U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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: MILFORD GM PROVING GR, MI **COOP ID: 205452**

Climate Division: MI10 **NWS Call Sign:** **Elevation: 990 Feet** **Lat: 42˚35N** **Lon: 83˚41W**

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	29.9	14.3	22.1	66	1950	25	31.5	1989	-23	1994	19	10.8	1977	1330	0	.0	.0	1.1	19.7	29.5	4.8
Feb	32.9	16.0	24.5	67	2000	23	34.1	1998	-16+	1994	10	13.6	1979	1135	0	.0	.0	1.5	15.1	26.7	3.7
Mar	43.3	24.5	33.9	79	1998	30	43.9	1973	-9	1978	2	25.6	1984	964	0	.0	.0	8.6	6.6	24.4	.8
Apr	55.9	35.2	45.6	86	1990	25	51.3	1985	11	1954	3	38.1	1975	584	0	.0	.0	20.7	.5	12.2	.0
May	68.4	46.5	57.5	92	1987	28	64.5	1982	24+	1966	10	49.8	1997	271	36	.0	.1	30.1	.0	1.3	.0
Jun	77.2	56.0	66.6	101	1988	25	71.2	1984	33	1949	8	61.6	1985	64	112	@	1.5	30.0	.0	.0	.0
Jul	81.7	60.3	71.0	100+	1966	3	74.3	1999	41+	2001	2	66.4	2000	11	196	@	3.1	31.0	.0	.0	.0
Aug	79.5	58.6	69.1	98+	1948	27	74.0	1995	38	1977	20	64.3	1992	32	158	.0	1.1	31.0	.0	.0	.0
Sep	71.6	51.2	61.4	96	1954	5	66.0	1971	26	1991	28	55.2	1975	149	42	.0	.3	29.9	.0	.6	.0
Oct	59.3	40.2	49.8	88+	1951	4	58.0	1971	16	1966	30	42.3	1972	479	6	.0	.0	25.3	@	6.6	.0
Nov	46.1	30.7	38.4	78	1950	1	45.1	1975	-1	1958	30	31.4	1976	798	0	.0	.0	10.9	3.1	18.5	.0
Dec	34.4	20.0	27.2	64+	1966	8	35.8	1984	-18	1983	24	13.7	2000	1172	0	.0	.0	2.2	13.6	27.9	2.2
Ann	56.7	37.8	47.3	101	Jun 1988	25	74.3	Jul 1999	-23	Jan 1994	19	10.8	Jan 1977	6989	550	.0	6.1	222.3	58.6	147.7	11.5

+ 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

(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

Issue Date: February 2004

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Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	1.52	1.28	1.32	1949	18	3.65	1982	.00+	1998
Feb	1.55	1.15	2.72	1954	16	5.19	1985	.00+	1998
Mar	2.13	1.88	1.74	1949	31	4.75	1974	.70	1988
Apr	2.78	2.74	2.46	1975	18	4.98	1999	1.01	1973
May	2.83	2.72	3.10	1998	1	5.56	2000	.88	1971
Jun	3.12	2.97	5.86	1968	25	6.94	1993	.25	1988
Jul	2.52	2.22	3.19	1957	11	6.89	1999	.25	1989
Aug	3.07	3.10	4.38	1959	26	7.49	1975	.00	1998
Sep	3.00	2.85	5.08	1981	30	12.51	1981	.56+	1995
Oct	2.10	2.01	4.14	1954	3	4.96	1990	.47	1974
Nov	2.47	2.35	1.60	1984	10	4.20	1979	.39	1986
Dec	2.19	2.27	1.59	1967	21	4.18	2000	.00+	1997
Ann	29.28	29.62	5.86	Jun 1968	25	12.51	Sep 1981	.00+	Aug 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.0	4.4	.6	.2
Feb	9.0	3.9	.8	.3
Mar	11.2	5.5	1.3	.2
Apr	11.0	6.9	1.6	.4
May	9.5	5.7	1.7	.7
Jun	8.8	6.2	1.9	.7
Jul	8.1	4.8	1.6	.4
Aug	8.8	5.7	2.1	.8
Sep	9.4	5.9	1.9	.5
Oct	9.2	5.2	1.2	.3
Nov	10.8	6.1	1.6	.3
Dec	12.0	6.1	1.1	.2
Ann	119.8	66.4	17.4	5.0

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.00	.00	.50	.77	1.02	1.29	1.58	1.93	2.37	3.11	3.80
Feb	.00	.25	.56	.81	1.05	1.31	1.60	1.94	2.39	3.13	3.83
Mar	.65	.85	1.15	1.41	1.67	1.93	2.22	2.56	3.00	3.68	4.32
Apr	1.23	1.48	1.83	2.11	2.37	2.63	2.92	3.24	3.65	4.28	4.84
May	1.09	1.35	1.73	2.04	2.33	2.63	2.96	3.33	3.81	4.55	5.22
Jun	.66	.95	1.41	1.82	2.24	2.68	3.18	3.79	4.58	5.85	7.04
Jul	.52	.75	1.12	1.46	1.80	2.16	2.57	3.07	3.72	4.77	5.76
Aug	.67	1.10	1.61	2.02	2.41	2.81	3.24	3.75	4.40	5.41	6.35
Sep	.64	.91	1.35	1.75	2.16	2.58	3.07	3.65	4.41	5.64	6.80
Oct	.73	.93	1.21	1.46	1.69	1.93	2.19	2.49	2.88	3.49	4.04
Nov	.74	.98	1.33	1.63	1.93	2.23	2.57	2.96	3.48	4.27	5.02
Dec	.00	.57	1.03	1.36	1.67	1.99	2.33	2.73	3.25	4.06	4.81
Ann	19.93	21.71	24.00	25.76	27.32	28.84	30.41	32.16	34.29	37.39	40.08

