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: APPLETON, WI **COOP ID: 470265**

Climate Division: WI 6 **NWS Call Sign:** **Elevation: 750 Feet** **Lat: 44˚15N** **Lon: 88˚22W**

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	24.1	7.8	16.0	50	1989	23	26.9	1990	-30	1951	30	4.6	1977	1520	0	.0	.0	@	22.8	30.6	9.8
Feb	29.4	12.7	21.1	59	2000	26	31.3	1998	-29	1996	3	11.4	1979	1230	0	.0	.0	.4	16.6	27.2	5.5
Mar	40.2	22.8	31.5	78	1986	29	39.4	2000	-21	1962	1	24.7	1996	1039	0	.0	.0	5.8	7.1	25.8	1.1
Apr	54.4	34.6	44.5	89	1980	22	50.4	1987	7	1979	6	39.1	1975	617	1	.0	.0	19.4	.5	12.0	.0
May	68.3	46.5	57.4	94	1988	31	65.1	1977	23	1966	9	49.6	1997	281	45	.0	.2	30.1	.0	1.3	.0
Jun	77.1	56.2	66.7	101	1988	20	71.3	1987	35	1994	2	61.5	1982	62	111	.1	1.7	30.0	.0	.0	.0
Jul	81.4	61.7	71.6	102	1995	13	76.2	1988	43	1992	21	66.8	1992	15	217	.1	3.2	31.0	.0	.0	.0
Aug	78.7	60.0	69.4	103	1988	16	75.3	1988	41	1967	22	64.8	1997	30	164	.1	1.3	31.0	.0	.0	.0
Sep	70.2	51.2	60.7	95+	1955	9	64.7	1998	25	1993	30	54.4	1993	161	32	.0	.1	29.8	.0	.5	.0
Oct	57.5	39.7	48.6	89	1963	6	56.0	1971	15	1992	19	44.2	1988	509	2	.0	.0	24.9	@	6.2	.0
Nov	41.9	27.3	34.6	73+	1999	9	41.2	1975	-7	1976	29	26.1	1995	913	0	.0	.0	6.9	5.6	21.3	.2
Dec	28.9	14.4	21.7	61	1998	3	30.2	1982	-23	1989	21	10.2	1985	1344	0	.0	.0	.6	18.3	29.8	5.1
Ann	54.3	36.2	45.3	103	Aug 1988	16	76.2	Jul 1988	-30	Jan 1951	30	4.6	Jan 1977	7721	572	.3	6.5	209.9	70.9	154.7	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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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	1.19	1.23	1.23	1980	16	2.57	1982	.04	1981
Feb	1.04	.94	1.87	1966	8	3.66	1981	.19	1978
Mar	2.05	2.02	1.85	1998	31	4.70	1979	.14	1978
Apr	2.84	2.77	2.30	1981	3	5.54	1981	.47	1997
May	3.10	3.13	2.96	1954	31	7.83	1973	.22	1988
Jun	3.56	2.58	4.18	1990	23	9.07	1990	.64	1976
Jul	3.31	3.03	3.29	1952	2	8.21	1994	.60	1998
Aug	3.90	3.13	3.70	1975	28	10.30	1995	.50	1976
Sep	3.23	2.64	2.67	1986	11	9.15	1986	.45	1976
Oct	2.29	2.21	2.85	1967	24	5.30	1984	.44	1975
Nov	2.27	1.99	2.15	1985	1	5.87	1985	.04	1976
Dec	1.38	1.27	1.55	1959	27	3.14	1982	.15	1994
Ann	30.16	30.53	4.18	Jun 1990	23	10.30	Aug 1995	.04+	Jan 1981

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.1	3.5	.4	@
Feb	7.3	2.8	.4	.1
Mar	9.4	4.6	1.5	.3
Apr	11.0	6.4	1.9	.5
May	10.5	6.3	2.2	.7
Jun	10.5	6.7	2.3	.8
Jul	10.5	5.9	2.3	.7
Aug	11.3	7.7	2.6	.9
Sep	10.2	6.4	2.1	.8
Oct	9.8	5.2	1.3	.4
Nov	9.5	4.8	1.4	.4
Dec	9.5	3.9	.6	@
Ann	118.6	64.2	19.0	5.6

