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: RHINELANDER, WI **COOP ID: 477113**

Climate Division: WI 2 **NWS Call Sign:** **Elevation: 1,580 Feet** **Lat: 45˚37N** **Lon: 89˚25W**

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	21.4	-.2	10.6	53	1981	25	21.8	1990	-40	1982	16	1.4	1982	1688	0	.0	.0	.1	26.5	30.9	16.3
Feb	27.7	4.4	16.1	59+	2000	29	30.0	1998	-42	1996	3	7.3	1989	1371	0	.0	.0	.5	18.6	27.8	11.4
Mar	38.3	15.8	27.1	75	1986	31	37.2	2000	-36	1962	1	19.9	1996	1176	0	.0	.0	4.8	9.1	28.7	4.7
Apr	52.6	29.1	40.9	92	1952	28	47.4	1987	-4	1982	6	33.9	1975	725	0	.0	.0	17.4	1.1	20.0	@
May	66.8	41.2	54.0	90+	1977	12	62.8	1977	20+	1966	10	47.7	1973	367	25	.0	.1	29.3	@	5.8	.0
Jun	74.4	50.6	62.5	98	1995	18	68.0	1995	30+	1995	7	57.0	1982	128	52	.0	.8	29.9	.0	.2	.0
Jul	78.6	55.7	67.2	100	1995	13	72.0	1999	37+	1972	4	61.7	1992	50	117	@	1.5	31.0	.0	.0	.0
Aug	76.2	53.9	65.1	97+	1988	16	69.5	1995	36+	1986	27	60.1	1977	83	83	.0	.9	31.0	.0	.0	.0
Sep	66.9	44.9	55.9	95	1976	7	63.3	1998	24	1976	24	49.0	1974	283	11	.0	.1	29.2	.0	2.6	.0
Oct	54.6	34.1	44.4	92	1976	1	51.6	1971	11+	1988	30	38.2	1987	640	0	.0	@	21.1	.2	14.7	.0
Nov	37.9	21.6	29.8	73	1975	5	38.8	1999	-16	1976	30	20.9	1995	1057	0	.0	.0	4.7	9.8	26.8	1.1
Dec	25.3	7.2	16.3	62	1998	2	25.1	1997	-34	1983	18	3.7	1983	1512	0	.0	.0	.4	23.8	30.7	10.7
Ann	51.7	29.9	40.8	100	Jul 1995	13	72.0	Jul 1999	-42	Feb 1996	3	1.4	Jan 1982	9080	288	@	3.4	199.4	89.1	188.2	44.2

\+ 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: 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	1.24	1.16	1.45	1950	13	3.15	1997	.14	1985
Feb	.87	.82	.91	1948	27	2.82	1971	.04	1993
Mar	1.60	1.41	1.75	1973	7	4.09	1973	.15	1978
Apr	2.38	2.56	2.00	1984	29	4.33	1991	.65	1971
May	3.36	3.01	3.26	1958	31	7.50	1991	.56	1986
Jun	3.93	4.04	4.64	1981	13	10.22	1981	.85	1995
Jul	4.04	3.88	8.27	2000	8	10.24	2000	.63	1989
Aug	4.35	3.62	3.48	1978	15	9.15	1978	.82	1981
Sep	4.11	4.17	3.41	1994	13	8.51	1994	.40	1976
Oct	2.65	2.18	2.47	1979	22	5.90	1979	.43	1976
Nov	2.05	1.97	2.14	1977	7	4.87	1991	.27	1981
Dec	1.32	1.13	2.00	1987	18	3.46	1987	.35	1994
Ann	31.90	32.04	8.27	Jul 2000	8	10.24	Jul 2000	.04	Feb 1993

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.7	4.3	.3	@
Feb	6.9	2.9	.4	.0
Mar	8.5	4.4	.9	.1
Apr	9.6	6.0	1.3	.3
May	11.6	7.5	2.3	.6
Jun	12.5	7.7	2.3	.8
Jul	11.6	7.5	2.5	1.1
Aug	11.6	7.6	2.8	1.0
Sep	12.4	7.6	2.8	.9
Oct	11.5	6.2	1.4	.6
Nov	10.3	4.9	1.0	.4
Dec	10.4	4.6	.3	@
Ann	126.6	71.2	18.3	5.8

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	.27	.38	.56	.73	.89	1.07	1.27	1.51	1.82	2.33	2.80
Feb	.09	.16	.28	.40	.53	.68	.85	1.06	1.35	1.83	2.30
Mar	.28	.42	.66	.88	1.10	1.34	1.62	1.95	2.39	3.11	3.79
Apr	.79	1.01	1.34	1.62	1.89	2.17	2.48	2.83	3.29	4.00	4.66
May	.92	1.24	1.72	2.15	2.56	3.00	3.48	4.05	4.80	5.97	7.06
Jun	1.37	1.74	2.28	2.73	3.17	3.61	4.10	4.67	5.40	6.52	7.56
Jul	.96	1.34	1.93	2.46	2.98	3.53	4.16	4.90	5.87	7.40	8.85
Aug	1.47	1.88	2.48	2.99	3.48	3.99	4.54	5.19	6.02	7.30	8.49
Sep	.97	1.35	1.95	2.49	3.02	3.59	4.22	4.98	5.97	7.54	9.02
Oct	.77	1.02	1.40	1.73	2.05	2.38	2.75	3.18	3.74	4.61	5.43
Nov	.37	.55	.85	1.13	1.41	1.72	2.07	2.49	3.06	3.97	4.83
Dec	.34	.46	.65	.82	.99	1.17	1.36	1.60	1.90	2.38	2.83
Ann	21.71	23.65	26.15	28.06	29.77	31.42	33.14	35.04	37.36	40.73	43.67

