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: LAKE MILLS, WI **COOP ID: 474482**

Climate Division: WI 8 **NWS Call Sign:** **Elevation: 852 Feet** **Lat: 43˚05N** **Lon: 88˚55W**

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	25.7	8.4	17.1	55+	1989	31	28.3	1990	-33	1951	30	3.6	1977	1487	0	.0	.0	.5	20.5	30.6	9.2
Feb	31.1	12.6	21.9	64	1999	12	34.2	1998	-31	1959	2	11.5	1978	1209	0	.0	.0	1.6	13.5	27.2	5.5
Mar	42.8	23.9	33.4	81	1986	29	41.3	2000	-18	1962	1	26.4	1975	981	0	.0	.0	9.0	4.2	25.1	.8
Apr	57.1	36.5	46.8	89	1980	22	53.1	1985	8	1982	7	41.6	1975	548	2	.0	.0	22.9	.3	11.2	.0
May	69.8	47.6	58.7	93	1978	27	66.0	1977	21	1978	1	52.7	1997	241	45	.0	.6	30.8	.0	2.5	.0
Jun	79.7	57.8	68.8	103	1988	21	72.7	1987	34+	1972	10	63.0	1982	37	150	.1	3.3	30.0	.0	.0	.0
Jul	83.8	63.2	73.5	102	1988	15	77.4	1988	43	1965	6	68.8	1992	6	269	.1	6.5	31.0	.0	.0	.0
Aug	80.6	60.6	70.6	104	1988	1	76.4	1988	41+	1986	28	66.1	1992	24	198	.1	3.1	31.0	.0	.0	.0
Sep	72.5	51.3	61.9	99	1953	1	67.1	1978	26+	1974	23	56.7	1993	132	40	.0	.6	30.0	.0	.5	.0
Oct	60.7	40.5	50.6	87+	1971	2	58.8	1971	15	1988	30	45.0	1987	450	2	.0	.0	26.9	.0	6.7	.0
Nov	43.8	28.1	36.0	75	1964	3	43.3	1999	-13	1976	29	27.9	1995	872	0	.0	.0	10.0	3.3	20.7	.2
Dec	30.5	15.9	23.2	66	1998	4	31.6	1998	-24	1983	24	11.6	2000	1295	0	.0	.0	1.1	15.6	29.4	4.5
Ann	56.5	37.2	46.9	104	Aug 1988	1	77.4	Jul 1988	-33	Jan 1951	30	3.6	Jan 1977	7282	706	.3	14.1	224.8	57.4	153.9	20.2

\+ 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	1.43	1.27	1.44	1950	25	3.68	1979	.26	1981
Feb	1.22	.93	1.66	1981	22	3.31	1986	.00	1987
Mar	2.28	2.27	2.48	1959	15	4.71	1976	.33	1999
Apr	3.35	3.27	3.10	1999	23	8.88	1999	1.26	1985
May	3.35	3.19	3.20	1999	17	7.57	2000	1.02	1988
Jun	3.91	3.68	4.00	1996	17	11.31	1996	.88	1987
Jul	4.12	3.49	3.87	1950	19	9.19	1997	1.52	1973
Aug	4.61	3.95	4.93	1990	18	10.92	1980	1.31	1984
Sep	3.60	3.58	3.36	1961	13	8.52	1986	.42	1979
Oct	2.44	2.13	2.31	1984	19	6.04	1991	.35	1994
Nov	2.39	2.05	2.21	1985	1	6.25	1985	.16	1976
Dec	1.68	1.75	1.65	1971	15	3.78	1971	.27+	1998
Ann	34.38	35.25	4.93	Aug 1990	18	11.31	Jun 1996	.00	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.0	4.2	.6	.1
Feb	5.9	3.6	.5	.1
Mar	8.8	5.2	1.5	.3
Apr	11.2	6.7	2.2	.7
May	11.0	7.0	2.2	.6
Jun	10.0	6.6	2.6	1.0
Jul	9.7	6.7	2.7	1.3
Aug	9.5	6.7	3.2	1.1
Sep	9.4	5.9	2.4	1.0
Oct	9.0	5.3	1.6	.3
Nov	9.3	5.5	1.8	.2
Dec	8.4	4.3	.9	.2
Ann	111.2	67.7	22.2	6.9

