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: VIROQUA 2 S, WI **COOP ID: 478827**

Climate Division: WI 7 **NWS Call Sign:** **Elevation: 1,160 Feet** **Lat: 43˚32N** **Lon: 90˚52W**

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	21.8	4.0	12.9	55+	1981	24	25.5	1990	-42	1963	15	.0	1977	1616	0	.0	.0	.2	23.9	30.8	12.9
Feb	28.5	10.1	19.3	63	1921	16	32.2	1998	-37	1996	3	7.9	1978	1280	0	.0	.0	1.1	15.7	27.5	7.9
Mar	40.5	21.6	31.1	83	1986	29	39.5	1973	-35	1962	1	22.6	1975	1052	0	.0	.0	7.3	6.3	26.2	2.1
Apr	55.4	32.9	44.2	90	1952	30	52.1	1977	-8	1982	6	38.6	1982	625	1	.0	.0	21.4	.4	14.0	.1
May	67.3	44.1	55.7	106	1934	31	64.0	1977	23+	1989	6	49.2	1983	309	21	.0	.1	30.4	.0	2.9	.0
Jun	76.3	53.7	65.0	101+	1931	30	69.4	1971	31	1945	4	60.9	1982	71	71	.0	.9	30.0	.0	.1	.0
Jul	80.3	58.4	69.4	108+	1936	14	73.1	1999	36	1984	7	62.9	1992	26	160	@	3.2	31.0	.0	.0	.0
Aug	77.3	56.2	66.8	103	1937	17	73.4	1995	32	1986	28	61.4	1992	63	117	.1	1.3	31.0	.0	@	.0
Sep	68.7	47.2	58.0	99	1939	8	63.1	1998	20	1995	22	52.1	1993	224	13	.0	.4	29.6	.0	1.5	.0
Oct	57.6	35.9	46.8	90	1963	6	54.3	1971	1	1925	30	40.6	1988	566	0	.0	.0	25.4	@	11.4	.0
Nov	40.4	23.6	32.0	78	1950	1	39.3	1999	-17	1977	26	25.3	1976	989	0	.0	.0	8.1	6.3	23.9	.9
Dec	26.7	10.5	18.6	63+	2001	5	26.1	1982	-36	1983	19	6.0	1985	1438	0	.0	.0	.7	19.9	30.0	7.3
Ann	53.4	33.2	43.3	108+	Jul 1936	14	73.4	Aug 1995	-42	Jan 1963	15	.0	Jan 1977	8259	383	.1	5.9	216.2	72.5	168.3	31.2

\+ 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: 1901-2001

(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	.87	.72	1.60	1999	24	3.51	1999	.08	1981
Feb	.74	.61	3.00	1922	24	2.94	1971	.00	1995
Mar	1.52	1.44	2.37	1913	14	3.89	1976	.08	1999
Apr	3.59	3.07	3.88	1975	28	7.74	1999	1.19	1988
May	3.61	3.05	4.00	2000	31	10.41	2000	1.38	1985
Jun	4.06	3.52	4.01	1942	29	9.88	1998	.93	1988
Jul	4.92	4.47	8.57	1917	22	11.64	1978	1.57	1975
Aug	4.61	3.78	4.87	1972	26	13.69	1980	1.05	1976
Sep	3.53	2.80	4.00	1946	6	9.69	1992	.22	1979
Oct	2.25	2.40	2.85	1904	9	5.17	1984	.56	2000
Nov	2.02	1.88	2.00	1982	12	6.07	1991	.04	1976
Dec	1.30	1.02	2.20	1985	2	4.82	1998	.08	1979
Ann	33.02	32.79	8.57	Jul 1917	22	13.69	Aug 1980	.00	Feb 1995

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.0	2.9	.3	.1
Feb	5.3	2.3	.3	@
Mar	7.1	3.9	.9	.2
Apr	10.0	6.6	2.5	.8
May	10.2	7.4	2.3	.9
Jun	9.3	6.8	2.6	1.1
Jul	9.5	6.8	3.3	1.5
Aug	9.9	7.1	3.4	1.2
Sep	9.2	6.1	2.2	1.2
Oct	7.7	5.3	1.5	.3
Nov	7.9	4.6	1.1	.5
Dec	7.2	3.3	.6	.1
Ann	100.3	63.1	21.0	7.9

