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: HORICON, WI **COOP ID: 473756**

Climate Division: WI 8 **NWS Call Sign:** **Elevation: 880 Feet** **Lat: 43˚26N** **Lon: 88˚38W**

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	25.4	6.6	16.0	55	1996	19	26.2	1989	-36	1994	19	3.1	1977	1519	0	.0	.0	.3	21.5	30.8	10.5
Feb	30.0	11.2	20.6	63	2000	27	33.0	1998	-30	1996	3	9.8	1979	1243	0	.0	.0	1.0	15.5	27.2	6.6
Mar	41.6	23.0	32.3	80	1986	30	40.7	2000	-10	1978	5	25.4	1975	1014	0	.0	.0	7.6	5.6	25.6	1.1
Apr	55.5	35.1	45.3	89+	1980	23	51.8	1977	9	1982	7	39.0	1975	592	2	.0	.0	21.3	.4	11.9	.0
May	68.6	46.9	57.8	93	1978	28	65.9	1977	25+	1989	6	50.6	1997	271	46	.0	.3	30.4	.0	1.4	.0
Jun	77.8	56.6	67.2	99+	1988	21	71.4	1995	33+	1993	1	61.9	1982	49	115	.0	2.0	30.0	.0	.0	.0
Jul	81.8	61.4	71.6	101	1995	14	76.0	1983	42	1972	5	66.0	1996	13	218	@	3.9	31.0	.0	.0	.0
Aug	79.4	58.8	69.1	100+	1988	17	75.0	1995	38	1986	27	64.8	1992	35	162	.1	2.0	31.0	.0	.0	.0
Sep	71.6	49.6	60.6	95+	1978	9	65.2	1998	24	1993	30	54.9	1993	159	27	.0	.4	29.9	.0	.8	.0
Oct	59.9	38.5	49.2	87	1971	1	57.3	1971	14	1988	30	43.0	1988	492	2	.0	.0	26.2	.0	9.0	.0
Nov	43.9	26.8	35.4	74	1999	10	42.6	1999	-10	1976	29	26.6	1996	890	0	.0	.0	9.1	4.3	22.0	.3
Dec	30.6	13.9	22.3	66	2001	6	30.9	1982	-25	1983	24	10.9+	1989	1326	0	.0	.0	1.1	16.0	29.9	5.7
Ann	55.5	35.7	45.6	101	Jul 1995	14	76.0	Jul 1983	-36	Jan 1994	19	3.1	Jan 1977	7603	572	.1	8.6	218.9	63.3	158.6	24.2

\+ 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: 1970-2001

(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	1.15	1.16	1.14	1974	26	2.72	1974	.14	1981
Feb	1.10	1.02	1.13	2001	9	2.74	1971	.02	1995
Mar	2.07	1.71	3.05	1998	31	5.25	1976	.15	1978
Apr	3.33	3.29	2.79	1999	23	7.24	1999	1.36	1989
May	3.13	3.09	3.50	1978	13	6.06	1973	.58	1992
Jun	3.91	4.38	3.15	1991	14	7.60	1996	.96	1987
Jul	4.33	4.39	5.94	1999	21	10.97	1999	1.30	1998
Aug	4.05	3.75	3.27	1995	10	10.16	1995	1.09	1984
Sep	3.76	2.89	5.79	1986	10	14.72	1986	.20	1979
Oct	2.64	2.42	2.40	1984	19	5.86	1995	.78	1997
Nov	2.11	2.01	1.70	1971	2	5.75	1982	.20	1976
Dec	1.47	1.50	1.60	1971	15	4.02	1971	.19	1993
Ann	33.05	33.49	5.94	Jul 1999	21	14.72	Sep 1986	.02	Feb 1995

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.9	3.8	.4	@
Feb	6.3	3.5	.6	.0
Mar	8.3	4.8	1.3	.3
Apr	9.9	7.1	2.2	.6
May	10.0	6.9	2.0	.5
Jun	9.1	7.0	2.8	1.1
Jul	9.7	7.1	2.8	1.1
Aug	9.5	7.3	2.9	1.2
Sep	8.6	6.5	2.4	.8
Oct	8.5	5.9	2.0	.3
Nov	8.8	5.2	1.5	.4
Dec	8.3	4.4	.8	.1
Ann	104.9	69.5	21.7	6.4

