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: MAPLE CITY, MI **COOP ID: 205097**

Climate Division: MI 3 **NWS Call Sign:** **Elevation: 730 Feet** **Lat: 44˚51N** **Lon: 85˚51W**

Temperature (˚F)

Month	Mean (1)			Extremes										Degree Days (1) Base Temp 65		Mean Number of Days (3)					
	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	28.5	15.1	21.8	55	1996	18	29.8	1990	-14	1965	17	13.3	1994	1340	0	.0	.0	.2	20.1	30.2	2.8
Feb	32.0	15.3	23.7	62+	2000	26	34.8	1998	-24	1979	17	15.3	1979	1158	0	.0	.0	1.1	14.7	26.5	3.3
Mar	41.1	22.0	31.6	76+	1986	31	40.4	2000	-20	1962	2	25.1	1972	1036	0	.0	.0	6.4	6.1	26.2	1.4
Apr	54.0	31.8	42.9	90	1980	22	49.7	1990	7	1996	5	36.9	1975	663	1	.0	@	18.7	.7	16.3	.0
May	67.7	41.6	54.7	92+	1977	19	62.6	1998	17	1966	2	46.8	1997	352	31	.0	.3	29.4	.0	6.2	.0
Jun	77.2	51.1	64.2	98	1995	19	69.3	1995	25	1998	5	58.4	1982	106	80	.0	1.9	30.0	.0	.4	.0
Jul	81.3	57.0	69.2	102	1995	14	74.1	1983	34	1992	21	64.1	1992	25	155	@	3.1	31.0	.0	.0	.0
Aug	79.1	56.2	67.7	98	1988	2	72.9	1995	35	1982	29	63.9	1992	49	131	.0	1.6	31.0	.0	.0	.0
Sep	70.7	49.4	60.1	96	1960	7	63.5	1978	21	2000	28	55.7	1975	167	19	.0	.2	29.9	.0	.8	.0
Oct	59.0	40.0	49.5	86	1971	2	57.2	1971	19	1965	28	45.0	1988	483	2	.0	.0	25.5	.0	5.9	.0
Nov	44.6	30.6	37.6	73+	1961	3	43.3	1975	2	1996	15	31.4	1995	822	0	.0	.0	9.1	2.2	18.5	.0
Dec	33.2	21.0	27.1	65	1982	3	34.3	1982	-12	1976	30	18.1	1989	1176	0	.0	.0	1.0	13.1	28.2	.8
Ann	55.7	35.9	45.8	102	Jul 1995	14	74.1	Jul 1983	-24	Feb 1979	17	13.3	Jan 1994	7377	419	@	7.1	213.3	56.9	159.2	8.3

\+ 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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1959-2001

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

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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	2.80	2.74	1.82	1962	7	5.89	1997	1.25	2000
Feb	1.80	1.82	1.62	1994	20	3.67	1997	.31	1998
Mar	2.14	2.03	2.00	1998	31	4.95	1979	.41	1978
Apr	2.51	2.50	1.95	1981	4	5.91	1981	.29	2000
May	2.63	2.66	1.81	1983	19	7.72	1983	.51	1977
Jun	2.95	2.43	2.76	1960	24	8.48	1990	.53	1991
Jul	2.91	2.77	3.52	1972	11	6.54	1999	.77	1981
Aug	3.37	3.04	3.00	1977	29	7.99	1987	.65	1999
Sep	4.22	3.79	2.88	1961	13	13.60	2000	.09	1979
Oct	3.36	3.05	3.30	2001	13	7.48	1991	1.00	2000
Nov	3.21	3.18	2.09	1986	20	5.98	1985	1.26	1980
Dec	2.84	2.86	1.52	1959	28	5.08	1971	.43	1994
Ann	34.74	34.64	3.52	Jul 1972	11	13.60	Sep 2000	.09	Sep 1979

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	18.1	9.5	.9	.1
Feb	12.2	6.2	.6	.1
Mar	10.6	5.5	1.1	.2
Apr	9.3	6.6	1.8	.4
May	9.0	6.7	2.0	.4
Jun	8.3	6.4	1.9	.7
Jul	7.7	6.0	1.7	.7
Aug	9.1	6.9	2.2	.7
Sep	11.0	8.4	2.7	1.0
Oct	10.8	7.8	2.3	.5
Nov	13.8	9.5	1.3	.3
Dec	17.1	9.8	1.0	.1
Ann	137.0	89.3	19.5	5.2

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	1.26	1.51	1.85	2.13	2.39	2.65	2.93	3.25	3.66	4.27	4.82
Feb	.51	.68	.94	1.16	1.38	1.61	1.87	2.16	2.55	3.16	3.73
Mar	.51	.70	1.02	1.30	1.57	1.87	2.20	2.59	3.10	3.92	4.68
Apr	.87	1.11	1.46	1.75	2.03	2.31	2.62	2.99	3.45	4.17	4.84
May	.65	.90	1.28	1.62	1.96	2.31	2.71	3.19	3.80	4.78	5.70
Jun	.81	1.09	1.51	1.89	2.25	2.63	3.06	3.56	4.21	5.24	6.19
Jul	.80	1.08	1.50	1.86	2.22	2.60	3.01	3.50	4.14	5.15	6.08
Aug	.90	1.22	1.70	2.13	2.55	2.99	3.48	4.06	4.82	6.00	7.11
Sep	.78	1.15	1.77	2.34	2.93	3.56	4.27	5.14	6.29	8.14	9.90
Oct	1.32	1.63	2.08	2.44	2.79	3.14	3.52	3.96	4.52	5.37	6.15
Nov	1.49	1.77	2.16	2.47	2.76	3.06	3.37	3.73	4.18	4.86	5.47
Dec	1.06	1.32	1.70	2.02	2.33	2.64	2.97	3.36	3.86	4.63	5.33
Ann	27.80	29.20	30.97	32.29	33.44	34.55	35.68	36.91	38.40	40.51	42.32

