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: OCONOMOWOC, WI **COOP ID: 476200**

Climate Division: WI 9 **NWS Call Sign:** **Elevation: 856 Feet** **Lat: 43˚06N** **Lon: 88˚30W**

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	26.3	8.0	17.2	59	1997	5	29.1	1990	-33	1951	30	3.6	1977	1484	0	.0	.0	.6	21.1	30.3	10.0
Feb	31.3	13.1	22.2	64+	2000	27	34.9	1998	-29+	1996	4	11.4	1978	1198	0	.0	.0	1.5	14.6	26.6	5.7
Mar	42.9	24.5	33.7	81+	1986	31	41.6	1973	-19	1962	1	26.5	1984	970	0	.0	.0	8.3	5.2	24.3	.8
Apr	56.1	36.2	46.2	88+	1980	23	52.7	1977	4	1982	6	40.2	1975	567	1	.0	.0	21.0	.4	10.5	.0
May	68.8	47.0	57.9	94	1975	20	66.2	1977	23	1966	10	51.4	1997	263	42	.0	.3	30.3	.0	1.4	.0
Jun	77.9	56.4	67.2	100	1988	20	71.8	1971	34	1972	11	62.1	1982	50	115	@	1.9	30.0	.0	.0	.0
Jul	82.1	61.4	71.8	100+	1995	14	76.5	1980	42+	1972	5	66.6	1992	12	221	.1	4.1	31.0	.0	.0	.0
Aug	79.7	59.3	69.5	101	1988	17	75.6	1995	40+	1986	27	64.5	1992	33	173	.1	1.7	31.0	.0	.0	.0
Sep	71.9	50.1	61.0	98	1953	1	65.3	1971	26	1949	29	56.1	1993	153	33	.0	.5	29.9	.0	.6	.0
Oct	60.3	39.1	49.7	87+	1976	2	57.9	1971	14+	1988	29	42.7	1988	477	3	.0	.0	26.5	.0	7.7	.0
Nov	44.5	27.8	36.2	74+	2000	2	43.7	1975	-10	1976	29	27.8	1995	866	0	.0	.0	10.0	4.0	20.4	.3
Dec	31.4	15.3	23.4	67	2001	6	31.1	1979	-22	2000	26	11.4	1985	1291	0	.0	.0	1.4	15.5	28.9	4.9
Ann	56.1	36.5	46.3	101	Aug 1988	17	76.5	Jul 1980	-33	Jan 1951	30	3.6	Jan 1977	7364	588	.2	8.5	221.5	60.8	150.7	21.7

\+ 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: 1948-2001

(3) Derived from 1971-2000 serially complete daily data

Issue Date: February 2004

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Climate Division: WI 9 **NWS Call Sign:** **Elevation: 856 Feet** **Lat: 43˚06N** **Lon: 88˚30W**

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	1.32	1.16	1.20	1988	19	3.46	1999	.23	1981
Feb	1.20	1.02	1.41	1997	21	3.02	1997	.13	1995
Mar	1.96	2.01	2.53	1998	31	4.30	1998	.37	1978
Apr	3.25	3.04	2.37	1999	23	7.14	1993	1.26	1994
May	3.14	3.23	2.81	1958	31	8.54	2000	.69	1988
Jun	3.97	3.79	2.94	1986	26	8.69	1996	.62	1995
Jul	4.21	4.03	4.82	1952	18	7.76	1989	.98	1988
Aug	4.52	4.04	5.38	1995	10	11.39	1995	1.55	1973
Sep	3.69	3.57	3.91	1991	12	10.92	1986	.44+	1982
Oct	2.63	2.22	2.82	1984	31	7.51	1984	.32	1975
Nov	2.30	2.16	2.20	1982	1	6.00	1985	.39	1976
Dec	1.71	1.61	1.64	1971	15	3.84	1971	.27	1989
Ann	33.90	33.53	5.38	Aug 1995	10	11.39	Aug 1995	.13	Feb 1995

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.5	4.3	.4	@
Feb	7.5	3.4	.6	.1
Mar	9.6	5.2	1.0	.2
Apr	11.4	7.0	2.0	.5
May	11.2	7.0	2.0	.5
Jun	10.3	6.8	2.6	.9
Jul	10.4	6.5	3.0	1.2
Aug	10.2	7.0	3.2	1.4
Sep	9.4	6.0	2.3	1.1
Oct	9.9	5.4	1.9	.5
Nov	10.0	4.9	1.6	.4
Dec	9.8	4.5	1.0	.1
Ann	119.2	68.0	21.6	6.9

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	.34	.47	.66	.83	.99	1.17	1.36	1.59	1.90	2.37	2.82
Feb	.16	.26	.43	.60	.78	.97	1.19	1.47	1.84	2.45	3.04
Mar	.49	.67	.96	1.21	1.46	1.72	2.02	2.37	2.82	3.54	4.22
Apr	1.32	1.62	2.04	2.39	2.71	3.04	3.40	3.81	4.34	5.13	5.86
May	.91	1.21	1.66	2.05	2.43	2.82	3.26	3.77	4.44	5.48	6.45
Jun	1.29	1.66	2.22	2.69	3.15	3.62	4.13	4.74	5.52	6.72	7.84
Jul	1.50	1.90	2.47	2.95	3.41	3.88	4.40	4.99	5.76	6.94	8.02
Aug	1.57	2.00	2.62	3.14	3.64	4.16	4.72	5.38	6.22	7.52	8.72
Sep	.47	.77	1.29	1.80	2.35	2.95	3.65	4.51	5.68	7.59	9.44
Oct	.53	.77	1.15	1.51	1.86	2.25	2.68	3.21	3.90	5.01	6.06
Nov	.58	.80	1.13	1.43	1.72	2.03	2.37	2.78	3.31	4.15	4.94
Dec	.38	.53	.79	1.01	1.24	1.48	1.75	2.08	2.51	3.19	3.83
Ann	25.52	27.18	29.28	30.87	32.26	33.61	34.99	36.51	38.34	40.97	43.24

