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: BELOIT, WI **COOP ID: 470696**

Climate Division: WI 8 **NWS Call Sign:** **Elevation: 780 Feet** **Lat: 42˚30N** **Lon: 89˚02W**

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	26.5	11.6	19.1	61	1967	24	30.6	1990	-26+	1994	18	7.8	1977	1425	0	.0	.0	.7	19.9	30.1	7.2
Feb	31.7	16.9	24.3	69	2000	26	36.1	1998	-25	1996	3	13.5	1979	1140	0	.0	.0	2.1	13.6	25.8	4.1
Mar	43.7	27.1	35.4	84	1986	30	43.2	1973	-13	1962	1	28.6	1996	918	0	.0	.0	9.7	4.4	23.0	.3
Apr	57.5	37.7	47.6	92	1980	22	55.3	1977	7	1982	7	43.4	1995	524	2	.0	.1	22.9	.2	8.5	.0
May	69.5	48.0	58.8	95	1975	19	65.3	1977	25	1980	11	53.3	1997	240	46	.0	.4	30.6	.0	.6	.0
Jun	79.2	58.0	68.6	101+	1988	26	73.2	1971	38+	1972	11	63.9	1982	35	142	.1	3.4	30.0	.0	.0	.0
Jul	82.5	62.3	72.4	102	1988	16	76.4	1999	42+	1978	11	67.3	1992	7	235	.1	6.1	31.0	.0	.0	.0
Aug	80.1	60.1	70.1	102	1988	18	77.0	1995	42	1965	29	64.5	1992	30	189	.1	3.6	31.0	.0	.0	.0
Sep	72.9	51.6	62.3	100	1953	1	67.0	1978	30+	1995	24	57.5	1993	127	44	.0	1.1	30.0	.0	.5	.0
Oct	61.5	40.7	51.1	89+	1971	1	59.3	1971	17+	1988	31	44.9	1987	437	6	.0	.0	27.4	.0	5.7	.0
Nov	44.9	29.3	37.1	78	1950	1	44.3	1999	-6	1950	24	28.6	1976	838	0	.0	.0	11.3	3.1	18.6	.1
Dec	31.7	17.8	24.8	66	2001	6	33.2	1982	-23	1983	24	13.1	1983	1248	0	.0	.0	1.8	13.8	28.6	4.1
Ann	56.8	38.4	47.6	102+	Aug 1988	18	77.0	Aug 1995	-26+	Jan 1994	18	7.8	Jan 1977	6969	664	.3	14.7	228.5	55.0	141.4	15.8

\+ 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	1.32	1.18	2.70	1960	12	3.10	1999	.02	1981
Feb	1.27	1.21	2.30	2001	9	3.28	1997	.00	1995
Mar	2.21	2.13	1.45+	1975	24	4.54	1990	.37	1980
Apr	3.75	3.39	3.90	1973	21	9.54	1973	1.17	1985
May	3.36	3.44	3.75	1959	19	7.38	1996	.96	1988
Jun	4.64	3.98	5.77	1993	30	14.39	1993	.48	1992
Jul	3.83	3.61	3.29	1952	19	8.65	1992	.95	1974
Aug	4.28	3.47	5.00	1998	5	10.93	1972	.84	1974
Sep	3.62	3.26	3.78	1984	25	9.92	1972	.06	1974
Oct	2.39	1.78	3.45	1954	10	6.11	1985	.29	1975
Nov	2.74	2.55	2.90	1952	17	6.74	1985	.42	1976
Dec	1.84	1.95	2.00	1971	15	4.41	1971	.30	1989
Ann	35.25	35.16	5.77	Jun 1993	30	14.39	Jun 1993	.00	Feb 1995

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.5	4.0	.6	.1
Feb	6.3	3.5	.6	.1
Mar	8.5	4.8	1.6	.4
Apr	9.8	7.0	2.6	.8
May	10.5	7.3	2.3	.6
Jun	9.6	6.9	2.8	1.2
Jul	9.5	5.9	2.8	1.1
Aug	9.2	6.3	3.1	1.1
Sep	7.9	5.2	2.5	1.1
Oct	8.6	5.1	1.5	.5
Nov	9.5	5.7	2.0	.5
Dec	8.6	4.4	.9	.3
Ann	106.5	66.1	23.3	7.8

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	.33	.52	.70	.89	1.09	1.32	1.61	1.99	2.60	3.19
Feb	.08	.20	.40	.59	.79	1.00	1.26	1.57	1.99	2.68	3.35
Mar	.49	.69	1.01	1.31	1.60	1.91	2.26	2.68	3.23	4.11	4.94
Apr	1.24	1.59	2.11	2.56	2.98	3.42	3.91	4.47	5.19	6.32	7.36
May	1.07	1.39	1.86	2.27	2.65	3.06	3.50	4.01	4.68	5.71	6.67
Jun	.84	1.25	1.93	2.56	3.20	3.90	4.70	5.66	6.94	9.00	10.97
Jul	1.15	1.52	2.06	2.53	2.98	3.46	3.98	4.59	5.39	6.63	7.77
Aug	1.09	1.49	2.11	2.66	3.20	3.78	4.41	5.17	6.16	7.72	9.19
Sep	.36	.63	1.13	1.63	2.18	2.79	3.52	4.42	5.66	7.71	9.72
Oct	.32	.51	.85	1.18	1.53	1.92	2.37	2.92	3.67	4.89	6.07
Nov	.59	.84	1.24	1.60	1.97	2.36	2.80	3.33	4.02	5.13	6.18
Dec	.43	.60	.87	1.11	1.35	1.60	1.89	2.23	2.67	3.38	4.04
Ann	23.97	26.11	28.88	30.99	32.88	34.71	36.61	38.72	41.28	45.02	48.27

