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: RIVER FALLS, WI **COOP ID: 477226**

Climate Division: WI 4 **NWS Call Sign:** **Elevation: 915 Feet** **Lat: 44˚51N** **Lon: 92˚37W**

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	21.6	.8	11.2	51+	1981	25	24.8	1990	-42	1951	30	-1.5	1977	1667	0	.0	.0	.1	23.3	30.9	13.7
Feb	28.5	6.8	17.7	57	1981	18	30.8	1998	-36	1951	1	7.3+	1979	1326	0	.0	.0	.6	15.8	26.9	8.5
Mar	40.8	18.9	29.9	81+	1986	31	38.5	2000	-31	1962	1	21.3	1975	1090	0	.0	.0	6.8	6.5	25.4	2.2
Apr	57.1	31.5	44.3	92+	1980	21	51.2	1977	5+	1995	5	37.0	1975	622	1	.0	.1	22.5	.4	13.5	.0
May	69.8	43.3	56.6	94+	2001	16	64.9	1977	19	1967	3	50.2	1997	295	32	.0	.2	30.5	.0	2.2	.0
Jun	78.9	53.9	66.4	99+	1988	24	72.6	1988	33	1993	1	61.3	1982	69	110	.0	2.2	30.0	.0	.0	.0
Jul	83.1	58.2	70.7	102+	1988	31	75.2	1988	37	1965	10	64.0	1992	22	198	.2	4.2	31.0	.0	.0	.0
Aug	80.7	56.2	68.5	101	1988	16	73.4	1988	34	1950	20	64.1	1992	36	143	.1	2.0	31.0	.0	.0	.0
Sep	71.7	46.8	59.3	95+	1976	7	64.7	1998	23	1974	22	53.8	1993	196	22	.0	.5	29.6	.0	.9	.0
Oct	59.6	35.7	47.7	90	1997	4	53.9	1973	9	1952	20	42.4	1988	539	0	.0	@	25.6	.2	9.0	.0
Nov	40.6	22.1	31.4	77	1999	9	39.2	1999	-19	1952	28	22.9	1991	1010	0	.0	.0	7.0	7.5	23.5	1.0
Dec	26.1	8.2	17.2	66	1998	2	25.8	1997	-36	1983	19	3.0	1983	1484	0	.0	.0	.4	20.5	30.3	8.0
Ann	54.9	31.9	43.4	102+	Jul 1988	31	75.2	Jul 1988	-42	Jan 1951	30	-1.5	Jan 1977	8356	506	.3	9.2	215.1	74.2	162.6	33.4

\+ 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	.82	.73	1.53	1996	20	2.28	1996	.06	1974
Feb	.66	.66	.77+	2001	25	2.38	1981	.04	1987
Mar	1.53	1.20	2.13	1998	28	4.20	1998	.13	1994
Apr	2.46	2.53	2.84	1954	15	5.04	1986	.35	1987
May	3.52	3.30	2.47	1979	30	6.91	1991	.52	1976
Jun	4.39	4.11	7.37	1965	1	8.88	1990	.46	1988
Jul	4.36	4.38	4.75	1978	1	10.48	1987	1.10	1974
Aug	4.56	4.44	4.67	1977	31	8.90	1975	1.83	1976
Sep	3.29	3.08	3.42	1968	23	8.61	1986	.45	2000
Oct	2.41	2.11	3.84	1996	17	6.51	1996	.46	1978
Nov	1.71	1.33	1.72	1996	16	5.38	1996	.04	1976
Dec	.82	.58	1.53	1982	28	3.30	1982	.13	1986
Ann	30.53	30.91	7.37	Jun 1965	1	10.48	Jul 1987	.04+	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.9	3.0	.1	@
Feb	6.0	2.3	.2	.0
Mar	8.9	4.1	.8	.2
Apr	10.3	5.9	1.4	.3
May	11.4	7.5	2.4	.7
Jun	11.6	8.0	3.0	1.1
Jul	10.5	6.8	2.8	1.4
Aug	10.4	6.4	2.8	1.5
Sep	9.6	6.0	2.4	.7
Oct	8.9	5.2	1.2	.4
Nov	8.1	4.0	1.0	.3
Dec	7.7	3.0	.2	.1
Ann	111.3	62.2	18.3	6.7

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	.12	.19	.30	.42	.54	.67	.82	1.00	1.25	1.65	2.04
Feb	.08	.13	.22	.31	.41	.52	.65	.81	1.03	1.38	1.73
Mar	.32	.46	.69	.89	1.10	1.32	1.56	1.86	2.26	2.89	3.48
Apr	.74	.98	1.32	1.62	1.92	2.22	2.55	2.95	3.45	4.25	4.98
May	1.14	1.48	1.97	2.39	2.79	3.21	3.67	4.21	4.90	5.97	6.96
Jun	1.37	1.79	2.41	2.94	3.46	3.99	4.57	5.26	6.14	7.52	8.79
Jul	1.34	1.75	2.37	2.90	3.42	3.95	4.54	5.23	6.12	7.51	8.80
Aug	1.99	2.40	2.97	3.43	3.87	4.31	4.78	5.33	6.01	7.05	7.99
Sep	.78	1.09	1.57	2.00	2.43	2.88	3.39	3.99	4.78	6.03	7.21
Oct	.52	.74	1.09	1.41	1.73	2.08	2.46	2.93	3.54	4.51	5.43
Nov	.20	.34	.58	.82	1.07	1.35	1.68	2.09	2.64	3.55	4.43
Dec	.14	.21	.33	.44	.56	.69	.83	1.01	1.24	1.62	1.99
Ann	21.67	23.39	25.59	27.26	28.74	30.17	31.65	33.29	35.28	38.16	40.66

