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: KENOSHA, WI **COOP ID: 474174**

Climate Division: WI 9 **NWS Call Sign:** **Elevation: 600 Feet** **Lat: 42˚34N** **Lon: 87˚49W**

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	28.4	13.2	20.8	64	1950	25	31.5	1990	-31+	1985	20	8.6	1977	1370	0	.0	.0	.8	17.9	29.0	6.7
Feb	32.3	17.8	25.1	69	1999	12	34.5	1998	-23	1996	3	16.1	1979	1119	0	.0	.0	1.5	12.7	25.6	2.9
Mar	41.5	27.2	34.4	83	1986	29	41.7	2000	-9	1962	1	27.5	1984	950	0	.0	.0	6.2	4.5	22.7	.2
Apr	50.9	37.3	44.1	90	1980	22	48.6	1981	10	1982	7	40.1	1972	627	0	.0	@	14.9	.3	8.9	.0
May	62.1	47.7	54.9	94+	1975	19	60.4	1977	26	1977	8	50.1	1983	324	12	.0	.1	28.2	.0	.5	.0
Jun	72.7	57.2	65.0	102	1953	20	69.4	1987	36	1972	11	59.5	1982	86	84	@	1.3	30.0	.0	.0	.0
Jul	78.7	63.9	71.3	104	1999	30	77.8	1999	41	1983	6	66.8	1992	16	212	.1	3.2	31.0	.0	.0	.0
Aug	77.7	63.9	70.8	101	1948	25	75.5	1983	40+	1978	31	65.7	1992	17	197	@	1.8	31.0	.0	.0	.0
Sep	70.5	55.2	62.9	100	1953	1	66.7	1998	30+	1984	30	57.7	1993	107	42	.0	.4	30.0	.0	.3	.0
Oct	59.3	44.0	51.7	89+	1967	2	57.7	1971	20+	1981	24	46.0	1988	415	2	.0	.0	27.1	.0	3.5	.0
Nov	46.0	31.5	38.8	80	1950	1	45.5	1999	-5	1976	29	31.0	1995	787	0	.0	.0	10.6	2.2	17.1	@
Dec	33.8	20.0	26.9	70	2001	5	34.4	1998	-29	1983	24	15.5	1983	1181	0	.0	.0	2.0	10.6	27.1	2.7
Ann	54.5	39.9	47.2	104	Jul 1999	30	77.8	Jul 1999	-31+	Jan 1985	20	8.6	Jan 1977	6999	549	.1	6.8	213.3	48.2	134.7	12.5

\+ 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

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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	1.67	1.40	2.59	1960	12	5.06	1999	.13	1981
Feb	1.29	1.23	1.61	2001	24	3.73	1994	.09	1995
Mar	2.34	2.09	2.17	1993	31	5.48	1976	.58	1981
Apr	3.85	3.66	2.39	1993	19	7.71	1999	1.23	1971
May	3.38	3.44	2.86	2000	18	8.41	2000	.23	1992
Jun	3.59	3.49	3.76	2000	12	8.69	1993	.80	1988
Jul	3.68	3.54	3.26	1963	19	8.55	1978	1.07	1979
Aug	4.19	3.64	4.88	1987	14	12.65	1987	.54	1973
Sep	3.49	2.92	2.77	1993	25	10.47	1986	.04	1979
Oct	2.49	1.97	5.66	1965	21	6.25	1985	.62	1992
Nov	2.68	2.29	2.39	1951	13	6.61	1985	.20	1999
Dec	2.09	2.14	2.74	1982	2	5.18	1987	.28	1989
Ann	34.74	35.00	5.66	Oct 1965	21	12.65	Aug 1987	.04	Sep 1979

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.1	4.2	.9	.3
Feb	7.5	3.3	.8	.1
Mar	10.1	5.7	1.5	.2
Apr	12.1	7.2	2.7	.9
May	10.7	6.8	2.1	.7
Jun	10.0	6.3	2.6	.8
Jul	9.4	6.2	2.6	.9
Aug	9.5	6.3	2.7	1.2
Sep	9.2	5.9	2.7	.8
Oct	8.9	5.3	1.8	.4
Nov	10.2	6.2	1.7	.5
Dec	9.8	5.1	1.1	.3
Ann	117.5	68.5	23.2	7.1

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	.27	.41	.65	.88	1.12	1.38	1.68	2.04	2.52	3.31	4.06
Feb	.24	.35	.54	.72	.90	1.09	1.31	1.58	1.93	2.50	3.05
Mar	.69	.91	1.24	1.53	1.81	2.10	2.43	2.81	3.30	4.07	4.79
Apr	1.33	1.70	2.23	2.67	3.10	3.54	4.02	4.59	5.30	6.41	7.44
May	.66	.96	1.46	1.91	2.37	2.87	3.43	4.11	5.01	6.45	7.81
Jun	.97	1.31	1.82	2.28	2.73	3.19	3.71	4.33	5.13	6.39	7.56
Jul	1.11	1.46	1.98	2.43	2.87	3.32	3.82	4.41	5.17	6.36	7.46
Aug	1.15	1.55	2.15	2.68	3.20	3.74	4.34	5.04	5.96	7.41	8.76
Sep	.52	.81	1.32	1.80	2.31	2.86	3.49	4.27	5.31	7.01	8.65
Oct	.73	.97	1.32	1.63	1.93	2.24	2.59	2.99	3.52	4.34	5.10
Nov	.65	.90	1.29	1.64	1.99	2.35	2.76	3.25	3.88	4.89	5.84
Dec	.46	.66	.97	1.24	1.52	1.81	2.15	2.54	3.06	3.90	4.68
Ann	23.96	26.02	28.68	30.71	32.51	34.26	36.08	38.09	40.53	44.09	47.18

