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: FOND DU LAC, WI **COOP ID: 472839**

Climate Division: WI 6 **NWS Call Sign:** **Elevation: 760 Feet** **Lat: 43˚48N** **Lon: 88˚27W**

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	24.0	9.1	16.6	55	1973	26	28.0	1990	-41	1951	30	3.6	1977	1503	0	.0	.0	.2	21.6	30.4	9.5
Feb	29.0	13.8	21.4	64	2000	26	32.2	1998	-30+	1959	1	10.1	1979	1221	0	.0	.0	.9	16.3	26.7	5.3
Mar	40.3	24.2	32.3	81+	1986	31	40.8	2000	-24	1962	1	25.4	1975	1016	0	.0	.0	6.4	6.8	25.2	.9
Apr	54.1	36.1	45.1	90	1980	22	51.4	1977	9+	1982	4	38.3	1975	598	1	.0	@	19.4	.6	10.2	.0
May	68.0	47.7	57.9	92+	1991	29	66.2	1977	25	1950	2	51.0	1997	267	47	.0	.3	30.4	.0	.7	.0
Jun	77.0	57.2	67.1	100	1988	21	71.4	1988	32	1956	2	61.3	1982	55	119	@	2.1	30.0	.0	.0	.0
Jul	81.1	62.4	71.8	103	1995	13	75.2+	1988	40	1948	1	66.7	1992	9	217	.1	3.6	31.0	.0	.0	.0
Aug	78.2	60.8	69.5	102	1988	17	74.6	1988	38	1950	20	65.7	1997	28	167	.1	1.9	31.0	.0	.0	.0
Sep	70.1	52.4	61.3	99	1953	1	66.2	1998	23	1949	29	56.2	1993	145	33	.0	.3	29.9	.0	.3	.0
Oct	57.9	41.2	49.6	90	1963	6	57.2	1971	15+	1952	29	44.1	1988	481	2	.0	.0	25.3	.0	4.9	.0
Nov	42.1	28.7	35.4	76	1950	1	42.7	1999	-10	1950	25	27.5	1995	888	0	.0	.0	8.0	4.8	20.4	.2
Dec	29.0	15.6	22.3	65	2001	5	29.9	1982	-24	1983	24	11.0	1985	1323	0	.0	.0	.8	16.6	29.1	4.7
Ann	54.2	37.4	45.9	103	Jul 1995	13	75.2+	Jul 1988	-41	Jan 1951	30	3.6	Jan 1977	7534	586	.2	8.2	213.3	66.7	147.9	20.6

\+ 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	1.09	1.06	2.83	1982	4	3.79	1982	.02	1981
Feb	1.00	.88	1.37	1953	20	2.26	1986	.20	1972
Mar	1.86	1.78	2.38	1998	30	5.01	1976	.07	1981
Apr	2.78	2.58	2.38	1999	3	5.88	1993	.89	1989
May	2.93	2.83	3.81	1989	30	8.02	1989	.49	1981
Jun	3.57	3.63	3.15	1991	14	7.17	1996	.31	1992
Jul	3.52	3.28	3.67	1952	18	8.12	1999	.89+	1998
Aug	4.18	3.92	5.74	1978	18	8.27	1990	.79	1976
Sep	3.50	2.62	6.83	1986	10	12.70	1986	.17	1979
Oct	2.36	1.98	3.70	1991	24	6.97	1991	.62	1975
Nov	1.97	1.83	1.86	1971	1	4.74	1985	.05	1976
Dec	1.39	1.35	2.07	1971	30	4.14	1971	.16	1993
Ann	30.15	30.29	6.83	Sep 1986	10	12.70	Sep 1986	.02	Jan 1981

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.5	3.3	.3	@
Feb	7.2	2.9	.5	.1
Mar	8.7	4.7	1.0	.2
Apr	11.0	6.1	1.5	.5
May	10.7	6.2	1.8	.5
Jun	10.1	6.5	2.2	.7
Jul	10.1	6.6	2.3	.7
Aug	10.2	6.9	2.9	1.1
Sep	9.9	5.8	2.4	.8
Oct	9.5	5.6	1.5	.3
Nov	9.8	5.1	1.1	.2
Dec	8.5	4.0	.6	.1
Ann	114.2	63.7	18.1	5.2

