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: ESCANABA, MI **COOP ID: 202626**

Climate Division: MI 2 **NWS Call Sign:** **Elevation: 591 Feet** **Lat: 45˚45N** **Lon: 87˚02W**

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	25.2	7.0	16.1	50	1967	23	23.3	1990	-28	1982	16	6.9	1994	1517	0	.0	.0	.0	24.4	30.9	8.2
Feb	27.7	7.9	17.8	52	1958	23	29.9	1998	-22	1985	2	9.2	1979	1321	0	.0	.0	.1	19.1	28.2	6.8
Mar	35.8	17.8	26.8	71	2000	9	34.5	2000	-26	1972	3	19.4	1989	1184	0	.0	.0	1.3	10.1	29.0	1.9
Apr	46.1	30.2	38.2	82	1957	29	42.6	1987	-1	1972	5	32.9	1972	807	0	.0	.0	8.9	1.4	17.0	@
May	59.6	42.3	51.0	91	1986	30	57.9	1998	23	1954	5	44.7	1997	440	5	.0	@	27.5	.0	2.3	.0
Jun	70.0	51.3	60.7	98	1970	29	64.6	1991	30	1990	4	56.7	1982	157	25	.0	.1	30.0	.0	.1	.0
Jul	76.0	57.1	66.6	95	1983	14	71.4	1983	40+	1967	5	61.0	1992	49	96	.0	.2	31.0	.0	.0	.0
Aug	74.6	56.5	65.6	100	1955	21	69.9	1983	38	1986	28	62.2	1992	71	88	.0	.1	31.0	.0	.0	.0
Sep	66.5	48.5	57.5	96	1953	1	62.9	1998	28+	2000	28	53.1	1974	234	9	.0	@	29.8	.0	.5	.0
Oct	54.5	38.9	46.7	82	1960	10	52.8	1971	19	1988	30	42.6	1980	567	0	.0	.0	22.7	.0	5.2	.0
Nov	41.5	27.0	34.3	71	1999	10	39.9	1999	-7	1950	24	27.0	1995	923	0	.0	.0	4.6	3.9	21.7	.1
Dec	30.3	14.9	22.6	58	2001	6	30.8	1997	-23	1976	30	11.5	1989	1314	0	.0	.0	.4	17.4	29.6	3.8
Ann	50.7	33.3	42.0	100	Aug 1955	21	71.4	Jul 1983	-28	Jan 1982	16	6.9	Jan 1994	8584	223	.0	.4	187.3	76.3	164.5	20.8

\+ 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	1.44	1.28	1.20	1967	24	2.80	1996	.45	1987
Feb	.95	.80	.94	1962	13	2.58	1971	.12	1993
Mar	1.87	1.73	1.23	1950	27	4.85	1977	.18	1999
Apr	1.95	1.95	1.81	1954	26	4.03	1981	.45	1997
May	2.74	2.71	2.13	1949	18	5.55	1991	.52	1986
Jun	3.02	3.09	3.92	1953	30	4.96	1981	.86	1983
Jul	3.36	3.31	3.44	1951	26	8.29	1999	1.06	1976
Aug	3.52	3.57	2.87	1976	12	5.83	1974	.74	1991
Sep	3.20	3.10	2.75	1984	12	7.01	1984	.43	1989
Oct	2.49	2.24	2.27	1991	29	5.25	1995	.54	2000
Nov	2.53	2.22	2.77	1985	1	7.18	1985	.61	1976
Dec	1.46	1.41	1.17	1975	14	2.73	1982	.26	1994
Ann	28.53	27.11	3.92	Jun 1953	30	8.29	Jul 1999	.12	Feb 1993

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.8	4.9	.4	.1
Feb	8.5	3.1	.2	.0
Mar	8.7	4.2	.9	.1
Apr	10.0	5.5	1.2	.2
May	10.8	6.5	1.7	.3
Jun	12.1	6.9	1.8	.4
Jul	11.5	6.7	2.0	.5
Aug	11.6	6.7	2.0	.7
Sep	11.4	6.3	2.2	.5
Oct	10.9	6.0	1.3	.3
Nov	11.6	5.5	1.5	.4
Dec	11.1	4.5	.5	@
Ann	130.0	66.8	15.7	3.5

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	.47	.61	.81	.98	1.15	1.32	1.50	1.72	2.00	2.43	2.84
Feb	.27	.36	.49	.61	.73	.85	.99	1.14	1.35	1.67	1.98
Mar	.36	.52	.80	1.05	1.31	1.58	1.90	2.28	2.78	3.59	4.35
Apr	.69	.88	1.14	1.37	1.58	1.80	2.04	2.32	2.67	3.22	3.73
May	.91	1.17	1.55	1.88	2.19	2.51	2.86	3.27	3.80	4.62	5.38
Jun	1.08	1.36	1.77	2.12	2.45	2.79	3.16	3.58	4.13	4.98	5.75
Jul	1.28	1.59	2.04	2.41	2.77	3.13	3.52	3.97	4.55	5.44	6.25
Aug	1.68	1.99	2.40	2.74	3.05	3.36	3.69	4.07	4.55	5.26	5.91
Sep	1.04	1.35	1.79	2.18	2.54	2.92	3.34	3.83	4.45	5.43	6.32
Oct	.79	1.03	1.38	1.67	1.96	2.26	2.59	2.98	3.47	4.24	4.96
Nov	.68	.92	1.29	1.61	1.92	2.25	2.62	3.05	3.62	4.50	5.33
Dec	.51	.65	.85	1.02	1.18	1.34	1.52	1.73	2.00	2.41	2.79
Ann	22.29	23.54	25.12	26.31	27.35	28.35	29.37	30.49	31.84	33.77	35.42

