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: WHITEFISH POINT, MI **COOP ID: 208920**

Climate Division: MI 2 **NWS Call Sign:** **Elevation: 605 Feet** **Lat: 46˚45N** **Lon: 84˚59W**

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	23.1	10.6	16.9	43	1980	11	25.3	1990	-23	1994	30	5.5	1994	1492	0	.0	.0	.0	25.5	30.9	5.7
Feb	25.7	9.4	17.6	50	1997	18	29.9	1998	-27	1979	18	8.2	1979	1329	0	.0	.0	@	20.3	27.6	7.5
Mar	34.2	16.8	25.5	61	1990	15	33.0	1973	-23	1972	3	19.4	1972	1224	0	.0	.0	.9	11.5	29.2	3.0
Apr	44.8	28.2	36.5	78	1990	26	41.2	1998	-1	1977	8	31.8	1996	854	0	.0	.0	7.4	1.5	20.9	.1
May	57.9	37.4	47.7	85+	1962	16	53.4	1998	20	1966	7	42.2	1997	538	0	.0	.0	25.0	.0	7.0	.0
Jun	66.2	44.9	55.6	89+	1964	29	62.4	1995	27	1964	2	51.6	1982	290	6	.0	.0	29.8	.0	.7	.0
Jul	72.5	51.3	61.9	96	1988	29	67.1	1999	33	1987	15	55.3	1992	146	48	.0	.2	31.0	.0	.0	.0
Aug	72.9	53.8	63.4	95	1955	21	68.4	1998	33	1982	29	58.0	1977	118	68	.0	.1	31.0	.0	.0	.0
Sep	65.2	48.1	56.7	90	1998	5	62.4	1998	26	1993	30	52.7	1993	258	7	.0	@	29.6	.0	.4	.0
Oct	52.9	38.9	45.9	82	1971	1	52.9	1971	19	1981	24	41.8	1976	592	0	.0	.0	20.9	.0	6.6	.0
Nov	39.5	28.9	34.2	68	1990	2	40.2	1999	-5	1976	29	28.3	1995	925	0	.0	.0	3.6	5.7	20.2	@
Dec	28.7	17.9	23.3	57	2001	6	31.2	1994	-14	1989	30	12.7	1989	1294	0	.0	.0	.2	18.7	29.3	1.6
Ann	48.6	32.2	40.4	96	Jul 1988	29	68.4	Aug 1998	-27	Feb 1979	18	5.5	Jan 1994	9060	129	.0	.3	179.4	83.2	172.8	17.9

\+ 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

(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

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	3.17	2.89	.81	1978	31	6.25	1982	.99	1987
Feb	1.80	1.60	.87	1999	28	4.35	1976	.50	1994
Mar	2.02	2.06	1.60	2000	9	3.89	1977	.46	1993
Apr	2.06	1.74	1.80	1954	26	4.18	1985	.90	1997
May	2.64	2.71	2.05	1960	6	4.85	1973	.96	2000
Jun	3.05	3.03	2.04	1992	17	5.69	1981	.78	1988
Jul	3.18	2.98	2.16	1953	26	5.99	1999	.43	1989
Aug	3.34	3.08	3.95	1969	29	6.61	1988	.59	2000
Sep	3.27	3.37	2.12	1980	21	5.54	1996	1.11	1976
Oct	3.16	2.94	2.46	1959	24	6.62	1995	1.16	2000
Nov	2.93	2.75	1.52	1977	3	6.81	1988	.95	1999
Dec	3.14	3.04	1.55	1975	14	6.68	1978	.19	1994
Ann	33.76	34.83	3.95	Aug 1969	29	6.81	Nov 1988	.19	Dec 1994

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	20.1	10.8	.9	.0
Feb	13.9	5.9	.3	.0
Mar	11.5	5.4	.8	.2
Apr	9.3	5.2	1.1	.2
May	9.9	5.8	1.7	.4
Jun	10.4	6.9	2.0	.6
Jul	10.8	6.7	2.3	.6
Aug	11.0	6.8	2.3	.8
Sep	12.8	7.5	2.0	.4
Oct	14.3	8.6	1.7	.3
Nov	15.9	8.7	1.2	.2
Dec	19.3	10.8	.9	@
Ann	159.2	89.1	17.2	3.7

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	1.13	1.43	1.86	2.22	2.57	2.93	3.32	3.77	4.35	5.24	6.06
Feb	.49	.66	.91	1.14	1.36	1.60	1.86	2.16	2.56	3.19	3.78
Mar	.60	.80	1.09	1.33	1.57	1.83	2.10	2.43	2.85	3.51	4.12
Apr	.79	.98	1.26	1.48	1.70	1.92	2.16	2.43	2.78	3.32	3.81
May	.99	1.23	1.59	1.88	2.17	2.45	2.77	3.13	3.59	4.30	4.95
Jun	1.14	1.43	1.84	2.18	2.50	2.83	3.19	3.60	4.13	4.95	5.69
Jul	1.03	1.33	1.78	2.16	2.52	2.90	3.31	3.80	4.42	5.39	6.29
Aug	1.22	1.53	1.98	2.36	2.72	3.09	3.49	3.96	4.55	5.47	6.31
Sep	1.47	1.76	2.16	2.49	2.80	3.10	3.43	3.81	4.29	5.01	5.66
Oct	1.20	1.49	1.91	2.26	2.59	2.93	3.30	3.73	4.27	5.11	5.87
Nov	1.38	1.64	1.99	2.27	2.53	2.80	3.08	3.40	3.80	4.41	4.95
Dec	1.06	1.36	1.79	2.16	2.51	2.87	3.27	3.73	4.33	5.25	6.10
Ann	26.34	27.83	29.71	31.11	32.35	33.53	34.75	36.08	37.68	39.97	41.94

