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: REDWOOD FALLS MUNICIPAL, MN **COOP ID: 216835**

Climate Division: MN 7 **NWS Call Sign: RWF** **Elevation: 1,025 Feet** **Lat: 44˚33N** **Lon: 95˚05W**

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	21.9	4.0	13.0	68	1981	24	27.3	1990	-34	1970	19	.4	1982	1613	0	.0	.0	.5	22.9	30.6	13.8
Feb	28.1	11.5	19.8	64	1981	16	32.3	1987	-33	1936	16	6.7	1979	1265	0	.0	.0	1.4	16.4	26.5	7.5
Mar	40.4	24.0	32.2	82	1968	30	41.3	1973	-25+	1962	1	23.1	1975	1016	0	.0	.0	7.2	7.2	22.9	1.8
Apr	57.2	36.6	46.9	96	1980	21	55.6	1977	4	1936	7	41.2	1975	547	4	.0	.2	22.0	.5	9.0	.0
May	71.4	49.2	60.3	107	1934	31	68.8	1977	21+	1967	3	53.9	1997	210	63	@	1.4	30.3	.0	.8	.0
Jun	80.6	58.5	69.6	105+	1988	24	75.4	1988	34+	1946	2	64.6	1982	30	166	.3	5.0	30.0	.0	.0	.0
Jul	84.4	62.5	73.5	110+	1936	14	78.8	1983	43	1971	30	65.3	1992	16	278	.8	7.6	31.0	.0	.0	.0
Aug	81.8	60.1	71.0	104+	1971	22	78.5	1983	36	1950	20	65.6	1992	31	215	.4	4.9	31.0	.0	.0	.0
Sep	73.1	50.3	61.7	103+	1978	7	69.3	1978	25+	1956	30	55.6	1993	152	53	.1	1.8	29.7	.0	.8	.0
Oct	59.9	38.4	49.2	93	1953	2	55.8	1973	12	1967	28	44.0	1987	493	1	.0	.2	25.4	.1	8.4	.0
Nov	40.1	24.0	32.1	82	1999	8	42.3	1999	-15	1996	26	21.4	1985	988	0	.0	.0	7.3	8.5	23.6	1.1
Dec	26.2	9.8	18.0	70	1939	6	27.7	1979	-29+	1983	19	1.1	1983	1458	0	.0	.0	.7	19.9	30.4	8.7
Ann	55.4	35.7	45.6	110+	Jul 1936	14	78.8	Jul 1983	-34	Jan 1970	19	.4	Jan 1982	7819	780	1.6	21.1	216.5	75.5	153.0	32.9

\+ 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: 1932-2001

(3) Derived from 1971-2000 serially complete daily data

Issue Date: February 2004

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: REDWOOD FALLS MUNICIPAL, MN **COOP ID: 216835**

Climate Division: MN 7 **NWS Call Sign: RWF** **Elevation: 1,025 Feet** **Lat: 44˚33N** **Lon: 95˚05W**

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	.70	.69	.80	1996	17	1.89	1975	.06	1995
Feb	.61	.55	1.08	1977	23	1.69	1971	.02	1985
Mar	1.65	1.54	1.35	1942	20	4.31	1977	.26	1994
Apr	2.51	2.36	3.30	2001	22	6.43	1986	.32	1980
May	3.11	3.02	2.73	1951	15	5.48	1979	.48	1975
Jun	4.09	3.73	4.31	1993	16	11.55	1993	.37	1988
Jul	3.80	3.79	3.32	1990	26	7.42	1990	.27	1988
Aug	3.61	2.94	3.83	1994	10	8.30	1979	1.07	1972
Sep	2.48	2.17	3.27	1933	10	6.77	1986	.45	2000
Oct	1.88	1.48	2.29	1968	17	4.97	1984	.04	1989
Nov	1.60	1.23	2.15	1973	20	5.33	1983	.00	1984
Dec	.60	.61	1.29	1959	27	1.98	1996	.03	1979
Ann	26.64	26.30	4.31	Jun 1993	16	11.55	Jun 1993	.00	Nov 1984

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.0	2.4	.2	.0
Feb	5.6	2.1	.2	@
Mar	8.6	4.0	1.0	.2
Apr	9.6	5.6	1.5	.5
May	10.7	6.7	2.0	.5
Jun	11.0	7.1	2.9	.8
Jul	9.3	6.3	2.3	1.1
Aug	9.3	6.0	2.1	1.1
Sep	8.0	5.0	1.7	.5
Oct	7.0	4.0	1.4	.5
Nov	6.9	3.2	1.1	.3
Dec	6.4	1.7	.1	.0
Ann	99.4	54.1	16.5	5.5

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	.10	.15	.25	.35	.45	.57	.69	.85	1.07	1.42	1.76
Feb	.06	.11	.19	.28	.37	.47	.60	.75	.96	1.30	1.64
Mar	.31	.46	.70	.93	1.15	1.40	1.67	2.01	2.45	3.16	3.84
Apr	.55	.78	1.15	1.48	1.82	2.17	2.57	3.04	3.67	4.67	5.61
May	.86	1.15	1.60	1.99	2.37	2.77	3.22	3.74	4.42	5.49	6.49
Jun	1.10	1.49	2.08	2.60	3.10	3.64	4.23	4.93	5.85	7.28	8.62
Jul	.71	1.04	1.60	2.12	2.64	3.21	3.85	4.63	5.66	7.33	8.91
Aug	.98	1.32	1.84	2.30	2.75	3.22	3.74	4.35	5.16	6.41	7.59
Sep	.60	.84	1.20	1.52	1.84	2.17	2.55	3.00	3.58	4.51	5.37
Oct	.22	.36	.63	.89	1.17	1.48	1.85	2.30	2.91	3.93	4.91
Nov	.04	.15	.37	.60	.85	1.15	1.50	1.95	2.57	3.62	4.66
Dec	.06	.10	.19	.27	.36	.46	.58	.74	.94	1.29	1.63
Ann	16.54	18.39	20.82	22.70	24.39	26.05	27.79	29.72	32.10	35.60	38.67

