

# Climatography of the United States

No. 20

1971-2000

Station: ONAWAY STATE PARK, MI

COOP ID: 206184

Climate Division: MI 4

NWS Call Sign:

Elevation: 690 Feet Lat: 45° 26N Lon: 84° 14W

## 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	27.9	10.5	19.2	55+	1973	16	28.3	1990	-30	1994	30	8.6	1994	1419	0	.0	.0	.2	21.2	30.7	7.3
Feb	31.7	10.7	21.2	64+	2000	26	31.0	1998	-35	1979	17	10.2	1979	1225	0	.0	.0	1.2	16.0	27.4	7.1
Mar	41.4	19.0	30.2	79	2000	8	39.2	2000	-23	1962	2	23.4	1972	1079	0	.0	.0	6.0	6.0	27.9	2.9
Apr	54.7	30.6	42.7	91	1986	27	48.2	1986	0	1964	1	36.6	1975	671	0	.0	@	19.2	.5	18.4	.0
May	69.4	41.5	55.5	94+	1998	15	61.4	1998	21+	1958	2	48.2	1997	321	25	.0	.4	30.2	.0	4.5	.0
Jun	77.8	50.5	64.2	98+	1991	27	68.7	1991	29	1949	8	58.8	1972	97	71	.0	1.6	30.0	.0	.1	.0
Jul	82.3	55.6	69.0	100	1977	19	74.2	1983	35	1965	6	62.6	1992	24	148	@	3.9	31.0	.0	.0	.0
Aug	79.7	54.3	67.0	100	1955	21	70.7	1983	32	1950	22	62.9	1977	52	113	.0	1.7	31.0	.0	@	.0
Sep	71.4	47.3	59.4	97	1953	1	63.2	1998	24	1999	25	55.4	1974	182	13	.0	.3	29.9	.0	.9	.0
Oct	59.7	38.4	49.1	89	1971	2	57.3	1971	16	1969	23	43.4	1980	498	3	.0	.0	25.1	.0	7.3	.0
Nov	44.5	29.3	36.9	77	1990	1	43.3	1999	-2	1951	27	31.1	1976	842	0	.0	.0	8.3	2.8	20.4	@
Dec	32.8	18.2	25.5	63	1982	3	32.7	1994	-21	1983	20	14.2	1989	1225	0	.0	.0	1.3	14.5	29.4	2.2
Ann	56.1	33.8	45.0	100+	Jul 1977	19	74.2	Jul 1983	-35	Feb 1979	17	8.6	Jan 1994	7635	373	@	7.9	213.4	61.0	167.0	19.5

+ 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](http://www.ncdc.noaa.gov/oa/climate/normals/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

081-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: ONAWAY STATE PARK, MI**

