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: MARSHFIELD EXP FARM, WI **COOP ID: 475120**

Climate Division: WI 5 **NWS Call Sign:** **Elevation: 1,250 Feet** **Lat: 44˚38N** **Lon: 90˚08W**

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	21.2	2.1	11.7	55	1981	25	22.5	1990	-37	1963	23	-.9	1977	1654	0	.0	.0	@	23.9	30.9	12.9
Feb	27.5	7.6	17.6	58	2000	27	30.6	1998	-33+	1996	3	6.9	1979	1329	0	.0	.0	.5	16.7	27.5	7.4
Mar	39.0	19.6	29.3	80+	1986	31	38.5	2000	-28	1962	1	21.5	1975	1107	0	.0	.0	5.6	6.9	26.7	2.3
Apr	54.9	32.7	43.8	91	1980	22	50.2	1987	-1	1924	1	36.2	1975	637	1	.0	@	21.1	.5	14.9	.0
May	67.6	44.0	55.8	105	1934	31	63.1	1977	19	1966	9	49.5	1983	316	29	.0	@	30.4	.0	2.8	.0
Jun	76.9	53.7	65.3	100	1934	1	69.9	1995	26	1927	12	59.2	1982	79	88	.0	1.8	30.0	.0	@	.0
Jul	81.1	58.4	69.8	104+	1995	13	74.2	1988	38+	1972	4	65.2	1971	12	163	.1	3.5	31.0	.0	.0	.0
Aug	78.4	56.0	67.2	102+	1988	16	73.3	1995	28	1915	30	62.3	1992	57	125	.1	1.9	31.0	.0	.0	.0
Sep	69.3	46.3	57.8	97+	1985	7	63.6	1998	20+	1976	28	52.5	1974	232	16	.0	.4	29.7	.0	1.4	.0
Oct	57.7	35.4	46.6	90	1976	1	52.5	1971	1	1925	30	41.2	1987	572	0	.0	@	25.2	@	10.8	.0
Nov	40.0	22.6	31.3	80	1930	10	40.2	1999	-18	1950	24	23.8	1976	1012	0	.0	.0	6.7	6.4	24.5	.6
Dec	25.8	8.7	17.3	63	1998	4	26.4	1997	-29+	1924	28	6.3	1983	1480	0	.0	.0	.5	20.5	30.6	7.5
Ann	53.3	32.3	42.8	105	May 1934	31	74.2	Jul 1988	-37	Jan 1963	23	-.9	Jan 1977	8487	422	.2	7.6	211.7	74.9	170.1	30.7

\+ 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: 1913-2001

(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	.99	.80	1.12+	1996	18	2.53	1996	.06	1981
Feb	.88	.71	1.25	1938	13	2.96	1971	.00	1987
Mar	1.95	1.92	2.30	1990	14	4.18	1990	.10	1978
Apr	2.94	2.56	2.33	1922	11	5.73	1999	.46	1997
May	3.70	3.14	3.96	1968	16	10.41	1973	.97	1994
Jun	4.14	3.85	4.25	1940	18	9.56	1984	.73	1983
Jul	4.06	3.19	3.70	1937	4	10.51	1986	.51	1998
Aug	4.31	3.79	4.17	1926	20	9.63	1980	.71	1976
Sep	4.02	3.63	3.62	1938	9	9.80	1986	.30	1979
Oct	2.49	2.54	2.29	1995	6	5.62	1984	.26	2000
Nov	2.29	2.06	2.45	1919	10	5.75	1991	.02	1976
Dec	1.29	1.16	1.43	1972	30	3.65	1971	.26+	1994
Ann	33.06	33.95	4.25	Jun 1940	18	10.51	Jul 1986	.00	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.0	3.2	.3	@
Feb	6.8	2.5	.4	@
Mar	8.5	4.4	1.0	.3
Apr	10.3	6.4	1.9	.5
May	11.3	6.8	2.4	1.0
Jun	11.1	7.6	2.7	1.1
Jul	11.1	7.8	2.6	1.0
Aug	10.9	7.4	2.9	1.3
Sep	11.6	7.4	2.4	1.1
Oct	9.8	5.5	1.6	.5
Nov	9.3	5.0	1.4	.5
Dec	9.0	3.6	.4	.2
Ann	118.7	67.6	20.0	7.5

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	.21	.30	.44	.58	.71	.85	1.01	1.20	1.46	1.86	2.25
Feb	.07	.16	.30	.43	.57	.71	.88	1.08	1.36	1.81	2.24
Mar	.35	.52	.81	1.07	1.34	1.64	1.97	2.38	2.92	3.79	4.61
Apr	.87	1.15	1.57	1.93	2.28	2.65	3.06	3.53	4.15	5.12	6.02
May	1.32	1.67	2.17	2.60	3.00	3.41	3.87	4.39	5.06	6.09	7.04
Jun	.85	1.23	1.84	2.39	2.95	3.55	4.22	5.03	6.11	7.82	9.45
Jul	1.00	1.38	1.97	2.49	3.02	3.57	4.18	4.91	5.87	7.38	8.80
Aug	1.40	1.81	2.41	2.92	3.42	3.93	4.49	5.14	5.98	7.29	8.50
Sep	.72	1.07	1.66	2.21	2.77	3.37	4.06	4.90	6.01	7.81	9.52
Oct	.71	.95	1.31	1.62	1.92	2.24	2.59	3.00	3.53	4.37	5.15
Nov	.25	.43	.74	1.06	1.41	1.79	2.24	2.79	3.55	4.81	6.03
Dec	.21	.32	.51	.69	.87	1.07	1.29	1.57	1.94	2.54	3.11
Ann	24.49	26.17	28.32	29.93	31.36	32.74	34.15	35.71	37.60	40.32	42.66

