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: ALMA DAM 4, WI **COOP ID: 470124**

Climate Division: WI 4 **NWS Call Sign:** **Elevation: 670 Feet** **Lat: 44˚20N** **Lon: 91˚56W**

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	23.4	7.3	15.4	55	1981	25	27.6	1990	-38	1996	31	2.2	1977	1539	0	.0	.0	.1	22.3	30.6	11.3
Feb	30.3	13.7	22.0	62	2000	26	34.5	1998	-35	1996	3	10.0	1979	1205	0	.0	.0	.9	14.8	26.8	6.6
Mar	41.8	25.6	33.7	80	1986	29	41.6	1973	-27	1962	1	26.2	1975	970	0	.0	.0	7.4	5.9	23.1	1.3
Apr	57.3	38.3	47.8	89+	1985	18	55.7	1977	7	1995	4	41.2	1975	520	5	.0	.0	22.8	.4	8.7	.0
May	70.0	50.3	60.2	92	1969	27	69.4	1977	24+	1989	6	55.0	1997	208	58	.0	.1	30.8	.0	.5	.0
Jun	78.6	59.3	69.0	101	1956	11	73.6	1971	36	2000	17	64.6	1982	32	151	.0	1.9	30.0	.0	.0	.0
Jul	82.5	64.2	73.4	100+	1995	13	77.1+	1977	43	1970	20	67.2	1992	8	267	.1	3.9	31.0	.0	.0	.0
Aug	79.8	62.3	71.1	101	2001	7	76.5	1983	42	1950	20	66.9	1992	18	205	.0	2.0	31.0	.0	.0	.0
Sep	70.7	53.7	62.2	97	1978	7	68.4	1998	25	1984	26	56.7	1993	131	47	.0	.2	29.8	.0	.3	.0
Oct	58.3	42.3	50.3	91	1997	4	56.0	1971	18+	1999	24	44.8	1988	460	3	.0	@	26.2	@	5.9	.0
Nov	40.6	28.4	34.5	78	1950	1	41.0	1990	-10	1977	26	27.0	1991	915	0	.0	.0	8.2	5.8	21.3	.4
Dec	27.3	14.6	21.0	64	1982	2	30.1	1998	-32	1983	24	7.4	1983	1366	0	.0	.0	.5	18.7	29.8	6.0
Ann	55.1	38.3	46.7	101+	Aug 2001	7	77.1+	Jul 1977	-38	Jan 1996	31	2.2	Jan 1977	7372	736	.1	8.1	218.7	67.9	147.0	25.6

\+ 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	1.00	.90	1.50	1973	4	2.10	1996	.08	1981
Feb	.66	.57	1.32	1998	27	2.53	1998	.05	1987
Mar	1.76	1.38	1.70	1966	23	3.66	1976	.25	1994
Apr	3.32	2.76	2.22	1975	28	8.16	1999	.73	1971
May	3.81	3.24	3.35	1970	28	7.08	1991	.93	1992
Jun	4.49	3.67	3.73	1990	13	10.91	1998	1.34	1983
Jul	5.18	4.37	5.91	1991	22	12.75	1978	.68	1980
Aug	4.79	4.72	3.75	1952	16	9.44	1998	.30	1971
Sep	4.13	3.80	3.94	1978	13	10.68	1986	.25	1979
Oct	2.37	2.30	5.35	1966	15	6.23	1979	.29	1976
Nov	2.24	1.90	2.60	1975	10	8.39	1991	.00	1976
Dec	.94	.94	1.48	1965	12	2.21	1982	.00	1989
Ann	34.69	34.47	5.91	Jul 1991	22	12.75	Jul 1978	.00+	Dec 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.4	3.5	.3	@
Feb	5.3	2.4	.2	@
Mar	7.6	4.5	1.1	.2
Apr	10.0	6.8	2.1	.8
May	10.4	8.0	2.8	.8
Jun	10.9	7.9	3.0	1.2
Jul	10.0	7.7	3.4	1.4
Aug	10.0	8.1	3.1	1.3
Sep	9.2	7.0	2.6	1.1
Oct	7.9	5.3	1.5	.4
Nov	7.2	4.5	1.6	.4
Dec	6.4	3.3	.2	.1
Ann	102.3	69.0	21.9	7.7

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	.23	.32	.47	.60	.73	.87	1.02	1.21	1.45	1.83	2.20
Feb	.09	.15	.24	.33	.43	.54	.66	.81	1.01	1.34	1.66
Mar	.46	.63	.88	1.10	1.32	1.56	1.81	2.12	2.52	3.14	3.73
Apr	.94	1.25	1.73	2.15	2.55	2.97	3.44	4.00	4.71	5.84	6.89
May	1.35	1.71	2.23	2.67	3.08	3.51	3.98	4.52	5.22	6.29	7.27
Jun	1.14	1.57	2.22	2.80	3.37	3.97	4.64	5.43	6.47	8.10	9.64
Jul	1.11	1.59	2.35	3.04	3.73	4.47	5.30	6.29	7.61	9.70	11.68
Aug	1.38	1.84	2.52	3.12	3.70	4.30	4.97	5.76	6.77	8.37	9.86
Sep	.71	1.07	1.68	2.24	2.82	3.45	4.17	5.04	6.21	8.09	9.89
Oct	.64	.86	1.20	1.50	1.80	2.11	2.45	2.86	3.40	4.23	5.01
Nov	.15	.38	.74	1.07	1.41	1.79	2.23	2.77	3.49	4.68	5.82
Dec	.12	.24	.40	.53	.67	.81	.97	1.16	1.41	1.81	2.19
Ann	23.24	25.41	28.21	30.35	32.27	34.14	36.07	38.22	40.85	44.67	48.01

