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: BRODHEAD, WI **COOP ID: 471078**

Climate Division: WI 8 **NWS Call Sign:** **Elevation: 790 Feet** **Lat: 42˚37N** **Lon: 89˚23W**

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	25.9	5.9	15.9	59	1989	31	28.6	1990	-36	1951	30	2.4	1977	1523	0	.0	.0	.6	20.7	30.6	10.5
Feb	31.2	11.2	21.2	69	2000	26	34.7	1998	-34+	1996	4	9.2	1979	1226	0	.0	.0	1.8	14.0	27.2	7.0
Mar	43.3	22.8	33.1	83	1986	29	41.8	2000	-21	1962	1	25.0	1975	991	0	.0	.0	9.2	4.8	25.7	.8
Apr	57.2	34.2	45.7	91	1980	23	52.9	1977	7+	1982	6	39.6	1975	580	1	.0	@	22.1	.2	12.2	.0
May	69.8	45.5	57.7	93	1975	19	64.3	1977	24	1978	2	52.5	1997	270	42	.0	.5	30.5	.0	1.9	.0
Jun	79.5	55.2	67.4	101	1988	20	71.4	1991	35+	1982	6	60.6	1982	52	122	.1	2.8	30.0	.0	.0	.0
Jul	83.0	59.6	71.3	101	1988	15	76.1	1999	40	1965	6	66.7	1992	12	207	@	5.4	31.0	.0	.0	.0
Aug	80.5	57.1	68.8	102	1988	17	76.1	1995	36	1950	20	64.0	1992	47	165	.1	3.0	31.0	.0	.0	.0
Sep	73.1	47.2	60.2	101	1953	1	65.3	1998	24	1974	23	56.0	1993	178	31	.0	.9	29.9	.0	1.7	.0
Oct	61.2	35.9	48.6	89	1971	1	57.3	1971	14+	1988	29	41.5	1988	515	5	.0	.0	26.9	.0	11.4	.0
Nov	44.7	25.1	34.9	76+	2000	2	42.7	1999	-10	1950	24	27.6	1976	902	0	.0	.0	10.5	3.4	22.8	.3
Dec	31.2	12.8	22.0	67	2001	6	30.7	1998	-30	1950	27	8.5	1985	1334	0	.0	.0	1.5	15.1	29.4	5.8
Ann	56.7	34.4	45.6	102	Aug 1988	17	76.1+	Jul 1999	-36	Jan 1951	30	2.4	Jan 1977	7630	573	.2	12.6	225.0	58.2	162.9	24.4

\+ 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: 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	1.37	1.47	1.68	1960	13	2.82	1974	.07	1981
Feb	1.41	1.21	1.80	2001	9	3.69	1985	.08	1982
Mar	2.27	2.12	2.27	1998	31	4.97	1975	.35	1980
Apr	3.45	3.13	2.46	1955	24	7.08	1999	1.09	1994
May	3.65	4.19	2.08	1996	29	7.22	1973	.78	1988
Jun	4.75	4.71	5.58	1978	25	13.11	1993	.42	1988
Jul	3.94	3.85	6.62	1996	18	8.67	1996	1.59	1991
Aug	4.19	3.89	4.30	1972	2	8.74	1972	1.14	1978
Sep	3.58	3.39	4.45	1950	19	10.11	1986	.21	1979
Oct	2.70	2.10	2.88	1954	10	9.86	1984	.71	1994
Nov	2.39	2.37	1.92	1952	17	5.05	1991	.13	1976
Dec	1.84	1.66	1.91	1971	15	4.11	1971	.17	1976
Ann	35.54	35.17	6.62	Jul 1996	18	13.11	Jun 1993	.07	Jan 1981

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.6	3.8	.7	.1
Feb	6.4	3.7	.8	.2
Mar	9.2	5.5	1.1	.4
Apr	10.7	7.1	2.4	.8
May	10.8	7.2	2.6	.9
Jun	9.9	6.8	3.0	1.4
Jul	9.5	6.5	2.6	.9
Aug	9.2	6.5	3.1	1.1
Sep	8.9	5.6	2.2	.8
Oct	8.6	5.4	1.7	.7
Nov	8.3	5.1	1.7	.4
Dec	8.5	4.7	1.2	.4
Ann	107.6	67.9	23.1	8.1

