

# Climatology of the United States

No. 20

1971-2000

Station: HOLLAND, MI

COOP ID: 203858

Climate Division: MI 8

NWS Call Sign:

Elevation: 610 Feet Lat: 42°47N Lon: 86°07W

## 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	31.1	17.6	24.4	67+	1950	25	34.1	1990	-21	1964	1	14.6	1977	1260	0	.0	.0	1.1	16.3	29.1	1.5
Feb	34.6	19.1	26.9	72	1999	12	36.3	1998	-16	1979	17	14.9	1978	1069	0	.0	.0	2.0	11.4	25.6	1.6
Mar	44.8	26.6	35.7	78+	1963	29	43.6	2000	-9	1967	1	27.2	1978	908	0	.0	.0	9.5	3.4	23.5	.3
Apr	56.7	36.1	46.4	90	1986	27	53.1	1985	5	1982	7	41.0	1975	560	2	.0	@	21.3	.2	11.6	.0
May	69.2	46.3	57.8	93+	1977	21	65.3	1991	20	1966	10	48.9	1997	279	53	.0	.5	30.2	.0	1.9	.0
Jun	78.5	55.2	66.9	101+	1953	20	72.3	1991	29	1972	11	60.9	1972	63	118	@	2.6	30.0	.0	@	.0
Jul	82.5	60.2	71.4	100+	1988	7	77.1	1999	40	1979	5	65.7	1971	19	216	.1	4.4	31.0	.0	.0	.0
Aug	80.9	59.0	70.0	98	1975	1	75.7	1988	36+	1963	18	65.4	1971	29	181	.0	2.3	31.0	.0	.0	.0
Sep	73.0	51.8	62.4	99	1954	6	66.5	1998	27	1991	28	58.1	1975	115	37	.0	.4	30.0	.0	.3	.0
Oct	60.7	41.6	51.2	89	1951	4	57.4	1971	19+	1965	29	46.2	1988	434	4	.0	.0	27.5	.0	4.6	.0
Nov	47.4	32.6	40.0	77+	1950	1	45.3	1999	-13	1950	25	33.7	1976	749	0	.0	.0	12.1	1.3	16.2	.0
Dec	35.9	22.9	29.4	70	2001	6	37.3	1982	-16	1963	31	20.8	1989	1104	0	.0	.0	2.5	9.6	27.2	.5
Ann	57.9	39.1	48.5	101+	Jun 1953	20	77.1	Jul 1999	-21	Jan 1964	1	14.6	Jan 1977	6589	611	.1	10.2	228.2	42.2	140.0	3.9

+ 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/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: 1948-2001

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

051-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: HOLLAND, MI**

**COOP ID: 203858**

**Climate Division: MI 8**

**NWS Call Sign:**

**Elevation: 610 Feet Lat: 42°47N**

**Lon: 86°07W**

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	2.26	1.90	2.00	1999	18	6.17	1999	.16	2000	14.5	6.5	1.0	.3	.40	.60	.93	1.24	1.55	1.89	2.28	2.76	3.39	4.40	5.37
Feb	1.38	1.09	2.00	1997	21	3.44	1974	.04	1987	9.8	4.3	.7	.1	.20	.32	.52	.71	.91	1.13	1.38	1.69	2.10	2.78	3.43
Mar	2.10	1.87	2.57	1954	25	6.25	1976	.20	1999	10.0	5.5	1.1	.2	.47	.66	.97	1.25	1.53	1.82	2.15	2.55	3.07	3.90	4.68
Apr	3.14	2.91	2.58	1963	30	5.20	1993	1.31	1989	11.2	7.0	2.0	.7	1.58	1.84	2.20	2.48	2.75	3.01	3.29	3.61	4.00	4.59	5.12
May	3.43	2.95	4.10	1981	11	9.52	2000	.58	1988	9.6	6.2	2.4	.8	.80	1.11	1.62	2.06	2.51	2.99	3.52	4.15	4.99	6.31	7.56
Jun	3.74	3.59	4.71	1972	15	8.40	1972	.60	1988	10.2	6.2	2.4	.7	.81	1.16	1.71	2.20	2.70	3.23	3.82	4.54	5.48	6.98	8.39
Jul	3.52	3.23	7.99	1982	17	9.92	1982	.87	1974	8.8	6.1	2.7	.9	1.11	1.45	1.94	2.37	2.78	3.20	3.67	4.21	4.92	6.01	7.03
Aug	3.62	3.35	3.41	1975	29	8.46	1975	1.05	1999	9.6	6.5	2.4	1.1	.98	1.33	1.85	2.31	2.76	3.23	3.75	4.36	5.17	6.43	7.61
Sep	4.00	3.89	3.35	1978	13	10.89	1986	.00	1979	10.3	7.1	2.6	1.1	.77	1.33	2.00	2.55	3.07	3.61	4.21	4.91	5.81	7.22	8.54
Oct	2.92	2.70	3.66	1954	4	7.50	1991	.75	1999	10.9	7.0	1.9	.4	1.06	1.33	1.73	2.06	2.37	2.70	3.05	3.46	3.98	4.79	5.53
Nov	3.24	2.80	2.50	1995	11	7.05	1990	.82	1997	12.3	7.5	2.0	.7	1.07	1.38	1.83	2.21	2.58	2.96	3.38	3.87	4.50	5.47	6.37
Dec	2.90	3.04	2.50	1985	16	4.77	1985	.95	1986	13.9	6.7	1.5	.4	1.20	1.46	1.84	2.14	2.43	2.72	3.04	3.40	3.86	4.55	5.19
Ann	36.25	35.96	7.99	Jul 1982	17	10.89	Sep 1986	.00	Sep 1979	131.1	76.6	22.7	7.4	28.41	29.99	31.97	33.46	34.76	36.01	37.29	38.69	40.38	42.79	44.86

