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: RED LAKE INDIAN AGENCY, MN **COOP ID: 216795**

Climate Division: MN 2 **NWS Call Sign:** **Elevation: 1,220 Feet** **Lat: 47˚53N** **Lon: 95˚01W**

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	12.7	-7.1	2.8	51	1981	25	15.0	1990	-48	1968	4	-11.7	1982	1931	0	.0	.0	@	27.9	31.0	20.9
Feb	20.6	-.4	10.1	60	1958	27	27.1	1998	-44	1996	1	-2.3	1989	1538	0	.0	.0	.4	20.8	28.1	15.1
Mar	32.6	12.9	22.8	74	1967	31	32.7	1973	-30+	1989	1	13.2	1996	1310	0	.0	.0	3.0	13.0	29.5	6.3
Apr	47.9	27.9	37.9	95	1980	22	46.7	1987	-17	1979	6	31.5	1975	813	0	.0	@	14.4	1.9	20.8	.3
May	62.8	42.1	52.5	95	1964	22	62.8	1977	12+	1967	3	43.4	1979	411	22	.0	.1	28.0	.0	5.1	.0
Jun	70.8	51.5	61.2	100	1995	18	68.3	1988	27	1964	1	55.2	1982	166	49	@	.8	29.9	.0	.1	.0
Jul	75.3	56.5	65.9	99	1975	30	70.0	1989	36	2000	19	59.7	1992	71	100	.0	1.4	31.0	.0	.0	.0
Aug	74.0	54.5	64.3	100+	1984	29	69.6	1983	33	1964	13	57.3	1977	112	89	.1	1.3	31.0	.0	.0	.0
Sep	63.0	44.2	53.6	95	1976	7	60.0	1998	13	2000	25	48.9	1993	348	5	.0	.2	28.4	.0	2.6	.0
Oct	50.9	32.9	41.9	94	1963	7	49.0	1973	-3	1996	31	36.4	1976	716	0	.0	.0	18.7	.8	14.1	.1
Nov	32.2	17.2	24.7	75	1975	6	35.5	1999	-23	1985	28	15.1	1985	1208	0	.0	.0	3.2	14.4	27.8	2.8
Dec	18.3	.2	9.3	58	1962	2	21.3	1997	-39	1955	19	-3.3	1983	1729	0	.0	.0	.2	25.3	31.0	15.1
Ann	46.8	27.7	37.3	100+	Jun 1995	18	70.0	Jul 1989	-48	Jan 1968	4	-11.7	Jan 1982	10353	265	.1	3.8	188.2	104.1	190.1	60.6

\+ 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	.70	.53	1.00+	2000	21	4.17	2000	.00+	1993
Feb	.46	.31	1.50	2000	3	2.94	2000	.00+	1996
Mar	.78	.69	.85	1955	13	1.59	1983	.00	1996
Apr	1.18	1.07	1.71	1957	19	3.03	1975	.06	1988
May	2.72	2.34	4.34	1949	30	7.09	2000	.20	1980
Jun	3.80	3.55	3.79	1950	25	6.98	1997	.39	1987
Jul	4.14	4.16	5.31	1975	2	7.21	1975	1.03	1990
Aug	3.43	3.29	4.07	1983	21	7.83	1983	.81	1982
Sep	2.62	2.40	2.62	1962	9	9.44	1973	.60	1998
Oct	2.13	2.05	2.27	1965	19	6.45	1984	.22	1976
Nov	.93	.85	1.42	1958	16	3.90	2000	.00+	1999
Dec	.38	.30	1.47	1951	4	.96	1972	.00+	1997
Ann	23.27	22.95	5.31	Jul 1975	2	9.44	Sep 1973	.00+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.6	2.3	.3	.2
Feb	3.7	1.6	.1	.1
Mar	4.6	2.5	.4	.0
Apr	6.2	3.4	.7	.1
May	10.5	6.0	1.4	.4
Jun	11.5	7.0	2.5	.9
Jul	10.6	6.7	2.8	1.2
Aug	9.3	6.2	2.1	.7
Sep	9.9	5.9	1.5	.6
Oct	8.5	4.3	1.2	.5
Nov	6.1	2.9	.6	.0
Dec	5.4	1.7	@	.0
Ann	91.9	50.5	13.6	4.7

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	.00	.00	.14	.26	.38	.52	.68	.88	1.15	1.61	2.05
Feb	.00	.00	.02	.09	.18	.28	.40	.56	.79	1.17	1.57
Mar	.11	.22	.35	.46	.57	.68	.81	.96	1.16	1.48	1.77
Apr	.14	.23	.39	.56	.73	.93	1.15	1.44	1.82	2.45	3.06
May	.45	.68	1.08	1.45	1.84	2.26	2.73	3.32	4.09	5.35	6.56
Jun	1.12	1.48	2.02	2.49	2.95	3.42	3.94	4.56	5.35	6.60	7.75
Jul	1.56	1.94	2.50	2.96	3.40	3.84	4.33	4.89	5.61	6.71	7.72
Aug	1.02	1.34	1.83	2.26	2.67	3.09	3.56	4.12	4.83	5.96	7.00
Sep	.60	.84	1.22	1.57	1.91	2.28	2.69	3.18	3.82	4.85	5.81
Oct	.30	.48	.78	1.08	1.39	1.73	2.12	2.60	3.24	4.30	5.31
Nov	.00	.00	.20	.36	.52	.70	.91	1.17	1.52	2.10	2.67
Dec	.00	.00	.12	.20	.26	.33	.40	.49	.60	.77	.93
Ann	15.63	17.08	18.94	20.37	21.65	22.89	24.18	25.61	27.35	29.90	32.11

