

Climatography of the United States

No. 20

1971-2000

Station: MIDLAND, MI

COOP ID: 205434

Climate Division: MI 6

NWS Call Sign:

Elevation: 640 Feet Lat: 43° 37N Lon: 84° 12W

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	29.5	16.2	22.9	59	1996	19	32.7	1990	-19	1994	19	13.5	1977	1307	0	.0	.0	.7	19.1	29.6	3.4
Feb	32.9	17.7	25.3	67	1999	11	33.5	1998	-15	1996	3	15.1	1979	1112	0	.0	.0	1.2	13.9	25.9	2.6
Mar	43.8	25.8	34.8	80	2000	8	43.7	2000	-10	1980	3	27.7	1984	937	0	.0	.0	8.3	5.1	25.0	.3
Apr	57.5	36.2	46.9	88	1980	22	51.3	1985	10	1982	7	41.5	1975	545	1	.0	.0	22.4	.1	12.0	.0
May	70.8	47.2	59.0	95	1977	21	65.3	1977	25	1978	1	51.2	1997	234	49	.0	.6	30.7	.0	1.7	.0
Jun	79.7	56.8	68.3	103	1971	28	72.6	1971	32+	1972	11	63.6	1982	46	145	.1	3.3	30.0	.0	.1	.0
Jul	83.8	61.5	72.7	100+	1988	6	76.6	1987	39	1972	5	67.3	1992	6	243	.1	5.8	31.0	.0	.0	.0
Aug	81.1	59.9	70.5	100+	2001	7	75.4	1995	33	1982	9	65.6	1992	19	190	.0	2.3	31.0	.0	.0	.0
Sep	73.3	52.1	62.7	95	1973	3	67.9	1998	28+	1989	27	57.6	1993	114	46	.0	.7	30.0	.0	.4	.0
Oct	60.9	42.1	51.5	87+	1971	1	58.8	1971	18	1974	21	45.9	1980	423	5	.0	.0	27.0	.0	5.6	.0
Nov	46.3	32.7	39.5	75	1978	5	46.1	1975	3	1995	29	32.2	1995	765	0	.0	.0	10.5	1.9	17.4	.0
Dec	34.3	22.4	28.4	67	2001	5	36.7	1982	-13	2000	25	18.4	1989	1137	0	.0	.0	2.1	12.4	27.8	1.1
Ann	57.8	39.2	48.5	103	Jun 1971	28	76.6	Jul 1987	-19	Jan 1994	19	13.5	Jan 1977	6645	679	.2	12.7	224.9	52.5	145.5	7.4

+ 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

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1970-2001

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

071-A

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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: MIDLAND, MI

COOP ID: 205434

Climate Division: MI 6

NWS Call Sign:

Elevation: 640 Feet Lat: 43°37N

Lon: 84°12W

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	1.56	1.39	1.27+	1978	26	3.88	1999	.26	1977	10.3	4.3	.7	.1	.39	.54	.77	.97	1.16	1.37	1.60	1.88	2.24	2.81	3.35	
Feb	1.25	.94	2.20	1997	21	3.90	1997	.08	1987	8.2	3.6	.5	.1	.17	.27	.44	.62	.80	1.00	1.24	1.52	1.91	2.55	3.17	
Mar	2.23	1.99	2.30	1976	2	5.68	1976	.37	1981	10.5	5.5	1.4	.3	.60	.81	1.13	1.42	1.69	1.99	2.31	2.70	3.20	3.98	4.72	
Apr	2.83	3.00	2.00	1992	16	5.45	1991	.86	1978	11.9	6.7	1.6	.4	.95	1.22	1.61	1.94	2.26	2.59	2.96	3.38	3.92	4.76	5.54	
May	2.86	2.61	2.83	1989	31	6.27	2000	.39	1988	10.5	6.1	1.7	.6	.69	.96	1.38	1.75	2.12	2.51	2.94	3.46	4.14	5.22	6.23	
Jun	2.98	2.87	3.96	1996	22	9.14	1996	.69	1988	9.9	6.0	1.8	.6	.89	1.17	1.59	1.96	2.32	2.69	3.10	3.58	4.20	5.17	6.08	
Jul	2.53	2.57	2.99	1996	29	4.73	1994	.41	1989	9.5	5.3	1.6	.4	.78	1.02	1.38	1.68	1.98	2.29	2.63	3.03	3.54	4.34	5.08	
Aug	3.67	3.20	3.80	1975	21	12.76	1975	.88	1976	11.1	6.4	2.5	1.0	1.00	1.35	1.88	2.34	2.80	3.27	3.80	4.42	5.24	6.51	7.71	
Sep	3.84	3.21	8.05	1986	11	18.35	1986	.00	1979	11.3	6.7	2.3	1.0	.59	1.10	1.76	2.29	2.82	3.37	3.99	4.72	5.68	7.19	8.61	
Oct	2.55	2.58	2.61	1993	17	5.47	1990	.65	1982	11.2	5.8	1.5	.5	.99	1.23	1.57	1.84	2.11	2.38	2.67	3.00	3.43	4.08	4.68	
Nov	2.51	2.18	2.14	1990	5	5.64	1990	.52	1986	11.3	5.4	1.6	.4	.66	.89	1.26	1.58	1.89	2.22	2.59	3.03	3.60	4.49	5.33	
Dec	1.88	1.65	1.60	1971	15	5.14	1971	.35	1976	11.0	4.8	1.0	.2	.41	.59	.86	1.11	1.36	1.62	1.92	2.28	2.75	3.50	4.20	
Ann	30.69	29.66	8.05	Sep 1986	11	18.35	Sep 1986	.00	Sep 1979	126.7	66.6	18.2	5.6	23.37	24.83	26.67	28.05	29.27	30.44	31.64	32.96	34.55	36.84	38.80	