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	.22	.32	.49	.65	.80	.97	1.17	1.40	1.71	2.21	2.68
Feb	.12	.20	.36	.51	.67	.86	1.07	1.34	1.71	2.31	2.90
Mar	.24	.40	.69	.98	1.29	1.63	2.03	2.53	3.20	4.31	5.39
Apr	1.40	1.71	2.13	2.48	2.81	3.14	3.49	3.90	4.42	5.21	5.93
May	.94	1.24	1.69	2.07	2.44	2.82	3.25	3.75	4.39	5.40	6.33
Jun	1.29	1.66	2.21	2.67	3.12	3.58	4.08	4.67	5.43	6.60	7.68
Jul	1.62	2.02	2.60	3.09	3.55	4.02	4.53	5.12	5.88	7.04	8.10
Aug	1.42	1.80	2.36	2.82	3.27	3.73	4.23	4.82	5.57	6.72	7.79
Sep	.43	.71	1.24	1.76	2.32	2.95	3.68	4.60	5.84	7.88	9.88
Oct	.74	.99	1.37	1.70	2.02	2.36	2.73	3.17	3.75	4.65	5.48
Nov	.42	.61	.92	1.20	1.49	1.80	2.15	2.57	3.13	4.02	4.87
Dec	.30	.43	.65	.85	1.05	1.26	1.50	1.79	2.18	2.79	3.38
Ann	25.38	26.91	28.85	30.30	31.58	32.81	34.07	35.45	37.12	39.52	41.57

\+ 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: 1970-2001
(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	11.7	10.0	7	5
Feb	6.4	5.7	6	4
Mar	5.6	4.0	1	1
Apr	2.1	.1	#	#
May	.2	.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	2.0	.8	#	#
Dec	9.7	7.7	3	2
Ann	37.8	28.3	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	16.0	1979	13	40.0	1979	58	1979	27	41	1979
Feb	6.8	1994	23	26.3	1994	52	1979	2	30	1979
Mar	9.0	1972	29	14.0	1972	15	1994	2	4	1986
Apr	7.2	1997	13	10.0	1997	8	1997	13	1	1997
May	3.0	1994	1	3.0	1994	3	1994	1	#+	1997
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	1.0	1992	20	1.0+	1997	2	1990	14	#+	1997
Nov	7.2	1995	28	11.5	1971	8	1995	30	1+	2000
Dec	12.0	1990	3	33.4	2000	22	2000	24	12	2000
Ann	16.0	Jan 1979	13	40.0	Jan 1979	58	Jan 1979	27	41	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.6	3.8	1.1	.4	.1
Feb	4.1	2.6	.7	.3	.0
Mar	2.7	1.9	.7	.3	.0
Apr	.7	.6	.3	.1	.0
May	.1	.1	@	.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	.2	.1	.0	.0	.0
Nov	1.7	1.2	.2	@	.0
Dec	4.9	3.4	1.1	.4	@
Ann	20.0	13.7	4.1	1.5	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	22.7	15.8	13.3	4.2
Feb	21.3	16.6	12.0	6.2
Mar	8.5	4.8	2.7	.3
Apr	1.2	.6	.1	.0
May	.1	@	.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	3.1	.9	.4	.0
Dec	18.5	9.5	5.6	1.5
Ann	75.5	48.2	34.1	12.2

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

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

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	108
32	170	164	160	156	153	149	146	141	135
28	203	193	187	181	175	170	164	157	148
24	222	214	209	204	199	195	190	184	176
20	242	234	229	224	220	216	211	206	199
16	267	257	251	245	240	234	229	222	213

***** 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	1519	1243	1014	592	271	49	13	35	159	492	890	1326	7603
60	1364	1103	859	448	171	13	0	8	68	349	740	1171	6294
57	1271	1019	766	366	122	5	0	2	35	271	651	1078	5586
55	1209	963	704	315	95	3	0	0	21	224	593	1016	5143
50	1054	823	557	201	45	0	0	0	4	129	453	862	4128
32	532	372	145	9	0	0	0	0	0	4	96	372	1530

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	36	54	154	408	799	1056	1228	1150	858	537	196	69	6545
55	0	0	0	24	181	369	515	437	188	44	3	0	1761
57	0	0	0	15	146	311	453	377	143	29	1	0	1475
60	0	0	0	7	101	229	360	290	86	14	0	0	1087
65	0	0	0	2	46	115	218	162	27	2	0	0	572
70	0	0	0	0	17	40	107	73	4	0	0	0	241

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	51	224	560	808	961	889	618	303	66	6	0	2	53	277	837	1645	2606	3495	4113	4416	4482	4488
45	0	0	25	131	409	658	806	734	471	185	27	1	0	0	25	156	565	1223	2029	2763	3234	3419	3446	3447
50	0	0	10	68	270	508	651	579	327	98	8	0	0	0	10	78	348	856	1507	2086	2413	2511	2519	2519
55	0	0	2	33	159	361	496	424	201	46	3	0	0	0	2	35	194	555	1051	1475	1676	1722	1725	1725
60	0	0	0	13	83	226	343	278	109	14	0	0	0	0	0	13	96	322	665	943	1052	1066	1066	1066
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	34	140	338	514	637	580	380	184	36	1	0	0	34	174	512	1026	1663	2243	2623	2807	2843	2844

(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