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: OCONTO 4 W, WI **COOP ID: 476208**

Climate Division: WI 3 **NWS Call Sign:** **Elevation: 660 Feet** **Lat: 44˚53N** **Lon: 87˚57W**

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	23.3	4.5	13.9	51	1973	26	23.8	1990	-35	1994	19	4.1	1977	1584	0	.0	.0	@	23.9	30.9	12.6
Feb	28.3	8.5	18.4	57+	2000	27	30.7	1998	-35	1996	3	7.6	1979	1305	0	.0	.0	.5	17.2	27.7	9.0
Mar	38.7	19.3	29.0	77	2000	8	38.8	2000	-27	1962	1	22.4	1989	1116	0	.0	.0	4.5	7.8	28.0	2.4
Apr	52.7	31.2	42.0	90	1980	23	46.9	1986	5	1954	3	35.8	1975	691	0	.0	@	17.5	.6	17.9	.0
May	66.4	42.4	54.4	94	1959	2	61.6	1977	21	1954	5	47.6	1983	352	22	.0	.1	29.5	.0	4.2	.0
Jun	75.2	52.1	63.7	97	1964	30	68.5	1971	30	1997	17	58.0	1982	105	65	.0	1.3	30.0	.0	.1	.0
Jul	79.8	56.9	68.4	100	1955	26	73.0	1983	37+	1972	5	62.4	1992	29	133	.0	2.6	31.0	.0	.0	.0
Aug	77.4	54.8	66.1	102	1955	21	70.9	1995	37+	1986	28	62.2	1992	63	96	.0	.9	31.0	.0	.0	.0
Sep	69.1	45.9	57.5	98	1953	1	62.8	1998	23+	1976	24	52.6	1974	236	11	.0	.1	29.9	.0	1.8	.0
Oct	57.2	35.5	46.4	89	1963	6	53.2	1971	14	1988	30	41.0	1988	579	0	.0	.0	24.7	.0	12.1	.0
Nov	41.7	24.7	33.2	74+	1999	10	40.2	1999	-8	1976	29	26.0	1995	955	0	.0	.0	6.9	5.0	24.2	.4
Dec	28.3	11.6	20.0	62+	2001	6	27.5	1997	-22	1976	29	8.8	1989	1397	0	.0	.0	.7	18.5	30.3	6.8
Ann	53.2	32.3	42.8	102	Aug 1955	21	73.0	Jul 1983	-35+	Feb 1996	3	4.1	Jan 1977	8412	327	.0	5.0	206.2	73.0	177.2	31.2

\+ 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: 1948-2001

(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	1.91	1.73	1.90	1996	27	6.39	1996	.07	1981
Feb	1.18	1.04	1.20	1984	13	2.98	1981	.22	1993
Mar	2.32	2.31	2.00	1998	31	5.76	1977	.17	1978
Apr	2.63	2.50	2.65	1980	9	4.92	1993	.15	1997
May	3.15	3.06	3.21	1973	28	9.58	1973	.43	1988
Jun	3.53	2.89	3.22	1990	23	8.42	1990	.71	1976
Jul	3.83	3.09	6.40	1991	29	9.48	1991	.79	1981
Aug	3.40	3.14	5.50	1964	1	6.63	1995	.40	1971
Sep	3.25	3.01	2.91	1975	11	6.28	1986	.89	1989
Oct	2.31	2.17	1.96	1984	19	5.65	1995	.34	2000
Nov	2.49	2.27	2.41	1984	1	6.54	1992	.06	1976
Dec	1.70	1.57	1.83	1959	28	3.71	1987	.25+	1994
Ann	31.70	31.80	6.40	Jul 1991	29	9.58	May 1973	.06	Nov 1976

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.9	5.3	1.0	.2
Feb	6.1	3.8	.6	.1
Mar	7.8	5.3	1.8	.3
Apr	8.9	5.9	1.8	.4
May	8.9	5.9	1.9	.8
Jun	9.8	6.8	2.3	.8
Jul	10.0	6.8	2.4	1.0
Aug	9.2	6.5	2.4	.9
Sep	9.6	6.3	2.2	.8
Oct	7.8	4.9	1.5	.5
Nov	7.9	5.3	1.5	.5
Dec	8.3	5.2	.9	.1
Ann	102.2	68.0	20.3	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	.37	.63	.90	1.18	1.50	1.87	2.33	2.96	3.99	5.00
Feb	.24	.35	.52	.68	.84	1.01	1.20	1.43	1.74	2.23	2.70
Mar	.35	.55	.89	1.21	1.54	1.90	2.32	2.83	3.51	4.63	5.69
Apr	.70	.95	1.33	1.66	1.99	2.34	2.72	3.17	3.77	4.70	5.57
May	.77	1.06	1.52	1.93	2.33	2.76	3.24	3.81	4.55	5.73	6.84
Jun	.87	1.20	1.71	2.17	2.62	3.10	3.63	4.26	5.09	6.41	7.64
Jul	1.05	1.42	1.97	2.45	2.92	3.42	3.97	4.62	5.46	6.79	8.03
Aug	.99	1.31	1.80	2.22	2.63	3.06	3.53	4.09	4.81	5.94	6.99
Sep	1.09	1.39	1.85	2.23	2.60	2.98	3.39	3.88	4.50	5.47	6.36
Oct	.61	.83	1.16	1.46	1.75	2.05	2.39	2.79	3.31	4.13	4.90
Nov	.40	.61	.98	1.32	1.67	2.06	2.50	3.04	3.76	4.94	6.06
Dec	.42	.58	.83	1.05	1.27	1.50	1.76	2.06	2.47	3.10	3.70
Ann	23.21	24.87	26.99	28.60	30.02	31.38	32.79	34.35	36.23	38.95	41.29

