

# Climatology of the United States

## No. 20

### 1971-2000

**Station: HOUGHTON CO AP (HANCOCK), MI**

**COOP ID: 203908**

**Climate Division: MI 1**

**NWS Call Sign: CMX**

**Elevation: 1,074 Feet Lat: 47° 10N**

**Lon: 88° 29W**

### 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	21.6	7.6	14.6	43	1987	13	23.5	1990	-26	1984	21	5.0	1977	1562	0	.0	.0	.0	27.2	31.0	7.3
Feb	24.8	9.1	17.0	56+	2000	26	30.3	1998	-25	1966	19	6.6	1979	1345	0	.0	.0	.1	21.7	27.8	6.1
Mar	33.7	17.6	25.7	65	1986	31	33.6	2000	-21	1953	7	17.9	1972	1221	0	.0	.0	1.6	14.2	28.5	1.9
Apr	47.1	29.5	38.3	88	1990	25	46.4	1987	0	1954	4	32.3	1975	801	0	.0	.0	10.3	3.0	18.8	.0
May	62.3	40.8	51.6	95	1969	28	57.8	1977	20+	1954	3	45.0	1983	425	9	.0	@	26.2	@	3.4	.0
Jun	70.8	49.3	60.1	96	1988	14	66.1	1995	31	1964	1	55.0	1982	176	28	.0	.5	29.7	.0	.1	.0
Jul	75.9	55.2	65.6	102	1988	7	70.3	1988	36	1960	1	59.5	1992	77	92	@	1.2	31.0	.0	.0	.0
Aug	73.6	54.7	64.2	97	1976	19	69.0	1983	38+	1952	22	58.9	1977	102	77	.0	.4	31.0	.0	.0	.0
Sep	63.3	46.2	54.8	92	1960	3	59.1	1994	24	2000	28	48.7	1974	312	4	.0	.1	28.1	.0	.6	.0
Oct	51.6	36.4	44.0	86	1953	2	50.3	1971	13	1954	31	39.1	1980	652	0	.0	.0	16.5	.6	8.2	.0
Nov	36.8	25.1	31.0	71+	1978	3	37.7	1999	-2	1958	29	24.3	1995	1022	0	.0	.0	3.0	10.6	24.2	.0
Dec	26.0	13.8	19.9	54	1962	3	27.6	1994	-15	1976	29	11.0	1976	1399	0	.0	.0	.1	23.6	30.1	3.0
Ann	49.0	32.1	40.6	102	Jul 1988	7	70.3	Jul 1988	-26	Jan 1984	21	5.0	Jan 1977	9094	210	@	2.2	177.6	100.9	172.7	18.3

+ 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](http://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: 1952-2001