**COOP ID: 206184**

**Climate Division: MI 4**

**NWS Call Sign:**

**Elevation: 690 Feet Lat: 45°26N**

**Lon: 84°14W**

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	1.86	1.52	1.90+	1964	26	4.05	1990	.48	1981	14.8	5.2	.6	.1	.62	.80	1.06	1.28	1.48	1.70	1.94	2.21	2.56	3.11	3.62
Feb	1.29	1.18	2.11	1965	25	3.16	1971	.35	1998	10.0	4.2	.5	.1	.37	.49	.67	.84	.99	1.16	1.34	1.55	1.83	2.26	2.67
Mar	2.10	2.05	1.75	1998	31	5.09	1998	.27	1993	9.7	5.4	1.1	.2	.40	.59	.90	1.18	1.47	1.78	2.13	2.55	3.11	4.02	4.88
Apr	2.44	2.37	1.80	1954	27	5.40	1995	.58	1997	9.8	5.7	1.7	.2	.82	1.05	1.38	1.67	1.95	2.23	2.54	2.90	3.37	4.09	4.75
May	2.76	2.58	2.01	1997	1	6.99	1983	.50	1992	11.1	6.4	1.8	.5	.81	1.07	1.47	1.81	2.14	2.49	2.87	3.32	3.90	4.81	5.66
Jun	2.68	2.53	3.06	1990	23	6.50	1990	.30	1997	10.7	5.9	1.7	.3	.73	.99	1.37	1.71	2.04	2.39	2.77	3.23	3.82	4.75	5.62
Jul	3.11	2.92	3.65	1970	15	7.57	1994	.11	1989	11.2	6.3	1.6	.6	.57	.85	1.30	1.73	2.16	2.62	3.15	3.79	4.64	6.00	7.31
Aug	3.40	3.08	3.28	1968	20	6.78	1977	1.60	1996	12.1	7.3	2.1	.8	1.47	1.77	2.20	2.55	2.88	3.21	3.57	3.98	4.49	5.28	5.99
Sep	3.41	2.86	3.72	1961	14	7.72	1996	.29	1979	13.3	7.7	2.2	.6	1.04	1.37	1.85	2.26	2.67	3.08	3.55	4.09	4.78	5.87	6.88
Oct	2.71	2.23	1.88	1969	13	6.48	1991	.58	2000	14.0	7.1	1.7	.2	.88	1.14	1.52	1.84	2.15	2.47	2.82	3.23	3.76	4.58	5.33
Nov	2.34	2.50	2.50	1989	9	4.91	1989	.73	1996	13.5	6.6	1.0	.3	.86	1.08	1.40	1.66	1.91	2.17	2.45	2.78	3.19	3.83	4.42
Dec	2.02	1.85	2.16	1970	4	4.26	1978	.49	1994	14.3	5.9	.7	.1	.61	.80	1.09	1.33	1.57	1.82	2.10	2.42	2.84	3.49	4.10
Ann	30.12	31.76	3.72	Sep 1961	14	7.72	Sep 1996	.11	Jul 1989	144.5	73.7	16.7	4.0	23.08	24.48	26.25	27.58	28.75	29.88	31.03	32.30	33.83	36.02	37.90

+ 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:  
[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

# 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](http://www.ncdc.noaa.gov)

**Station: ONAWAY STATE PARK, MI**

**COOP ID: 206184**

**Climate Division: MI 4**

**NWS Call Sign:**

**Elevation: 690 Feet**

**Lat: 45°26N**

**Lon: 84°14W**

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	23.0	20.4	10	10	19.0	1978	26	43.0	1985	31	1978	28	21	1979	13.4	8.7	2.9	1.0	.2	28.2	26.5	22.0	13.4
Feb	16.6	16.0	11	9	14.0	1974	22	33.1	1985	32	1971	23	26	1971	9.3	6.2	2.0	.6	@	26.5	25.1	23.1	14.5
Mar	16.2	14.8	8	6	16.0	1971	7	31.5+	1972	38	1971	8	25	1971	6.6	4.8	1.9	.7	.1	20.4	17.9	15.7	10.5
Apr	4.7	4.3	1	#	12.0	1973	10	12.0	1973	18	1975	2	10	1972	2.2	1.7	.6	.2	@	5.0	3.2	2.5	1.4
May	.2	.0	0	0	2.0	1984	1	2.0+	1994	0	0	0	0	0	.1	.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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.2	.0	#	0	3.0	1996	31	3.0	1996	3	1996	31	#+	1997	.2	.1	@	.0	.0	.1	@	.0	.0
Nov	8.6	5.2	1	#	11.0	1989	16	20.3	1990	11	1976	30	4	1995	5.0	3.6	.9	.4	@	6.6	4.1	1.6	.1
Dec	19.8	22.1	5	4	18.0	1977	9	42.1	1983	21	1977	10	12	1985	10.5	7.1	2.1	.9	.2	21.4	18.5	13.0	6.0
Ann	89.3	82.8	N/A	N/A	19.0	Jan 1978	26	43.0	Jan 1985	38	Mar 1971	8	26	Feb 1971	47.3	32.3	10.4	3.8	.5	108.2	95.3	77.9	45.9