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	13.1	13.4	13	9
Feb	8.8	8.6	11	12
Mar	9.9	9.0	6	1
Apr	2.3	1.1	1	0
May	.1	.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	4.3	3.7	#	0
Dec	12.6	11.5	3	2
Ann	51.2	47.3	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	10.8	1988	20	26.3	1971	42	1971	31	34	1971
Feb	7.0	1974	22	22.9	1971	31	1971	23	29	1971
Mar	10.8	1975	24	23.1	1972	30	1972	8	24	1971
Apr	7.2	1993	16	11.9	1993	21	1971	2	6	1971
May	2.8	1990	10	2.8	1990	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	.8	1989	20	.8	1989	#	1989	20	#	1989
Nov	9.2	1985	22	18.9	1985	7	1977	11	1	1977
Dec	8.0	1987	15	23.6	1977	16	1977	13	8	1977
Ann	10.8+	Jan 1988	20	26.3	Jan 1971	42	Jan 1971	31	34	Jan 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	8.9	5.1	1.2	.2	.1
Feb	7.1	3.3	.6	.2	.0
Mar	5.5	2.8	1.0	.6	.1
Apr	1.1	.6	.3	.1	.0
May	.1	.1	.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	.0	.0	.0	.0
Nov	3.2	1.3	.3	.1	.0
Dec	7.7	4.3	1.4	.5	.0
Ann	33.7	17.5	4.8	1.7	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	-9.9	-9.9	-9.9	-9.9
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	.0	.0	.0	.0
Nov	-9.9	-9.9	-9.9	-9.9
Dec	-9.9	-9.9	-9.9	-9.9
Ann	-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	6/06	6/01	5/27	5/24	5/21	5/17	5/14	5/10	5/04
32	5/30	5/23	5/18	5/14	5/10	5/06	5/02	4/28	4/21
28	5/08	5/04	5/01	4/29	4/26	4/24	4/21	4/18	4/14
24	4/25	4/21	4/18	4/16	4/13	4/11	4/09	4/06	4/02
20	4/17	4/13	4/10	4/07	4/05	4/02	3/31	3/28	3/24
16	4/12	4/07	4/04	4/01	3/29	3/26	3/24	3/20	3/16

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	9/11	9/16	9/20	9/23	9/26	9/29	10/02	10/06	10/11
32	9/21	9/28	10/02	10/06	10/10	10/13	10/17	10/22	10/28
28	10/07	10/13	10/17	10/21	10/25	10/29	11/01	11/06	11/12
24	10/24	10/29	11/01	11/04	11/07	11/10	11/12	11/16	11/21
20	10/31	11/07	11/11	11/15	11/19	11/22	11/26	12/01	12/07
16	11/08	11/14	11/19	11/23	11/26	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	147	140	136	132	128	124	120	115	109
32	175	167	161	156	152	147	142	136	128
28	203	196	190	185	181	177	172	167	159
24	221	216	213	210	207	204	201	197	192
20	246	239	235	231	227	224	220	215	209
16	266	258	252	247	242	237	231	225	217

***** 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	1517	1321	1184	807	440	157	49	71	234	567	923	1314	8584
60	1362	1181	1029	657	300	68	9	18	118	415	773	1159	7089
57	1269	1097	936	567	227	35	1	7	67	328	683	1066	6283
55	1207	1041	874	508	184	20	0	2	44	274	623	1004	5781
50	1052	901	719	363	97	4	0	0	10	158	474	849	4627
32	507	412	216	28	0	0	0	0	0	3	79	351	1596

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	13	16	55	211	588	858	1071	1041	765	459	146	60	5283
55	0	0	0	1	59	188	358	330	118	17	0	0	1071
57	0	0	0	0	40	143	297	272	82	9	0	0	843
60	0	0	0	0	20	86	212	191	42	3	0	0	554
65	0	0	0	0	5	25	96	88	9	0	0	0	223
70	0	0	0	0	0	3	27	26	1	0	0	0	57

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	1	57	347	615	817	778	533	233	32	0	0	0	1	58	405	1020	1837	2615	3148	3381	3413	3413
45	0	0	0	16	209	465	662	623	386	120	9	0	0	0	0	16	225	690	1352	1975	2361	2481	2490	2490
50	0	0	0	1	102	318	507	468	245	45	0	0	0	0	0	1	103	421	928	1396	1641	1686	1686	1686
55	0	0	0	0	42	184	353	315	131	11	0	0	0	0	0	0	42	226	579	894	1025	1036	1036	1036
60	0	0	0	0	10	87	208	176	50	0	0	0	0	0	0	0	10	97	305	481	531	531	531	531
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	1	21	161	344	513	479	284	89	8	0	0	0	1	22	183	527	1040	1519	1803	1892	1900	1900

(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