+ 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: 1970-2001

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

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Station: MIDLAND, MI

COOP ID: 205434

Climate Division: MI 6

NWS Call Sign:

Elevation: 640 Feet

Lat: 43°37N

Lon: 84°12W

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	2.7	-99.9	5	4	8.0	1993	13	8.0	1993	20	1979	19	14	1979	3.5	2.2	.6	.2	.0	-9.9	-9.9	-9.9	-9.9
Feb	3.3	2.0	4	2	4.0	1973	25	11.3	1974	19+	1985	17	14	1979	3.0	2.1	.4	.0	.0	-9.9	-9.9	-9.9	-9.9
Mar	6.9	4.0	1	#	8.0	1971	6	26.0	1971	14	1978	7	5	1978	1.4	1.0	.4	.2	.0	4.0	2.2	1.2	.1
Apr	.6	.0	#	0	6.0	1975	3	9.8	1975	6	1975	4	1	1975	.1	.1	.1	@	.0	.2	.1	.1	.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	.0	.0	0	0	.2	1981	21	.2	1981	0	0	0	0	0	@	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.1	.1	#	#	6.0	1985	9	6.3	1971	11	1995	28	4	1980	.8	.5	.2	.1	.0	.6	.2	.0	.0
Dec	2.9	-99.9	2	1	10.1	1973	15	11.5	1971	14	2000	31	8	2000	2.3	1.4	.6	.3	.1	4.4	2.5	1.5	.3
Ann	17.5	-9.9	N/A	N/A	10.1	Dec 1973	15	26.0	Mar 1971	20	Jan 1979	19	14+	Feb 1979	11.1	7.3	2.3	.8	.1	-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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NWS Call Sign:

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Lat: 43°37N

Lon: 84°12W

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	6/05	5/30	5/26	5/22	5/19	5/15	5/11	5/07	5/01
32	5/26	5/20	5/15	5/11	5/08	5/04	4/30	4/26	4/20
28	5/07	5/02	4/28	4/25	4/22	4/19	4/16	4/13	4/08
24	4/21	4/17	4/14	4/12	4/10	4/07	4/05	4/02	3/29
20	4/14	4/10	4/07	4/04	4/02	3/31	3/28	3/25	3/21
16	4/05	4/01	3/29	3/27	3/24	3/22	3/19	3/16	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	9/07	9/13	9/17	9/20	9/23	9/27	9/30	10/04	10/09
32	9/25	9/29	10/02	10/04	10/06	10/08	10/11	10/14	10/17
28	10/05	10/11	10/16	10/19	10/23	10/27	10/30	11/04	11/10
24	10/20	10/26	10/30	11/02	11/05	11/08	11/11	11/15	11/21
20	10/28	11/04	11/09	11/13	11/17	11/21	11/25	11/30	12/06
16	11/12	11/19	11/23	11/28	12/01	12/05	12/09	12/14	12/21
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	147	140	135	131	127	123	119	114	107
32	172	164	159	155	151	147	142	137	130
28	210	201	194	188	183	178	172	165	156
24	229	222	217	213	209	205	200	195	188
20	255	246	239	233	228	223	217	210	201
16	275	267	261	256	251	247	242	236	227

* 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)													
Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1307	1112	937	545	234	46	6	19	114	423	765	1137	6645
60	1152	972	782	399	137	13	0	3	42	284	615	982	5381
57	1059	888	689	316	92	5	0	0	19	212	526	889	4695
55	997	832	628	265	68	3	0	0	10	170	467	827	4267
50	842	692	483	154	26	0	0	0	2	87	328	675	3289
32	330	243	104	3	0	0	0	0	0	0	31	217	928

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	46	55	190	448	838	1088	1261	1194	922	605	256	103	7006
55	0	0	1	20	192	401	548	481	242	62	2	0	1949
57	0	0	0	11	155	344	486	419	191	42	1	0	1649
60	0	0	0	5	107	262	393	328	124	21	0	0	1240
65	0	0	0	1	49	145	243	190	46	5	0	0	679
70	0	0	0	0	17	62	116	87	10	0	0	0	292

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	64	242	583	842	1006	936	670	352	95	15	1	9	73	315	898	1740	2746	3682	4352	4704	4799	4814
45	0	0	31	143	432	692	851	781	520	227	47	4	0	0	31	174	606	1298	2149	2930	3450	3677	3724	3728
50	0	0	16	74	295	542	696	626	376	127	19	1	0	0	16	90	385	927	1623	2249	2625	2752	2771	2772
55	0	0	6	38	178	393	541	472	241	60	5	0	0	0	6	44	222	615	1156	1628	1869	1929	1934	1934
60	0	0	0	15	94	256	386	319	138	21	0	0	0	0	0	15	109	365	751	1070	1208	1229	1229	1229
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	42	152	365	544	671	619	415	197	48	5	0	1	43	195	560	1104	1775	2394	2809	3006	3054	3059

(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 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