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: SAULT STE MARIE AP, MI **COOP ID: 207366**

Climate Division: MI 2 **NWS Call Sign: ANJ** **Elevation: 718 Feet** **Lat: 46˚28N** **Lon: 84˚21W**

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	21.5	4.9	13.2	54	1932	7	23.5	1990	-36	1982	10	.8	1994	1606	0	.0	.0	.0	25.9	30.7	11.8
Feb	24.5	6.6	15.6	49+	1999	11	29.1	1998	-37	1934	8	5.2	1979	1399	0	.0	.0	.0	21.2	27.7	9.8
Mar	33.6	16.1	24.9	75	1946	28	35.0	1973	-28	1948	11	19.0	1972	1253	0	.0	.0	2.0	13.4	28.4	3.9
Apr	48.0	28.8	38.4	85	1990	25	45.9	1987	-2	1982	5	31.7	1982	798	1	.0	.0	12.9	2.0	20.5	@
May	63.2	39.3	51.3	89+	1937	30	57.6	1998	18	1966	7	44.7	1997	434	6	.0	.0	27.5	.0	6.7	.0
Jun	70.7	46.5	58.6	93	1983	26	63.4	1995	26	1982	3	51.5	1982	212	20	.0	.2	29.8	.0	.9	.0
Jul	75.7	52.0	63.9	97+	1931	1	69.2	1983	36+	1950	14	57.4	1992	91	56	.0	.8	31.0	.0	.0	.0
Aug	74.1	52.4	63.3	98+	1947	6	68.5	1998	29	1982	29	57.3	1977	107	50	.0	.3	31.0	.0	@	.0
Sep	64.8	44.8	54.8	95	1976	8	60.3	1998	25+	1981	23	50.3	1981	320	12	.0	@	29.2	.0	1.9	.0
Oct	52.8	36.0	44.4	81	1938	12	50.9	1971	16+	1933	28	37.7	1980	642	0	.0	.0	20.2	.1	10.7	.0
Nov	38.9	25.9	32.4	74	1938	3	38.2	1999	-10+	1936	30	25.7	1995	979	0	.0	.0	4.0	7.3	22.3	.2
Dec	27.2	13.1	20.2	62	2001	5	29.3	1994	-31	1993	26	7.3	1989	1383	0	.0	.0	.2	20.3	29.6	5.7
Ann	49.6	30.5	40.1	98+	Aug 1947	6	69.2	Jul 1983	-37	Feb 1934	8	.8	Jan 1994	9224	145	.0	1.3	187.8	90.2	179.4	31.4

\+ 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: 1931-2001

(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	2.64	2.50	1.21	1988	5	4.52	1982	.68	1981
Feb	1.60	1.21	1.00	1977	24	3.74	1971	.21	1993
Mar	2.41	2.34	1.38	1971	15	4.97	1976	.35	1993
Apr	2.57	2.44	2.35	1954	26	4.36	1985	.94	2000
May	2.50	2.16	5.08	1970	31	5.21	1973	.62	1996
Jun	3.00	2.86	2.39	1969	26	5.59	1981	.52	1988
Jul	3.14	3.28	2.23	1955	15	7.23	1996	.57	1989
Aug	3.47	3.31	5.92	1974	3	9.48	1974	1.27	1975
Sep	3.71	3.36	2.20	1984	12	6.71	1978	1.05	1989
Oct	3.32	3.22	1.86	1959	24	6.55	1995	1.16	1975
Nov	3.40	3.33	2.33	1988	5	7.72	1988	1.18	1999
Dec	2.91	2.72	1.46	1995	9	6.24	1995	.58	1994
Ann	34.67	34.99	5.92	Aug 1974	3	9.48	Aug 1974	.21	Feb 1993

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	19.9	8.8	.8	.1
Feb	13.9	4.8	.5	@
Mar	13.1	6.1	1.2	.1
Apr	10.7	6.1	1.5	.4
May	11.0	6.1	1.6	.3
Jun	11.2	6.6	1.8	.5
Jul	10.8	6.4	2.3	.6
Aug	11.4	7.1	1.9	.7
Sep	13.1	8.3	2.4	.7
Oct	14.5	8.3	1.8	.4
Nov	17.3	9.8	1.5	.4
Dec	19.6	9.0	1.1	.1
Ann	166.5	87.4	18.4	4.3

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	1.26	1.49	1.80	2.05	2.28	2.52	2.76	3.05	3.40	3.94	4.42
Feb	.38	.53	.76	.97	1.18	1.40	1.64	1.94	2.32	2.93	3.50
Mar	.65	.87	1.22	1.53	1.83	2.15	2.49	2.91	3.45	4.30	5.09
Apr	1.09	1.32	1.65	1.92	2.17	2.42	2.69	3.01	3.40	4.00	4.55
May	.82	1.05	1.40	1.70	1.99	2.28	2.61	2.98	3.47	4.23	4.93
Jun	1.04	1.33	1.74	2.09	2.42	2.76	3.14	3.57	4.13	4.99	5.78
Jul	.92	1.22	1.67	2.06	2.43	2.82	3.26	3.77	4.43	5.46	6.42
Aug	1.23	1.56	2.03	2.43	2.81	3.20	3.62	4.11	4.75	5.72	6.61
Sep	1.41	1.76	2.25	2.66	3.05	3.45	3.88	4.38	5.01	5.99	6.88
Oct	1.38	1.68	2.11	2.46	2.79	3.12	3.48	3.90	4.42	5.22	5.95
Nov	1.72	2.01	2.39	2.70	2.98	3.26	3.56	3.90	4.33	4.96	5.53
Dec	1.02	1.30	1.70	2.03	2.35	2.68	3.04	3.45	3.99	4.81	5.57
Ann	25.70	27.47	29.71	31.40	32.89	34.33	35.81	37.44	39.41	42.25	44.70