\+ 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	8.1	7.1	4	3
Feb	7.2	8.7	3	2
Mar	3.7	2.6	#	#
Apr	1.0	.0	#	0
May	#	.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	1.4	.7	#	#
Dec	6.0	5.7	2	2
Ann	27.5	24.8	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	1998	9	18.7	1999	13	1986	8	9	1986
Feb	7.0	1994	26	22.0	1994	16	1994	14	9	1994
Mar	9.0	1972	29	14.5	1971	9	1972	29	1+	1999
Apr	4.9	1982	6	6.9	1982	9	1973	10	1	1973
May	#	1994	1	#+	1994	#	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	.0	0	0	.0	0	0	0	0	0	0
Oct	.9	1972	18	.9	1972	#+	1997	27	#+	1997
Nov	5.0	1995	28	8.5	1995	5	1995	30	1	1995
Dec	11.0	1994	7	12.7	1983	20	2000	30	10	2000
Ann	11.0	Dec 1994	7	22.0	Feb 1994	20	Dec 2000	30	10	Dec 2000

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.8	3.0	1.0	.3	.0
Feb	3.7	2.2	.6	.2	.0
Mar	2.0	1.2	.3	.1	.0
Apr	.5	.3	.1	.0	.0
May	.0	.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	.0	.0	.0	.0
Nov	.8	.5	.2	@	.0
Dec	4.8	2.6	.8	.3	@
Ann	17.7	9.8	3.0	.9	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	17.0	8.7	4.8	1.2
Feb	13.9	7.6	2.9	.8
Mar	3.5	1.2	.4	.0
Apr	.4	.1	.1	.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	1.5	.5	.1	.0
Dec	10.5	4.2	2.0	.7
Ann	46.8	22.3	10.3	2.7

+ 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	5/20	5/16	5/12	5/09	5/06	5/04	5/01	4/27	4/22
32	5/08	5/02	4/29	4/26	4/23	4/20	4/16	4/13	4/08
28	4/29	4/24	4/20	4/17	4/14	4/12	4/08	4/05	3/31
24	4/15	4/11	4/08	4/06	4/03	4/01	3/30	3/27	3/23
20	4/10	4/05	4/01	3/28	3/25	3/22	3/19	3/15	3/09
16	4/04	3/28	3/24	3/20	3/16	3/12	3/08	3/03	2/25

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	9/23	9/26	9/29	10/01	10/03	10/05	10/07	10/10	10/13
32	9/24	9/29	10/03	10/06	10/09	10/12	10/15	10/18	10/23
28	10/08	10/14	10/18	10/21	10/24	10/28	10/31	11/04	11/10
24	10/23	10/28	10/31	11/03	11/06	11/09	11/12	11/15	11/20
20	11/04	11/08	11/11	11/14	11/16	11/19	11/21	11/24	11/28
16	11/09	11/14	11/18	11/21	11/24	11/27	12/01	12/05	12/10

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	166	160	156	152	149	145	142	138	132
32	191	183	178	173	169	164	159	154	146
28	217	208	202	197	192	187	182	176	168
24	234	227	223	219	216	212	209	204	198
20	258	250	244	240	235	231	226	221	213
16	280	271	264	258	253	247	242	235	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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1425	1140	918	524	240	35	7	30	127	437	838	1248	6969
60	1270	1000	763	381	142	8	0	7	50	300	688	1093	5702
57	1177	916	670	301	97	3	0	2	24	228	599	1000	5017
55	1115	860	609	253	73	1	0	0	13	186	540	938	4588
50	960	723	463	148	30	0	0	0	2	101	402	789	3618
32	448	293	90	3	0	0	0	0	0	2	68	319	1223

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	46	77	195	471	829	1097	1251	1181	907	594	220	94	6962
55	0	0	1	31	189	409	538	468	230	65	3	0	1934
57	0	0	0	20	152	350	476	408	181	45	1	0	1633
60	0	0	0	9	104	266	383	321	117	23	0	0	1223
65	0	0	0	2	46	142	235	189	44	6	0	0	664
70	0	0	0	0	16	56	113	94	10	0	0	0	289

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	7	77	283	619	882	1037	969	703	382	94	8	0	7	84	367	986	1868	2905	3874	4577	4959	5053	5061
45	0	1	37	173	466	732	882	814	553	249	44	4	0	1	38	211	677	1409	2291	3105	3658	3907	3951	3955
50	0	0	18	97	321	582	727	659	409	145	21	0	0	0	18	115	436	1018	1745	2404	2813	2958	2979	2979
55	0	0	7	49	199	433	572	504	272	73	4	0	0	0	7	56	255	688	1260	1764	2036	2109	2113	2113
60	0	0	1	20	109	298	418	351	157	30	0	0	0	0	1	21	130	428	846	1197	1354	1384	1384	1384
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	3	50	170	374	578	701	644	438	222	50	5	0	3	53	223	597	1175	1876	2520	2958	3180	3230	3235

(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