+ 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: 1959-2001
(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	48.8	44.0	18	15
Feb	28.6	31.0	16	14
Mar	16.6	17.0	7	9
Apr	4.2	3.8	1	#
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	.4	.0	0	0
Nov	13.7	13.5	1	#
Dec	37.8	39.5	6	4
Ann	150.1	148.8	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	15.0	1982	4	79.0	1979	52	1979	17	41	1979
Feb	10.0	1976	1	57.0	1995	57	1985	19	43	1979
Mar	12.0	1998	8	39.5	1989	31+	1989	5	21	1979
Apr	8.0	1973	10	10.0+	1980	9	1979	2	3	1979
May	1.0	1976	3	1.0	1976	#	1979	5	#	1979
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	2.5	1989	20	3.0	1997	0	0	0	0	0
Nov	8.0	1979	11	37.0	1976	13	1976	30	3	1976
Dec	16.0	1989	18	76.0	1985	49	1983	30	21	1983
Ann	16.0	Dec 1989	18	79.0	Jan 1979	57	Feb 1985	19	43	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	15.5	14.4	7.4	3.1	.5
Feb	10.3	9.6	4.1	1.6	.1
Mar	6.4	5.7	2.3	.8	@
Apr	1.7	1.4	.6	.1	.0
May	@	@	.0	.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	.2	.2	.0	.0	.0
Nov	5.7	5.3	1.9	.8	.0
Dec	14.0	12.8	6.2	2.0	.2
Ann	53.8	49.4	22.5	8.4	.8

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	27.5	25.9	23.8	19.0
Feb	27.3	26.2	24.6	19.2
Mar	22.5	19.5	17.5	11.3
Apr	4.6	3.0	1.5	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	8.1	3.9	1.9	.1
Dec	25.3	20.4	16.0	7.9
Ann	115.3	98.9	85.3	57.5

+ 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	6/25	6/20	6/15	6/12	6/09	6/05	6/02	5/28	5/23
32	6/14	6/08	6/04	6/01	5/29	5/26	5/23	5/19	5/14
28	5/25	5/21	5/17	5/15	5/12	5/09	5/06	5/03	4/28
24	5/12	5/07	5/04	5/01	4/29	4/26	4/23	4/20	4/15
20	4/27	4/22	4/19	4/16	4/13	4/10	4/08	4/04	3/31
16	4/16	4/11	4/08	4/05	4/02	3/30	3/27	3/23	3/18

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	8/30	9/06	9/11	9/15	9/19	9/23	9/27	10/02	10/09
32	9/16	9/21	9/25	9/28	10/01	10/04	10/07	10/11	10/16
28	10/01	10/07	10/12	10/16	10/19	10/23	10/27	10/31	11/06
24	10/18	10/24	10/28	11/01	11/04	11/08	11/11	11/16	11/22
20	11/02	11/07	11/11	11/14	11/16	11/19	11/22	11/25	11/30
16	11/11	11/18	11/22	11/26	11/30	12/04	12/08	12/13	12/20

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	133	122	115	108	102	96	89	82	71
32	142	136	132	128	124	120	116	112	106
28	183	175	169	164	160	155	150	144	136
24	213	205	199	194	189	184	179	173	164
20	235	228	224	220	216	213	209	205	198
16	267	258	252	247	242	237	231	225	217

***** 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	1340	1158	1036	663	352	106	25	49	167	483	822	1176	7377
60	1185	1018	881	517	238	44	5	12	71	338	672	1021	6002
57	1092	934	788	431	181	23	0	4	36	260	582	928	5259
55	1030	878	726	377	148	14	0	1	21	214	522	866	4797
50	875	738	573	253	80	3	0	0	4	118	376	711	3731
32	340	285	140	17	1	0	0	0	0	1	37	228	1049

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	23	51	127	344	703	964	1153	1105	842	544	205	75	6136
55	0	0	0	14	137	288	440	393	173	43	1	0	1489
57	0	0	0	9	108	237	378	334	128	28	0	0	1222
60	0	0	0	4	72	168	290	249	73	13	0	0	869
65	0	0	0	1	31	80	155	131	19	2	0	0	419
70	0	0	0	0	12	26	64	54	2	0	0	0	158

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	6	41	166	471	739	915	872	614	310	78	3	0	6	47	213	684	1423	2338	3210	3824	4134	4212	4215
45	0	0	20	95	328	589	760	717	466	191	32	2	0	0	20	115	443	1032	1792	2509	2975	3166	3198	3200
50	0	0	9	49	210	440	605	563	321	104	13	0	0	0	9	58	268	708	1313	1876	2197	2301	2314	2314
55	0	0	0	24	124	302	450	409	199	48	2	0	0	0	0	24	148	450	900	1309	1508	1556	1558	1558
60	0	0	0	10	64	178	299	259	104	18	0	0	0	0	0	10	74	252	551	810	914	932	932	932
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	28	116	301	472	605	567	369	171	36	1	0	1	29	145	446	918	1523	2090	2459	2630	2666	2667

(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