\+ 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

Complete documentation available from:
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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	12.0	12.5	11	9
Feb	7.6	6.0	12	11
Mar	6.4	3.5	7	5
Apr	1.9	.5	1	#
May	.2	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	#	0
Oct	.3	.0	#	0
Nov	2.5	1.7	1	1
Dec	10.3	7.4	6	5
Ann	41.2	31.6	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	9.0	1971	4	24.0	1971	29	1971	31	21	1997
Feb	9.0	1971	5	18.1	2000	40	1971	11	33	1971
Mar	11.5	1992	9	14.3	1972	34	1972	10	22	1972
Apr	6.5	1972	22	7.5	1972	11	1972	5	4	1972
May	5.0	1979	5	5.0	1979	1	1997	16	#	1997
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	#	1974	21	#	1974	#	1985	30	#	1985
Oct	2.0	1979	23	2.0+	2000	3	1990	10	#+	1997
Nov	12.0	1991	23	12.0	1991	15	1985	30	4	1991
Dec	6.0	1995	13	21.5	1972	20+	1996	31	16	1985
Ann	12.0	Nov 1991	23	24.0	Jan 1971	40	Feb 1971	11	33	Feb 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.9	5.2	1.4	.3	.0
Feb	4.1	2.7	.7	.2	.0
Mar	2.9	2.5	.9	.3	@
Apr	1.0	.7	.2	.1	.0
May	.1	@	@	@	.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	2.6	1.4	.2	.1	.0
Dec	6.0	4.7	1.1	.2	.0
Ann	23.8	17.3	4.5	1.2	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	14.1	12.4	10.4	7.2
Apr	2.2	1.5	.9	.4
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
Nov	3.3	1.5	.9	.0
Dec	24.6	19.6	10.6	1.1
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	6/13	6/09	6/07	6/04	6/02	5/31	5/29	5/26	5/22
32	6/03	5/29	5/26	5/24	5/21	5/19	5/16	5/13	5/08
28	5/16	5/12	5/09	5/07	5/04	5/02	4/30	4/27	4/23
24	5/05	4/30	4/26	4/23	4/20	4/17	4/14	4/10	4/05
20	4/24	4/20	4/17	4/15	4/12	4/10	4/08	4/05	4/01
16	4/16	4/11	4/08	4/06	4/03	4/01	3/29	3/26	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	9/03	9/07	9/10	9/12	9/14	9/17	9/19	9/22	9/26
32	9/12	9/16	9/19	9/21	9/23	9/25	9/27	9/30	10/04
28	9/24	9/29	10/02	10/04	10/07	10/10	10/12	10/15	10/20
24	10/05	10/10	10/15	10/18	10/22	10/25	10/29	11/02	11/08
20	10/18	10/23	10/27	10/30	11/02	11/05	11/08	11/12	11/17
16	10/25	10/29	11/02	11/04	11/07	11/10	11/12	11/16	11/20

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	119	114	110	107	103	100	97	93	87
32	142	136	131	128	124	121	117	113	107
28	172	166	162	158	155	152	148	144	138
24	210	201	194	189	184	179	173	167	158
20	223	216	211	207	203	199	195	190	183
16	236	230	225	221	217	213	209	205	198

***** 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	1688	1371	1176	725	367	128	50	83	283	640	1057	1512	9080
60	1533	1231	1021	579	248	55	11	25	164	490	907	1357	7621
57	1440	1147	928	493	190	28	4	10	109	403	817	1264	6833
55	1378	1091	866	438	155	17	0	4	79	349	757	1202	6336
50	1223	951	711	311	86	4	0	0	30	227	609	1047	5199
32	677	472	238	37	2	0	0	0	0	15	176	525	2142

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	12	26	86	302	683	914	1089	1024	717	397	108	36	5394
55	0	0	0	13	124	241	376	315	107	18	0	0	1194
57	0	0	0	8	96	192	319	259	76	11	0	0	961
60	0	0	0	4	62	129	233	181	42	5	0	0	656
65	0	0	0	0	25	52	117	83	11	0	0	0	288
70	0	0	0	0	8	13	42	25	1	0	0	0	89

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	19	136	458	688	860	796	490	194	22	1	0	1	20	156	614	1302	2162	2958	3448	3642	3664	3665
45	0	1	7	72	315	538	705	641	346	108	9	0	0	1	8	80	395	933	1638	2279	2625	2733	2742	2742
50	0	0	1	36	196	391	550	486	217	46	1	0	0	0	1	37	233	624	1174	1660	1877	1923	1924	1924
55	0	0	0	13	107	252	395	332	121	17	0	0	0	0	0	13	120	372	767	1099	1220	1237	1237	1237
60	0	0	0	5	48	139	245	190	58	3	0	0	0	0	0	5	53	192	437	627	685	688	688	688
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	18	106	292	427	550	497	289	123	15	0	0	1	19	125	417	844	1394	1891	2180	2303	2318	2318

(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