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: GROSSE POINTE FARMS, MI **COOP ID: 203477**

Climate Division: MI10 **NWS Call Sign:** **Elevation: 613 Feet** **Lat: 42˚24N** **Lon: 82˚53W**

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	31.7	18.8	25.3	62+	1952	18	34.5	1990	-17	1994	19	14.7	1977	1232	0	.0	.0	1.4	15.1	28.4	1.7
Feb	34.7	20.7	27.7	69	2000	26	34.9	1998	-12	1976	2	17.7	1979	1045	0	.0	.0	2.3	11.6	24.6	.8
Mar	44.5	28.3	36.4	81+	1986	30	43.6	2000	-4	1978	7	29.2	1984	886	0	.0	.0	9.2	3.6	22.0	@
Apr	57.0	38.1	47.6	90	1990	26	53.6	1985	12	1982	7	40.6	1975	524	1	.0	@	22.2	.1	7.4	.0
May	69.6	49.1	59.4	93+	1987	30	65.1	1991	27+	1966	10	52.8	1997	219	43	.0	.3	30.7	.0	.3	.0
Jun	78.9	58.5	68.7	105	1988	26	72.1	1971	38+	1966	1	64.2	1992	37	148	.1	3.2	30.0	.0	.0	.0
Jul	83.3	63.9	73.6	102	1995	15	78.1	1999	45	1972	5	69.3	1992	2	268	.1	6.1	31.0	.0	.0	.0
Aug	80.8	62.8	71.8	101+	2001	8	76.4	1988	41	1965	29	68.2	1992	7	219	@	2.5	31.0	.0	.0	.0
Sep	74.1	55.8	65.0	98+	1953	1	69.6	1998	33+	1974	23	60.4	1975	75	72	.0	.8	30.0	.0	.0	.0
Oct	61.5	44.9	53.2	90+	1963	6	60.3	1971	23+	1972	19	47.7	1988	372	6	.0	.0	28.1	.0	2.2	.0
Nov	48.6	34.9	41.8	79	1950	2	48.9	1975	4	1976	30	34.7	1976	697	0	.0	.0	13.5	.8	13.3	.0
Dec	36.6	24.8	30.7	69	1998	6	38.7	1982	-10	1977	26	19.8	1989	1064	0	.0	.0	2.9	8.8	25.2	.5
Ann	58.4	41.7	50.1	105	Jun 1988	26	78.1	Jul 1999	-17	Jan 1994	19	14.7	Jan 1977	6160	757	.2	12.9	232.3	40.0	123.4	3.0

\+ 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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1950-2001

(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	1.77	1.66	1.85	1967	27	4.44	1999	.31	1971
Feb	1.79	1.41	2.41	1954	16	5.14	1990	.15	1987
Mar	2.46	2.07	2.08	1997	14	5.59	1985	.88	1981
Apr	3.22	3.20	1.87	1969	18	5.46	1999	1.00	1971
May	2.97	2.90	2.16	1996	10	5.08	2000	.80	1988
Jun	3.40	3.45	3.31	1987	22	6.48	1987	.80	1988
Jul	3.43	2.96	5.13	1976	29	6.66	1976	.73	1991
Aug	3.61	3.33	3.58	1968	17	10.43	1985	1.00	1978
Sep	3.40	3.26	3.48	1990	7	7.41	1986	1.05	1995
Oct	2.63	2.35	4.30	1981	1	8.54	1981	.61	1982
Nov	2.84	2.61	2.27	1951	7	6.16	1985	.93	1976
Dec	2.45	2.64	2.43	1965	25	4.70	1987	.53	1989
Ann	33.97	33.21	5.13	Jul 1976	29	10.43	Aug 1985	.15	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.1	5.2	.7	.2
Feb	8.1	4.7	.9	.3
Mar	10.0	6.1	1.4	.4
Apr	12.4	7.6	1.9	.5
May	10.8	6.7	1.8	.6
Jun	10.5	7.1	2.2	.7
Jul	10.0	6.1	2.1	.9
Aug	10.0	6.6	2.3	1.0
Sep	9.8	6.5	2.4	.8
Oct	10.7	5.4	1.6	.4
Nov	11.5	6.7	1.7	.5
Dec	11.2	6.6	1.5	.2
Ann	125.1	75.3	20.5	6.5

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	.46	.63	.88	1.11	1.34	1.57	1.83	2.14	2.55	3.19	3.78
Feb	.27	.42	.68	.92	1.18	1.46	1.79	2.18	2.71	3.58	4.41
Mar	.95	1.18	1.51	1.78	2.03	2.29	2.58	2.91	3.32	3.96	4.55
Apr	1.37	1.66	2.07	2.40	2.72	3.03	3.37	3.76	4.26	5.01	5.69
May	1.12	1.40	1.80	2.13	2.44	2.76	3.11	3.51	4.02	4.81	5.53
Jun	1.31	1.63	2.08	2.45	2.81	3.17	3.56	4.02	4.59	5.48	6.28
Jul	1.11	1.44	1.92	2.32	2.72	3.12	3.57	4.09	4.76	5.80	6.77
Aug	1.13	1.47	1.98	2.41	2.84	3.27	3.75	4.32	5.04	6.17	7.22
Sep	1.16	1.48	1.95	2.35	2.73	3.12	3.55	4.04	4.68	5.67	6.59
Oct	.74	.99	1.37	1.70	2.02	2.36	2.73	3.17	3.74	4.64	5.47
Nov	.86	1.13	1.53	1.88	2.21	2.56	2.95	3.40	3.98	4.89	5.74
Dec	.81	1.04	1.39	1.67	1.95	2.24	2.56	2.92	3.40	4.13	4.80
Ann	24.63	26.45	28.78	30.53	32.09	33.60	35.15	36.86	38.93	41.93	44.51