\+ 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

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	10.6	4	4	11.0	1982	31	29.3	1982	18	1982	31	9	1976	7.1	3.4	.8	.3	.1	-9.9	-9.9	-9.9	-9.9
Feb	8.4	5.3	3	3	7.0	1981	10	30.0	1988	16	1978	8	14	1978	5.8	2.5	.8	.2	.0	-9.9	-9.9	-9.9	-9.9
Mar	4.3	2.7	1	#	9.0	1973	17	10.5	1993	12	1978	4	5	1978	2.9	1.1	.3	.1	.0	3.2	1.2	.5	.2
Apr	.9	.0	#	0	5.0	1975	2	8.0	1975	8	1975	3	1	1993	.6	.3	.1	@	.0	.5	.2	.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	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	2.3	1989	19	2.3	1989	#	1993	31	#	1993	.1	@	.0	.0	.0	.0	.0	.0	.0
Nov	3.4	2.3	#	#	5.0	1977	27	13.0	1972	10	1977	26	1	1977	2.2	1.1	.2	@	.0	1.9	.3	.0	.0
Dec	13.1	12.6	2	1	16.0	1974	1	30.2	1974	17	1974	2	9+	2000	5.8	3.1	.9	.2	@	8.9	4.2	.6	.0
Ann	43.0	33.5	N/A	N/A	16.0	Dec 1974	1	30.2	Dec 1974	18	Jan 1982	31	14	Feb 1978	24.5	11.5	3.1	.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

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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	6/02	5/27	5/23	5/20	5/16	5/13	5/10	5/06	4/30
32	5/17	5/12	5/09	5/06	5/03	4/30	4/27	4/24	4/19
28	5/06	5/01	4/28	4/25	4/23	4/20	4/17	4/14	4/10
24	4/26	4/22	4/19	4/16	4/14	4/12	4/09	4/06	4/02
20	4/17	4/12	4/09	4/06	4/03	3/31	3/28	3/25	3/20
16	4/09	4/04	3/31	3/28	3/25	3/22	3/19	3/15	3/10

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	9/15	9/19	9/22	9/25	9/28	9/30	10/03	10/06	10/10
32	9/20	9/26	9/30	10/04	10/07	10/11	10/14	10/19	10/25
28	10/02	10/08	10/13	10/16	10/20	10/23	10/27	10/31	11/06
24	10/16	10/22	10/26	10/29	11/01	11/05	11/08	11/12	11/18
20	10/27	11/01	11/05	11/08	11/12	11/15	11/18	11/22	11/27
16	11/09	11/15	11/20	11/23	11/27	11/30	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	154	147	142	138	134	130	125	120	113
32	177	170	165	160	156	152	148	143	136
28	203	195	189	184	179	174	169	163	155
24	221	214	209	205	201	197	193	188	181
20	242	235	230	226	222	218	213	208	201
16	273	264	257	251	246	241	235	228	219

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1330	1135	964	584	271	64	11	32	149	479	798	1172	6989
60	1175	995	809	437	165	20	0	7	68	339	648	1017	5680
57	1082	911	716	352	115	9	0	1	37	265	559	924	4971
55	1020	855	656	300	87	5	0	0	24	220	500	862	4529
50	865	715	511	183	37	1	0	0	6	128	361	715	3522
32	354	264	122	6	0	0	0	0	0	3	44	261	1054

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	48	54	181	412	789	1039	1208	1149	883	554	236	112	6665
55	0	0	1	16	163	353	495	436	216	58	2	0	1740
57	0	0	0	9	129	297	433	375	170	40	1	0	1454
60	0	0	0	3	86	219	340	288	110	22	0	0	1068
65	0	0	0	0	36	112	196	158	42	6	0	0	550
70	0	0	0	0	12	42	85	69	10	0	0	0	218

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	2	8	70	218	553	801	963	900	639	318	93	13	2	10	80	298	851	1652	2615	3515	4154	4472	4565	4578
45	0	2	34	127	402	652	808	745	490	198	45	4	0	2	36	163	565	1217	2025	2770	3260	3458	3503	3507
50	0	0	16	66	264	502	653	590	347	107	17	1	0	0	16	82	346	848	1501	2091	2438	2545	2562	2563
55	0	0	4	31	156	357	498	436	221	51	4	0	0	0	4	35	191	548	1046	1482	1703	1754	1758	1758
60	0	0	0	14	80	226	343	285	121	17	0	0	0	0	0	14	94	320	663	948	1069	1086	1086	1086
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	3	43	134	327	515	645	591	389	171	46	4	0	3	46	180	507	1022	1667	2258	2647	2818	2864	2868

(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:
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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.
Compete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normals/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.

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