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: HARRISVILLE 2 NNE, MI **COOP ID: 203628**

Climate Division: MI 4 **NWS Call Sign:** **Elevation: 585 Feet** **Lat: 44˚41N** **Lon: 83˚17W**

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	27.8	11.4	19.6	53	1973	18	29.2	1990	-19	1982	10	10.0	1977	1408	0	.0	.0	.1	20.9	30.6	5.7
Feb	29.3	11.8	20.6	65	1984	23	30.5	1998	-22	1979	18	9.9	1979	1245	0	.0	.0	.6	16.0	27.4	4.2
Mar	38.0	20.9	29.5	75	1998	31	37.1	2000	-8	1980	2	23.0	1972	1102	0	.0	.0	4.7	6.2	27.3	1.0
Apr	49.1	31.4	40.3	88	1976	16	44.8	1991	6	1972	5	34.2	1972	743	0	.0	@	14.7	.6	16.8	.0
May	60.5	41.5	51.0	88+	1980	5	56.8	1991	21	1976	6	44.9	1997	438	5	.0	@	28.5	.0	3.3	.0
Jun	70.8	50.9	60.9	94	1999	7	64.9	1987	30	1978	10	54.9	1972	158	34	.0	.4	30.0	.0	.2	.0
Jul	76.5	57.2	66.9	101	1977	20	71.4	1999	34	1978	12	62.5	1992	46	103	.1	2.1	31.0	.0	.0	.0
Aug	75.0	56.0	65.5	103	2001	7	71.3	1995	35	1982	29	61.4	1982	82	97	.0	.8	31.0	.0	.0	.0
Sep	68.1	49.5	58.8	90+	1973	2	62.9	1998	32+	1973	17	54.5	1975	195	9	.0	.1	30.0	.0	.4	.0
Oct	56.2	38.5	47.4	84	1975	13	54.3	1971	19+	1972	19	42.6	1988	547	0	.0	.0	26.2	.0	9.0	.0
Nov	42.8	28.5	35.7	76	1999	10	41.1	1999	-1	1976	29	28.6	1976	880	0	.0	.0	8.5	2.0	19.4	@
Dec	32.6	18.1	25.4	65+	1982	3	32.7	1998	-28	1977	28	15.3	1976	1230	0	.0	.0	1.5	13.7	28.9	1.5
Ann	52.2	34.6	43.5	103	Aug 2001	7	71.4	Jul 1999	-28	Dec 1977	28	9.9	Feb 1979	8074	248	.1	3.4	206.8	59.4	163.3	12.4

\+ 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

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1971-2001

(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	1.83	1.65	1.12	1974	27	3.94	1974	.61	1972
Feb	1.22	1.14	1.08	1977	23	2.89	1977	.26	1987
Mar	2.16	2.05	1.61	1998	31	5.28	1998	.65+	2000
Apr	2.16	2.11	1.40	1998	1	3.33	1983	.33	1976
May	2.48	2.37	2.28	2000	13	4.85	2000	1.25	1977
Jun	2.81	2.99	2.21	1999	14	5.70	1999	.69	1988
Jul	3.10	3.23	3.10	1984	11	6.26	1972	.90	1979
Aug	2.90	2.85	2.19	1998	23	6.52	1975	1.37	1974
Sep	2.91	2.84	2.72	1981	4	5.92	1978	.52	1979
Oct	2.20	2.18	2.03	1998	7	3.76	1983	.73	1975
Nov	2.25	2.06	1.05	2000	10	5.59	1977	.60	1999
Dec	2.03	1.73	1.62	1971	15	5.55	1971	.96	1981
Ann	28.05	27.64	3.10	Jul 1984	11	6.52	Aug 1975	.26	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.8	5.5	.6	.1
Feb	10.4	4.3	.5	.1
Mar	9.7	4.9	1.3	.2
Apr	9.9	5.5	1.3	.1
May	11.1	6.6	1.4	.3
Jun	11.3	6.7	1.7	.4
Jul	11.5	6.3	2.1	.7
Aug	11.2	6.8	1.8	.6
Sep	13.0	7.5	2.0	.6
Oct	12.0	5.8	1.2	.4
Nov	13.3	6.0	1.6	.3
Dec	11.9	5.0	.8	.2
Ann	138.1	70.9	16.3	4.0

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	.74	.91	1.14	1.34	1.53	1.72	1.92	2.15	2.45	2.91	3.32
Feb	.40	.52	.69	.83	.97	1.11	1.27	1.45	1.69	2.05	2.38
Mar	.65	.85	1.16	1.42	1.68	1.95	2.24	2.59	3.04	3.74	4.39
Apr	.83	1.03	1.32	1.56	1.78	2.01	2.26	2.55	2.92	3.48	3.99
May	1.26	1.46	1.74	1.97	2.18	2.38	2.60	2.85	3.16	3.63	4.04
Jun	1.21	1.47	1.82	2.11	2.38	2.65	2.95	3.28	3.71	4.36	4.95
Jul	1.32	1.60	1.99	2.32	2.62	2.93	3.25	3.63	4.11	4.84	5.50
Aug	1.25	1.51	1.87	2.17	2.45	2.73	3.04	3.39	3.83	4.50	5.10
Sep	1.16	1.42	1.80	2.12	2.42	2.72	3.05	3.42	3.90	4.64	5.30
Oct	.97	1.17	1.44	1.67	1.87	2.08	2.31	2.56	2.89	3.38	3.82
Nov	.87	1.08	1.38	1.62	1.86	2.10	2.35	2.65	3.03	3.62	4.15
Dec	.79	.98	1.24	1.47	1.68	1.89	2.12	2.39	2.73	3.26	3.74
Ann	23.63	24.54	25.68	26.52	27.26	27.95	28.66	29.44	30.36	31.67	32.78