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

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### 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	Median	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	4.26	4.33	1.82	1980	11	8.51	1980	1.66	1987	22.7	13.2	1.7	.2	1.87	2.25	2.78	3.22	3.62	4.03	4.47	4.97	5.60	6.57	7.44
Feb	2.28	2.04	1.79	1989	8	5.11	1989	.48	1997	15.8	7.2	.8	.1	.64	.86	1.19	1.47	1.75	2.04	2.37	2.75	3.24	4.02	4.74
Mar	2.45	2.19	2.49	1985	4	7.47	1976	.58	1980	12.6	6.3	1.2	.4	.54	.77	1.13	1.45	1.77	2.12	2.51	2.97	3.58	4.56	5.47
Apr	1.71	1.55	2.08	1954	26	3.17	1982	.32	1998	9.6	4.7	.7	.1	.53	.70	.94	1.14	1.34	1.55	1.78	2.04	2.39	2.92	3.42
May	2.49	2.33	2.84	1956	26	5.71	1999	.35	1986	10.3	5.9	1.4	.3	.76	1.00	1.35	1.65	1.95	2.25	2.59	2.98	3.49	4.28	5.02
Jun	2.84	2.53	2.31	1954	11	6.61	1989	.42	1995	10.8	6.4	1.8	.4	.78	1.04	1.45	1.81	2.16	2.53	2.94	3.42	4.05	5.03	5.95
Jul	2.97	2.83	2.35	1960	21	5.86	1982	.90	1989	10.0	5.5	2.1	.7	1.13	1.41	1.80	2.13	2.44	2.76	3.11	3.51	4.02	4.80	5.51
Aug	2.75	2.66	3.23+	1955	3	6.44	1988	.23	1990	9.9	5.7	1.7	.6	.76	1.03	1.42	1.77	2.10	2.46	2.85	3.31	3.91	4.85	5.72
Sep	3.24	3.05	3.06	1985	3	6.62	1985	1.12	1989	12.7	7.1	1.6	.6	1.23	1.53	1.96	2.32	2.66	3.01	3.39	3.82	4.38	5.23	6.01
Oct	2.56	2.16	2.11	1954	14	4.89	1990	1.03	1972	13.1	7.0	1.3	.2	.99	1.23	1.57	1.85	2.11	2.38	2.68	3.02	3.45	4.11	4.71
Nov	2.84	2.53	1.90	1961	2	6.91	1985	.72	1981	15.4	8.1	1.4	.2	.97	1.24	1.63	1.96	2.28	2.61	2.96	3.38	3.91	4.74	5.50
Dec	3.42	3.14	1.53	1983	22	9.48	1983	.09	2000	19.7	11.4	1.1	.1	.59	.89	1.39	1.86	2.34	2.86	3.45	4.17	5.13	6.69	8.17
Ann	33.81+	32.98+	3.23+	Aug 1955	3	9.48	Dec 1983	.09	Dec 2000	162.6	88.5	16.8	3.9	22.87	24.94	27.62	29.67	31.50	33.28	35.12	37.16	39.66	43.29	46.45

+ 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: 1952-2001

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

Complete documentation available from:

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Elevation: 1,074 Feet

Lat: 47° 10N

Lon: 88° 29W

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	68.4	70.4	28	28	26.5	1996	18	100.9	1972	52	1986	7	43	1979	23.6	17.1	8.4	4.3	.8	31.0	31.0	30.8	29.7
Feb	33.4	31.3	29	29	19.6	1989	8	89.8	1989	56	1989	23	43+	1996	15.6	10.0	3.8	1.8	.2	28.3	28.3	28.1	27.7
Mar	24.0	19.6	20	19	24.9	1985	4	63.5	1976	53	1976	13	40	1972	10.3	5.7	2.6	1.4	.4	30.0	29.0	27.8	23.9
Apr	7.1	5.0	5	4	13.5	1971	2	22.9	1996	41+	1975	2	26	1972	4.8	2.3	.7	.4	@	15.2	12.6	9.6	6.1
May	1.1	.0	#	1	6.4	1973	2	9.0	1973	7+	1996	1	1	1996	.9	.4	.1	@	.0	.6	.3	.1	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1997	.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	.1	.0	#	0	3.0	1995	22	3.0	1995	1	1995	22	#	1995	.1	.0	@	.0	.0	@	.0	.0	.0
Oct	4.0	2.3	#	0	11.1	1979	23	14.8	1979	10+	1979	26	1+	1981	2.5	1.1	.3	.1	.1	1.8	.6	.2	.1
Nov	23.8	22.5	3	2	17.0	1982	12	54.9	1978	25	1985	29	8	1985	12.0	7.0	2.6	1.2	.1	15.6	9.2	6.1	2.0
Dec	56.1	50.5	14	13	17.8	1998	23	119.0	1978	50+	1985	29	33	1985	19.7	14.6	7.0	3.2	.6	29.2	27.2	23.9	17.1
Ann	218.0	201.6	N/A	N/A	26.5	Jan 1996	18	119.0	Dec 1978	56	Feb 1989	23	43+	Feb 1996	89.5	58.2	25.5	12.4	2.2	151.7	138.2	126.6	106.6