\+ 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	10.8	8.8	9	8
Feb	7.4	7.7	10	8
Mar	8.5	8.8	5	4
Apr	2.9	1.2	#	#
May	.0	.0	#	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.5	.0	#	0
Nov	7.9	6.2	1	1
Dec	8.5	6.5	5	4
Ann	46.5	39.2	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	15.0	1982	20	32.2	1982	27	1982	23	18	1984
Feb	6.5	1983	2	16.1	1981	26	1982	6	21	1979
Mar	15.0	1999	9	23.7	1989	23	1979	11	15	1979
Apr	14.0	1983	14	20.5	1983	14	1983	14	3	1975
May	1.0	1976	2	1.0	1976	#+	1996	6	#+	1996
Jun	.0	0	0	.0	0	#	1994	28	#	1994
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.3	1985	24	.3	1985	0	0	0	0	0
Oct	4.0	1991	31	4.0	1991	4	1991	31	#+	1997
Nov	11.0	1983	23	25.2	1983	18	1983	30	8	1991
Dec	11.0	1982	28	19.1	1972	22	1983	30	20	1983
Ann	15.0+	Mar 1999	9	32.2	Jan 1982	27	Jan 1982	23	21	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.9	3.5	1.1	.4	@
Feb	4.9	2.4	1.0	.2	.0
Mar	4.8	2.9	1.1	.5	.1
Apr	1.4	.9	.2	.1	@
May	.1	@	.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
Oct	.6	.2	@	.0	.0
Nov	4.1	2.5	1.0	.3	.1
Dec	6.4	2.9	.8	.4	@
Ann	29.2	15.3	5.2	1.9	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	28.2	25.9	22.1	8.9
Feb	25.3	22.9	19.7	12.9
Mar	16.0	12.1	10.2	5.3
Apr	1.2	.7	.5	.2
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
Nov	7.0	3.9	2.1	.8
Dec	23.6	14.3	9.4	3.6
Ann	101.3	79.8	64.0	31.7

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

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	9/17	9/19	9/21	9/24	9/26	9/29	10/03
32	9/17	9/21	9/24	9/27	9/29	10/01	10/04	10/06	10/10
28	9/27	10/02	10/05	10/08	10/11	10/14	10/17	10/20	10/25
24	10/09	10/15	10/19	10/22	10/25	10/28	10/31	11/04	11/10
20	10/15	10/21	10/24	10/28	10/31	11/03	11/06	11/10	11/15
16	10/28	11/02	11/06	11/09	11/12	11/15	11/18	11/22	11/27

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	161	155	151	148	145	141	138	134	128
28	187	180	176	172	168	165	161	156	150
24	216	208	203	198	193	189	184	178	170
20	227	220	216	212	208	204	200	195	189
16	250	243	237	233	229	225	220	215	208

***** 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	1667	1326	1090	622	295	69	22	36	196	539	1010	1484	8356
60	1512	1186	935	479	186	23	5	8	96	389	860	1329	7008
57	1419	1102	842	396	134	10	0	2	55	306	770	1236	6272
55	1357	1046	780	345	105	5	0	0	35	255	710	1174	5812
50	1202	906	630	230	50	1	0	0	8	148	565	1019	4759
32	666	447	195	17	0	0	0	0	0	4	155	505	1989

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	22	45	128	386	760	1031	1198	1130	816	489	135	44	6184
55	0	0	0	24	152	346	485	417	162	27	0	0	1613
57	0	0	0	15	119	291	423	357	121	16	0	0	1342
60	0	0	0	7	79	214	335	270	72	6	0	0	983
65	0	0	0	1	32	110	198	143	22	0	0	0	506
70	0	0	0	0	10	42	98	59	4	0	0	0	213

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	40	232	581	826	986	915	617	295	43	2	0	1	41	273	854	1680	2666	3581	4198	4493	4536	4538
45	0	0	18	136	428	676	831	760	469	183	17	0	0	0	18	154	582	1258	2089	2849	3318	3501	3518	3518
50	0	0	5	74	288	526	676	605	330	97	3	0	0	0	5	79	367	893	1569	2174	2504	2601	2604	2604
55	0	0	0	36	172	380	521	450	211	43	1	0	0	0	0	36	208	588	1109	1559	1770	1813	1814	1814
60	0	0	0	11	92	244	366	301	111	16	0	0	0	0	0	11	103	347	713	1014	1125	1141	1141	1141
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	28	155	361	529	659	602	377	175	23	0	0	0	28	183	544	1073	1732	2334	2711	2886	2909	2909

(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