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: HARBOR BEACH 1 SSE, MI **COOP ID: 203585**

Climate Division: MI 7 **NWS Call Sign:** **Elevation: 600 Feet** **Lat: 43˚50N** **Lon: 82˚39W**

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	27.7	14.2	21.0	59+	1950	13	29.5	1990	-19+	1951	30	10.0	1977	1365	0	.0	.0	.5	19.7	29.8	3.3
Feb	29.5	15.3	22.4	68	1984	23	31.8	1998	-16	1962	2	12.4	1979	1193	0	.0	.0	.6	16.1	27.1	2.7
Mar	37.8	23.6	30.7	80	2000	9	39.1	2000	-12	1986	7	24.1	1978	1063	0	.0	.0	4.7	7.6	26.5	.5
Apr	48.9	33.7	41.3	88	1990	26	46.1	1985	11+	1954	3	35.3	1972	712	0	.0	.0	13.6	.8	13.7	.0
May	61.2	44.2	52.7	92+	1987	28	58.5	1991	27+	1966	10	46.0	1997	389	7	.0	.2	27.4	.0	1.1	.0
Jun	70.4	53.3	61.9	97+	1964	30	66.4	1999	33+	1949	8	55.9	1982	143	50	.0	1.1	29.9	.0	.0	.0
Jul	76.1	59.1	67.6	100	1995	15	72.4	1987	40	1965	6	62.1	1992	38	118	@	1.9	31.0	.0	.0	.0
Aug	74.8	58.0	66.4	99+	1948	25	71.3	1995	35	1982	28	62.5	1982	62	105	.0	1.0	31.0	.0	.0	.0
Sep	68.3	50.9	59.6	98	1953	1	63.8	1998	31	1951	29	54.8	1975	178	15	.0	.3	30.0	.0	.1	.0
Oct	56.7	40.4	48.6	87	1951	4	54.2	1971	17	1952	21	43.4	1972	510	0	.0	.0	25.5	.0	4.2	.0
Nov	44.1	31.1	37.6	80	1950	1	43.8	1975	4	1950	24	30.6	1976	823	0	.0	.0	9.2	2.2	18.4	.0
Dec	33.0	21.2	27.1	65+	1998	1	34.2	1982	-14	1960	24	15.7	1989	1175	0	.0	.0	1.8	12.2	28.1	1.0
Ann	52.4	37.1	44.7	100	Jul 1995	15	72.4	Jul 1987	-19+	Jan 1951	30	10.0	Jan 1977	7651	295	@	4.5	205.2	58.6	149.0	7.5

\+ 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: 1948-2001

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

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	2.65	2.72	1.85	1985	1	4.76	1985	1.19	1980
Feb	2.01	1.72	1.70	2001	10	4.64	1985	.72	1995
Mar	2.42	2.45	1.55	1984	15	5.12	1985	.86	2000
Apr	2.78	2.62	2.26	1957	24	5.76	1991	.94	1997
May	3.02	2.86	2.80	2000	13	7.49	2000	.70	1988
Jun	2.76	2.67	2.10	1994	25	5.38	2000	.86	1988
Jul	2.90	2.86	2.71	1955	15	4.91	1976	.54	1989
Aug	3.59	3.67	3.60	1977	16	9.14	1977	.57	1973
Sep	4.05	3.40	6.04	1986	10	14.17	1986	.89	1991
Oct	2.69	2.50	1.77	1976	6	5.52	1988	.51	1975
Nov	3.04	3.16	1.82	1982	1	5.36	1995	.77	1986
Dec	2.71	2.54	2.69	1972	30	8.02	1972	.58	1993
Ann	34.62	33.84	6.04	Sep 1986	10	14.17	Sep 1986	.51	Oct 1975

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	15.3	8.1	1.2	.1
Feb	12.5	5.9	.9	.1
Mar	11.9	6.4	1.4	.2
Apr	11.6	6.6	1.6	.5
May	10.2	6.9	1.8	.6
Jun	10.2	6.6	1.9	.5
Jul	9.8	6.1	1.9	.4
Aug	9.5	6.3	2.6	1.0
Sep	11.5	7.3	2.7	.8
Oct	12.5	6.5	1.5	.3
Nov	14.0	7.9	1.7	.3
Dec	15.0	7.8	1.3	.2
Ann	144.0	82.4	20.5	5.0

