

Climatology of the United States

No. 20

1971-2000

Station: OWOSSO WWTP, MI

COOP ID: 206300

Climate Division: MI 9

NWS Call Sign:

Elevation: 730 Feet Lat: 43°01N Lon: 84°11W

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	28.7	13.7	21.2	65+	1950	25	31.4	1990	-20+	1994	19	10.0	1977	1358	0	.0	.0	1.0	19.6	29.7	4.9
Feb	31.7	15.2	23.5	67	1999	12	33.7	1998	-20	1979	17	12.2	1978	1163	0	.0	.0	1.9	14.4	26.2	3.9
Mar	42.7	24.1	33.4	80	2000	9	41.3	2000	-10	1962	2	25.9	1978	979	0	.0	.0	8.6	5.3	25.0	.6
Apr	55.7	33.8	44.8	86+	1986	28	49.6	1985	3	1982	7	38.8	1975	608	0	.0	.0	21.3	.4	13.8	.0
May	68.6	44.3	56.5	92	1977	21	63.0	1991	22	1978	1	48.8	1997	295	31	.0	.1	30.3	.0	2.0	.0
Jun	77.5	53.6	65.6	99	1988	26	68.9	1971	33+	1949	8	61.1	1985	71	89	.0	1.7	30.0	.0	.0	.0
Jul	81.7	58.1	69.9	101	1988	7	74.0	1987	40+	1965	20	65.5	1992	15	167	.1	3.6	31.0	.0	.0	.0
Aug	79.1	56.3	67.7	99	1948	27	74.1	1995	37+	1976	30	63.0	1992	49	132	.0	1.8	31.0	.0	.0	.0
Sep	71.8	49.1	60.5	99	1953	1	65.7	1998	26	1991	28	55.5	1975	162	26	.0	.5	30.0	.0	.3	.0
Oct	59.6	38.9	49.3	90	1953	3	57.1	1971	17	1972	19	44.0	1976	491	3	.0	.0	26.6	@	7.1	.0
Nov	45.6	30.1	37.9	79	1950	1	44.3	1975	-5	1949	26	30.1	1976	815	0	.0	.0	10.8	2.7	19.1	.0
Dec	33.6	20.0	26.8	69	2001	6	35.4	1982	-12+	1951	19	16.9	1989	1186	0	.0	.0	2.3	12.9	28.7	1.6
Ann	56.4	36.4	46.4	101	Jul 1988	7	74.1	Aug 1995	-20+	Jan 1994	19	10.0	Jan 1977	7192	448	.1	7.7	224.8	55.3	151.9	11.0

+ 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

082-A

Climatology 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: OWOSSO WWTP, MI

COOP ID: 206300

Climate Division: MI 9

NWS Call Sign:

Elevation: 730 Feet Lat: 43°01N

Lon: 84°11W

Precipitation (inches)

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	1.53	1.17	3.13	1967	27	4.26	1999	.10	1994	10.3	5.2	.8	.1	.29	.43	.66	.86	1.07	1.30	1.56	1.87	2.28	2.94	3.56
Feb	1.31	1.02	1.63	1997	22	3.77	1997	.03	1987	8.2	3.9	.6	.1	.18	.28	.47	.65	.84	1.06	1.30	1.60	2.01	2.67	3.31
Mar	2.03	1.97	1.60	1991	28	4.48	1976	.00	1995	9.9	5.5	1.0	.2	.46	.75	1.08	1.35	1.60	1.86	2.15	2.48	2.90	3.56	4.16
Apr	2.83	2.87	2.27	1967	17	5.74	1991	.56	1978	11.1	7.0	1.9	.4	1.06	1.33	1.71	2.02	2.32	2.63	2.96	3.35	3.84	4.59	5.28
May	2.79	2.72	2.54	1981	11	7.04	2000	.07	1977	9.9	5.7	1.5	.4	.45	.70	1.10	1.49	1.88	2.31	2.81	3.41	4.21	5.52	6.77
Jun	3.17	3.20	2.39+	1950	3	6.14	1993	.49	1988	9.4	5.8	1.8	.8	.98	1.28	1.73	2.12	2.49	2.88	3.30	3.80	4.45	5.45	6.39
Jul	2.74	2.79	2.69	1972	15	5.09	1980	.61	1998	9.3	5.6	1.7	.6	.89	1.15	1.53	1.86	2.17	2.49	2.85	3.27	3.80	4.64	5.41
Aug	3.44	3.12	3.91	1968	17	9.91	1975	.72	1976	10.1	6.7	2.3	.7	1.19	1.52	1.99	2.39	2.77	3.16	3.59	4.08	4.72	5.71	6.62
Sep	3.56	3.28	2.85	2000	23	10.26	1986	.01	1979	10.3	6.9	2.6	.8	.58	.88	1.40	1.89	2.39	2.94	3.57	4.34	5.37	7.04	8.63
Oct	2.57	2.38	4.67	1981	1	5.99	1981	.61	1982	9.9	5.9	1.4	.4	.95	1.19	1.53	1.83	2.10	2.38	2.69	3.05	3.50	4.20	4.84
Nov	2.45	2.43	2.40	1963	18	6.00	1990	.72	1993	10.8	6.1	1.5	.2	.78	1.02	1.36	1.65	1.93	2.23	2.55	2.92	3.40	4.16	4.85
Dec	2.12	2.07	1.81	1984	31	4.44	1972	.32	1985	10.8	5.7	1.1	.3	.49	.69	1.00	1.27	1.55	1.84	2.17	2.57	3.08	3.90	4.67
Ann	30.54	29.65	4.67	Oct 1981	1	10.26	Sep 1986	.00	Mar 1995	120.0	70.0	18.2	5.0	22.57	24.13	26.13	27.63	28.96	30.24	31.56	33.01	34.76	37.30	39.48