+ 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:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

# Climatography of the United States

## No. 20 1971-2000

**Station: ONAWAY STATE PARK, MI**

**COOP ID: 206184**

**Climate Division: MI 4**

**NWS Call Sign:**

**Elevation: 690 Feet**

**Lat: 45°26N**

**Lon: 84°14W**

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	6/14	6/09	6/05	6/02	5/30	5/27	5/24	5/20	5/15
32	5/30	5/26	5/23	5/20	5/18	5/15	5/13	5/09	5/05
28	5/14	5/10	5/07	5/05	5/03	5/01	4/28	4/26	4/22
24	4/27	4/24	4/21	4/19	4/17	4/15	4/12	4/10	4/06
20	4/18	4/15	4/13	4/11	4/09	4/07	4/05	4/02	3/30
16	4/14	4/10	4/07	4/04	4/02	3/31	3/28	3/25	3/21
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	9/01	9/07	9/11	9/14	9/17	9/20	9/24	9/28	10/03
32	9/15	9/20	9/24	9/27	10/01	10/04	10/07	10/11	10/17
28	10/01	10/06	10/10	10/14	10/17	10/20	10/24	10/28	11/03
24	10/17	10/23	10/28	11/01	11/05	11/08	11/12	11/17	11/23
20	10/29	11/04	11/09	11/13	11/17	11/20	11/24	11/29	12/05
16	11/10	11/16	11/19	11/23	11/26	11/29	12/02	12/06	12/11
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	132	124	119	114	109	105	100	95	87
32	154	148	143	139	135	131	127	123	116
28	188	180	175	171	166	162	158	153	145
24	222	215	210	205	201	197	192	187	180
20	245	237	231	226	221	216	211	206	198
16	258	251	246	241	237	233	228	223	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

Complete documentation available from:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

**Climatography  
of the United States**  
**No. 20**  
**1971-2000**

**Station: ONAWAY STATE PARK, MI**

**COOP ID: 206184**

**Climate Division: MI 4      NWS Call Sign:      Elevation: 690 Feet    Lat: 45° 26N    Lon: 84° 14W**

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	1419	1225	1079	671	321	97	24	52	182	498	842	1225	7635
60	1264	1085	924	524	206	36	4	12	79	353	692	1070	6249
57	1171	1001	831	438	150	17	0	3	41	275	602	977	5506
55	1109	945	769	383	118	9	0	0	24	227	543	915	5042
50	954	805	615	257	57	2	0	0	5	129	396	760	3980
32	421	338	162	17	0	0	0	0	0	2	45	283	1268

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	26	36	107	335	727	964	1146	1084	821	530	193	81	6050
55	0	0	0	12	132	284	433	372	156	42	0	0	1431
57	0	0	0	7	102	231	371	313	112	27	0	0	1163
60	0	0	0	3	65	160	282	228	60	13	0	0	811
65	0	0	0	0	25	71	148	113	13	3	0	0	373
70	0	0	0	0	8	20	58	41	1	0	0	0	128

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	3	33	155	489	738	915	857	592	297	65	3	0	3	36	191	680	1418	2333	3190	3782	4079	4144	4147
45	0	0	14	84	342	588	760	702	443	174	27	1	0	0	14	98	440	1028	1788	2490	2933	3107	3134	3135
50	0	0	3	40	217	438	605	547	299	93	7	0	0	0	3	43	260	698	1303	1850	2149	2242	2249	2249
55	0	0	0	21	126	298	450	392	179	42	2	0	0	0	0	21	147	445	895	1287	1466	1508	1510	1510
60	0	0	0	9	63	167	297	244	88	9	0	0	0	0	0	9	72	239	536	780	868	877	877	877
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	26	117	315	469	595	553	356	165	32	1	0	1	27	144	459	928	1523	2076	2432	2597	2629	2630

(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> |
|---|---|

## 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)