\+ 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	11.8	8.7	7	6
Feb	8.9	8.0	7	6
Mar	7.4	7.8	3	1
Apr	3.1	2.0	#	#
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.2	.0	#	0
Nov	3.8	2.8	#	#
Dec	12.9	13.3	4	3
Ann	48.1	42.6	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	14.0	1996	27	31.1	1976	32	1979	24	21	1979
Feb	8.0	1997	5	24.0	1975	36	1979	16	28	1979
Mar	13.0	1997	14	25.5	1972	24	1997	16	10	1972
Apr	9.0	1991	10	11.5	1991	11	1977	5	1	1992
May	.5	1997	1	.5	1997	#	1997	15	#	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	4.0	1976	19	4.0	1976	4	1976	19	#+	1992
Nov	6.6	1971	27	11.1	1995	9	1971	29	1+	2000
Dec	13.0	1985	2	28.0	1977	19	1985	2	13	1985
Ann	14.0	Jan 1996	27	31.1	Jan 1976	36	Feb 1979	16	28	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.0	4.7	1.7	.7	.1
Feb	5.0	3.3	1.0	.3	.0
Mar	3.4	2.5	1.2	.4	.1
Apr	1.6	1.1	.3	.1	.0
May	@	.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	.1	.1	@	.0	.0
Nov	2.7	1.7	.3	.1	.0
Dec	6.5	4.5	1.4	.4	.1
Ann	26.3	17.9	5.9	2.0	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	26.2	17.6	11.0	2.1
Feb	21.5	17.3	13.1	5.0
Mar	10.5	6.6	4.7	1.2
Apr	1.7	.7	.3	.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
Nov	3.6	1.4	.3	.0
Dec	17.4	11.5	6.3	2.0
Ann	81.0	55.1	35.7	10.3

+ 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	6/08	6/04	6/01	5/29	5/26	5/22	5/19	5/13
32	5/31	5/25	5/21	5/18	5/15	5/12	5/08	5/04	4/29
28	5/15	5/10	5/07	5/04	5/01	4/29	4/26	4/22	4/18
24	5/02	4/27	4/24	4/21	4/18	4/15	4/12	4/09	4/04
20	4/19	4/14	4/11	4/08	4/06	4/03	4/01	3/29	3/24
16	4/12	4/07	4/04	4/01	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	9/08	9/11	9/14	9/16	9/18	9/20	9/22	9/24	9/28
32	9/15	9/19	9/22	9/25	9/27	9/29	10/02	10/05	10/09
28	9/22	9/27	10/01	10/04	10/07	10/10	10/14	10/17	10/23
24	10/02	10/08	10/13	10/17	10/21	10/25	10/29	11/03	11/09
20	10/19	10/24	10/28	11/01	11/04	11/07	11/10	11/14	11/20
16	11/01	11/06	11/09	11/12	11/15	11/18	11/21	11/25	11/30

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	127	122	118	115	111	108	105	101	96
32	152	146	142	138	134	131	127	123	117
28	181	174	168	163	158	154	149	143	136
24	208	200	195	190	185	181	176	170	163
20	230	224	219	215	211	207	203	198	192
16	247	241	237	233	230	227	223	219	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	1584	1305	1116	691	352	105	29	63	236	579	955	1397	8412
60	1429	1165	961	542	233	41	5	16	122	430	805	1242	6991
57	1336	1081	868	455	174	20	0	5	73	345	715	1149	6221
55	1274	1025	806	398	139	11	0	2	49	292	655	1087	5738
50	1119	885	652	268	72	2	0	0	13	179	507	932	4629
32	579	409	194	17	0	0	0	0	0	6	103	423	1731

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	17	28	101	316	693	950	1127	1056	764	450	138	49	5689
55	0	0	0	8	120	271	414	345	123	23	0	0	1304
57	0	0	0	4	92	220	352	286	87	14	0	0	1055
60	0	0	0	2	58	151	264	204	47	6	0	0	732
65	0	0	0	0	22	65	133	96	11	0	0	0	327
70	0	0	0	0	7	17	49	30	1	0	0	0	104

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	23	144	458	723	893	822	540	240	44	1	0	0	23	167	625	1348	2241	3063	3603	3843	3887	3888
45	0	0	8	75	317	573	738	667	392	136	16	1	0	0	8	83	400	973	1711	2378	2770	2906	2922	2923
50	0	0	2	39	196	424	583	512	260	67	5	0	0	0	2	41	237	661	1244	1756	2016	2083	2088	2088
55	0	0	0	14	109	281	428	357	144	23	0	0	0	0	0	14	123	404	832	1189	1333	1356	1356	1356
60	0	0	0	7	52	163	280	214	70	4	0	0	0	0	0	7	59	222	502	716	786	790	790	790
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	21	98	282	452	579	523	327	151	22	0	0	0	21	119	401	853	1432	1955	2282	2433	2455	2455

(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