\+ 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	9.0	8.7	12	13
Feb	7.0	7.0	13	14
Mar	8.4	6.5	9	8
Apr	2.1	1.0	1	#
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	.9	.0	#	0
Nov	8.4	7.5	2	1
Dec	8.9	9.0	6	4
Ann	44.8	39.7	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	8.0	1972	25	24.0	1975	37	1989	13	29	1989
Feb	7.0	1977	24	15.5	1979	39	1979	24	31	1979
Mar	8.0	1976	12	21.0	1976	37	1979	1	24	1979
Apr	5.0	1978	3	7.0	1974	17	1975	2	8	1975
May	1.0	1979	5	1.0	1979	#+	1983	15	#+	1983
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	3.0	1971	31	5.0	1971	3+	1987	24	#+	1988
Nov	9.0	1977	21	29.5	1977	23	1977	28	10	1977
Dec	6.0	1988	27	15.9	1972	24	1977	11	19	1977
Ann	9.0	Nov 1977	21	29.5	Nov 1977	39	Feb 1979	24	31	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.6	5.0	1.0	.2	.0
Feb	3.6	2.7	.4	.1	.0
Mar	3.4	3.1	.7	.2	.0
Apr	1.2	1.0	.2	@	.0
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	.0
Oct	.5	.4	@	.0	.0
Nov	4.2	3.4	.6	.3	.0
Dec	4.6	3.8	.5	@	.0
Ann	23.2	19.4	3.4	.8	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	29.5	28.4	26.2	18.1
Feb	25.5	24.0	22.4	17.9
Mar	24.7	22.2	20.8	15.8
Apr	4.0	3.1	2.3	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	.5	.1	.0	.0
Nov	11.4	5.6	3.0	1.1
Dec	23.8	18.1	13.8	5.0
Ann	119.4	101.5	88.5	58.9

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

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	8/31	9/05	9/08	9/11	9/14	9/17	9/20	9/23	9/28
32	9/12	9/16	9/19	9/21	9/23	9/26	9/28	10/01	10/04
28	9/17	9/22	9/25	9/29	10/01	10/04	10/07	10/11	10/16
24	9/29	10/05	10/09	10/13	10/17	10/20	10/24	10/29	11/04
20	10/09	10/15	10/20	10/24	10/28	10/31	11/04	11/09	11/15
16	10/15	10/22	10/26	10/30	11/03	11/06	11/10	11/15	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	132	123	117	112	107	102	97	91	83
32	148	141	137	132	128	125	120	116	109
28	166	159	154	150	147	143	139	134	127
24	199	190	184	179	174	170	164	158	150
20	224	214	207	201	196	190	184	177	168
16	233	225	219	214	209	204	199	193	184

***** 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	1931	1538	1310	813	411	166	71	112	348	716	1208	1729	10353
60	1776	1398	1155	665	287	84	19	45	216	561	1058	1574	8838
57	1683	1314	1062	578	224	49	8	22	149	471	968	1481	8009
55	1621	1258	1000	520	187	33	3	13	111	412	908	1419	7485
50	1466	1118	845	385	109	10	0	2	44	276	759	1264	6278
32	916	642	347	64	4	0	0	0	0	22	289	728	3012

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	8	28	60	241	637	874	1052	1000	647	329	71	22	4969
55	0	0	0	7	108	217	342	300	68	5	0	0	1047
57	0	0	0	5	83	173	284	247	46	2	0	0	840
60	0	0	0	2	53	118	203	177	23	0	0	0	576
65	0	0	0	0	22	49	100	89	5	0	0	0	265
70	0	0	0	0	7	15	33	32	1	0	0	0	88

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	10	112	440	694	856	807	454	169	15	0	0	0	10	122	562	1256	2112	2919	3373	3542	3557	3557
45	0	0	0	60	310	544	701	652	315	88	6	0	0	0	0	60	370	914	1615	2267	2582	2670	2676	2676
50	0	0	0	26	198	397	546	497	196	39	0	0	0	0	0	26	224	621	1167	1664	1860	1899	1899	1899
55	0	0	0	10	112	257	391	345	104	11	0	0	0	0	0	10	122	379	770	1115	1219	1230	1230	1230
60	0	0	0	2	55	145	241	204	47	1	0	0	0	0	0	2	57	202	443	647	694	695	695	695
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	7	78	267	417	545	505	255	98	10	0	0	0	7	85	352	769	1314	1819	2074	2172	2182	2182

(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