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: OCONTO, NE **COOP ID: 256167**

Climate Division: NE 5 **NWS Call Sign:** **Elevation: 2,580 Feet** **Lat: 41˚09N** **Lon: 99˚46W**

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	34.5	9.0	21.8	73+	1997	2	32.1	1986	-30	1988	9	7.5	1979	1340	0	.0	.0	5.4	11.5	30.5	6.7
Feb	40.2	14.2	27.2	78	1995	25	35.8	1991	-27	1994	9	14.3	1978	1058	0	.0	.0	9.4	7.8	26.6	3.4
Mar	49.3	22.2	35.8	87+	1986	29	41.7	1986	-22	1998	11	28.8	1996	906	0	.0	.0	17.2	3.1	24.9	.6
Apr	60.8	31.9	46.4	92+	1989	22	54.6	1981	7	1994	6	40.2	1983	560	0	.0	.3	25.4	.2	12.0	.0
May	70.5	44.1	57.3	97+	1989	29	62.6	1977	18	1989	1	51.2	1995	259	21	.0	.5	30.6	.0	1.9	.0
Jun	80.8	53.9	67.4	106+	1988	21	73.5	1988	33+	1998	6	61.3	1982	54	124	.5	5.5	30.0	.0	.0	.0
Jul	86.4	59.6	73.0	106+	1998	20	80.0	1980	39	1971	30	67.1	1992	11	258	1.5	11.7	31.0	.0	.0	.0
Aug	84.4	57.2	70.8	106	1983	16	77.7	1983	37	1964	23	65.8	1992	25	206	.7	10.2	31.0	.0	.0	.0
Sep	77.0	46.6	61.8	102	1998	6	67.6	1998	20+	1995	22	57.0	1993	154	58	.1	4.1	29.7	.0	1.3	.0
Oct	65.0	34.6	49.8	93	1996	12	54.2	1974	4	1997	27	46.3	1972	471	0	.0	.2	28.2	.2	10.0	.0
Nov	47.0	21.0	34.0	80+	1999	13	41.0	1999	-15	1986	11	22.9	1985	930	0	.0	.0	14.4	4.0	25.0	.9
Dec	37.0	12.1	24.6	74	1980	17	33.2	1979	-29+	1989	23	6.4	1983	1253	0	.0	.0	6.6	9.3	30.2	3.8
Ann	61.1	33.9	47.5	106+	Jul 1998	20	80.0	Jul 1980	-30	Jan 1988	9	6.4	Dec 1983	7021	667	2.8	32.5	258.9	36.1	162.4	15.4

\+ 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	.55	.57	1.22	1960	14	1.60	1992	.00+	1998
Feb	.45	.31	1.00	1958	26	1.35	1971	.00+	1996
Mar	1.59	1.52	2.19	1987	17	5.92	1987	.00	1994
Apr	2.11	2.04	2.10	1964	27	5.64	1984	.07	1989
May	3.68	3.21	2.75	1996	27	9.32	1977	.47	1994
Jun	3.44	2.94	4.48	1988	30	8.87	1993	.60	1977
Jul	3.16	2.51	3.52	1987	18	9.44	1981	.42	1999
Aug	2.48	2.50	2.82	1984	20	6.62	1996	.31	1971
Sep	1.80	1.30	3.41	1989	4	6.18	1973	.00	1999
Oct	1.38	.87	2.08	2000	28	3.88	1997	.05	1988
Nov	.99	.89	1.82	1981	30	3.47	1981	.00+	1999
Dec	.47	.35	.85	1982	27	1.69	1973	.00+	2000
Ann	22.10	21.43	4.48	Jun 1988	30	9.44	Jul 1981	.00+	Dec 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.1	1.8	.3	@
Feb	3.5	1.9	.1	.0
Mar	5.4	4.0	1.1	.2
Apr	6.5	4.7	1.4	.5
May	8.9	7.0	2.6	1.0
Jun	7.5	5.7	2.2	.9
Jul	6.7	5.5	2.1	.8
Aug	5.8	4.6	1.6	.6
Sep	5.0	3.7	1.0	.3
Oct	4.1	3.0	1.0	.3
Nov	3.4	2.4	.7	.1
Dec	3.1	1.7	.2	.0
Ann	63.0	46.0	14.3	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	.15	.26	.36	.46	.58	.71	.90	1.17	1.45
Feb	.00	.05	.14	.21	.28	.36	.46	.56	.71	.96	1.19
Mar	.06	.19	.42	.65	.90	1.18	1.52	1.95	2.53	3.51	4.47
Apr	.27	.44	.74	1.03	1.34	1.69	2.08	2.57	3.24	4.33	5.38
May	1.09	1.44	1.96	2.42	2.86	3.31	3.82	4.42	5.19	6.39	7.51
Jun	.67	.98	1.49	1.95	2.42	2.92	3.49	4.18	5.09	6.56	7.95
Jul	.60	.88	1.34	1.77	2.20	2.67	3.21	3.85	4.70	6.07	7.38
Aug	.67	.91	1.26	1.58	1.89	2.21	2.57	3.00	3.55	4.42	5.23
Sep	.13	.32	.61	.87	1.15	1.45	1.80	2.22	2.79	3.72	4.62
Oct	.11	.20	.38	.57	.78	1.02	1.31	1.68	2.19	3.04	3.89
Nov	.00	.00	.18	.37	.55	.75	.98	1.26	1.64	2.24	2.84
Dec	.00	.00	.05	.15	.24	.34	.46	.61	.80	1.11	1.44
Ann	14.49	15.91	17.77	19.19	20.47	21.71	23.01	24.44	26.20	28.78	31.02