\+ 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: 1932-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Services

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: REDWOOD FALLS MUNICIPAL, MN **COOP ID: 216835**

Climate Division: MN 7 **NWS Call Sign: RWF** **Elevation: 1,025 Feet** **Lat: 44°33N** **Lon: 95°05W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	7.3	6.1	6	5
Feb	4.9	4.2	5	4
Mar	7.7	6.3	2	2
Apr	2.0	1.2	#	0
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	.4	.0	#	0
Nov	6.7	5.3	1	1
Dec	6.1	5.6	3	2
Ann	35.1	28.7	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	7.2	2000	19	17.1	1979	26+	1997	2	22	1997
Feb	11.0	1971	26	17.1	1971	22+	1982	6	19	1979
Mar	14.0	1984	4	25.2	1989	20+	1989	6	9	1979
Apr	6.0	1994	28	7.2	1972	7	1975	1	1	1975
May	#	1989	6	#+	1989	0	0	0	#	2000
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	#	1995	21	#+	1995	0	0	0	0	0
Oct	3.6	1991	31	4.9	1976	2+	1976	24	#	1981
Nov	8.6	1991	1	21.1	1983	17	1983	29	5	1991
Dec	10.0	1996	14	20.2	1996	26+	1996	31	17	1996
Ann	14.0	Mar 1984	4	25.2	Mar 1989	26+	Jan 1997	2	22	Jan 1997

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.4	2.7	.5	.2	.0
Feb	4.6	2.0	.2	.1	@
Mar	5.0	2.2	.8	.4	.1
Apr	1.5	.8	.2	@	.0
May	.0	.0	.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	.2	.1	@	.0	.0
Nov	4.1	2.0	.7	.4	.0
Dec	5.9	2.1	.5	.1	@
Ann	27.7	11.9	2.9	1.2	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	24.8	21.2	14.5	7.5
Feb	21.1	16.3	11.3	5.4
Mar	13.9	10.1	5.8	2.0
Apr	1.2	.5	.1	.0
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	.1	.0	.0	.0
Nov	7.6	4.3	2.2	.7
Dec	19.7	12.7	8.3	2.9
Ann	88.4	65.1	42.2	18.5

+ 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: REDWOOD FALLS MUNICIPAL, MN **COOP ID: 216835**

Climate Division: MN 7 **NWS Call Sign: RWF** **Elevation: 1,025 Feet** **Lat: 44˚33N** **Lon: 95˚05W**

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	161	155	150	145	142	138	134	129	122
32	182	175	169	165	161	157	152	147	140
28	203	196	191	187	183	179	175	170	163
24	226	219	214	209	205	201	197	191	184
20	245	236	230	225	220	215	210	203	195
16	259	251	245	240	236	231	226	220	212

***** 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: REDWOOD FALLS MUNICIPAL, MN **COOP ID: 216835**

Climate Division: MN 7 **NWS Call Sign: RWF** **Elevation: 1,025 Feet** **Lat: 44˚33N** **Lon: 95˚05W**

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	1613	1265	1016	547	210	30	16	31	152	493	988	1458	7819
60	1458	1125	861	407	121	6	4	9	70	345	838	1303	6547
57	1365	1041	768	330	82	2	0	2	38	265	748	1210	5851
55	1303	985	707	282	60	1	0	0	23	216	690	1148	5415
50	1148	852	563	179	25	0	0	0	5	118	551	994	4435
32	631	412	158	9	0	0	0	0	0	3	164	494	1871

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	42	71	165	457	877	1126	1284	1207	891	534	166	59	6879
55	0	0	1	40	224	437	571	495	224	35	2	0	2029
57	0	0	0	27	183	378	509	434	179	21	0	0	1731
60	0	0	0	14	130	292	420	348	121	8	0	0	1333
65	0	0	0	4	63	166	278	215	53	1	0	0	780
70	0	0	0	0	24	75	160	116	16	0	0	0	391

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	3	48	258	645	896	1046	969	658	320	51	2	0	3	51	309	954	1850	2896	3865	4523	4843	4894	4896
45	0	0	18	153	491	746	891	814	510	198	22	0	0	0	18	171	662	1408	2299	3113	3623	3821	3843	3843
50	0	0	4	79	346	597	736	659	368	106	8	0	0	0	4	83	429	1026	1762	2421	2789	2895	2903	2903
55	0	0	2	39	216	448	581	504	240	50	0	0	0	0	2	41	257	705	1286	1790	2030	2080	2080	2080
60	0	0	0	15	120	305	428	350	135	21	0	0	0	0	0	15	135	440	868	1218	1353	1374	1374	1374
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	31	154	387	582	701	640	406	189	33	0	0	1	32	186	573	1155	1856	2496	2902	3091	3124	3124

(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