\+ 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: 1913-2001
(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	9.5	9.5	8	8
Feb	7.6	8.0	7	5
Mar	9.1	7.8	2	1
Apr	3.0	2.0	#	0
May	#	.0	#	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.6	.0	#	0
Nov	5.1	3.5	1	0
Dec	10.8	9.2	4	0
Ann	45.7	40.0	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	10.5	1971	4	26.7	1971	22+	1971	31	17+	1972
Feb	10.0	1971	5	17.9	1971	36+	1971	15	30	1971
Mar	12.0	1997	14	27.0	1989	17+	1997	15	9	1979
Apr	6.0	1973	9	11.0	1993	4+	1993	11	1+	1994
May	#	1997	1	#+	1997	#	1997	1	#	2000
Jun	.0	0	0	.0	0	0	0	0	#	1988
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	3.5	1990	10	5.5	1990	2+	1995	21	#	1995
Nov	9.0	1991	24	21.0	1991	10+	1971	30	2+	2000
Dec	10.0	1985	1	27.8	1972	16+	1978	31	10	1978
Ann	12.0	Mar 1997	14	27.8	Dec 1972	36+	Feb 1971	15	30	Feb 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.1	3.4	1.3	.4	@
Feb	4.5	2.8	1.0	.2	@
Mar	3.7	2.9	1.2	.5	@
Apr	1.8	1.2	.4	@	.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	.3	.3	.1	.0	.0
Nov	2.8	1.8	.6	.2	.0
Dec	6.1	4.0	1.3	.6	@
Ann	25.3	16.4	5.9	1.9	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	27.4	25.6	22.4	9.4
Feb	23.9	21.2	17.3	7.8
Mar	11.4	7.0	4.7	1.2
Apr	1.0	.5	.0	.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	.0
Nov	3.7	2.2	1.2	.2
Dec	23.7	18.2	11.0	2.6
Ann	91.2	74.7	56.6	21.2

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

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	8/21	8/28	9/02	9/07	9/11	9/15	9/19	9/24	10/02
32	9/16	9/20	9/23	9/25	9/28	9/30	10/02	10/05	10/09
28	9/23	9/28	10/01	10/04	10/07	10/09	10/12	10/16	10/20
24	10/01	10/08	10/13	10/17	10/21	10/24	10/29	11/02	11/09
20	10/14	10/19	10/24	10/27	10/30	11/03	11/06	11/11	11/16
16	10/26	10/31	11/04	11/08	11/11	11/14	11/18	11/22	11/27

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	135	125	118	112	107	101	95	88	78
32	157	151	146	142	138	134	130	125	119
28	187	178	172	167	162	157	151	145	136
24	217	208	201	195	189	184	178	171	161
20	228	221	217	212	209	205	201	196	189
16	249	241	235	230	226	221	216	210	202

***** 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	1654	1329	1107	637	316	79	12	57	232	572	1012	1480	8487
60	1499	1189	952	491	204	28	2	16	122	421	862	1325	7111
57	1406	1105	859	407	150	12	0	6	73	335	772	1232	6357
55	1344	1049	797	355	118	7	0	2	49	282	712	1170	5885
50	1189	909	646	236	58	1	0	0	13	169	565	1015	4801
32	650	434	204	17	0	0	0	0	0	6	150	496	1957

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	19	30	120	371	736	999	1171	1091	774	457	128	39	5935
55	0	0	0	19	142	316	458	380	133	21	0	0	1469
57	0	0	0	11	111	261	396	321	97	12	0	0	1209
60	0	0	0	5	72	186	304	239	56	4	0	0	866
65	0	0	0	1	29	88	163	125	16	0	0	0	422
70	0	0	0	0	10	28	69	50	3	0	0	0	160

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	33	205	531	773	932	867	581	271	37	2	0	0	33	238	769	1542	2474	3341	3922	4193	4230	4232
45	0	0	15	118	384	623	777	712	434	158	18	0	0	0	15	133	517	1140	1917	2629	3063	3221	3239	3239
50	0	0	6	56	248	473	622	557	296	79	2	0	0	0	6	62	310	783	1405	1962	2258	2337	2339	2339
55	0	0	0	21	144	328	467	402	176	34	0	0	0	0	0	21	165	493	960	1362	1538	1572	1572	1572
60	0	0	0	8	70	204	313	253	92	8	0	0	0	0	0	8	78	282	595	848	940	948	948	948
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	25	140	336	496	616	563	358	162	21	0	0	0	25	165	501	997	1613	2176	2534	2696	2717	2717

(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