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: WHITEWATER, WI **COOP ID: 479190**

Climate Division: WI 9 **NWS Call Sign:** **Elevation: 875 Feet** **Lat: 42˚51N** **Lon: 88˚44W**

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	25.1	7.9	16.5	60	1950	25	28.7	1990	-37	1951	30	3.1	1977	1504	0	.0	.0	.7	20.6	30.3	9.4
Feb	30.2	12.8	21.5	66+	2000	26	34.6	1998	-27	1996	3	10.2	1979	1218	0	.0	.0	1.7	14.2	26.6	5.5
Mar	42.2	23.9	33.1	82	1986	30	41.7	2000	-20	1962	1	26.0	1975	991	0	.0	.0	9.0	4.7	24.2	.7
Apr	55.7	34.6	45.2	90	1980	22	51.0	1977	0	1982	7	38.8	1975	596	1	.0	@	22.0	.2	11.7	@
May	68.5	45.2	56.9	93+	1975	20	63.8	1977	17	1966	9	51.7	1997	281	29	.0	.5	30.4	.0	2.2	.0
Jun	78.3	54.9	66.6	100	1953	19	71.8	1987	30+	1998	8	61.3	1982	59	106	.0	2.8	30.0	.0	.1	.0
Jul	82.0	59.8	70.9	100+	1995	14	76.0	1999	40+	1965	6	66.0	1992	16	197	.1	5.3	31.0	.0	.0	.0
Aug	79.0	57.5	68.3	101	1953	31	75.3	1995	37+	1997	23	63.0	1992	50	152	@	2.6	31.0	.0	.0	.0
Sep	71.5	48.8	60.2	100+	1953	2	65.2	1998	26	1991	27	55.4	1974	174	28	.0	.9	29.9	.0	.7	.0
Oct	60.0	38.0	49.0	89+	1982	2	56.0	1971	13	1988	30	42.5	1976	499	2	.0	.0	26.9	.0	8.0	.0
Nov	43.6	26.5	35.1	78	1950	1	43.4	1999	-10	1950	25	26.7	1976	899	0	.0	.0	10.6	3.5	20.3	.3
Dec	30.6	14.6	22.6	66	2001	6	31.3	1998	-25	2000	25	9.7	1983	1314	0	.0	.0	1.7	14.4	29.0	4.5
Ann	55.6	35.4	45.5	101	Aug 1953	31	76.0	Jul 1999	-37	Jan 1951	30	3.1	Jan 1977	7601	515	.1	12.1	224.9	57.6	153.1	20.4

\+ 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	1.25	1.22	1.67	1988	20	2.76	1974	.13	1981
Feb	1.13	1.02	1.69	2001	9	3.18	1986	.00	1987
Mar	2.02	1.93	1.82	1966	22	5.36	1976	.14	1996
Apr	3.40	3.10	2.86	1999	23	6.92	1981	1.02	1996
May	3.18	3.08	2.75	1984	25	6.59	2000	.62	1988
Jun	3.78	3.78	4.12	1950	13	8.54	1993	.17	1987
Jul	3.94	3.23	4.10	1982	22	9.12	1982	1.43	1988
Aug	4.64	4.26	4.03	1998	6	8.92	1995	1.40	1973
Sep	3.37	3.53	4.12	1985	9	7.99	1986	.08	1979
Oct	2.59	2.29	4.00	1959	23	6.83	1984	.40	1975
Nov	2.48	2.22	2.43	1984	1	6.50	1985	.39	1976
Dec	1.56	1.60	1.90	1971	15	4.19	1971	.19	1975
Ann	33.34+	33.50+	4.12+	Sep 1985	9	9.12	Jul 1982	.00	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.6	3.6	.5	@
Feb	6.7	3.2	.5	.2
Mar	9.0	5.0	1.3	.2
Apr	11.1	6.9	2.3	.6
May	11.7	7.2	2.1	.6
Jun	10.0	6.3	2.8	.9
Jul	10.0	6.4	2.7	1.1
Aug	10.6	6.8	3.1	1.4
Sep	9.2	5.8	2.1	1.0
Oct	9.6	5.3	1.7	.5
Nov	10.0	5.2	1.7	.4
Dec	8.9	4.2	.9	.2
Ann	115.4	65.9	21.7	7.1

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	.24	.35	.54	.70	.88	1.06	1.27	1.52	1.85	2.38	2.89
Feb	.09	.21	.39	.56	.73	.92	1.13	1.40	1.75	2.33	2.88
Mar	.35	.53	.82	1.10	1.38	1.69	2.04	2.47	3.04	3.95	4.83
Apr	1.15	1.47	1.94	2.34	2.72	3.12	3.55	4.05	4.70	5.70	6.62
May	.85	1.15	1.61	2.01	2.41	2.83	3.29	3.84	4.56	5.68	6.73
Jun	.84	1.19	1.74	2.24	2.75	3.28	3.88	4.59	5.54	7.04	8.46
Jul	1.47	1.84	2.37	2.81	3.23	3.65	4.12	4.65	5.34	6.39	7.36
Aug	1.64	2.08	2.71	3.25	3.75	4.28	4.85	5.51	6.36	7.67	8.87
Sep	.41	.68	1.15	1.62	2.12	2.67	3.32	4.11	5.19	6.97	8.69
Oct	.53	.77	1.15	1.50	1.85	2.22	2.64	3.15	3.82	4.90	5.91
Nov	.62	.86	1.22	1.54	1.85	2.19	2.56	3.00	3.58	4.49	5.34
Dec	.27	.41	.64	.85	1.07	1.31	1.58	1.91	2.34	3.05	3.72
Ann	26.18	27.62	29.43	30.79	31.99	33.13	34.30	35.58	37.12	39.33	41.21

