

Climatography of the United States

No. 20

1971-2000

Station: MONROE, MI

COOP ID: 205558

Climate Division: MI10

NWS Call Sign:

Elevation: 590 Feet Lat: 41° 55N Lon: 83° 24W

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	17.4	24.2	70	1950	25	33.8	1990	-18	1994	19	12.5	1977	1266	0	.0	.0	1.5	15.8	28.9	2.7
Feb	33.8	18.4	26.1	71	2000	27	35.7	1998	-14	1934	9	15.5	1979	1089	0	.0	.0	2.5	12.0	25.4	1.3
Mar	43.4	26.9	35.2	83	1938	22	42.6	2000	-2	1943	4	27.3	1984	924	0	.0	.0	9.9	3.2	21.8	.0
Apr	55.5	36.9	46.2	90	1990	26	52.3	1985	11	1982	7	39.1	1975	564	1	.0	@	22.6	.1	8.1	.0
May	68.0	49.3	58.7	95+	1942	31	65.2	1991	26	1976	9	52.1	1997	243	45	.0	.8	30.6	.0	.3	.0
Jun	77.8	58.9	68.4	106	1988	26	71.9	1991	39	1949	8	63.8	1972	42	143	.2	4.3	30.0	.0	.0	.0
Jul	82.4	63.7	73.1	106	1934	24	77.5	1999	43	1945	11	69.1	1992	3	252	.4	8.2	31.0	.0	.0	.0
Aug	80.4	61.5	71.0	103	1936	22	75.7	1995	42+	1965	29	66.6	1992	15	199	.1	4.6	31.0	.0	.0	.0
Sep	73.2	53.6	63.4	103	1939	16	68.4	1971	30+	1942	28	58.6	1975	107	58	.0	1.2	30.0	.0	.0	.0
Oct	60.6	42.0	51.3	92	1939	9	60.5	1971	21	1981	24	45.7	1988	432	7	.0	.0	27.9	.0	3.5	.0
Nov	47.3	32.6	40.0	81	1950	1	46.6	1975	1	1958	30	33.7	1996	751	0	.0	.0	13.0	1.1	16.3	.0
Dec	36.0	23.5	29.8	69	1998	7	37.4	1982	-12	1989	22	18.0	1989	1093	0	.0	.0	3.1	9.5	26.4	1.0
Ann	57.4	40.4	49.0	106+	Jun 1988	26	77.5	Jul 1999	-18	Jan 1994	19	12.5	Jan 1977	6529	705	.7	19.1	233.1	41.7	130.7	5.0

+ 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: 1931-2001

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

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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: MONROE, MI

COOP ID: 205558

Climate Division: MI10

NWS Call Sign:

Elevation: 590 Feet Lat: 41°55N

Lon: 83°24W

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	1.83	1.70	1.97	1978	27	4.29	1993	.60	1984	9.6	5.2	.8	.2	.54	.71	.97	1.20	1.42	1.65	1.90	2.20	2.59	3.19	3.75
Feb	1.74	1.60	1.74	1950	14	4.54	1990	.03	1987	8.2	4.6	1.0	.2	.28	.44	.69	.93	1.17	1.44	1.75	2.13	2.63	3.44	4.21
Mar	2.68	2.27	1.99	1976	1	5.44	1977	.66	1981	9.4	6.3	1.6	.5	.97	1.22	1.58	1.89	2.18	2.48	2.80	3.17	3.65	4.39	5.07
Apr	3.25	3.12	2.25	1956	29	6.24	1979	.87	1971	11.2	7.6	2.0	.5	1.15	1.46	1.90	2.28	2.63	3.00	3.40	3.86	4.45	5.37	6.21
May	3.15	2.96	2.52	1968	26	5.59	2000	1.26+	1994	10.9	7.1	2.0	.6	1.26	1.55	1.96	2.30	2.62	2.95	3.30	3.70	4.21	5.00	5.71
Jun	3.61	3.69	2.74	1944	23	6.12	1973	.70	1988	9.9	6.6	2.7	.8	1.56	1.89	2.34	2.71	3.06	3.41	3.79	4.22	4.77	5.60	6.35
Jul	3.00	3.09	2.85	1977	5	6.12+	1981	.35	1974	8.3	5.6	2.1	.7	.66	.94	1.38	1.78	2.18	2.60	3.08	3.65	4.40	5.59	6.72
Aug	3.46	2.65	4.22	1987	27	8.43	1987	.49	1996	9.1	6.0	2.2	1.0	.69	1.00	1.51	1.97	2.45	2.95	3.53	4.22	5.13	6.59	7.98
Sep	3.01	2.82	2.38	1981	4	7.69	1986	1.02	1995	9.2	5.9	2.1	.5	.92	1.20	1.63	2.00	2.35	2.72	3.13	3.61	4.23	5.19	6.09
Oct	2.36	2.02	2.67	1949	12	5.23	1981	.43	1982	8.8	5.2	1.7	.4	.75	.97	1.30	1.59	1.86	2.15	2.46	2.82	3.29	4.02	4.70
Nov	2.82	2.40	2.15	1982	2	8.50	1982	.37	1981	10.5	6.5	2.0	.4	.63	.89	1.31	1.68	2.05	2.45	2.89	3.43	4.12	5.24	6.29
Dec	2.53	2.50	2.75	1967	21	6.14	1990	.47	1976	10.8	6.3	1.5	.3	.73	.97	1.33	1.65	1.95	2.27	2.62	3.04	3.57	4.41	5.20
Ann	33.44	32.91	4.22	Aug 1987	27	8.50	Nov 1982	.03	Feb 1987	115.9	72.9	21.7	6.1	26.03	27.52	29.40	30.80	32.04	33.22	34.44	35.77	37.37	39.66	41.63