+ 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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<b>Freeze Data</b>									
<b>Spring Freeze Dates (Month/Day)</b>									
<b>Temp (F)</b>	<b>Probability of later date in spring (thru Jul 31) than indicated(*)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	6/09	6/04	5/31	5/28	5/25	5/22	5/19	5/15	5/10
<b>32</b>	5/24	5/19	5/16	5/12	5/10	5/07	5/04	4/30	4/25
<b>28</b>	5/13	5/07	5/03	4/30	4/27	4/24	4/21	4/17	4/11
<b>24</b>	5/02	4/27	4/24	4/21	4/18	4/15	4/12	4/09	4/04
<b>20</b>	4/21	4/17	4/14	4/11	4/09	4/06	4/04	4/01	3/27
<b>16</b>	4/15	4/10	4/06	4/03	3/31	3/28	3/25	3/21	3/16
<b>Fall Freeze Dates (Month/Day)</b>									
<b>Temp (F)</b>	<b>Probability of earlier date in fall (beginning Aug 1) than indicated(*)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	9/09	9/13	9/16	9/18	9/20	9/22	9/25	9/28	10/02
<b>32</b>	9/19	9/24	9/28	10/02	10/05	10/08	10/11	10/15	10/20
<b>28</b>	10/01	10/07	10/11	10/15	10/18	10/22	10/25	10/30	11/05
<b>24</b>	10/15	10/21	10/25	10/29	11/01	11/04	11/08	11/12	11/18
<b>20</b>	10/30	11/03	11/06	11/09	11/11	11/14	11/16	11/19	11/23
<b>16</b>	11/06	11/11	11/14	11/18	11/20	11/23	11/26	11/30	12/05
<b>Freeze Free Period</b>									
<b>Temp (F)</b>	<b>Probability of longer than indicated freeze free period (Days)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	137	130	125	121	118	114	110	105	98
<b>32</b>	163	158	154	150	147	144	141	137	131
<b>28</b>	197	189	183	178	173	169	164	158	150
<b>24</b>	221	212	206	201	196	191	186	180	172
<b>20</b>	237	230	224	220	216	211	207	201	194
<b>16</b>	259	250	244	239	234	229	224	218	209

\* 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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**Elevation: 1,074 Feet Lat: 47° 10N Lon: 88° 29W**

### 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
65	1562	1345	1221	801	425	176	77	102	312	652	1022	1399	9094
60	1407	1205	1066	652	290	85	21	36	182	498	872	1244	7558
57	1314	1121	973	564	221	47	8	16	119	409	782	1151	6725
55	1252	1065	911	507	180	29	4	9	84	351	722	1089	6203
50	1097	925	756	370	99	7	0	0	29	223	572	934	5012
32	552	445	254	52	2	0	0	0	0	9	127	404	1845

Base	Cooling Degree Days (1)												
	Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
32	13	24	57	241	609	842	1039	997	682	380	94	28	5006
55	0	0	0	6	74	181	330	293	76	10	0	0	970
57	0	0	0	3	53	139	272	238	51	5	0	0	761
60	0	0	0	1	29	86	192	165	24	1	0	0	498
65	0	0	0	0	9	28	92	77	4	0	0	0	210
70	0	0	0	0	0	6	29	24	0	0	0	0	59

### 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	12	91	381	613	806	766	460	185	21	0	0	1	13	104	485	1098	1904	2670	3130	3315	3336	3336
45	0	0	0	46	247	463	651	611	318	96	8	0	0	0	0	46	293	756	1407	2018	2336	2432	2440	2440
50	0	0	0	19	144	323	496	456	195	41	1	0	0	0	0	19	163	486	982	1438	1633	1674	1675	1675
55	0	0	0	9	78	199	344	304	101	13	0	0	0	0	0	9	87	286	630	934	1035	1048	1048	1048
60	0	0	0	1	38	101	204	175	47	2	0	0	0	0	0	1	39	140	344	519	566	568	568	568
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	1	53	212	356	499	462	234	80	7	0	0	0	1	54	266	622	1121	1583	1817	1897	1904	1904

(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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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](http://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 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/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)