\+ 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	11.2	10.7	4	3
Feb	8.6	7.2	4	2
Mar	4.3	2.4	1	#
Apr	1.3	.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	.1	.0	#	0
Nov	1.5	.3	#	#
Dec	7.3	6.9	1	1
Ann	34.3	27.5	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	15.0	1979	13	37.5	1979	33	1979	19	22	1979
Feb	14.5	1978	6	33.5	1994	30	1978	7	23	1979
Mar	8.0	1999	9	16.0	1999	14	1979	2	6	1979
Apr	8.0	1975	2	10.0	1975	8	1975	3	1	1975
May	#	1990	10	#+	1990	0	0	0	0	0
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	1989	19	1.5	1989	1	1989	19	#+	1989
Nov	5.0	1975	26	8.0	1977	6	1977	27	1	1977
Dec	11.8	2000	11	16.8	1977	16+	2000	30	9	2000
Ann	15.0	Jan 1979	13	37.5	Jan 1979	33	Jan 1979	19	23	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.9	4.0	1.3	.5	.1
Feb	4.2	2.6	1.1	.4	.1
Mar	2.8	1.9	.6	.1	.0
Apr	.7	.3	.1	.1	.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	.1	@	.0	.0	.0
Nov	1.0	.5	.2	@	.0
Dec	4.4	2.6	1.0	.4	@
Ann	20.1	11.9	4.3	1.5	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	17.8	11.8	5.6	2.2
Feb	12.3	6.9	3.4	1.3
Mar	4.8	2.4	1.4	.4
Apr	.4	.2	.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	.8	.4	.1	.0
Dec	8.9	3.2	1.8	.7
Ann	45.0	24.9	12.4	4.6

+ 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	5/19	5/15	5/11	5/07	5/04	4/30	4/25	4/19
32	5/13	5/08	5/04	4/30	4/27	4/24	4/21	4/17	4/11
28	4/30	4/24	4/20	4/17	4/14	4/11	4/07	4/03	3/29
24	4/13	4/09	4/07	4/04	4/02	3/31	3/29	3/26	3/22
20	4/10	4/04	3/30	3/26	3/23	3/19	3/15	3/10	3/04
16	4/03	3/27	3/22	3/18	3/14	3/10	3/06	3/01	2/22

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	175	167	161	156	152	147	142	136	128
32	202	192	185	179	174	168	162	155	145
28	222	214	209	205	201	197	192	187	180
24	239	232	226	222	218	213	209	203	196
20	268	258	251	245	239	234	228	220	210
16	286	275	268	262	256	250	243	236	226

***** 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	1370	1119	950	627	324	86	16	17	107	415	787	1181	6999
60	1215	979	795	477	198	30	2	1	36	273	637	1026	5669
57	1122	895	702	389	137	13	0	0	14	199	548	933	4952
55	1060	839	640	332	103	7	0	0	7	156	490	871	4505
50	905	699	488	202	42	1	0	0	1	75	353	723	3489
32	405	261	88	3	0	0	0	0	0	0	48	266	1071

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	58	66	160	366	711	989	1219	1203	925	610	251	108	6666
55	0	0	0	5	101	305	506	490	242	53	3	0	1705
57	0	0	0	2	73	252	444	428	190	34	1	0	1424
60	0	0	0	0	41	179	353	337	121	15	0	0	1046
65	0	0	0	0	12	84	212	197	42	2	0	0	549
70	0	0	0	0	2	28	104	92	8	0	0	0	234

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	3	7	54	161	444	729	949	925	674	359	96	10	3	10	64	225	669	1398	2347	3272	3946	4305	4401	4411
45	0	1	26	81	298	579	794	770	524	225	42	5	0	1	27	108	406	985	1779	2549	3073	3298	3340	3345
50	0	0	9	35	177	429	639	615	376	121	15	0	0	0	9	44	221	650	1289	1904	2280	2401	2416	2416
55	0	0	5	13	97	288	486	460	238	50	3	0	0	0	5	18	115	403	889	1349	1587	1637	1640	1640
60	0	0	0	4	43	170	332	308	129	18	0	0	0	0	0	4	47	217	549	857	986	1004	1004	1004
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	3	31	80	226	434	624	611	394	178	46	3	0	3	34	114	340	774	1398	2009	2403	2581	2627	2630

(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