\+ 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

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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	37.9	35.2	20	20	11.2	1995	3	68.0	1977	46	1977	31	33	1974	19.3	13.4	4.7	1.4	.1	30.5	30.1	28.7	25.4
Feb	23.4	22.1	24	25	9.8	1985	13	47.6	1976	47	1977	3	42	1977	12.6	7.1	2.5	.7	.0	27.8	27.8	27.8	26.4
Mar	13.7	11.0	21	22	9.5	1975	24	34.0	1975	48	1972	8	40	1972	7.8	4.4	1.6	.6	.0	30.2	29.7	28.8	25.8
Apr	5.3	3.3	7	5	16.0	1977	5	21.1	1977	34	1977	7	22	1972	2.6	1.4	.5	.2	.1	13.2	11.1	9.6	6.1
May	.1	.0	#	0	1.0	1996	1	1.0	1996	7+	1996	1	1+	1996	.2	@	.0	.0	.0	.3	.2	.1	.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	#	1993	29	#	1993	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.8	.0	#	0	4.2	1992	18	4.6	1988	3+	1996	31	#+	1997	.6	.4	.1	.0	.0	.4	.2	.0	.0
Nov	11.2	8.3	1	1	14.5	1976	30	44.2	1976	20	1976	30	5	1989	7.3	4.4	1.4	.3	@	8.9	4.6	2.8	.4
Dec	36.7	34.2	9	6	15.4	1988	9	71.7	1978	28+	1989	21	24	1976	16.6	11.8	4.5	1.3	.2	24.7	21.1	17.6	10.6
Ann	129.1	114.1	N/A	N/A	16.0	Apr 1977	5	71.7	Dec 1978	48	Mar 1972	8	42	Feb 1977	67.0	42.9	15.3	4.5	.4	136.0	124.8	115.4	94.7

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

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	9/05	9/09	9/13	9/17	9/20	9/24	9/28	10/05
32	9/21	9/26	9/29	10/02	10/05	10/08	10/11	10/14	10/19
28	10/04	10/09	10/12	10/15	10/18	10/21	10/24	10/28	11/02
24	10/25	10/29	11/01	11/04	11/06	11/08	11/11	11/14	11/18
20	10/30	11/05	11/09	11/12	11/15	11/19	11/22	11/26	12/01
16	11/10	11/16	11/20	11/24	11/27	12/01	12/04	12/08	12/14

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	117	109	103	97	93	88	82	76	68
32	149	142	137	132	128	124	120	114	107
28	183	176	172	168	164	161	157	152	146
24	217	210	206	202	198	194	190	185	178
20	241	233	227	222	218	213	208	202	194
16	261	253	247	243	238	234	229	224	216

***** 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	1492	1329	1224	854	538	290	146	118	258	592	925	1294	9060
60	1337	1189	1069	704	388	165	64	45	136	439	775	1139	7450
57	1244	1105	976	614	302	107	31	20	82	351	685	1046	6563
55	1182	1049	914	554	250	76	18	12	54	296	625	984	6014
50	1027	909	759	407	139	23	3	0	14	176	475	829	4761
32	483	426	238	41	1	0	0	0	0	3	67	321	1580

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	14	21	37	176	486	706	925	973	739	435	132	50	4694
55	0	0	0	0	22	91	230	271	104	14	0	0	732
57	0	0	0	0	12	63	181	218	71	8	0	0	553
60	0	0	0	0	5	31	121	150	36	3	0	0	346
65	0	0	0	0	0	6	48	68	7	0	0	0	129
70	0	0	0	0	0	0	13	20	1	0	0	0	34

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	0	42	248	465	675	723	499	213	32	1	0	0	0	42	290	755	1430	2153	2652	2865	2897	2898
45	0	0	0	12	131	317	520	568	353	104	11	0	0	0	0	12	143	460	980	1548	1901	2005	2016	2016
50	0	0	0	2	55	181	366	414	221	40	0	0	0	0	0	2	57	238	604	1018	1239	1279	1279	1279
55	0	0	0	0	16	84	221	266	109	6	0	0	0	0	0	0	16	100	321	587	696	702	702	702
60	0	0	0	0	1	32	101	134	43	1	0	0	0	0	0	0	1	33	134	268	311	312	312	312
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	0	26	135	256	398	433	264	84	7	0	0	0	0	26	161	417	815	1248	1512	1596	1603	1603

(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