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: ROSHOLT 9 NNE, WI **COOP ID: 477349**

Climate Division: WI 5 **NWS Call Sign:** **Elevation: 1,160 Feet** **Lat: 44˚45N** **Lon: 89˚14W**

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	21.7	.2	11.0	53	1996	19	20.1	1990	-41	1982	17	1.0	1977	1677	0	.0	.0	.1	24.3	30.9	14.2
Feb	27.5	5.2	16.4	59	2000	27	29.5	1998	-38	1996	3	7.0	1979	1362	0	.0	.0	.6	17.1	27.7	9.0
Mar	38.7	17.0	27.9	78	1986	30	36.9	2000	-33	1962	1	20.1	1984	1153	0	.0	.0	5.4	7.5	27.4	3.9
Apr	54.1	30.0	42.1	89+	1980	22	48.8	1977	2	1982	7	35.7	1975	689	0	.0	.0	19.7	.5	17.6	.0
May	67.7	41.8	54.8	92	1959	2	63.4	1977	15	1980	15	48.0	1997	343	26	.0	.1	30.1	@	4.4	.0
Jun	76.3	50.6	63.5	98	1963	30	67.6	1971	26	1980	16	57.8	1982	103	57	.0	1.6	30.0	.0	.2	.0
Jul	80.2	55.4	67.8	103	1995	14	72.0	1983	35	1988	1	62.4	1992	36	123	.1	2.5	31.0	.0	.0	.0
Aug	77.5	53.2	65.4	100	1948	24	71.6	1995	31	1982	28	61.8	1992	77	87	.0	1.4	31.0	.0	@	.0
Sep	68.8	44.1	56.5	94+	1976	8	61.4	1998	19+	1989	25	51.2	1993	264	7	.0	.3	29.7	.0	2.6	.0
Oct	57.2	33.4	45.3	90	1976	2	52.6	1971	10+	1989	19	39.1	1988	611	0	.0	@	24.0	.1	13.1	.0
Nov	40.1	21.0	30.6	73+	1999	10	38.1	1999	-14	1950	25	23.6	1995	1034	0	.0	.0	6.2	6.6	25.6	1.1
Dec	26.4	7.4	16.9	61	1962	3	25.4	1997	-35	1989	21	4.6	1989	1492	0	.0	.0	.6	21.1	30.5	8.7
Ann	53.0	29.9	41.5	103	Jul 1995	14	72.0	Jul 1983	-41	Jan 1982	17	1.0	Jan 1977	8841	300	.1	5.9	208.4	77.2	180.0	36.9

\+ 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	1.12	1.06	.92	1980	6	3.14	1980	.05	1981
Feb	.94	.88	1.65	1981	22	3.64	1971	.01	1978
Mar	1.77	1.80	1.44	1949	31	3.65	1977	.30	1999
Apr	2.92	2.56	2.15	1984	30	5.03	1981	.55	1989
May	3.67	3.44	3.15	1970	22	8.69	1973	1.25	1986
Jun	3.70	3.07	2.62	1996	18	8.16	1993	.97	1985
Jul	3.92	3.39	2.38	1976	28	7.94	1978	1.46	1988
Aug	4.55	3.80	6.65	1995	9	16.45	1995	1.22	1976
Sep	3.83	3.47	2.86	1986	10	8.56	1986	.58	1976
Oct	2.54	2.26	2.30	1959	24	6.63	1984	.31	2000
Nov	2.34	1.92	2.00	1985	1	5.60	1991	.00	1976
Dec	1.36	1.40	1.28	1965	12	3.00	1972	.26	1993
Ann	32.66	33.85	6.65	Aug 1995	9	16.45	Aug 1995	.00	Nov 1976

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.5	3.7	.3	.0
Feb	5.2	3.1	.4	@
Mar	7.1	4.8	1.1	.2
Apr	9.2	6.3	1.9	.5
May	9.6	6.8	2.4	1.0
Jun	10.2	7.2	2.5	.7
Jul	10.2	7.7	2.7	.9
Aug	10.0	7.3	2.6	1.2
Sep	10.0	6.9	2.4	1.0
Oct	8.0	5.4	1.7	.6
Nov	7.7	5.0	1.5	.6
Dec	7.2	4.0	.7	.0
Ann	101.9	68.2	20.2	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	.20	.30	.47	.62	.77	.94	1.13	1.36	1.67	2.16	2.63
Feb	.05	.10	.21	.34	.48	.66	.86	1.13	1.51	2.16	2.81
Mar	.36	.52	.78	1.02	1.26	1.51	1.80	2.15	2.61	3.34	4.03
Apr	.91	1.19	1.60	1.95	2.29	2.65	3.04	3.50	4.09	5.01	5.86
May	1.42	1.76	2.25	2.65	3.03	3.42	3.84	4.33	4.95	5.90	6.77
Jun	1.03	1.38	1.91	2.38	2.83	3.31	3.83	4.45	5.26	6.52	7.70
Jul	1.52	1.89	2.41	2.84	3.24	3.66	4.11	4.63	5.29	6.30	7.22
Aug	1.39	1.83	2.47	3.02	3.56	4.12	4.73	5.45	6.38	7.83	9.17
Sep	.98	1.35	1.90	2.39	2.88	3.39	3.95	4.63	5.51	6.89	8.19
Oct	.68	.92	1.29	1.61	1.92	2.26	2.62	3.06	3.63	4.51	5.34
Nov	.30	.60	1.00	1.33	1.66	2.01	2.41	2.88	3.50	4.49	5.42
Dec	.30	.43	.63	.81	.99	1.18	1.39	1.64	1.98	2.52	3.02
Ann	24.53	26.13	28.17	29.70	31.06	32.36	33.70	35.17	36.94	39.50	41.70