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	.16	.24	.36	.48	.60	.73	.88	1.06	1.30	1.68	2.04
Feb	.03	.09	.20	.31	.42	.56	.71	.91	1.18	1.63	2.08
Mar	.13	.24	.44	.65	.88	1.15	1.46	1.85	2.39	3.29	4.17
Apr	1.22	1.56	2.05	2.48	2.88	3.29	3.75	4.28	4.96	6.01	6.98
May	1.14	1.49	1.99	2.43	2.84	3.28	3.75	4.31	5.03	6.15	7.18
Jun	1.06	1.44	2.03	2.55	3.06	3.59	4.19	4.90	5.82	7.28	8.64
Jul	1.58	2.05	2.74	3.32	3.89	4.48	5.12	5.87	6.84	8.35	9.75
Aug	1.29	1.72	2.39	2.96	3.53	4.12	4.77	5.54	6.55	8.12	9.59
Sep	.59	.90	1.42	1.90	2.40	2.94	3.56	4.31	5.31	6.93	8.49
Oct	.65	.86	1.18	1.46	1.74	2.02	2.33	2.70	3.18	3.93	4.63
Nov	.28	.45	.74	1.02	1.31	1.64	2.01	2.47	3.09	4.10	5.08
Dec	.12	.21	.39	.57	.77	.99	1.26	1.59	2.04	2.80	3.55
Ann	22.59	24.57	27.14	29.09	30.84	32.53	34.29	36.23	38.60	42.05	45.04

\+ 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: 1901-2001
(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	9.7	8.1	7	5	13.0	1971	4	21.0	1982	32	1996	31	20	1999	5.2	3.4	1.2	.4	.1	26.5	22.8	16.4	7.8
Feb	7.9	6.9	7	6	8.0	1994	23	20.5	1994	32	1996	5	21	1979	3.7	2.6	.9	.3	.0	21.8	18.6	13.8	6.7
Mar	5.8	5.0	3	1	10.0	1971	19	14.0	1972	23	1975	12	18	1975	2.7	1.8	.5	.2	@	8.9	6.2	3.6	.8
Apr	2.7	1.0	#	#	13.0	1973	9	17.0	1973	17	1973	10	2	1973	1.0	.8	.3	.1	@	1.4	.8	.3	.1
May	.0	.0	0	0	.0	0	0	.0	0	0	0	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	.5	.0	#	0	3.0	1990	11	3.0+	1995	3	1995	31	#+	1999	.3	.2	.1	.0	.0	.2	.1	.0	.0
Nov	4.1	3.0	1	#	12.0	1991	24	15.0	1985	14	1991	28	7	1991	2.3	1.6	.5	.2	@	4.8	2.8	1.9	.3
Dec	9.5	5.8	4	3	15.0	1985	2	35.0	1985	26	2000	31	18	1985	5.3	3.3	1.0	.3	@	20.8	15.8	9.8	3.0
Ann	40.2	29.8	N/A	N/A	15.0	Dec 1985	2	35.0	Dec 1985	32+	Feb 1996	5	21	Feb 1979	20.5	13.7	4.5	1.5	.1	84.4	67.1	45.8	18.7

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

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	131	124	119	114	110	106	101	96	88
32	157	150	145	140	136	132	128	123	116
28	172	166	161	157	153	149	145	140	134
24	204	196	191	186	182	177	172	167	159
20	222	215	210	206	202	198	193	188	181
16	239	231	225	220	215	211	206	200	192

***** 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	1616	1280	1052	625	309	71	26	63	224	566	989	1438	8259
60	1461	1140	897	480	193	20	5	17	113	417	839	1283	6865
57	1368	1056	804	397	138	7	0	7	66	333	749	1190	6115
55	1306	1000	742	344	107	4	0	2	43	281	689	1128	5646
50	1151	860	592	227	50	0	0	0	11	171	543	973	4578
32	623	404	168	15	0	0	0	0	0	7	135	463	1815

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	31	48	139	380	735	990	1157	1078	779	464	136	48	5985
55	0	0	0	19	129	303	444	367	133	26	0	0	1421
57	0	0	0	12	98	247	382	309	95	16	0	0	1159
60	0	0	0	5	61	170	294	227	52	7	0	0	816
65	0	0	0	1	21	71	160	117	13	0	0	0	383
70	0	0	0	0	5	17	69	46	2	0	0	0	139

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	50	220	526	779	945	866	585	275	50	3	0	2	52	272	798	1577	2522	3388	3973	4248	4298	4301
45	0	1	24	124	379	629	790	711	438	164	20	1	0	1	25	149	528	1157	1947	2658	3096	3260	3280	3281
50	0	0	10	67	248	479	635	556	300	90	4	0	0	0	10	77	325	804	1439	1995	2295	2385	2389	2389
55	0	0	4	30	138	336	480	402	184	37	1	0	0	0	4	34	172	508	988	1390	1574	1611	1612	1612
60	0	0	0	12	68	202	328	255	99	9	0	0	0	0	0	12	80	282	610	865	964	973	973	973
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	34	144	328	503	629	564	363	168	28	1	0	1	35	179	507	1010	1639	2203	2566	2734	2762	2763

(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