

Climatography of the United States

No. 20

1971-2000

Station: BATTLE CREEK 5 NW, MI

COOP ID: 200552

Climate Division: MI 9

NWS Call Sign:

Elevation: 930 Feet Lat: 42° 22N Lon: 85° 16W

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	30.9	15.3	23.1	65	1950	25	32.0	1990	-20	1994	19	11.9	1977	1300	0	.0	.0	1.4	17.6	29.6	3.6
Feb	34.9	17.7	26.3	72	1999	11	35.9	1998	-19	1996	3	15.6	1978	1085	0	.0	.0	2.6	12.4	25.8	2.8
Mar	45.8	25.8	35.8	80	1963	29	43.7	1973	-4+	1967	1	28.1	1984	907	0	.0	.0	10.8	3.7	23.3	.4
Apr	58.6	35.9	47.3	87+	1977	18	53.0	1985	5	1982	7	41.0	1975	534	1	.0	.0	23.2	.2	11.2	.0
May	70.6	46.1	58.4	93+	1962	17	65.3	1977	22	1989	7	51.0	1997	253	46	.0	.5	30.5	.0	2.3	.0
Jun	78.9	55.2	67.1	101	1971	28	72.2	1971	30	1993	1	63.1	1992	58	119	.1	2.0	30.0	.0	.1	.0
Jul	82.5	59.4	71.0	100+	1955	27	75.4	1999	42+	1984	8	66.7	1992	10	193	.1	4.2	31.0	.0	.0	.0
Aug	80.3	57.5	68.9	100	1955	2	75.7	1995	37	1986	28	64.3	1992	35	156	.0	1.9	31.0	.0	.0	.0
Sep	72.7	49.9	61.3	99+	1953	1	66.1	1998	25+	1989	24	54.8	1993	151	40	.0	.5	30.0	.0	.7	.0
Oct	60.7	39.4	50.1	91	1963	6	57.9	1971	16	1988	30	44.1	1988	467	4	.0	.0	27.1	.0	6.9	.0
Nov	47.0	30.6	38.8	80	1950	1	44.7	1999	-6	1950	25	31.8	1976	786	0	.0	.0	12.0	2.2	18.7	.0
Dec	35.0	20.4	27.7	69	2001	5	36.1	1982	-18	1989	22	17.3	1989	1156	0	.0	.0	2.6	11.8	28.0	1.4
Ann	58.2	37.8	48.0	101	Jun 1971	28	75.7	Aug 1995	-20	Jan 1994	19	11.9	Jan 1977	6742	559	.2	9.1	232.2	47.9	146.6	8.2

+ 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

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

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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: BATTLE CREEK 5 NW, MI

COOP ID: 200552

Climate Division: MI 9

NWS Call Sign:

Elevation: 930 Feet Lat: 42°22N

Lon: 85°16W

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	1.66	1.45	2.16	1960	12	3.18	1993	.33	1981	12.5	4.9	.6	.1	.42	.58	.82	1.03	1.24	1.46	1.71	2.00	2.38	2.98	3.55
Feb	1.52	1.14	2.24	1997	21	4.34	1985	.09	1987	10.3	4.3	.6	.1	.23	.36	.58	.79	1.01	1.25	1.52	1.86	2.31	3.03	3.73
Mar	2.41	2.25	1.88	1985	4	4.82	1985	.45	1996	10.9	6.0	1.4	.2	.71	.94	1.28	1.58	1.87	2.17	2.50	2.89	3.40	4.19	4.93
Apr	3.37	3.19	2.32	1975	19	6.68	1975	.86	1971	11.9	7.3	2.2	.6	1.31	1.62	2.06	2.43	2.78	3.14	3.53	3.97	4.54	5.41	6.21
May	3.48	3.53	2.43	2000	18	8.93	2000	.83	1994	12.1	7.4	2.4	.8	1.07	1.41	1.90	2.32	2.73	3.16	3.62	4.17	4.88	5.99	7.01
Jun	3.44	3.44	6.44	1978	26	8.73	1978	.23	1984	10.4	6.6	2.2	.8	.85	1.18	1.68	2.12	2.56	3.03	3.55	4.16	4.97	6.25	7.45
Jul	3.41	2.77	3.04	1985	14	6.26	1980	.88	1997	9.2	6.4	2.4	.9	1.13	1.45	1.92	2.33	2.71	3.11	3.55	4.07	4.72	5.75	6.69
Aug	3.62	3.51	3.47	1949	11	11.02	1975	.20	1976	10.3	6.8	2.4	.9	.89	1.23	1.76	2.23	2.69	3.18	3.73	4.38	5.23	6.58	7.84
Sep	3.90	4.20	2.82	1985	8	8.41	1988	.00	1979	11.1	6.8	2.4	1.1	1.03	1.59	2.22	2.72	3.17	3.64	4.14	4.72	5.46	6.60	7.64
Oct	2.90	2.63	2.80	1993	17	7.15	1991	.73	1975	11.9	6.7	1.8	.6	.87	1.14	1.56	1.91	2.26	2.62	3.01	3.48	4.08	5.03	5.90
Nov	2.95	2.55	2.46	1990	5	6.25	1990	.72	1993	12.3	6.3	1.5	.6	.91	1.19	1.60	1.96	2.31	2.67	3.07	3.54	4.14	5.08	5.95
Dec	2.49	2.49	2.33	1967	21	4.46	1972	.59	1995	14.0	6.4	1.5	.3	.81	1.05	1.40	1.69	1.98	2.28	2.60	2.98	3.47	4.22	4.92
Ann	35.15	34.76	6.44	Jun 1978	26	11.02	Aug 1975	.00	Sep 1979	136.9	75.9	21.4	7.0	26.73	28.40	30.52	32.11	33.52	34.87	36.25	37.77	39.61	42.25	44.51