+ 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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1971-2000

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Station: OWOSSO WWTP, MI

COOP ID: 206300

Climate Division: MI 9

NWS Call Sign:

Elevation: 730 Feet

Lat: 43°01N

Lon: 84°11W

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	10.0	9.5	5	5	10.0	1979	14	23.0+	1979	19+	1999	13	13	1985	6.1	3.5	1.1	.2	@	20.0	15.3	11.7	4.4
Feb	6.2	6.3	5	4	8.0	1982	1	14.5	1982	22	1985	15	21	1985	3.7	2.6	.6	.2	.0	17.4	12.6	7.8	2.4
Mar	6.0	6.0	1	1	6.0	1973	17	16.5	1971	16	1978	12	9	1982	2.7	2.2	.6	.2	.0	6.5	3.7	2.4	1.0
Apr	1.9	.0	#	0	14.0	1975	3	14.5	1975	15	1975	3	2	1975	.6	.4	.2	.1	@	.8	.5	.2	.1
May	#	.0	#	0	#	1974	6	#+	1974	#	1974	6	#	1974	.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	.1	.0	#	0	2.1	1997	27	2.1	1997	3	1997	28	#	1997	@	@	.0	.0	.0	.1	@	.0	.0
Nov	2.8	3.2	#	#	6.0	1975	27	12.0	1975	11	1975	27	1	1975	1.5	1.2	.2	.1	.0	2.2	.5	.2	@
Dec	12.8	10.3	2	2	10.2	2000	12	35.0	1983	16	2000	19	9	2000	5.9	3.9	1.4	.5	@	14.9	8.9	5.1	1.3
Ann	39.8	35.3	N/A	N/A	14.0	Apr 1975	3	35.0	Dec 1983	22	Feb 1985	15	21	Feb 1985	20.5	13.8	4.1	1.3	@	61.9	41.5	27.4	9.2

+ 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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NWS Call Sign:

Elevation: 730 Feet

Lat: 43°01N

Lon: 84°11W

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	6/09	6/02	5/29	5/25	5/21	5/18	5/14	5/09	5/03
32	5/19	5/14	5/11	5/08	5/06	5/03	4/30	4/27	4/22
28	5/11	5/06	5/03	4/30	4/27	4/24	4/21	4/17	4/13
24	4/23	4/19	4/16	4/13	4/11	4/09	4/06	4/03	3/30
20	4/12	4/08	4/05	4/03	4/01	3/30	3/27	3/25	3/21
16	4/03	3/31	3/28	3/25	3/23	3/21	3/18	3/15	3/12
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	9/17	9/20	9/23	9/25	9/28	9/30	10/04	10/08
32	9/27	10/01	10/04	10/06	10/08	10/11	10/13	10/16	10/20
28	10/05	10/11	10/15	10/18	10/22	10/25	10/28	11/01	11/07
24	10/13	10/20	10/25	10/29	11/01	11/05	11/09	11/14	11/20
20	10/30	11/06	11/11	11/15	11/18	11/22	11/26	12/01	12/07
16	11/13	11/19	11/23	11/27	11/30	12/03	12/07	12/11	12/17
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	149	141	135	131	126	122	117	111	104
32	171	166	162	158	155	152	148	144	139
28	201	193	187	182	177	172	167	161	153
24	228	220	214	208	204	199	193	187	179
20	254	246	240	235	231	226	221	215	207
16	273	266	260	256	251	247	242	237	229

* 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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Climate Division: MI 9 NWS Call Sign: Elevation: 730 Feet Lat: 43°01N Lon: 84°11W

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	1358	1163	979	608	295	71	15	49	162	491	815	1186	7192
60	1203	1023	824	460	185	23	1	12	70	347	665	1031	5844
57	1110	939	731	375	132	10	0	4	37	270	575	938	5121
55	1048	883	669	320	102	5	0	1	22	223	516	876	4665
50	893	743	523	199	47	1	0	0	4	127	372	721	3630
32	380	295	123	6	0	0	0	0	0	2	42	255	1103

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	45	56	167	388	759	1007	1175	1107	854	537	217	92	6404
55	0	0	0	12	148	323	462	394	186	45	1	0	1571
57	0	0	0	7	116	267	400	336	141	30	0	0	1297
60	0	0	0	3	76	190	308	251	84	14	0	0	926
65	0	0	0	0	31	89	167	132	26	3	0	0	448
70	0	0	0	0	10	27	68	54	4	0	0	0	163

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	1	8	66	221	550	806	961	896	647	329	95	16	1	9	75	296	846	1652	2613	3509	4156	4485	4580	4596
45	0	0	34	129	399	656	806	741	497	205	45	6	0	0	34	163	562	1218	2024	2765	3262	3467	3512	3518
50	0	0	13	69	265	507	651	586	352	114	21	1	0	0	13	82	347	854	1505	2091	2443	2557	2578	2579
55	0	0	6	34	158	360	496	431	222	54	5	0	0	0	6	40	198	558	1054	1485	1707	1761	1766	1766
60	0	0	0	13	84	228	344	281	123	22	0	0	0	0	0	13	97	325	669	950	1073	1095	1095	1095
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	2	45	141	342	519	638	585	397	189	49	5	0	2	47	188	530	1049	1687	2272	2669	2858	2907	2912

(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

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 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/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