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: SPOONER EXPERMNT FARM, WI **COOP ID: 478027**

Climate Division: WI 1 **NWS Call Sign:** **Elevation: 1,100 Feet** **Lat: 45˚49N** **Lon: 91˚53W**

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	21.8	.0	10.9	57	1973	25	23.7	1990	-45	1935	23	.2	1982	1678	0	.0	.0	.1	25.4	30.9	15.2
Feb	29.5	6.4	18.0	61	2000	29	31.2	1998	-46	1936	16	8.3	1989	1317	0	.0	.0	.9	16.6	27.5	10.1
Mar	41.0	18.8	29.9	81	1946	28	39.3	2000	-38	1962	1	21.3	1975	1088	0	.0	.0	6.4	6.9	27.0	3.6
Apr	57.2	31.5	44.4	90+	1980	21	51.5	1987	-6	1924	1	37.4	1975	621	1	.0	@	21.9	.6	16.5	.1
May	70.7	43.4	57.1	104	1934	31	65.0	1977	15	1966	9	51.4	1997	286	38	.0	@	30.3	.0	4.8	.0
Jun	78.0	52.2	65.1	100+	1933	20	69.6	1988	25	1945	4	59.6	1982	83	85	.0	1.1	30.0	.0	.3	.0
Jul	81.6	57.2	69.4	110+	1936	13	74.2	1988	35	1946	2	63.1	1992	27	164	.1	2.6	31.0	.0	.0	.0
Aug	79.3	55.1	67.2	104	1947	4	71.6	1995	29	1934	28	62.8	1977	53	121	.0	1.1	31.0	.0	@	.0
Sep	70.1	46.7	58.4	98	1931	10	64.9	1998	18	1947	25	52.5	1974	218	20	.0	.1	29.6	.0	2.3	.0
Oct	58.3	36.0	47.2	87+	1953	2	52.8	1971	2	1933	25	41.2	1976	555	0	.0	.0	24.1	.1	12.0	.0
Nov	39.4	22.7	31.1	74	1978	3	40.0	1999	-22	1976	30	23.5	1995	1018	0	.0	.0	5.8	9.0	25.3	1.4
Dec	25.5	7.2	16.4	60	1998	2	25.6	1997	-44	1983	19	3.9	1983	1508	0	.0	.0	.4	22.6	30.7	10.0
Ann	54.4	31.4	42.9	110+	Jul 1936	13	74.2	Jul 1988	-46	Feb 1936	16	.2	Jan 1982	8452	429	.1	4.9	211.5	81.2	177.3	40.4

\+ 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: 1911-2001

(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	.86	.82	1.35	1996	18	2.07	1996	.05	1981
Feb	.66	.49	1.50	1948	28	2.68	1981	.06	1988
Mar	1.43	1.28	1.55	1922	18	2.93	1998	.33	1987
Apr	2.20	2.34	2.43	2001	23	4.02	1992	.23	1997
May	3.10	3.01	4.41	1918	9	6.88	1991	.49	1976
Jun	3.98	3.67	4.00	1956	14	7.36	1984	1.27	1987
Jul	4.22	3.44	3.73	1987	24	9.59	1986	.86	1975
Aug	4.64	4.42	4.20	1953	1	10.08	1995	1.14	1976
Sep	3.68	3.40	3.33	1957	2	8.10	1980	.65	2000
Oct	2.58	2.23	2.55	1950	2	5.89	1995	.56	1976
Nov	1.87	1.56	2.07	1991	1	5.62	1991	.19	1981
Dec	.84	.82	1.18	1982	28	2.30	1982	.13	1974
Ann	30.06	29.88	4.41	May 1918	9	10.08	Aug 1995	.05	Jan 1981

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.5	2.9	.1	@
Feb	6.0	2.0	.2	@
Mar	6.9	3.9	.6	.1
Apr	8.5	5.4	1.3	.4
May	10.8	6.4	2.0	.6
Jun	12.3	7.9	2.8	.7
Jul	10.3	6.8	2.9	1.1
Aug	10.8	7.3	3.3	1.6
Sep	10.9	7.0	2.5	.7
Oct	9.6	6.0	1.5	.5
Nov	8.2	4.4	1.1	.2
Dec	7.9	2.7	.3	@
Ann	110.7	62.7	18.6	5.9

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	.17	.24	.37	.49	.61	.73	.88	1.05	1.28	1.66	2.01
Feb	.07	.12	.21	.30	.40	.51	.64	.81	1.03	1.40	1.76
Mar	.41	.55	.75	.93	1.10	1.28	1.48	1.71	2.02	2.49	2.94
Apr	.41	.60	.93	1.23	1.53	1.86	2.23	2.68	3.28	4.25	5.17
May	1.04	1.34	1.77	2.13	2.48	2.84	3.23	3.69	4.28	5.19	6.03
Jun	1.85	2.19	2.67	3.06	3.42	3.78	4.17	4.61	5.17	6.00	6.76
Jul	1.04	1.43	2.05	2.59	3.14	3.71	4.35	5.11	6.10	7.68	9.16
Aug	1.71	2.15	2.77	3.30	3.79	4.30	4.85	5.50	6.31	7.57	8.73
Sep	.89	1.23	1.77	2.25	2.72	3.23	3.79	4.46	5.33	6.73	8.03
Oct	.77	1.02	1.39	1.70	2.01	2.33	2.68	3.10	3.64	4.47	5.25
Nov	.27	.43	.70	.96	1.23	1.53	1.87	2.29	2.85	3.77	4.66
Dec	.17	.24	.37	.48	.60	.72	.86	1.03	1.25	1.61	1.94
Ann	20.55	22.37	24.71	26.49	28.09	29.63	31.24	33.01	35.18	38.33	41.07