\+ 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	9.8	8.3	5	4
Feb	7.3	7.5	5	3
Mar	4.9	4.0	1	1
Apr	1.2	#	#	#
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
Nov	2.0	.4	#	#
Dec	8.4	7.5	2	2
Ann	33.7	27.7	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	12.0	1979	13	31.5	1979	40	1979	24	26	1979
Feb	11.0	1983	3	24.5	1994	33	1979	12	29	1979
Mar	9.0	1972	29	13.2	1972	18	1979	1	5	1979
Apr	10.0	1973	9	15.0	1973	13	1973	10	2	1973
May	2.1	1994	1	2.1	1994	2	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	#	1989	20	#+	1989	#+	1997	27	#+	1997
Nov	9.0	1976	27	10.0	1977	10	1995	29	3	1995
Dec	9.0	1994	7	19.5	1983	23	2000	30	11	2000
Ann	12.0	Jan 1979	13	31.5	Jan 1979	40	Jan 1979	24	29	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.2	4.0	1.0	.5	@
Feb	3.1	2.3	.7	.2	@
Mar	1.8	1.5	.5	.2	.0
Apr	.4	.3	.1	@	@
May	@	@	.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	.0	.0
Nov	1.0	.7	.2	.1	.0
Dec	3.5	2.8	.9	.3	.0
Ann	15.0	11.6	3.4	1.3	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	20.7	15.9	13.0	3.4
Feb	17.0	12.8	8.5	2.8
Mar	6.0	3.9	2.0	.2
Apr	.8	.4	.1	.1
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	.0	.0	.0	.0
Nov	1.3	.7	.3	.0
Dec	12.6	8.2	3.9	.1
Ann	58.4	41.9	27.8	6.6

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

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	9/10	9/14	9/16	9/19	9/21	9/23	9/26	9/28	10/02
32	9/21	9/25	9/29	10/01	10/04	10/07	10/09	10/13	10/17
28	9/25	10/01	10/06	10/10	10/13	10/17	10/21	10/26	11/01
24	10/13	10/18	10/22	10/25	10/28	10/31	11/03	11/07	11/12
20	10/23	10/28	11/01	11/04	11/07	11/10	11/13	11/17	11/22
16	11/02	11/08	11/12	11/15	11/19	11/22	11/26	11/30	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	142	136	131	127	123	119	115	110	103
32	165	159	154	150	146	143	139	134	128
28	194	186	180	175	171	166	161	155	147
24	215	209	205	201	198	194	191	187	181
20	240	233	227	223	218	214	209	204	196
16	267	258	252	246	241	236	231	224	215

***** 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	1504	1218	991	596	281	59	16	50	174	499	899	1314	7601
60	1349	1078	836	451	172	17	1	14	80	355	749	1159	6261
57	1256	994	743	368	120	7	0	5	44	276	659	1066	5538
55	1194	938	681	316	92	3	0	2	27	229	601	1004	5087
50	1039	798	535	200	40	0	0	0	5	131	460	849	4057
32	524	358	133	9	0	0	0	0	0	4	96	363	1487

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	42	64	165	403	771	1038	1205	1125	845	529	187	72	6446
55	0	0	0	20	150	351	492	414	181	42	2	0	1652
57	0	0	0	12	116	294	430	355	138	27	0	0	1372
60	0	0	0	5	75	215	337	271	85	13	0	0	1001
65	0	0	0	1	29	106	197	152	28	2	0	0	515
70	0	0	0	0	8	37	92	70	5	0	0	0	212

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	6	70	245	573	835	988	917	658	345	86	6	0	6	76	321	894	1729	2717	3634	4292	4637	4723	4729
45	0	0	36	145	422	685	833	762	509	219	39	3	0	0	36	181	603	1288	2121	2883	3392	3611	3650	3653
50	0	0	14	83	287	536	678	607	366	129	18	0	0	0	14	97	384	920	1598	2205	2571	2700	2718	2718
55	0	0	6	42	172	390	523	454	241	61	3	0	0	0	6	48	220	610	1133	1587	1828	1889	1892	1892
60	0	0	0	17	94	253	369	304	135	24	0	0	0	0	0	17	111	364	733	1037	1172	1196	1196	1196
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	3	46	157	357	545	659	609	412	210	47	4	0	3	49	206	563	1108	1767	2376	2788	2998	3045	3049

(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