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: ST JAMES 2 S BEAVER IS, MI **COOP ID: 207277**

Climate Division: MI 3 **NWS Call Sign:** **Elevation: 670 Feet** **Lat: 45˚43N** **Lon: 85˚31W**

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	25.7	13.1	19.4	54	1953	31	27.7	1990	-23	1981	4	8.5	1994	1413	0	.0	.0	@	22.8	30.5	3.5
Feb	27.3	12.2	19.8	59	2000	26	30.9	1998	-25	1979	17	9.9	1979	1268	0	.0	.0	.3	19.2	27.7	4.5
Mar	35.7	20.2	28.0	68	1990	15	35.1	1973	-21	1962	2	20.7	1972	1149	0	.0	.0	2.7	10.8	28.4	1.3
Apr	48.0	30.9	39.5	82	1990	26	45.0	1987	7+	1954	4	33.8	1972	767	0	.0	.0	13.1	.9	18.2	.0
May	61.4	40.8	51.1	84	1972	24	57.4	1998	21+	1974	7	45.0	1983	437	6	.0	.0	28.3	.0	3.8	.0
Jun	70.3	50.0	60.2	91	1995	19	65.0	1991	31+	1958	9	55.3	1982	176	30	.0	@	30.0	.0	@	.0
Jul	75.6	56.7	66.2	94	1988	8	71.4	1983	35	2000	19	59.7	1992	62	97	.0	.1	31.0	.0	.0	.0
Aug	74.4	57.2	65.8	93	1988	2	70.6	1995	36	1982	29	60.3	1977	75	99	.0	.1	31.0	.0	.0	.0
Sep	66.3	50.1	58.2	90	1999	5	62.4	1998	27	2000	28	54.2	1975	216	10	.0	@	29.7	.0	.3	.0
Oct	54.9	40.4	47.7	81	1953	1	53.4	1971	21+	1959	19	43.5	1972	538	0	.0	.0	23.6	.0	4.4	.0
Nov	41.8	30.8	36.3	69	1990	1	42.3	1999	7+	1976	29	30.6	1995	862	0	.0	.0	5.9	3.7	17.4	.0
Dec	31.6	20.8	26.2	60+	2001	5	33.1	1994	-10	1976	29	15.7	1989	1204	0	.0	.0	.5	14.6	27.9	.4
Ann	51.1	35.3	43.2	94	Jul 1988	8	71.4	Jul 1983	-25	Feb 1979	17	8.5	Jan 1994	8167	242	.0	.2	196.1	72.0	158.6	9.7

\+ 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: 1952-2001

(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	2.30	1.74	1.35+	1996	23	5.88	1994	.42	1981
Feb	1.25	1.18	1.68	2001	19	2.35	1971	.15	1982
Mar	2.15	1.89	1.88	1966	25	5.29	1977	.10	1978
Apr	2.51	2.41	2.00	1973	21	4.86	1993	.87	1997
May	2.73	2.46	3.07	1964	22	5.42	1983	1.14	1977
Jun	2.57	2.35	2.18	1975	17	5.92	1990	.47	1983
Jul	2.64	2.52	3.58	1986	13	5.34	1996	.90	1998
Aug	3.17	3.06	2.90	1973	2	5.78	1972	.50	1991
Sep	3.70	3.55	3.75	2001	21	6.38	1986	.22	1979
Oct	3.11	3.06	3.75	2001	14	5.67	1995	.49	1975
Nov	2.55	2.42	2.38	1982	12	5.64	1992	.60	1976
Dec	2.20	2.12	2.25	1982	31	4.11	1971	.37	1994
Ann	30.88+	31.83+	3.75+	Oct 2001	14	6.38	Sep 1986	.10	Mar 1978

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.4	5.9	1.1	.2
Feb	8.1	4.0	.3	@
Mar	7.0	4.9	1.3	.2
Apr	7.9	5.3	1.6	.4
May	8.0	5.9	1.6	.5
Jun	8.5	5.9	1.6	.4
Jul	7.9	5.5	1.9	.5
Aug	8.1	6.2	2.2	.5
Sep	9.6	7.0	2.6	.9
Oct	8.4	6.1	2.2	.5
Nov	8.3	6.0	1.5	.4
Dec	10.9	5.9	.8	.3
Ann	104.1	68.6	18.7	4.8

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	.55	.76	1.10	1.40	1.69	2.01	2.36	2.78	3.33	4.20	5.02
Feb	.29	.40	.58	.75	.91	1.08	1.28	1.51	1.81	2.30	2.75
Mar	.28	.46	.76	1.06	1.38	1.72	2.13	2.62	3.30	4.40	5.46
Apr	.99	1.22	1.55	1.83	2.08	2.35	2.63	2.96	3.37	4.01	4.59
May	.99	1.25	1.62	1.93	2.22	2.53	2.85	3.24	3.72	4.47	5.16
Jun	.70	.94	1.31	1.64	1.96	2.29	2.66	3.10	3.67	4.57	5.40
Jul	.95	1.20	1.56	1.86	2.15	2.44	2.76	3.14	3.62	4.35	5.03
Aug	1.08	1.38	1.82	2.19	2.54	2.91	3.31	3.78	4.37	5.30	6.15
Sep	1.26	1.61	2.12	2.55	2.97	3.40	3.86	4.41	5.10	6.18	7.18
Oct	1.13	1.42	1.84	2.19	2.53	2.88	3.25	3.69	4.24	5.10	5.89
Nov	.87	1.11	1.46	1.76	2.05	2.34	2.66	3.04	3.52	4.26	4.95
Dec	.63	.84	1.16	1.43	1.70	1.97	2.28	2.64	3.11	3.85	4.53
Ann	23.57	25.03	26.87	28.25	29.47	30.64	31.84	33.15	34.74	37.03	38.99

