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: KEWAUNEE 3 NW, WI **COOP ID: 474195**

Climate Division: WI 6 **NWS Call Sign:** **Elevation: 702 Feet** **Lat: 44˚29N** **Lon: 87˚32W**

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	25.7	10.3	18.0	52	1961	13	26.8	1990	-29	1985	20	5.7	1977	1458	0	.0	.0	.1	21.4	30.3	6.9
Feb	29.1	13.3	21.2	56	1984	23	31.5	1998	-20+	1985	2	11.3	1979	1227	0	.0	.0	.1	15.8	26.7	3.8
Mar	38.6	23.2	30.9	71	1986	27	38.9	2000	-16	1962	1	24.6	1996	1058	0	.0	.0	3.3	6.0	25.0	.6
Apr	49.3	33.7	41.5	87	1962	26	45.6	1999	9	1954	3	37.1	1996	704	0	.0	.0	14.8	.3	10.8	.0
May	61.7	43.6	52.7	91+	1988	31	59.8	1998	24	1966	10	47.2	1983	392	10	.0	@	28.7	.0	1.4	.0
Jun	71.6	53.2	62.4	98	1970	29	68.5	1987	31	1990	4	57.9	1982	139	60	.0	.8	30.0	.0	@	.0
Jul	77.2	59.9	68.6	100+	1995	15	73.0	1983	41	1982	7	62.7	1992	32	141	.1	1.4	31.0	.0	.0	.0
Aug	75.5	59.6	67.6	102	1948	24	73.5	1995	40+	1986	30	63.2	1992	46	127	.0	.5	31.0	.0	.0	.0
Sep	68.3	51.5	59.9	95	1953	1	64.5	1998	28	1989	24	54.7	1993	178	24	.0	.1	29.9	.0	.6	.0
Oct	56.0	39.9	48.0	89	1963	6	54.5	1971	20+	1988	30	44.0	1988	529	0	.0	.0	25.7	.0	5.0	.0
Nov	42.9	28.1	35.5	73+	1999	10	42.9	1975	-7	1976	29	28.7	1996	885	0	.0	.0	7.0	2.9	19.4	.1
Dec	30.2	16.6	23.4	66	2001	5	30.4	1982	-20+	1989	21	11.1	1989	1289	0	.0	.0	.7	15.4	28.3	3.5
Ann	52.2	36.1	44.1	102	Aug 1948	24	73.5	Aug 1995	-29	Jan 1985	20	5.7	Jan 1977	7937	362	.1	2.8	202.3	61.8	147.5	14.9

\+ 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

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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	1.49	1.57	2.00	1969	23	3.09	1994	.20	1981
Feb	1.21	1.11	1.83	1977	13	2.92	1977	.19	1995
Mar	1.99	1.72	1.90	1979	30	5.74	1979	.20	1999
Apr	2.69	2.70	2.32	1949	26	5.44	1981	.57	1997
May	2.77	2.51	3.00	1978	13	7.94	1973	.80	1981
Jun	3.31	2.91	3.75	1990	17	10.15	1990	.96	1995
Jul	3.39	3.26	3.81	1964	20	7.51	1991	.95	1995
Aug	3.74	3.31	4.08	1980	20	7.39	1975	1.70	1976
Sep	3.41	3.19	3.78	1985	5	10.45	1986	.15	1979
Oct	2.32	2.32	2.41	1984	19	4.95	1984	.00	2000
Nov	2.35	2.20	2.00	1992	2	5.92	1985	.18	1976
Dec	1.63	1.54	2.30	1959	28	4.08	1971	.16	1994
Ann	30.30	29.77	4.08	Aug 1980	20	10.45	Sep 1986	.00	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.1	4.7	.5	.0
Feb	7.1	3.5	.5	.1
Mar	7.9	5.0	1.3	.4
Apr	8.3	6.2	1.7	.4
May	8.0	5.9	1.9	.5
Jun	8.3	6.1	2.4	.7
Jul	8.3	6.0	2.2	.9
Aug	8.6	6.5	2.4	.9
Sep	8.7	6.2	2.1	.9
Oct	8.0	5.2	1.4	.4
Nov	7.8	5.3	1.5	.4
Dec	8.6	4.5	.6	.1
Ann	98.7	65.1	18.5	5.7