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	.26	.37	.55	.70	.86	1.03	1.22	1.45	1.74	2.22	2.66
Feb	.19	.28	.43	.58	.72	.88	1.05	1.27	1.55	2.01	2.45
Mar	.36	.54	.84	1.12	1.41	1.72	2.07	2.49	3.06	3.97	4.85
Apr	1.06	1.32	1.71	2.02	2.32	2.63	2.97	3.35	3.85	4.61	5.30
May	.69	.98	1.43	1.84	2.25	2.69	3.18	3.76	4.53	5.75	6.90
Jun	.92	1.26	1.77	2.23	2.68	3.15	3.67	4.30	5.11	6.39	7.59
Jul	1.13	1.44	1.90	2.29	2.66	3.04	3.46	3.94	4.57	5.53	6.42
Aug	.98	1.34	1.91	2.41	2.91	3.43	4.02	4.71	5.62	7.05	8.40
Sep	.59	.87	1.35	1.78	2.23	2.72	3.27	3.94	4.82	6.25	7.61
Oct	.66	.88	1.21	1.49	1.77	2.06	2.38	2.76	3.24	4.01	4.72
Nov	.42	.63	.96	1.27	1.58	1.92	2.30	2.76	3.38	4.36	5.30
Dec	.28	.41	.61	.80	.98	1.18	1.41	1.68	2.04	2.62	3.17
Ann	23.13	24.53	26.30	27.63	28.80	29.92	31.07	32.34	33.86	36.05	37.92

\+ 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	12.2	9.3	7	6
Feb	8.3	8.2	7	6
Mar	8.0	7.5	3	2
Apr	2.6	.5	#	#
May	.2	.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	4.1	2.5	#	#
Dec	10.1	9.1	3	3
Ann	45.7	37.1	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	11.5	1996	27	29.9	1994	30	1979	24	20	1979
Feb	7.5	1971	22	20.5	1975	31	1979	21	26	1979
Mar	13.5	1997	14	21.2	1972	23	1979	2	14	1979
Apr	8.0	1977	4	11.0	1985	8	1977	5	1	1985
May	4.3	1990	11	5.3	1990	2	1990	11	#+	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	2.0	1989	20	2.0+	1989	1	1989	20	#+	2000
Nov	7.8	1986	20	13.8	1977	9	1971	29	2	1985
Dec	12.0	1990	4	25.5	2000	19	1985	27	15	1985
Ann	13.5	Mar 1997	14	29.9	Jan 1994	31	Feb 1979	21	26	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.9	4.1	1.3	.5	@
Feb	5.9	2.9	.8	.2	.0
Mar	4.7	2.7	.8	.2	@
Apr	1.3	1.0	.3	.1	.0
May	.1	.1	@	.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	.2	.1	.0	.0	.0
Nov	3.4	1.6	.4	.1	.0
Dec	7.2	3.5	1.0	.5	@
Ann	30.7	16.0	4.6	1.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	25.3	20.0	16.0	7.3
Feb	21.9	17.8	13.2	7.3
Mar	12.0	8.0	5.5	3.1
Apr	1.5	.3	.2	.0
May	.1	.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	.0
Nov	4.4	1.4	.6	.0
Dec	19.4	12.7	7.8	2.5
Ann	84.7	60.2	43.3	20.2

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

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	157	150	146	142	138	135	131	126	120
32	178	170	165	160	155	150	146	140	132
28	207	198	191	185	180	174	169	162	153
24	225	219	214	210	207	203	199	194	188
20	243	237	232	228	224	221	217	212	205
16	261	253	247	243	238	234	229	223	216

***** 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	1520	1230	1039	617	281	62	15	30	161	509	913	1344	7721
60	1365	1090	884	471	179	20	1	6	71	360	763	1189	6399
57	1272	1006	791	388	130	8	0	1	38	279	673	1096	5682
55	1210	950	729	335	102	4	0	0	23	230	613	1034	5230
50	1055	810	577	217	49	1	0	0	4	128	469	879	4189
32	528	346	148	11	0	0	0	0	0	2	96	384	1515

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	31	40	132	385	788	1039	1226	1157	861	518	173	63	6413
55	0	0	0	20	176	354	513	444	194	32	0	0	1733
57	0	0	0	12	142	297	451	383	149	19	0	0	1453
60	0	0	0	6	99	219	359	295	92	8	0	0	1078
65	0	0	0	1	45	111	217	164	32	2	0	0	572
70	0	0	0	0	17	41	108	73	6	0	0	0	245

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	1	37	197	550	808	989	917	627	297	52	2	0	1	38	235	785	1593	2582	3499	4126	4423	4475	4477
45	0	1	17	109	405	658	834	762	480	176	20	0	0	1	18	127	532	1190	2024	2786	3266	3442	3462	3462
50	0	0	8	57	262	508	679	607	336	92	5	0	0	0	8	65	327	835	1514	2121	2457	2549	2554	2554
55	0	0	0	23	155	362	524	452	212	40	0	0	0	0	0	23	178	540	1064	1516	1728	1768	1768	1768
60	0	0	0	11	85	230	370	302	115	9	0	0	0	0	0	11	96	326	696	998	1113	1122	1122	1122
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	23	118	328	514	664	601	373	151	23	0	0	1	24	142	470	984	1648	2249	2622	2773	2796	2796

(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