\+ 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: 1931-2001
(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	32.6	31.5	18	17	12.2	1972	25	50.4	1971	38	1982	17	28	1982	20.2	10.5	3.8	1.3	.2	31.0	30.7	30.2	26.6
Feb	19.5	17.0	21	21	8.3	1972	18	41.3	1972	40	1972	29	32	1996	14.7	6.2	2.0	.6	.0	28.3	28.3	28.3	27.4
Mar	15.0	15.4	17	16	9.6	1988	12	32.1	1976	50	1972	8	35	1972	10.9	4.6	1.5	.6	.0	28.7	27.6	26.4	23.6
Apr	7.1	5.0	4	4	9.0	1979	6	25.8	1982	26+	1972	6	16	1972	4.9	2.2	.8	.3	.0	11.5	9.5	7.6	4.7
May	.2	.0	#	0	1.8	1976	5	1.8	1976	2	1984	1	#	1996	.5	.0	.0	.0	.0	.1	.0	.0	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1996	.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	.2	1991	26	.4	1991	#	1984	26	0	0	.2	.0	.0	.0	.0	.0	.0	.0	.0
Oct	2.5	.6	#	0	6.8	1972	18	10.8	1992	6	1972	19	#	1993	2.8	.8	.2	@	.0	.8	.3	@	.0
Nov	17.0	14.6	2	1	10.5	1989	16	46.8	1989	14+	1989	19	6	1989	11.6	5.8	1.5	.5	@	11.6	7.1	3.9	.8
Dec	35.4	29.0	9	7	26.6	1995	10	98.7	1995	49	1995	12	31	1995	18.9	10.3	4.2	1.6	.2	27.9	23.6	19.7	11.6
Ann	129.3	113.1	N/A	N/A	26.6	Dec 1995	10	98.7	Dec 1995	50	Mar 1972	8	35	Mar 1972	84.7	40.4	14.0	4.9	.4	139.9	127.1	116.1	94.7

+ 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	7/01	6/24	6/20	6/16	6/12	6/08	6/04	5/30	5/24
32	6/15	6/09	6/05	6/01	5/28	5/25	5/21	5/17	5/11
28	5/25	5/19	5/15	5/11	5/08	5/05	5/01	4/27	4/21
24	5/07	5/02	4/28	4/25	4/22	4/19	4/16	4/12	4/07
20	4/21	4/17	4/15	4/13	4/11	4/08	4/06	4/04	3/31
16	4/19	4/14	4/10	4/07	4/04	4/01	3/28	3/25	3/20

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	8/28	9/02	9/05	9/08	9/11	9/14	9/17	9/20	9/25
32	9/09	9/14	9/18	9/22	9/25	9/28	10/01	10/05	10/11
28	9/22	9/28	10/02	10/05	10/08	10/12	10/15	10/19	10/25
24	10/11	10/17	10/21	10/25	10/28	10/31	11/04	11/08	11/14
20	10/23	10/29	11/02	11/06	11/09	11/13	11/16	11/21	11/26
16	10/29	11/04	11/08	11/12	11/15	11/18	11/22	11/26	12/02

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	117	108	101	96	90	85	80	73	64
32	141	134	128	123	119	114	109	104	96
28	178	170	163	158	153	147	142	136	127
24	212	204	198	193	188	183	178	172	164
20	237	228	222	217	212	207	202	196	188
16	254	244	236	230	225	219	213	206	196

***** 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	1606	1399	1253	798	434	212	91	107	320	642	979	1383	9224
60	1450	1246	1090	648	302	116	35	51	183	487	827	1235	7670
57	1357	1162	997	560	232	71	15	24	121	398	737	1142	6816
55	1295	1106	935	503	192	48	8	14	87	341	677	1080	6286
50	1140	966	780	366	108	15	0	2	31	214	528	925	5075
32	595	478	273	51	2	0	0	0	0	7	92	411	1909

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	2	8	44	228	596	798	988	967	683	387	110	14	4825
55	0	0	0	6	61	148	279	261	87	9	0	0	851
57	0	0	0	4	44	111	222	206	63	5	0	0	655
60	0	0	0	2	24	66	146	133	36	2	0	0	409
65	0	0	0	1	6	20	56	50	12	0	0	0	145
70	0	0	0	0	1	4	14	12	3	0	0	0	34

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	6	91	364	567	749	731	451	183	28	0	0	0	6	97	461	1028	1777	2508	2959	3142	3170	3170
45	0	0	0	40	234	417	594	576	307	90	7	0	0	0	0	40	274	691	1285	1861	2168	2258	2265	2265
50	0	0	0	17	132	275	439	421	184	35	0	0	0	0	0	17	149	424	863	1284	1468	1503	1503	1503
55	0	0	0	7	66	153	288	271	92	6	0	0	0	0	0	7	73	226	514	785	877	883	883	883
60	0	0	0	1	25	71	154	139	37	1	0	0	0	0	0	1	26	97	251	390	427	428	428	428
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	3	60	225	342	463	442	251	88	9	0	0	0	3	63	288	630	1093	1535	1786	1874	1883	1883

(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