55	0	0	0	3	67	158	276	244	90	11	0	0	0	0	0	3	70	228	504	748	838	849	849	849
60	0	0	0	0	26	78	150	126	40	2	0	0	0	0	0	0	26	104	254	380	420	422	422	422
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	6	62	238	363	471	445	265	100	10	0	0	0	6	68	306	669	1140	1585	1850	1950	1960	1960

(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.
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