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	.34	.54	.73	.92	1.13	1.38	1.68	2.07	2.72	3.34
Feb	.18	.29	.49	.69	.89	1.12	1.39	1.72	2.16	2.89	3.60
Mar	.44	.64	.98	1.28	1.59	1.93	2.31	2.77	3.38	4.35	5.28
Apr	1.33	1.65	2.11	2.49	2.85	3.22	3.62	4.08	4.66	5.56	6.38
May	.93	1.28	1.81	2.28	2.74	3.22	3.76	4.41	5.25	6.57	7.81
Jun	.96	1.39	2.09	2.73	3.37	4.06	4.84	5.78	7.02	9.00	10.88
Jul	1.53	1.89	2.42	2.85	3.26	3.67	4.13	4.65	5.31	6.33	7.26
Aug	1.32	1.72	2.31	2.81	3.30	3.80	4.36	5.01	5.84	7.15	8.35
Sep	.47	.75	1.26	1.76	2.29	2.87	3.55	4.38	5.50	7.35	9.13
Oct	.48	.71	1.11	1.48	1.86	2.27	2.73	3.30	4.05	5.27	6.43
Nov	.57	.79	1.14	1.45	1.76	2.09	2.45	2.89	3.46	4.37	5.22
Dec	.35	.51	.78	1.03	1.29	1.56	1.87	2.24	2.74	3.54	4.30
Ann	25.21	27.21	29.77	31.72	33.44	35.11	36.84	38.75	41.06	44.42	47.32

\+ 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)

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	9.5	9.2	3	1	9.0	1999	3	23.6	1999	12	1971	30	10	1971	5.6	3.8	1.4	.5	.0	-9.9	-9.9	-9.9	-9.9
Feb	6.9	7.4	5	3	7.0	1983	2	24.2	1994	37	1979	21	33	1979	3.8	2.4	.9	.2	.0	-9.9	-9.9	-9.9	-9.9
Mar	5.2	4.5	1	#	8.0	1972	29	13.5	1971	12	1975	8	5	1978	2.7	2.0	.5	.2	.0	5.4	2.5	1.5	.7
Apr	1.3	.0	#	0	9.0	1973	10	15.0	1973	12	1973	10	1	1975	.6	.4	.2	@	.0	1.1	.7	.3	.1
May	.1	.0	0	0	2.1	1994	1	2.1	1994	0	0	0	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	.1	.0	#	0	1.0	1997	27	1.0	1997	1	1972	18	#	1972	.1	@	.0	.0	.0	.1	.0	.0	.0
Nov	2.4	2.0	#	0	7.1	1995	28	11.7	1995	6	1971	29	1	1971	1.4	.8	.2	@	.0	1.3	.4	.1	.0
Dec	9.1	5.5	2	1	10.0	1994	7	31.1	2000	17	2000	29	9	1985	4.9	3.3	1.0	.5	@	-9.9	-9.9	-9.9	-9.9
Ann	34.6	28.6	N/A	N/A	10.0	Dec 1994	7	31.1	Dec 2000	37	Feb 1979	21	33	Feb 1979	19.1	12.7	4.2	1.4	@	-9.9	-9.9	-9.9	-9.9

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	151	143	137	132	128	123	118	112	104
32	164	157	153	149	145	141	137	132	126
28	194	186	180	174	169	164	159	153	144
24	215	208	203	198	194	190	185	180	172
20	236	229	224	220	216	212	207	202	196
16	263	254	248	242	237	231	226	219	210

***** 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	1523	1226	991	580	270	52	12	47	178	515	902	1334	7630
60	1368	1086	836	434	168	15	1	14	85	373	752	1179	6311
57	1275	1002	743	352	119	6	0	5	49	296	663	1086	5596
55	1213	946	682	300	92	3	0	2	31	249	604	1024	5146
50	1058	811	539	187	41	0	0	0	8	151	460	869	4124
32	545	373	146	7	0	0	0	0	0	6	91	383	1551

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	45	71	178	418	795	1060	1218	1141	843	519	179	73	6540
55	0	0	1	22	174	374	505	430	185	49	1	0	1741
57	0	0	0	13	139	316	443	371	142	34	0	0	1458
60	0	0	0	6	95	236	350	286	88	18	0	0	1079
65	0	0	0	1	42	122	207	165	31	5	0	0	573
70	0	0	0	0	15	46	97	80	6	0	0	0	244

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	63	242	573	840	989	912	636	314	72	7	0	2	65	307	880	1720	2709	3621	4257	4571	4643	4650
45	0	0	32	142	425	690	834	757	487	193	31	2	0	0	32	174	599	1289	2123	2880	3367	3560	3591	3593
50	0	0	14	73	282	541	679	602	346	108	11	0	0	0	14	87	369	910	1589	2191	2537	2645	2656	2656
55	0	0	4	36	171	392	524	447	217	52	3	0	0	0	4	40	211	603	1127	1574	1791	1843	1846	1846
60	0	0	0	14	92	250	370	297	121	18	0	0	0	0	0	14	106	356	726	1023	1144	1162	1162	1162
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	2	45	159	358	545	658	600	401	209	47	4	0	2	47	206	564	1109	1767	2367	2768	2977	3024	3028

(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

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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