\+ 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: 1952-2001
(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	24.0	27.5	10	9	12.0	1988	20	39.0	1989	34	1979	25	25	1979	8.8	7.3	3.5	1.7	.2	-9.9	-9.9	-9.9	-9.9
Feb	15.9	18.0	13	12	9.0	1988	7	30.0	1988	37	1979	16	34	1979	6.1	5.4	2.4	.7	.0	-9.9	-9.9	-9.9	-9.9
Mar	11.7	14.0	6	3	14.0	1989	4	22.1	1988	34	1979	1	22	1972	4.2	3.8	1.6	.7	.1	-9.9	-9.9	-9.9	-9.9
Apr	3.8	3.0	1	0	10.0	1991	10	13.0	1979	16	1971	3	5	1972	1.5	1.3	.5	.3	@	4.3	2.6	2.4	1.1
May	.2	.0	#	0	4.0	1994	1	4.0	1994	1	1979	5	#	1979	.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	#	1991	26	#	1991	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	#	.0	#	0	#	1997	21	#+	1997	#	1997	21	#	1997	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	6.4	5.0	#	0	9.0	1989	28	25.0	1991	10	1976	9	2	1979	2.1	2.0	1.0	.4	.0	-9.9	-9.9	-9.9	-9.9
Dec	19.0	18.0	3	1	20.0	1995	14	51.7	1985	15	1972	18	12	1972	5.6	5.2	2.6	1.4	.1	-9.9	-9.9	-9.9	-9.9
Ann	81.0	85.5	N/A	N/A	20.0	Dec 1995	14	51.7	Dec 1985	37	Feb 1979	16	34	Feb 1979	28.4	25.1	11.6	5.2	.4	-9.9	-9.9	-9.9	-9.9

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	6/26	6/18	6/12	6/07	6/02	5/28	5/23	5/17	5/09
32	5/28	5/23	5/20	5/17	5/14	5/11	5/08	5/05	4/30
28	5/15	5/10	5/07	5/04	5/02	4/29	4/27	4/23	4/19
24	4/28	4/23	4/20	4/17	4/14	4/11	4/08	4/04	3/30
20	4/17	4/13	4/10	4/08	4/06	4/03	4/01	3/29	3/25
16	4/14	4/09	4/05	4/02	3/30	3/27	3/24	3/21	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	9/17	9/22	9/25	9/29	10/02	10/06	10/11	10/17
32	9/27	10/01	10/05	10/08	10/11	10/14	10/17	10/20	10/25
28	10/02	10/09	10/13	10/17	10/21	10/25	10/29	11/02	11/09
24	10/27	11/01	11/06	11/09	11/13	11/16	11/20	11/24	11/30
20	11/09	11/15	11/19	11/22	11/26	11/29	12/02	12/06	12/12
16	11/16	11/22	11/27	12/01	12/04	12/08	12/11	12/16	12/22

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	150	139	131	124	118	112	105	97	86
32	167	161	156	153	149	145	141	137	131
28	195	187	181	176	172	167	162	156	148
24	236	228	222	217	212	208	202	197	188
20	253	246	241	237	233	229	225	220	213
16	273	264	258	253	248	243	238	232	223

***** 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	1413	1268	1149	767	437	176	62	75	216	538	862	1204	8167
60	1258	1128	994	617	298	85	15	21	103	387	712	1049	6667
57	1165	1044	901	529	225	48	5	9	56	302	622	956	5862
55	1103	988	839	470	183	30	1	4	35	249	562	894	5358
50	948	848	684	329	97	7	0	0	7	138	413	739	4210
32	413	367	186	25	1	0	0	0	0	1	45	258	1296

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	23	23	60	247	592	844	1058	1047	785	486	173	77	5415
55	0	0	0	3	61	184	346	338	130	21	0	0	1083
57	0	0	0	1	42	142	288	281	91	12	0	0	857
60	0	0	0	0	22	89	205	201	48	4	0	0	569
65	0	0	0	0	6	30	97	99	10	0	0	0	242
70	0	0	0	0	0	6	30	34	1	0	0	0	71

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	13	88	358	612	818	810	555	263	49	2	0	0	13	101	459	1071	1889	2699	3254	3517	3566	3568
45	0	0	1	38	223	462	663	655	407	141	15	0	0	0	1	39	262	724	1387	2042	2449	2590	2605	2605
50	0	0	0	12	116	313	508	500	262	62	2	0	0	0	0	12	128	441	949	1449	1711	1773	1775	1775
55	0	0	0	3	47	180	355	346	143	24	0	0	0	0	0	3	50	230	585	931	1074	1098	1098	1098
60	0	0	0	0	11	81	204	198	60	4	0	0	0	0	0	0	11	92	296	494	554	558	558	558
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	7	56	199	355	513	507	302	116	13	0	0	1	8	64	263	618	1131	1638	1940	2056	2069	2069

(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