+ 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: 1931-2001

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

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Station: MONROE, MI

COOP ID: 205558

Climate Division: MI10

NWS Call Sign:

Elevation: 590 Feet

Lat: 41°55N

Lon: 83°24W

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	8.9	6.3	2	1	13.0	1992	14	29.0	1978	16	1978	31	11	1999	4.1	2.5	1.1	.4	.1	-9.9	-9.9	-9.9	-9.9
Feb	4.6	5.0	2	#	7.5	1984	28	8.5	1984	16	1978	6	13	1978	2.7	1.8	.7	.3	.0	-9.9	-9.9	-9.9	-9.9
Mar	5.5	3.3	1	#	10.5	1992	22	23.0	1977	12	1982	10	7	1982	1.4	1.2	.7	.3	.1	-9.9	-9.9	-9.9	-9.9
Apr	.5	.0	#	0	3.0	1994	6	5.5	1994	2+	1979	9	#+	1979	.3	.2	@	.0	.0	.2	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	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	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	0	1.4	1989	19	1.4	1989	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Nov	1.6	.3	#	0	4.5	1978	27	6.6	1997	6	1997	16	1	1978	.8	.6	.3	.0	.0	.6	.4	.2	.0
Dec	4.1	1.0	1	#	10.0	1977	9	19.5	1977	20	1974	4	9	1974	2.0	1.2	.4	.2	.1	-9.9	-9.9	-9.9	-9.9
Ann	25.3	15.9	N/A	N/A	13.0	Jan 1992	14	29.0	Jan 1978	20	Dec 1974	4	13	Feb 1978	11.3	7.5	3.2	1.2	.3	-9.9	-9.9	-9.9	-9.9

+ 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:

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Lat: 41° 55N

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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	5/21	5/16	5/12	5/09	5/06	5/03	4/30	4/26	4/20
32	5/07	5/02	4/29	4/26	4/23	4/21	4/18	4/14	4/10
28	4/28	4/23	4/19	4/16	4/13	4/11	4/08	4/04	3/30
24	4/16	4/12	4/08	4/06	4/03	3/31	3/29	3/26	3/21
20	4/07	4/02	3/29	3/26	3/23	3/20	3/17	3/13	3/08
16	3/31	3/26	3/22	3/18	3/15	3/12	3/08	3/04	2/27
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	9/22	9/27	9/30	10/03	10/06	10/09	10/12	10/15	10/20
32	10/07	10/12	10/15	10/18	10/21	10/23	10/26	10/29	11/03
28	10/16	10/21	10/25	10/28	10/31	11/03	11/07	11/10	11/16
24	10/27	11/02	11/06	11/10	11/14	11/18	11/22	11/26	12/02
20	11/10	11/16	11/20	11/23	11/27	11/30	12/03	12/08	12/13
16	11/20	11/26	12/01	12/05	12/08	12/12	12/16	12/20	12/26
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	173	166	161	156	152	148	144	139	132
32	201	194	188	184	180	175	171	166	158
28	225	216	210	205	200	195	190	184	176
24	249	240	234	229	224	219	214	208	200
20	272	264	258	253	248	243	238	232	224
16	289	281	276	272	268	263	259	254	246

* 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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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	1266	1089	924	564	243	42	3	15	107	432	751	1093	6529
60	1111	949	769	418	143	12	0	2	41	295	601	938	5279
57	1018	865	676	334	97	5	0	0	20	223	511	845	4594
55	956	809	614	281	73	2	0	0	11	181	452	783	4162
50	801	669	466	167	29	0	0	0	2	96	313	638	3181
32	304	231	84	3	0	0	0	0	0	0	25	206	853

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	61	67	183	430	825	1091	1272	1207	942	597	264	136	7075
55	0	0	0	18	185	403	559	494	263	65	2	0	1989
57	0	0	0	11	148	345	497	432	211	45	1	0	1690
60	0	0	0	4	101	262	404	340	143	24	0	0	1278
65	0	0	0	1	45	143	252	199	58	7	0	0	705
70	0	0	0	0	15	59	119	91	15	1	0	0	300

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	6	12	81	273	630	901	1078	1015	744	387	121	23	6	18	99	372	1002	1903	2981	3996	4740	5127	5248	5271
45	0	3	38	165	476	751	923	860	594	249	59	8	0	3	41	206	682	1433	2356	3216	3810	4059	4118	4126
50	0	0	18	88	331	601	768	705	445	142	26	3	0	0	18	106	437	1038	1806	2511	2956	3098	3124	3127
55	0	0	6	43	204	454	613	550	303	70	7	0	0	0	6	49	253	707	1320	1870	2173	2243	2250	2250
60	0	0	1	20	110	315	458	395	183	25	0	0	0	0	1	21	131	446	904	1299	1482	1507	1507	1507
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	8	50	153	372	589	732	684	462	210	60	8	0	8	58	211	583	1172	1904	2588	3050	3260	3320	3328

(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.

- | | |
|---|---|
| <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