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: BLOOMINGDALE, MI **COOP ID: 200864**

Climate Division: MI 8 **NWS Call Sign:** **Elevation: 725 Feet** **Lat: 42˚23N** **Lon: 85˚58W**

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	30.6	15.3	23.0	67	1950	25	33.0	1990	-18	1981	5	12.8	1977	1303	0	.0	.0	1.2	17.2	29.4	3.5
Feb	34.2	16.5	25.4	71	1999	12	34.2	1998	-23	1996	3	12.8	1978	1110	0	.0	.0	2.0	12.9	25.8	3.2
Mar	44.4	24.5	34.5	79+	1986	30	43.1	2000	-9	1962	2	26.3	1978	947	0	.0	.0	9.2	4.7	24.5	.9
Apr	56.8	34.6	45.7	89	1962	30	52.1	1985	5	1972	8	40.6	1975	580	0	.0	.0	21.0	.4	13.7	.0
May	69.3	44.5	56.9	93	1962	18	64.7	1991	24+	1968	6	50.2	1997	293	42	.0	.5	30.0	.0	3.3	.0
Jun	78.5	53.7	66.1	98+	1971	29	71.4	1971	31	1972	11	61.4	1982	75	108	.0	2.7	30.0	.0	.1	.0
Jul	82.5	57.8	70.2	101	1999	31	74.1	1999	39	1972	6	66.0	1996	12	171	.1	4.3	31.0	.0	.0	.0
Aug	80.7	56.5	68.6	100+	1988	2	75.8	1995	36	1982	29	63.6	1992	43	154	.1	2.8	31.0	.0	.0	.0
Sep	73.1	48.9	61.0	98	1953	1	65.2	1971	26+	1989	27	55.9	1975	151	31	.0	.8	29.9	.0	.8	.0
Oct	61.2	38.7	50.0	89	1971	2	58.3	1971	16	1972	19	44.2	1988	469	2	.0	.0	26.9	.0	8.7	.0
Nov	47.2	30.5	38.9	80	1950	1	44.9	1975	-12	1950	25	32.7	1976	784	0	.0	.0	11.8	2.1	19.6	.0
Dec	35.5	21.1	28.3	71	2001	6	36.8	1982	-18	1976	31	18.8	2000	1137	0	.0	.0	2.6	10.6	28.0	1.1
Ann	57.8	36.9	47.4	101	Jul 1999	31	75.8	Aug 1995	-23	Feb 1996	3	12.8+	Feb 1978	6904	508	.2	11.1	226.6	47.9	153.9	8.7

\+ 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

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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	2.59	2.26	2.55	1960	12	4.65	1975	1.00+	1986
Feb	1.78	1.50	2.21	1997	21	5.41	1997	.09	1987
Mar	2.64	2.37	2.25	1985	28	5.21	1974	1.36	1978
Apr	3.56	3.47	4.70	1975	19	7.10	1975	1.17	1971
May	3.53	3.79	3.77	2000	19	8.60	2000	.94	1994
Jun	3.53	3.23	3.57	1978	26	8.03	1978	.40	1984
Jul	3.83	3.64	4.05	1982	17	9.38	1986	1.18	1996
Aug	3.59	3.05	3.29	1975	22	10.54	1987	.83	1976
Sep	4.43	3.94	4.57	1986	25	14.64	1986	.00	1979
Oct	3.08	2.80	2.38	1954	11	6.21	1991	1.34	1982
Nov	3.68	3.51	2.20	1990	28	7.66	1990	.80	1999
Dec	3.31	3.13	2.67	1982	3	7.32	1982	1.22	1995
Ann	39.55	38.83	4.70	Apr 1975	19	14.64	Sep 1986	.00	Sep 1979

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	16.4	8.0	1.1	.1
Feb	11.7	5.6	.6	.1
Mar	11.6	6.8	1.5	.2
Apr	12.3	8.3	2.1	.6
May	11.1	6.7	2.3	.8
Jun	9.8	6.4	2.4	.7
Jul	9.3	6.2	2.5	.9
Aug	9.8	6.6	2.4	.8
Sep	10.4	7.0	2.7	1.4
Oct	11.4	7.1	2.0	.5
Nov	13.4	8.6	2.2	.6
Dec	15.7	9.0	1.7	.3
Ann	142.9	86.3	23.5	7.0

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	.92	1.17	1.52	1.82	2.10	2.39	2.71	3.08	3.55	4.28	4.94
Feb	.41	.58	.84	1.07	1.31	1.55	1.83	2.16	2.60	3.29	3.94
Mar	1.18	1.42	1.74	2.01	2.25	2.50	2.77	3.08	3.46	4.05	4.57
Apr	1.51	1.83	2.28	2.65	3.00	3.35	3.73	4.17	4.72	5.56	6.32
May	.86	1.19	1.71	2.16	2.62	3.10	3.63	4.27	5.11	6.43	7.67
Jun	.75	1.07	1.59	2.06	2.53	3.04	3.61	4.29	5.19	6.62	7.98
Jul	1.12	1.48	2.03	2.50	2.96	3.44	3.97	4.60	5.41	6.67	7.85
Aug	.95	1.29	1.81	2.26	2.71	3.18	3.71	4.33	5.14	6.41	7.60
Sep	.84	1.46	2.20	2.81	3.39	3.99	4.65	5.43	6.43	8.01	9.47
Oct	1.31	1.59	1.98	2.30	2.60	2.90	3.23	3.61	4.09	4.81	5.47
Nov	1.22	1.57	2.08	2.52	2.93	3.37	3.84	4.39	5.10	6.20	7.21
Dec	1.22	1.53	1.98	2.35	2.70	3.06	3.46	3.91	4.49	5.39	6.21
Ann	29.80	31.73	34.18	36.02	37.65	39.21	40.82	42.59	44.72	47.79	50.43