+ 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

Complete documentation available from:
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Station: BATTLE CREEK 5 NW, MI

COOP ID: 200552

Climate Division: MI 9

NWS Call Sign:

Elevation: 930 Feet

Lat: 42°22N

Lon: 85°16W

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	12.8	10.3	5	4	18.0	1978	26	36.8	1978	30	1978	31	11+	1982	11.8	4.4	1.2	.3	.1	20.7	15.0	10.5	2.3
Feb	9.0	8.1	5	3	9.7	1985	11	26.8	1985	31	1978	7	23	1978	8.0	2.9	.9	.2	.0	16.5	10.4	7.4	1.6
Mar	5.1	3.8	1	1	11.3	1973	17	14.0	1971	21	1982	9	8	1982	4.8	1.5	.6	.2	@	5.7	2.3	.9	.1
Apr	2.1	1.0	#	#	5.5	1975	3	17.1	1982	7	1975	3	1	1982	1.5	.7	.2	.1	.0	.8	.3	.2	.0
May	#	.0	0	0	#	1990	10	#+	1990	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	#	1993	29	#	1993	1	1982	24	#	1982	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.4	.0	#	0	3.8	1989	19	4.3	1989	3	1989	19	#+	1997	.3	.1	.1	.0	.0	.1	@	.0	.0
Nov	4.8	5.0	#	#	6.2	1972	14	16.3	1971	11	2000	21	2+	2000	4.1	2.0	.6	.1	.0	3.6	1.4	.6	.0
Dec	14.0	14.1	2	2	10.0	1987	28	31.2	1983	20	2000	30	13	2000	10.5	4.5	1.2	.5	@	15.4	8.0	3.7	.6
Ann	48.2	42.3	N/A	N/A	18.0	Jan 1978	26	36.8	Jan 1978	31	Feb 1978	7	23	Feb 1978	41.0	16.1	4.8	1.4	.1	62.8	37.4	23.3	4.6

+ 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

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NWS Call Sign:

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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	6/05	6/01	5/28	5/24	5/21	5/17	5/12	5/06
32	5/30	5/24	5/20	5/16	5/13	5/10	5/06	5/02	4/26
28	5/13	5/07	5/03	4/30	4/27	4/23	4/20	4/16	4/10
24	4/27	4/23	4/19	4/16	4/14	4/11	4/08	4/05	3/31
20	4/18	4/13	4/10	4/07	4/04	4/02	3/30	3/26	3/22
16	4/08	4/04	4/01	3/29	3/27	3/24	3/22	3/19	3/15
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	9/12	9/15	9/18	9/20	9/22	9/24	9/26	9/29	10/03
32	9/20	9/25	9/29	10/02	10/04	10/07	10/10	10/14	10/19
28	9/30	10/07	10/12	10/16	10/20	10/23	10/28	11/01	11/08
24	10/11	10/17	10/21	10/25	10/29	11/01	11/05	11/09	11/15
20	10/20	10/27	11/01	11/06	11/10	11/14	11/19	11/24	12/01
16	11/10	11/16	11/20	11/24	11/27	12/01	12/04	12/09	12/15
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	140	133	128	124	120	116	112	107	100
32	166	158	153	148	144	139	135	129	122
28	204	194	187	181	175	170	164	157	147
24	223	214	208	202	197	192	187	180	171
20	249	239	231	225	219	213	207	199	189
16	269	261	255	250	245	240	235	229	220

* 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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Climate Division: MI 9 NWS Call Sign: Elevation: 930 Feet Lat: 42° 22N Lon: 85° 16W

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	1300	1085	907	534	253	58	10	35	151	467	786	1156	6742
60	1145	945	752	390	154	18	0	8	68	326	636	1001	5443
57	1052	861	659	308	107	8	0	2	36	250	547	908	4738
55	990	805	597	259	81	4	0	0	22	205	488	846	4297
50	835	665	452	151	34	0	0	0	5	114	349	694	3299
32	329	235	82	3	0	0	0	0	0	2	39	234	924

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	52	75	199	460	816	1051	1207	1144	879	562	243	101	6789
55	0	0	1	26	183	365	494	431	211	53	2	0	1766
57	0	0	0	16	148	309	432	371	165	36	1	0	1478
60	0	0	0	7	102	229	339	283	106	18	0	0	1084
65	0	0	0	1	46	119	193	156	40	4	0	0	559
70	0	0	0	0	16	45	82	68	9	0	0	0	220

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	5	12	83	268	587	835	985	926	664	348	105	16	5	17	100	368	955	1790	2775	3701	4365	4713	4818	4834
45	1	4	47	163	437	685	830	771	514	222	54	5	1	5	52	215	652	1337	2167	2938	3452	3674	3728	3733
50	0	0	21	91	300	536	675	616	372	126	23	1	0	0	21	112	412	948	1623	2239	2611	2737	2760	2761
55	0	0	9	44	184	388	520	461	240	58	7	0	0	0	9	53	237	625	1145	1606	1846	1904	1911	1911
60	0	0	1	20	90	252	365	307	136	21	0	0	0	0	1	21	111	363	728	1035	1171	1192	1192	1192
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	7	58	171	367	544	662	616	411	204	56	6	0	7	65	236	603	1147	1809	2425	2836	3040	3096	3102

(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

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
- 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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