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	.17	.26	.42	.57	.72	.89	1.09	1.33	1.65	2.17	2.67
Feb	.16	.24	.39	.53	.67	.82	1.00	1.22	1.51	1.98	2.43
Mar	.21	.35	.61	.87	1.14	1.45	1.82	2.27	2.88	3.89	4.88
Apr	1.24	1.49	1.83	2.11	2.37	2.64	2.92	3.24	3.65	4.26	4.82
May	.61	.88	1.30	1.70	2.09	2.51	2.99	3.56	4.31	5.52	6.66
Jun	.89	1.22	1.74	2.20	2.66	3.14	3.68	4.32	5.15	6.47	7.71
Jul	1.20	1.53	2.02	2.43	2.83	3.23	3.68	4.19	4.86	5.89	6.84
Aug	1.19	1.58	2.18	2.71	3.21	3.75	4.33	5.03	5.93	7.34	8.65
Sep	.47	.75	1.25	1.74	2.25	2.82	3.47	4.28	5.37	7.16	8.89
Oct	.64	.86	1.20	1.50	1.79	2.10	2.44	2.85	3.38	4.20	4.98
Nov	.33	.50	.79	1.06	1.33	1.64	1.98	2.40	2.96	3.86	4.73
Dec	.24	.36	.57	.76	.95	1.17	1.41	1.70	2.09	2.72	3.32
Ann	23.01	24.43	26.23	27.58	28.77	29.91	31.09	32.38	33.93	36.16	38.08

\+ 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	10.1	11.0	5	4
Feb	7.6	7.4	4	4
Mar	6.1	4.7	1	2
Apr	2.0	.7	#	0
May	.1	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	#	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.1	.0	#	0
Nov	3.3	1.2	#	0
Dec	9.0	6.9	2	1
Ann	38.3	31.9	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	12.0	1982	4	25.1	1979	23+	1979	28	16	1979
Feb	8.0	1976	21	16.6	1994	17+	1985	17	15	1979
Mar	9.7	1972	29	15.7	1989	11	1979	1	5	1979
Apr	7.0	1997	12	10.2	1993	6+	1997	12	1+	1982
May	3.3	1990	10	3.3	1990	1	1990	10	#	2000
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	#	1990
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	1.3	1992	19	2.2	1992	1	1992	19	#	1992
Nov	10.0	1995	27	15.2	1995	10	1995	27	2+	1995
Dec	14.0	1990	3	21.9	1978	14+	1990	3	11	1985
Ann	14.0	Dec 1990	3	25.1	Jan 1979	23+	Jan 1979	28	16	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.0	3.5	1.1	.3	@
Feb	5.7	2.7	.8	.2	.0
Mar	3.6	2.2	.7	.3	.0
Apr	1.2	.7	.2	@	.0
May	.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	.1	.1	.0	.0	.0
Nov	2.8	1.2	.3	.1	@
Dec	5.9	2.9	1.0	.3	.1
Ann	26.3	13.3	4.1	1.2	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	24.4	17.6	12.5	5.0
Feb	21.0	15.3	9.9	4.0
Mar	10.3	5.9	3.9	.2
Apr	1.3	.5	.1	.0
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	1.2	.7	@
Dec	17.8	9.8	5.0	1.3
Ann	78.1	50.3	32.1	10.5

+ 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

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	159	154	150	147	144	141	138	134	129
32	185	179	174	171	167	163	160	155	149
28	214	206	201	197	193	189	184	179	172
24	229	223	220	216	213	210	207	203	198
20	253	245	239	234	229	225	220	214	206
16	269	262	256	251	247	242	238	232	224

***** 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	1503	1221	1016	598	267	55	9	28	145	481	888	1323	7534
60	1348	1081	861	453	167	17	0	5	60	336	738	1168	6234
57	1255	997	768	370	119	7	0	1	30	259	648	1075	5529
55	1193	941	706	318	92	4	0	0	17	213	589	1013	5086
50	1038	801	556	203	43	0	0	0	3	118	448	858	4068
32	519	345	140	9	0	0	0	0	0	3	89	368	1473

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	39	49	148	403	802	1054	1231	1162	878	547	191	68	6572
55	0	0	0	22	182	367	518	449	205	44	2	0	1789
57	0	0	0	14	147	310	456	388	158	28	0	0	1501
60	0	0	0	6	102	230	363	299	97	13	0	0	1110
65	0	0	0	1	47	119	217	167	33	2	0	0	586
70	0	0	0	0	17	44	101	75	6	0	0	0	243

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	49	212	565	825	997	925	652	321	65	4	0	3	52	264	829	1654	2651	3576	4228	4549	4614	4618
45	0	1	24	126	412	675	842	770	502	199	26	2	0	1	25	151	563	1238	2080	2850	3352	3551	3577	3579
50	0	0	11	64	275	525	687	615	357	109	7	0	0	0	11	75	350	875	1562	2177	2534	2643	2650	2650
55	0	0	5	29	167	376	532	460	226	52	0	0	0	0	5	34	201	577	1109	1569	1795	1847	1847	1847
60	0	0	0	13	88	241	377	308	126	21	0	0	0	0	0	13	101	342	719	1027	1153	1174	1174	1174
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	30	121	326	526	668	612	385	167	33	2	0	1	31	152	478	1004	1672	2284	2669	2836	2869	2871

(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