\+ 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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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	25.5	23.0	7	5
Feb	14.8	15.1	6	5
Mar	7.2	6.0	1	1
Apr	1.7	.4	#	#
May	#	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.5	.0	#	0
Nov	9.2	7.3	1	#
Dec	21.8	19.2	4	3
Ann	80.7	71.0	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	11.0	1979	14	62.5	1997	40	1978	31	17	1979
Feb	9.0	1990	15	25.5+	1994	38	1978	1	17	1978
Mar	9.0	1998	10	18.0	1971	18	1982	9	7	1978
Apr	8.0	1975	3	9.0	1975	9	1975	4	1	1982
May	#	1989	7	#	1989	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	6.0	1989	20	6.0	1989	4	1989	20	#+	1992
Nov	10.0	1996	11	26.5	1996	16	1996	11	4	1996
Dec	12.0	1977	11	52.5	1977	23+	1977	11	13	2000
Ann	12.0	Dec 1977	11	62.5	Jan 1997	40	Jan 1978	31	17+	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	12.4	10.0	3.8	1.1	.1
Feb	8.2	5.8	1.9	.5	.0
Mar	3.8	2.5	.8	.2	.0
Apr	.9	.5	.2	.1	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.1	.1	.1	.1	.0
Nov	3.9	3.1	1.3	.3	@
Dec	9.4	7.7	3.3	1.3	.1
Ann	38.7	29.7	11.4	3.6	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	23.1	19.0	15.4	8.4
Feb	20.6	17.1	13.5	7.2
Mar	8.7	5.0	2.7	.8
Apr	1.0	.4	.2	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.1	@	.0	.0
Nov	4.8	2.3	.7	.1
Dec	18.4	12.9	7.9	2.8
Ann	76.7	56.7	40.4	19.3

+ 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	6/16	6/10	6/05	6/01	5/29	5/25	5/21	5/16	5/10
32	5/30	5/24	5/20	5/17	5/13	5/10	5/07	5/03	4/27
28	5/14	5/09	5/05	5/02	4/30	4/27	4/24	4/20	4/15
24	4/26	4/22	4/19	4/17	4/14	4/12	4/10	4/07	4/03
20	4/17	4/13	4/09	4/07	4/04	4/02	3/30	3/27	3/23
16	4/11	4/06	4/02	3/30	3/27	3/24	3/21	3/18	3/13

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	9/08	9/12	9/14	9/17	9/19	9/21	9/24	9/26	9/30
32	9/23	9/26	9/29	10/01	10/03	10/05	10/08	10/10	10/14
28	9/30	10/06	10/10	10/14	10/18	10/21	10/25	10/29	11/04
24	10/13	10/19	10/24	10/28	11/01	11/05	11/09	11/13	11/20
20	10/29	11/05	11/09	11/13	11/16	11/20	11/24	11/28	12/05
16	11/12	11/19	11/24	11/28	12/02	12/06	12/10	12/15	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	131	125	120	116	113	109	105	100	94
32	161	155	150	146	142	139	135	130	124
28	194	186	180	175	170	166	161	155	146
24	225	216	210	205	200	195	190	184	175
20	249	241	235	230	225	221	216	210	202
16	273	265	259	253	249	244	239	233	224

***** 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	1303	1110	947	580	293	75	12	43	151	469	784	1137	6904
60	1148	970	792	434	188	27	0	11	63	324	634	982	5573
57	1055	886	699	349	137	13	0	4	32	247	544	889	4855
55	993	830	637	295	107	8	0	1	18	200	485	827	4401
50	838	690	494	178	51	2	0	0	3	106	343	675	3380
32	327	253	111	4	0	0	0	0	0	0	31	220	946

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	47	67	186	414	772	1023	1182	1133	870	557	237	106	6594
55	0	0	0	15	166	341	469	421	198	43	1	0	1654
57	0	0	0	9	133	286	407	362	151	28	0	0	1376
60	0	0	0	3	92	210	315	277	93	12	0	0	1002
65	0	0	0	0	42	108	171	154	31	2	0	0	508
70	0	0	0	0	16	40	67	69	6	0	0	0	198

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	3	11	77	229	538	793	943	893	636	327	99	19	3	14	91	320	858	1651	2594	3487	4123	4450	4549	4568
45	0	2	40	137	388	643	788	738	488	204	51	5	0	2	42	179	567	1210	1998	2736	3224	3428	3479	3484
50	0	0	21	78	257	493	633	583	347	112	22	1	0	0	21	99	356	849	1482	2065	2412	2524	2546	2547
55	0	0	7	41	155	353	478	429	220	55	5	0	0	0	7	48	203	556	1034	1463	1683	1738	1743	1743
60	0	0	1	19	80	224	326	279	125	19	0	0	0	0	1	20	100	324	650	929	1054	1073	1073	1073
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	4	53	147	335	513	622	585	401	202	60	6	0	4	57	204	539	1052	1674	2259	2660	2862	2922	2928

(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.
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