\+ 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: 1911-2001
(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	11.9	10.8	10	10	10.0	1997	4	26.7	1976	31	1972	31	21	1976	7.5	4.3	1.4	.6	@	28.9	27.1	23.9	14.5
Feb	6.4	5.7	11	9	8.7	1990	16	17.1	1971	40	1971	10	28+	1972	4.9	3.1	.6	.2	.0	24.9	23.2	20.7	13.2
Mar	8.8	8.1	7	5	18.0	1996	25	24.3	1985	31	1972	5	18	1976	3.6	2.5	1.0	.4	.1	13.4	10.4	8.3	5.9
Apr	2.4	.5	1	#	10.5	1974	1	12.5	1974	12	1996	1	7	1996	1.0	.8	.2	.2	@	1.4	1.0	.6	@
May	#	.0	#	0	#	1996	1	#+	1996	#+	1996	1	#+	1996	.0	.0	.0	.0	.0	.0	.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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.7	.0	#	0	4.1	1989	31	4.1	1989	3	1986	14	#+	2000	.3	.3	.1	.0	.0	.1	.1	.0	.0
Nov	6.1	3.8	2	1	14.0	1991	30	24.8	1985	16	1991	30	9	1991	3.9	2.6	.9	.3	@	7.2	4.4	2.6	.2
Dec	10.5	10.4	5	4	12.0	1982	28	20.3	2000	18	1991	5	14	1985	7.4	3.9	.9	.2	@	24.0	19.0	13.1	5.1
Ann	46.8	39.3	N/A	N/A	18.0	Mar 1996	25	26.7	Jan 1976	40	Feb 1971	10	28+	Feb 1972	28.6	17.5	5.1	1.9	.1	99.9	85.2	69.2	38.9

+ 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	6/19	6/14	6/10	6/07	6/04	6/02	5/30	5/26	5/21
32	6/09	6/03	5/29	5/25	5/21	5/17	5/13	5/08	5/01
28	5/21	5/16	5/13	5/10	5/07	5/04	5/02	4/28	4/24
24	5/08	5/03	4/29	4/26	4/24	4/21	4/18	4/14	4/09
20	4/25	4/21	4/18	4/15	4/13	4/10	4/08	4/05	3/31
16	4/16	4/12	4/09	4/06	4/04	4/02	3/30	3/27	3/23

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	117	110	104	100	95	91	86	81	73
32	146	139	133	128	124	119	115	109	101
28	165	159	154	150	146	142	138	133	127
24	200	191	185	180	175	170	165	159	150
20	221	213	207	202	198	193	188	183	175
16	237	229	224	219	214	210	205	200	192

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1678	1317	1088	621	286	83	27	53	218	555	1018	1508	8452
60	1523	1177	933	477	181	28	5	14	113	405	868	1353	7077
57	1430	1093	840	395	131	12	0	4	68	321	778	1260	6332
55	1368	1037	778	344	102	7	0	2	46	270	718	1198	5870
50	1213	897	631	228	48	1	0	0	12	160	572	1043	4805
32	675	437	201	17	0	0	0	0	0	5	158	521	2014

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	19	44	136	387	776	992	1160	1091	793	474	130	36	6038
55	0	0	0	24	165	308	447	380	149	26	0	0	1499
57	0	0	0	15	131	254	385	320	111	15	0	0	1231
60	0	0	0	7	89	180	297	237	66	6	0	0	882
65	0	0	0	1	38	85	164	121	20	0	0	0	429
70	0	0	0	0	14	26	72	46	4	0	0	0	162

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	2	31	193	536	754	921	846	555	255	33	2	0	2	33	226	762	1516	2437	3283	3838	4093	4126	4128
45	0	1	11	108	386	604	766	691	408	144	14	0	0	1	12	120	506	1110	1876	2567	2975	3119	3133	3133
50	0	0	4	56	252	454	611	536	274	75	3	0	0	0	4	60	312	766	1377	1913	2187	2262	2265	2265
55	0	0	0	24	150	311	456	383	163	32	0	0	0	0	0	24	174	485	941	1324	1487	1519	1519	1519
60	0	0	0	7	75	183	305	243	81	8	0	0	0	0	0	7	82	265	570	813	894	902	902	902
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	21	138	347	486	603	555	340	157	18	0	0	1	22	160	507	993	1596	2151	2491	2648	2666	2666

(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