\+ 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: 1971-2001
(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	12.0	9.7	8	8	12.0	1974	11	25.5	1974	27	1979	19	21	1979	6.8	4.6	1.9	.8	.1	-9.9	-9.9	-9.9	-9.9
Feb	11.1	12.0	8	6	10.5	1974	22	18.5	1976	27	1979	17	23	1979	5.5	3.1	1.1	.4	.2	-9.9	-9.9	-9.9	-9.9
Mar	10.1	7.3	5	3	12.0	1983	22	32.9	1972	23	1982	9	15	1972	4.6	3.1	1.6	.4	.1	-9.9	-9.9	-9.9	-9.9
Apr	2.8	2.0	#	#	5.5	1973	10	9.1	1979	16	1972	1	4	1972	1.4	1.1	.2	.1	.0	1.4	.8	.6	.5
May	.4	.0	#	0	3.0	1974	6	3.3	1974	1+	1979	6	#+	1979	.3	.1	.1	.0	.0	.1	.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	#	1975	13	#	1975	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.2	.0	#	0	2.3	1976	27	2.3	1976	1	1976	27	#+	1976	.1	.1	.0	.0	.0	.1	.0	.0	.0
Nov	4.9	2.9	#	#	11.0	1977	28	27.0	1977	22	1977	28	2	1977	2.4	1.3	.3	.2	.1	2.2	.2	.0	.0
Dec	17.9	16.2	3	2	13.5	1980	2	36.1	1972	20	1972	16	11	1972	8.2	4.4	1.6	.6	.2	-9.9	-9.9	-9.9	-9.9
Ann	59.4	50.1	N/A	N/A	13.5	Dec 1980	2	36.1	Dec 1972	27+	Feb 1979	17	23	Feb 1979	29.3	17.8	6.8	2.5	.7	-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	6/15	6/09	6/04	5/31	5/27	5/23	5/19	5/14	5/07
32	5/30	5/25	5/21	5/18	5/15	5/12	5/09	5/05	4/29
28	5/13	5/08	5/04	5/01	4/28	4/25	4/22	4/18	4/13
24	4/28	4/24	4/21	4/18	4/16	4/14	4/11	4/08	4/04
20	4/16	4/12	4/09	4/07	4/04	4/02	3/30	3/27	3/23
16	4/11	4/06	4/03	3/30	3/28	3/25	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	9/15	9/19	9/21	9/24	9/26	9/29	10/01	10/04	10/08
32	9/24	9/28	10/01	10/04	10/07	10/09	10/12	10/15	10/19
28	9/30	10/06	10/10	10/13	10/17	10/20	10/23	10/27	11/02
24	10/11	10/17	10/22	10/26	10/30	11/03	11/07	11/12	11/19
20	10/24	10/31	11/06	11/10	11/14	11/18	11/23	11/28	12/05
16	11/03	11/11	11/17	11/22	11/27	12/01	12/06	12/12	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	144	136	131	126	122	117	113	107	100
32	163	156	152	148	144	140	136	132	125
28	195	187	181	175	171	166	161	155	146
24	222	213	207	201	196	191	186	180	171
20	249	240	234	228	223	218	213	206	197
16	274	264	256	250	243	237	231	223	212

***** 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	1408	1245	1102	743	438	158	46	82	195	547	880	1230	8074
60	1253	1105	947	593	298	72	9	25	85	398	730	1075	6590
57	1160	1021	854	504	224	39	1	10	43	314	640	982	5792
55	1098	965	792	445	181	24	0	5	25	262	580	920	5297
50	943	825	637	306	95	6	0	0	4	153	432	765	4166
32	410	349	166	20	0	0	0	0	0	3	56	277	1281

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	25	28	87	268	590	866	1081	1039	804	479	166	70	5503
55	0	0	0	3	58	200	368	331	139	25	0	0	1124
57	0	0	0	1	39	155	307	274	97	15	0	0	888
60	0	0	0	0	19	98	221	195	49	6	0	0	588
65	0	0	0	0	5	34	103	97	9	0	0	0	248
70	0	0	0	0	0	7	31	34	1	0	0	0	73

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	0	0	26	119	386	643	875	827	602	254	65	6	0	0	26	145	531	1174	2049	2876	3478	3732	3797	3803
45	0	0	10	59	246	493	720	672	452	137	24	2	0	0	10	69	315	808	1528	2200	2652	2789	2813	2815
50	0	0	1	29	139	344	565	517	309	63	7	0	0	0	1	30	169	513	1078	1595	1904	1967	1974	1974
55	0	0	0	13	68	210	410	362	183	24	0	0	0	0	0	13	81	291	701	1063	1246	1270	1270	1270
60	0	0	0	3	30	107	256	220	89	4	0	0	0	0	0	3	33	140	396	616	705	709	709	709
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	18	71	217	374	563	527	353	143	27	2	0	0	18	89	306	680	1243	1770	2123	2266	2293	2295

(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