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	.35	.48	.69	.88	1.06	1.25	1.47	1.73	2.06	2.59	3.09
Feb	.07	.19	.38	.56	.75	.96	1.20	1.51	1.92	2.59	3.24
Mar	.42	.62	.95	1.26	1.58	1.92	2.31	2.77	3.39	4.39	5.35
Apr	1.25	1.56	2.01	2.39	2.75	3.11	3.51	3.97	4.55	5.45	6.28
May	.99	1.31	1.78	2.20	2.60	3.01	3.48	4.02	4.72	5.82	6.84
Jun	.94	1.31	1.88	2.39	2.89	3.43	4.02	4.73	5.66	7.13	8.52
Jul	1.58	1.97	2.51	2.97	3.40	3.84	4.31	4.87	5.57	6.65	7.63
Aug	1.72	2.15	2.77	3.29	3.78	4.28	4.82	5.45	6.26	7.50	8.63
Sep	.58	.89	1.42	1.91	2.42	2.98	3.62	4.40	5.44	7.12	8.74
Oct	.49	.71	1.07	1.40	1.73	2.08	2.49	2.97	3.61	4.64	5.62
Nov	.58	.81	1.16	1.46	1.77	2.10	2.46	2.89	3.45	4.34	5.18
Dec	.31	.46	.71	.94	1.17	1.42	1.71	2.05	2.51	3.24	3.94
Ann	27.07	28.54	30.39	31.78	32.99	34.16	35.35	36.65	38.22	40.47	42.39

\+ 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)

Extremes (2)

Mean Number of Days (1)

Snow Fall >= Thresholds

Snow Depth >= Thresholds

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	10.2	9.7	5	4	8.0	1971	3	31.0	1979	35	1979	27	23	1979	6.9	3.7	1.0	.3	.0	22.0	16.5	13.5	5.5
Feb	7.0	7.0	5	4	8.0	1994	25	22.0	1974	32	1979	1	25	1979	4.8	2.6	1.0	.2	.0	18.8	14.3	9.7	4.7
Mar	5.5	4.1	1	#	10.0	1971	19	17.0	1971	13	1979	1	5	1979	3.8	1.9	.6	.2	@	7.3	4.2	2.2	.2
Apr	2.3	.0	#	0	8.0	1973	9	14.8	1997	13	1997	13	1+	1997	.8	.6	.2	.1	.0	.8	.4	.1	.0
May	.1	.0	0	0	2.0	1994	1	2.0	1994	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.1	.0	#	0	1.7	1989	20	1.7	1989	#	1987	22	#	1987	.1	.1	.0	.0	.0	.0	.0	.0	.0
Nov	2.9	2.1	#	#	8.2	1995	27	12.5	1971	9	1977	28	2	1977	2.4	1.1	.3	.1	.0	2.7	.7	.4	.0
Dec	10.0	8.4	3	2	11.0	1990	3	22.4+	1987	22	2000	28	14	2000	6.1	3.1	.9	.3	.1	17.1	10.9	5.7	1.4
Ann	38.1	31.3	N/A	N/A	11.0	Dec 1990	3	31.0	Jan 1979	35	Jan 1979	27	25	Feb 1979	25.0	13.2	4.0	1.2	.1	68.7	47.0	31.6	11.8

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	150	144	140	137	134	130	127	123	117
32	176	169	164	160	156	152	147	142	135
28	209	199	192	186	180	174	168	161	150
24	223	216	210	206	202	197	193	187	180
20	249	241	235	230	225	220	215	209	201
16	272	263	257	251	246	241	236	229	220

***** 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	1487	1209	981	548	241	37	6	24	132	450	872	1295	7282
60	1332	1069	826	406	143	9	0	5	52	306	722	1140	6010
57	1239	985	733	326	98	3	0	1	25	231	632	1047	5320
55	1177	929	672	277	73	2	0	0	13	186	573	985	4887
50	1022	789	526	171	30	0	0	0	2	97	433	831	3901
32	503	343	130	6	0	0	0	0	0	1	81	347	1411

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	39	58	172	450	827	1103	1286	1196	897	577	198	76	6879
55	0	0	1	31	188	414	573	483	221	49	1	0	1961
57	0	0	0	20	150	356	511	422	172	31	0	0	1662
60	0	0	0	9	102	272	418	333	110	14	0	0	1258
65	0	0	0	2	45	150	269	198	40	2	0	0	706
70	0	0	0	0	15	63	140	97	8	0	0	0	323

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	4	62	258	592	866	1026	948	676	345	75	5	0	4	66	324	916	1782	2808	3756	4432	4777	4852	4857
45	0	0	31	153	441	716	871	793	526	219	34	2	0	0	31	184	625	1341	2212	3005	3531	3750	3784	3786
50	0	0	12	82	302	566	716	638	381	124	10	0	0	0	12	94	396	962	1678	2316	2697	2821	2831	2831
55	0	0	3	43	186	418	561	483	250	59	3	0	0	0	3	46	232	650	1211	1694	1944	2003	2006	2006
60	0	0	0	17	98	278	407	331	140	18	0	0	0	0	0	17	115	393	800	1131	1271	1289	1289	1289
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	46	164	376	564	694	631	422	205	38	3	0	1	47	211	587	1151	1845	2476	2898	3103	3141	3144

(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