\+ 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: 1948-2001
(3) Derived from 1971-2000 serially complete daily data

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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	10.3	10.7	5	4
Feb	6.8	7.7	4	3
Mar	5.3	5.0	1	1
Apr	2.0	.5	#	#
May	.2	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	.1	.0	#	0
Nov	2.9	2.3	#	#
Dec	10.1	7.3	2	2
Ann	37.7	33.5	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	10.2	1999	3	18.5	1976	25	1979	25	16	1979
Feb	8.0	1974	6	23.9	1994	20	1979	13	18	1979
Mar	8.0	1985	3	18.5	1972	15	1979	2	6	1978
Apr	8.0	1973	9	14.5	1973	10	1973	10	1	1997
May	5.3	1994	1	5.3	1994	4	1994	1	#+	1994
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	#	1993	30	#	1993	0	0	0	0	0
Oct	1.7	1992	20	1.7	1992	1	1992	20	#+	1997
Nov	7.0	1976	27	12.0	1977	8	1977	27	2	1995
Dec	11.5	1977	8	28.7	2000	18	1977	9	8	2000
Ann	11.5	Dec 1977	8	28.7	Dec 2000	25	Jan 1979	25	18	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.9	4.2	1.2	.3	.1
Feb	4.9	2.8	.6	.1	.0
Mar	3.8	1.9	.6	.3	.0
Apr	1.2	.6	.3	.1	.0
May	.1	@	@	@	.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	.1	@	.0	.0	.0
Nov	2.5	1.2	.4	.2	.0
Dec	7.1	3.3	1.1	.4	@
Ann	27.6	14.0	4.2	1.4	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	23.5	17.4	12.7	2.8
Feb	17.4	11.6	6.2	1.8
Mar	6.2	3.6	1.7	.2
Apr	1.1	.5	.3	@
May	@	@	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	@	.0	.0	.0
Nov	2.7	.9	.4	.0
Dec	16.4	9.2	4.0	.6
Ann	67.3	43.2	25.3	5.4

+ 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	5/30	5/25	5/22	5/19	5/16	5/13	5/10	5/06	5/01
32	5/20	5/14	5/10	5/07	5/04	5/01	4/28	4/24	4/18
28	5/02	4/27	4/24	4/22	4/19	4/16	4/14	4/11	4/06
24	4/16	4/13	4/11	4/09	4/07	4/05	4/03	4/01	3/29
20	4/12	4/08	4/05	4/02	3/31	3/29	3/26	3/23	3/19
16	4/07	4/01	3/28	3/25	3/22	3/19	3/15	3/11	3/06

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	9/16	9/19	9/22	9/24	9/26	9/28	9/30	10/03	10/06
32	9/24	9/27	9/30	10/02	10/04	10/07	10/09	10/11	10/15
28	9/30	10/05	10/09	10/13	10/16	10/19	10/23	10/27	11/02
24	10/16	10/21	10/25	10/28	10/31	11/03	11/06	11/10	11/15
20	10/26	10/31	11/04	11/07	11/10	11/13	11/16	11/20	11/25
16	11/02	11/07	11/12	11/15	11/19	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	150	144	140	136	133	129	126	122	116
32	171	165	160	156	153	149	145	141	134
28	203	195	189	184	179	175	170	164	156
24	223	217	213	209	206	202	199	194	188
20	242	235	231	227	223	219	215	210	204
16	267	258	252	246	241	236	230	224	215

***** 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	1484	1198	970	567	263	50	12	33	153	477	866	1291	7364
60	1329	1058	815	423	162	13	0	8	66	334	716	1136	6060
57	1236	974	722	341	114	5	0	2	34	257	627	1043	5355
55	1174	918	660	291	88	3	0	0	20	211	568	981	4914
50	1019	778	514	180	39	0	0	0	4	118	428	829	3909
32	508	336	118	6	0	0	0	0	0	2	78	350	1398

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	47	62	171	430	802	1055	1233	1162	870	551	202	82	6667
55	0	0	0	25	177	368	520	449	200	47	2	0	1788
57	0	0	0	16	141	311	458	389	154	31	1	0	1501
60	0	0	0	7	96	229	365	302	96	14	0	0	1109
65	0	0	0	1	42	115	221	173	33	3	0	0	588
70	0	0	0	0	15	41	108	81	6	0	0	0	251

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	6	63	238	570	824	990	922	646	321	77	6	0	6	69	307	877	1701	2691	3613	4259	4580	4657	4663
45	0	0	30	139	420	674	835	767	497	201	35	2	0	0	30	169	589	1263	2098	2865	3362	3563	3598	3600
50	0	0	12	73	281	524	680	612	354	109	15	0	0	0	12	85	366	890	1570	2182	2536	2645	2660	2660
55	0	0	4	40	169	377	525	457	224	53	3	0	0	0	4	44	213	590	1115	1572	1796	1849	1852	1852
60	0	0	1	14	90	241	371	305	128	20	0	0	0	0	1	15	105	346	717	1022	1150	1170	1170	1170
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	39	140	342	527	664	608	395	189	46	2	0	0	39	179	521	1048	1712	2320	2715	2904	2950	2952

(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