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	.44	.58	.79	.98	1.15	1.34	1.54	1.79	2.10	2.59	3.04
Feb	.30	.42	.59	.75	.90	1.06	1.24	1.46	1.74	2.18	2.59
Mar	.30	.47	.76	1.04	1.32	1.63	1.99	2.43	3.02	3.98	4.90
Apr	1.04	1.29	1.65	1.94	2.22	2.51	2.82	3.18	3.63	4.33	4.97
May	.95	1.21	1.59	1.92	2.23	2.54	2.89	3.30	3.82	4.62	5.36
Jun	.97	1.28	1.76	2.17	2.57	2.98	3.44	3.98	4.68	5.78	6.79
Jul	1.11	1.43	1.90	2.30	2.69	3.09	3.53	4.04	4.70	5.73	6.67
Aug	1.43	1.78	2.27	2.69	3.08	3.48	3.91	4.42	5.06	6.04	6.94
Sep	.57	.87	1.36	1.83	2.31	2.84	3.44	4.16	5.14	6.71	8.22
Oct	.46	.78	1.17	1.49	1.79	2.10	2.44	2.84	3.35	4.16	4.91
Nov	.54	.76	1.10	1.41	1.72	2.05	2.41	2.85	3.43	4.34	5.20
Dec	.39	.54	.78	.99	1.20	1.43	1.68	1.98	2.37	2.99	3.57
Ann	22.93	24.40	26.25	27.64	28.87	30.05	31.26	32.60	34.21	36.52	38.51

\+ 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	13.0	9.5	7	5
Feb	10.1	9.5	7	5
Mar	7.0	6.0	3	2
Apr	2.0	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	.0	.0	0	0
Nov	2.2	1.5	#	#
Dec	9.1	9.8	2	1
Ann	43.5	37.3	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	8.0	1971	4	34.5	1982	24+	1994	31	17	1982
Feb	6.5	1985	6	20.0	1979	30	1979	16	24	1979
Mar	15.2	1997	14	20.6	1997	22	1979	1	13	1979
Apr	5.0	1977	4	8.0	1993	5	1977	4	1	1979
May	1.0	1990	10	1.0+	1994	#	1990	10	#	1990
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	1992	0	0	0	0	0
Nov	4.0	1988	6	6.5	1988	3	1995	26	1	1991
Dec	9.9	2000	19	18.5	1989	16	1985	31	10	1985
Ann	15.2	Mar 1997	14	34.5	Jan 1982	30	Feb 1979	16	24	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.9	5.0	1.7	.5	.0
Feb	5.4	4.0	1.2	.4	.0
Mar	4.3	2.9	.8	.1	@
Apr	1.4	1.0	.2	@	.0
May	.1	.1	.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	@	@	.0	.0	.0
Nov	1.8	1.2	.1	.0	.0
Dec	5.4	3.9	1.0	.3	.0
Ann	25.3	18.1	5.0	1.3	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	25.2	20.0	14.8	7.1
Feb	23.7	18.5	15.1	5.9
Mar	13.6	8.3	6.1	1.0
Apr	1.9	.4	@	.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	.0	.0	.0	.0
Nov	2.5	.2	.0	.0
Dec	17.1	9.4	6.6	1.9
Ann	84.0	56.8	42.6	15.9

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	154	146	140	135	130	126	121	115	107
32	177	169	164	160	156	152	148	143	135
28	210	202	196	191	187	182	177	171	163
24	228	222	217	214	210	207	203	199	193
20	252	244	239	234	230	225	221	215	208
16	270	262	257	252	248	243	239	233	225

***** 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	1458	1227	1058	704	392	139	32	46	178	529	885	1289	7937
60	1303	1087	903	554	259	64	6	11	81	377	735	1134	6514
57	1210	1003	810	465	192	35	1	3	43	292	645	1041	5740
55	1148	947	748	407	152	22	0	1	26	239	585	979	5254
50	993	807	593	267	75	5	0	0	5	129	442	827	4143
32	464	339	139	8	0	0	0	0	0	1	77	346	1374

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	29	36	103	294	640	912	1133	1103	836	495	182	80	5843
55	0	0	0	2	80	244	420	391	172	20	0	0	1329
57	0	0	0	1	57	197	359	331	129	11	0	0	1085
60	0	0	0	0	32	136	271	246	76	4	0	0	765
65	0	0	0	0	10	60	141	127	24	0	0	0	362
70	0	0	0	0	2	18	56	49	4	0	0	0	129

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	21	123	399	667	872	851	597	280	53	3	0	0	21	144	543	1210	2082	2933	3530	3810	3863	3866
45	0	0	6	48	254	517	717	696	447	152	16	1	0	0	6	54	308	825	1542	2238	2685	2837	2853	2854
50	0	0	1	17	141	367	562	541	305	64	4	0	0	0	1	18	159	526	1088	1629	1934	1998	2002	2002
55	0	0	0	3	67	232	408	386	179	19	0	0	0	0	0	3	70	302	710	1096	1275	1294	1294	1294
60	0	0	0	0	27	123	258	238	82	2	0	0	0	0	0	0	27	150	408	646	728	730	730	730
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	7	56	206	390	561	543	340	127	17	0	0	0	7	63	269	659	1220	1763	2103	2230	2247	2247

(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