+ 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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**NWS Call Sign:**

**Elevation: 610 Feet**

**Lat: 42°47N**

**Lon: 86°07W**

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	18.3	16.5	7	4	15.5	1985	19	47.8	1978	36+	1999	13	26	1999	12.8	8.4	2.6	.6	.2	21.9	17.6	13.5	6.7
Feb	12.8	10.2	6	5	10.0	1988	5	27.4	1986	28	1971	3	20	1978	7.7	5.1	1.6	.4	@	18.6	14.9	10.0	5.9
Mar	6.3	6.2	2	1	6.1	1983	21	16.5	1972	19	1978	4	12	1978	4.2	2.0	.6	.2	.0	7.2	3.4	1.8	.6
Apr	2.0	.4	#	#	9.0	1982	6	14.0	1982	12	1982	6	2	1982	.9	.5	.2	.1	.0	1.1	.5	.3	@
May	#	.0	0	0	#	1989	7	#+	1989	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	.3	.0	#	0	4.0	1989	20	4.0	1989	2	1989	20	#+	1989	.1	.1	@	.0	.0	.1	.0	.0	.0
Nov	4.4	3.7	#	#	6.5	1976	11	21.5	1976	9	1976	12	2	1976	2.8	1.8	.3	.1	.0	3.4	1.3	.3	.0
Dec	17.6	17.3	3	2	10.0	1977	10	43.5	1977	22	1985	29	8	1985	9.6	6.6	2.2	.9	@	15.5	10.2	5.6	.9
Ann	61.7	54.3	N/A	N/A	15.5	Jan 1985	19	47.8	Jan 1978	36+	Jan 1999	13	26	Jan 1999	38.1	24.5	7.5	2.3	.2	67.8	47.9	31.5	14.1

+ 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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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	6/11	6/03	5/29	5/25	5/21	5/17	5/12	5/07	4/30
32	5/25	5/19	5/15	5/11	5/08	5/05	5/01	4/27	4/22
28	5/09	5/04	4/30	4/27	4/24	4/21	4/18	4/14	4/09
24	4/21	4/17	4/14	4/12	4/09	4/07	4/05	4/02	3/29
20	4/16	4/11	4/08	4/05	4/02	3/31	3/28	3/24	3/20
16	4/05	3/31	3/27	3/24	3/21	3/18	3/15	3/11	3/06
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	9/16	9/21	9/24	9/26	9/29	10/02	10/04	10/07	10/12
32	9/26	10/01	10/04	10/07	10/10	10/13	10/16	10/19	10/24
28	10/07	10/13	10/18	10/22	10/25	10/29	11/02	11/06	11/12
24	10/22	10/29	11/02	11/06	11/10	11/14	11/18	11/23	11/29
20	11/06	11/13	11/18	11/22	11/26	11/30	12/04	12/09	12/16
16	11/22	11/27	12/01	12/04	12/07	12/10	12/13	12/17	12/22
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	156	148	141	136	131	125	120	114	105
32	178	170	164	159	154	149	144	138	130
28	210	201	194	188	183	178	172	166	157
24	238	230	224	219	214	209	204	198	190
20	266	256	249	243	237	231	225	218	208
16	282	275	269	265	260	256	252	246	239

\* 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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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	1260	1069	908	560	279	63	19	29	115	434	749	1104	6589
60	1105	929	753	417	180	21	4	7	40	293	599	949	5297
57	1012	845	660	335	132	9	0	0	17	220	510	856	4596
55	950	789	599	285	104	5	0	0	9	177	451	794	4163
50	795	650	454	174	51	1	0	0	1	92	313	641	3172
32	296	227	85	4	0	0	0	0	0	0	25	192	829

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	58	82	200	436	797	1045	1220	1176	912	594	266	112	6898
55	0	0	1	26	188	360	507	463	231	57	2	0	1835
57	0	0	0	17	154	304	445	401	179	38	1	0	1539
60	0	0	0	8	109	226	356	314	112	19	0	0	1144
65	0	0	0	2	53	118	216	181	37	4	0	0	611
70	0	0	0	0	22	46	111	88	6	0	0	0	273

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	3	9	78	249	571	821	988	940	686	368	113	17	3	12	90	339	910	1731	2719	3659	4345	4713	4826	4843
45	0	0	40	151	418	671	833	785	536	234	56	7	0	0	40	191	609	1280	2113	2898	3434	3668	3724	3731
50	0	0	20	83	284	522	678	630	393	136	22	1	0	0	20	103	387	909	1587	2217	2610	2746	2768	2769
55	0	0	4	42	172	379	523	475	256	64	5	0	0	0	4	46	218	597	1120	1595	1851	1915	1920	1920
60	0	0	1	21	92	240	370	323	149	26	0	0	0	0	1	22	114	354	724	1047	1196	1222	1222	1222
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	2	49	149	348	530	664	627	428	204	55	4	0	2	51	200	548	1078	1742	2369	2797	3001	3056	3060

(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](http://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](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 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"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## 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)