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	1.22	1.46	1.78	2.04	2.28	2.52	2.78	3.08	3.45	4.02	4.52
Feb	.74	.93	1.20	1.42	1.64	1.86	2.10	2.37	2.73	3.27	3.77
Mar	.77	1.00	1.34	1.63	1.91	2.20	2.52	2.89	3.37	4.12	4.82
Apr	1.06	1.32	1.69	1.99	2.29	2.59	2.91	3.28	3.76	4.49	5.17
May	1.05	1.34	1.75	2.10	2.44	2.78	3.16	3.59	4.15	5.02	5.81
Jun	1.03	1.29	1.66	1.97	2.26	2.56	2.89	3.27	3.75	4.50	5.18
Jul	1.03	1.30	1.70	2.03	2.35	2.67	3.03	3.44	3.97	4.79	5.54
Aug	1.16	1.50	2.01	2.43	2.85	3.28	3.74	4.29	5.00	6.09	7.11
Sep	1.00	1.38	1.97	2.50	3.02	3.56	4.17	4.90	5.85	7.35	8.76
Oct	.87	1.12	1.50	1.82	2.13	2.46	2.81	3.22	3.75	4.58	5.34
Nov	1.03	1.31	1.74	2.09	2.44	2.79	3.18	3.63	4.21	5.10	5.93
Dec	.89	1.15	1.53	1.85	2.16	2.48	2.83	3.24	3.76	4.58	5.33
Ann	27.24	28.73	30.60	32.00	33.24	34.41	35.62	36.94	38.53	40.81	42.75

\+ 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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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	23.9	24.2	6	4	18.5	1985	1	47.3	1985	34	1984	1	17	1985	13.9	8.1	2.4	1.1	.1	24.8	20.1	14.8	6.5
Feb	13.9	13.0	6	4	7.0	1988	11	29.6	1972	42+	1985	16	29	1985	11.0	5.4	1.5	.5	.0	22.9	18.2	13.6	6.3
Mar	13.5	12.2	2	2	15.5	1984	15	29.8	1984	20	1984	20	8	1972	6.9	4.3	1.3	.4	.1	14.7	9.6	5.7	2.0
Apr	4.3	3.5	#	0	16.0	1975	3	18.2	1975	16	1975	3	2+	1990	2.6	1.6	.2	.1	@	2.1	.9	.6	.1
May	.2	.0	#	0	4.3	1984	13	4.3	1984	#	1984	13	#	1997	.1	.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	#	1974	22	#	1974	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.3	.0	0	0	3.5	1972	19	4.2	1972	#+	1977	16	0	0	.2	.1	@	.0	.0	.0	.0	.0	.0
Nov	4.9	3.6	#	0	8.0	1977	26	18.6	1977	12	1977	28	2+	1995	3.2	1.8	.5	.1	.0	2.8	1.6	.4	.2
Dec	18.6	17.3	2	1	18.5	1984	31	35.8	1972	33	1983	31	7+	2000	11.5	6.4	1.9	.6	.1	14.5	7.2	3.8	1.3
Ann	79.6	73.8	N/A	N/A	18.5+	Jan 1985	1	47.3	Jan 1985	42+	Feb 1985	16	29	Feb 1985	49.4	27.7	7.8	2.8	.3	81.8	57.6	38.9	16.4

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

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	9/17	9/22	9/25	9/27	9/30	10/03	10/05	10/08	10/13
32	10/02	10/07	10/11	10/14	10/18	10/21	10/24	10/28	11/02
28	10/17	10/21	10/25	10/28	10/30	11/02	11/05	11/09	11/13
24	10/26	11/01	11/05	11/09	11/12	11/16	11/19	11/23	11/29
20	11/08	11/14	11/18	11/22	11/25	11/28	12/02	12/06	12/11
16	11/20	11/25	11/29	12/02	12/05	12/08	12/12	12/15	12/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	152	146	142	139	136	133	129	125	120
32	184	178	174	170	167	163	159	155	149
28	209	203	199	195	192	188	185	180	174
24	238	231	225	220	216	211	207	201	193
20	264	256	250	245	240	235	230	224	216
16	281	274	269	264	260	256	251	246	238

***** 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	1365	1193	1063	712	389	143	38	62	178	510	823	1175	7651
60	1210	1053	908	562	254	65	7	15	76	361	673	1020	6204
57	1117	969	815	473	185	35	1	6	38	279	583	927	5428
55	1055	913	753	415	145	22	0	2	22	229	523	865	4944
50	900	773	599	278	68	5	0	0	4	125	376	710	3838
32	377	306	153	15	0	0	0	0	0	1	36	240	1128

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	34	38	113	293	641	896	1103	1066	827	515	203	88	5817
55	0	0	0	3	73	228	390	355	159	29	0	0	1237
57	0	0	0	1	51	181	329	297	115	17	0	0	991
60	0	0	0	0	27	122	242	214	63	7	0	0	675
65	0	0	0	0	7	50	118	105	15	0	0	0	295
70	0	0	0	0	1	13	40	36	1	0	0	0	91

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	29	136	419	687	886	851	621	308	76	9	0	1	30	166	585	1272	2158	3009	3630	3938	4014	4023
45	0	0	15	76	277	537	731	696	471	180	33	1	0	0	15	91	368	905	1636	2332	2803	2983	3016	3017
50	0	0	3	35	165	389	576	541	324	93	8	0	0	0	3	38	203	592	1168	1709	2033	2126	2134	2134
55	0	0	0	16	90	250	421	387	192	38	1	0	0	0	0	16	106	356	777	1164	1356	1394	1395	1395
60	0	0	0	5	41	139	270	241	96	10	0	0	0	0	0	5	46	185	455	696	792	802	802	802
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	20	78	225	409	569	544	356	151	38	2	0	0	20	98	323	732	1301	1845	2201	2352	2390	2392

(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