\+ 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: 1950-2001
(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	8.5	7.3	4	3	8.0	1992	14	30.0	1978	23	1999	13	12	1999	4.2	3.5	1.0	.4	.0	17.2	14.2	10.2	1.5
Feb	5.3	5.0	3	3	7.0	1984	28	12.7	1985	18	1982	9	13	1982	3.1	2.9	.9	.2	.0	15.6	11.4	7.3	2.7
Mar	3.0	2.5	1	#	6.0	1976	1	9.0	1976	12	1982	4	6	1982	1.5	1.4	.4	.1	.0	5.2	2.9	1.2	.3
Apr	.6	.0	#	0	5.0	1982	6	5.0	1982	5	1982	6	#+	2000	.3	.3	.1	@	.0	.6	.2	@	.0
May	#	.0	0	0	#	1976	3	#	1976	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	#	1981	23	#+	1981	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.1	.0	#	#	3.0	1977	28	6.0	1996	4	1996	28	1	1996	.7	.6	.1	.0	.0	.7	.2	.0	.0
Dec	6.6	4.0	2	1	10.0	1974	2	22.5	2000	15	1974	2	8	1974	3.3	2.8	1.0	.2	@	7.8	5.2	3.7	.8
Ann	25.1	18.8	N/A	N/A	10.0	Dec 1974	2	30.0	Jan 1978	23	Jan 1999	13	13	Feb 1982	13.1	11.5	3.5	.9	@	47.1	34.1	22.4	5.3

+ 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	5/19	5/15	5/12	5/09	5/07	5/04	5/01	4/28	4/24
32	5/05	5/01	4/27	4/25	4/22	4/20	4/17	4/14	4/10
28	4/27	4/23	4/20	4/17	4/15	4/12	4/09	4/06	4/02
24	4/15	4/10	4/07	4/04	4/01	3/30	3/27	3/24	3/19
20	4/08	4/03	3/30	3/26	3/23	3/20	3/16	3/12	3/07
16	3/31	3/26	3/21	3/18	3/15	3/11	3/08	3/04	2/26

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	9/26	10/01	10/05	10/08	10/11	10/14	10/17	10/21	10/27
32	10/10	10/15	10/18	10/21	10/23	10/26	10/29	11/01	11/05
28	10/19	10/25	10/28	11/01	11/04	11/07	11/10	11/14	11/19
24	10/27	11/02	11/06	11/10	11/13	11/17	11/20	11/25	12/01
20	11/11	11/17	11/21	11/24	11/27	12/01	12/04	12/08	12/14
16	11/23	11/30	12/04	12/08	12/11	12/15	12/19	12/23	12/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	175	169	164	160	157	153	149	145	139
32	204	197	192	187	183	179	175	169	162
28	225	217	212	207	202	198	193	187	179
24	249	241	235	230	225	221	216	210	201
20	274	266	259	254	249	244	238	232	223
16	295	287	281	276	271	266	261	255	247

***** 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	1232	1045	886	524	219	37	2	7	75	372	697	1064	6160
60	1077	905	731	379	122	9	0	0	23	238	548	909	4941
57	984	821	638	298	79	3	0	0	9	171	459	816	4278
55	922	765	577	248	57	1	0	0	4	132	402	754	3862
50	767	625	431	142	20	0	0	0	0	61	269	606	2921
32	276	193	70	2	0	0	0	0	0	0	18	178	737

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	68	72	207	469	848	1101	1289	1234	988	658	311	137	7382
55	0	0	1	25	191	413	576	521	302	77	5	0	2111
57	0	0	0	15	152	355	514	459	247	54	2	0	1798
60	0	0	0	6	102	270	421	366	171	28	0	0	1364
65	0	0	0	1	43	148	268	219	72	6	0	0	757
70	0	0	0	0	13	62	133	99	19	0	0	0	326

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	4	11	77	268	618	880	1057	995	752	416	134	25	4	15	92	360	978	1858	2915	3910	4662	5078	5212	5237
45	0	2	37	158	465	730	902	840	602	277	68	8	0	2	39	197	662	1392	2294	3134	3736	4013	4081	4089
50	0	0	15	88	318	580	747	685	453	160	26	2	0	0	15	103	421	1001	1748	2433	2886	3046	3072	3074
55	0	0	6	38	197	431	592	530	313	82	7	0	0	0	6	44	241	672	1264	1794	2107	2189	2196	2196
60	0	0	1	17	101	291	437	377	190	29	0	0	0	0	1	18	119	410	847	1224	1414	1443	1443	1443
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	4	49	148	366	575	718	678	468	215	61	8	0	4	53	201	567	1142	1860	2538	3006	3221	3282	3290

(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