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	11.6	10.6	7	#
Feb	5.5	4.0	8	6
Mar	7.2	7.0	3	2
Apr	1.3	.0	#	0
May	#	.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	2.8	1.0	1	#
Dec	8.1	6.0	4	2
Ann	36.5	28.6	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	11.0	1971	4	26.2	1971	24	1996	31	14+	1997
Feb	8.0	1983	3	13.0	1971	29	1979	21	24	1979
Mar	12.0	1985	4	20.1	1984	16+	1986	2	11	1978
Apr	6.0	1973	9	11.0	1973	9	1973	10	1	1980
May	#	1989	7	#+	1989	#+	1997	8	#+	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	1.0	1981	25	1.0	1981	1	1981	25	#	1981
Nov	11.0	1991	24	12.5	1985	15	1991	29	5	1991
Dec	8.0	1985	2	24.0	1990	23+	2000	31	18	1985
Ann	12.0	Mar 1985	4	26.2	Jan 1971	29	Feb 1979	21	24	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.9	4.2	1.2	.4	.1
Feb	3.2	2.3	.6	.2	.0
Mar	2.9	2.6	.9	.4	.1
Apr	.6	.5	.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	@	@	.0	.0	.0
Nov	1.7	1.5	.4	.1	@
Dec	4.7	3.9	.9	.4	.0
Ann	19.0	15.0	4.2	1.5	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	27.1	17.9	12.7	5.1
Feb	20.7	16.2	12.8	5.3
Mar	10.6	7.8	5.5	2.5
Apr	1.0	.4	.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	@	.0	.0	.0
Nov	4.2	2.3	1.1	.2
Dec	19.3	12.0	7.1	2.6
Ann	82.9	56.6	39.3	15.7

+ 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	5/26	5/20	5/15	5/11	5/07	5/03	4/29	4/24	4/18
32	5/08	5/03	4/29	4/26	4/23	4/20	4/17	4/14	4/09
28	5/01	4/25	4/21	4/18	4/14	4/11	4/07	4/03	3/28
24	4/18	4/14	4/11	4/08	4/05	4/03	3/31	3/28	3/24
20	4/11	4/06	4/03	4/01	3/29	3/26	3/24	3/21	3/16
16	4/03	3/30	3/26	3/23	3/20	3/18	3/15	3/11	3/07

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	166	159	153	148	144	140	135	129	122
32	191	183	177	172	167	162	157	151	143
28	214	205	198	192	187	182	176	169	160
24	227	221	216	212	209	205	201	197	190
20	246	239	234	230	226	222	218	213	206
16	267	259	253	248	244	239	234	228	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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1539	1205	970	520	208	32	8	18	131	460	915	1366	7372
60	1384	1065	815	382	119	7	0	2	55	316	765	1211	6121
57	1291	981	722	306	79	2	0	0	27	241	675	1118	5442
55	1229	925	661	260	58	1	0	0	15	196	616	1056	5017
50	1074	790	516	160	23	0	0	0	3	104	473	901	4044
32	557	353	126	7	0	0	0	0	0	2	102	410	1557

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	41	72	179	481	872	1110	1282	1210	906	568	177	67	6965
55	0	0	1	44	217	420	569	497	231	49	1	0	2029
57	0	0	0	31	176	362	507	435	183	32	0	0	1726
60	0	0	0	16	123	276	414	344	120	15	0	0	1308
65	0	0	0	5	58	151	267	205	47	3	0	0	736
70	0	0	0	1	21	63	141	98	11	0	0	0	335

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	55	264	620	864	1025	961	665	336	58	3	0	4	59	323	943	1807	2832	3793	4458	4794	4852	4855
45	0	1	21	159	467	714	870	806	516	209	22	1	0	1	22	181	648	1362	2232	3038	3554	3763	3785	3786
50	0	0	7	85	321	565	715	651	373	117	7	0	0	0	7	92	413	978	1693	2344	2717	2834	2841	2841
55	0	0	0	41	197	415	560	496	243	50	1	0	0	0	0	41	238	653	1213	1709	1952	2002	2003	2003
60	0	0	0	12	104	274	405	342	137	19	0	0	0	0	0	12	116	390	795	1137	1274	1293	1293	1293
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	28	157	375	568	700	642	402	182	28	0	0	1	29	186	561	1129	1829	2471	2873	3055	3083	3083

(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