\+ 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	9.4	9.0	10	9
Feb	9.3	11.3	14	13
Mar	9.3	6.0	8	5
Apr	2.8	.5	1	#
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	.4	.0	#	0
Nov	5.4	3.0	1	#
Dec	11.3	8.8	6	5
Ann	48.1	38.6	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	8.0	1971	4	23.0	1971	37	1982	31	25	1982
Feb	8.0	1971	5	26.1	1971	40	1971	9	34	1971
Mar	14.0	1997	14	26.0	1985	36	1971	3	26	1971
Apr	8.0	1977	4	13.0	1993	16	1996	3	6	1996
May	4.0	1996	1	4.0	1996	3	1996	1	#+	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	.0	0	0	.0	0	0	0	0	0	0
Oct	2.0	1976	19	2.0+	1992	1	1995	21	#+	2000
Nov	9.0	1983	28	16.5	1971	12	1991	28	4	1991
Dec	10.0	1977	24	26.0	1984	23	1985	4	17	1985
Ann	14.0	Mar 1997	14	26.1	Feb 1971	40	Feb 1971	9	34	Feb 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.7	5.0	1.5	.4	.0
Feb	3.6	3.3	1.2	.3	.0
Mar	3.6	3.3	1.4	.6	@
Apr	1.1	1.0	.5	.2	.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	.2	.0	.0	.0
Nov	3.0	2.7	.9	.3	.0
Dec	5.3	4.9	1.5	.5	.1
Ann	22.6	20.5	7.0	2.3	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	29.0	27.5	22.5	11.5
Feb	27.0	26.1	23.6	15.7
Mar	15.1	12.5	10.4	5.9
Apr	2.5	1.9	1.3	.3
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	.0
Nov	6.0	2.8	1.6	.3
Dec	25.9	21.5	16.7	5.6
Ann	105.6	92.3	76.1	39.3

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

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	8/24	8/30	9/03	9/06	9/10	9/13	9/16	9/20	9/26
32	9/09	9/13	9/16	9/19	9/21	9/24	9/26	9/29	10/03
28	9/19	9/23	9/27	9/30	10/02	10/05	10/08	10/11	10/16
24	9/27	10/03	10/07	10/11	10/14	10/18	10/22	10/26	11/01
20	10/10	10/16	10/20	10/24	10/28	10/31	11/04	11/08	11/15
16	10/21	10/27	10/31	11/03	11/06	11/09	11/13	11/17	11/22

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	121	113	107	102	97	92	87	81	72
32	147	139	134	129	124	120	115	110	102
28	173	165	159	155	150	146	141	135	127
24	200	192	186	181	176	172	167	161	153
20	224	215	209	203	198	193	188	181	173
16	243	234	227	222	217	211	206	199	190

***** 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	1677	1362	1153	689	343	103	36	77	264	611	1034	1492	8841
60	1522	1222	998	541	227	38	7	22	142	460	884	1337	7400
57	1429	1138	905	455	170	17	0	9	87	373	794	1244	6621
55	1367	1082	843	400	137	10	0	3	59	319	734	1182	6136
50	1212	942	689	273	71	2	0	0	17	200	586	1027	5019
32	664	460	223	22	0	0	0	0	0	10	156	504	2039

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	11	22	93	324	706	944	1110	1033	733	422	112	35	5545
55	0	0	0	11	130	264	397	323	102	18	0	0	1245
57	0	0	0	7	101	211	335	266	70	11	0	0	1001
60	0	0	0	3	65	142	248	187	35	4	0	0	684
65	0	0	0	0	26	57	123	87	7	0	0	0	300
70	0	0	0	0	9	13	43	27	0	0	0	0	92

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	0	24	174	495	736	885	825	539	240	36	2	0	0	24	198	693	1429	2314	3139	3678	3918	3954	3956
45	0	0	9	94	347	586	730	670	390	138	15	0	0	0	9	103	450	1036	1766	2436	2826	2964	2979	2979
50	0	0	3	49	220	437	575	515	256	66	3	0	0	0	3	52	272	709	1284	1799	2055	2121	2124	2124
55	0	0	0	20	122	295	420	360	146	29	0	0	0	0	0	20	142	437	857	1217	1363	1392	1392	1392
60	0	0	0	6	60	171	274	220	70	5	0	0	0	0	0	6	66	237	511	731	801	806	806	806
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	21	129	318	466	577	531	333	155	22	0	0	0	21	150	468	934	1511	2042	2375	2530	2552	2552

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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