\+ 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	5.0	3.0	2	#
Feb	5.4	4.0	1	#
Mar	7.2	4.0	#	#
Apr	1.3	.0	#	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
Oct	.8	.0	#	0
Nov	4.5	3.0	#	#
Dec	4.5	4.0	1	#
Ann	28.7	18.0	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	8.8	1990	20	16.5	1979	26	1979	31	18	1979
Feb	7.0	1997	4	17.4	1978	8	1994	26	7	1994
Mar	8.0	1977	12	23.5	1987	15	1987	29	3	1998
Apr	5.0	1980	1	11.0	1980	10	1994	12	#+	1999
May	.0	0	0	.0	0	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	#	1995	20	#	1995
Oct	5.9	1980	27	7.4	1980	5	1987	10	#+	1997
Nov	9.0	1979	21	19.0	1979	13	2000	13	2	2000
Dec	9.0	1982	27	16.0	1982	10	1987	29	5	1985
Ann	9.0+	Dec 1982	27	23.5	Mar 1987	26	Jan 1979	31	18	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.3	1.6	.7	.3	.0
Feb	2.4	1.7	.9	.1	.0
Mar	2.4	2.3	1.0	.4	.0
Apr	.6	.5	.3	@	.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	.4	.3	.1	@	.0
Nov	1.3	1.1	.7	.2	.0
Dec	1.6	1.3	.7	.2	.0
Ann	11.0	8.8	4.4	1.2	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	4.6	3.5	2.5	.8
Feb	4.0	2.8	1.2	.0
Mar	1.8	.8	.4	.2
Apr	.3	.1	.0	.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	.2	@	.0	.0
Nov	1.9	.6	.2	.0
Dec	3.2	1.5	.8	.2
Ann	16.0	9.3	5.1	1.2

+ 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	6/04	5/29	5/24	5/21	5/17	5/14	5/10	5/06	4/29
32	5/19	5/15	5/11	5/09	5/06	5/03	5/01	4/27	4/23
28	5/13	5/08	5/04	5/01	4/27	4/24	4/21	4/17	4/12
24	4/29	4/25	4/22	4/20	4/17	4/15	4/13	4/10	4/06
20	4/23	4/17	4/13	4/09	4/06	4/03	3/30	3/26	3/21
16	4/11	4/05	4/01	3/28	3/25	3/21	3/17	3/13	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	9/11	9/15	9/18	9/20	9/22	9/24	9/27	9/29	10/03
32	9/15	9/20	9/24	9/27	9/29	10/02	10/05	10/09	10/14
28	9/21	9/26	9/30	10/03	10/06	10/09	10/12	10/16	10/22
24	9/30	10/06	10/10	10/14	10/17	10/20	10/24	10/28	11/03
20	10/07	10/14	10/19	10/23	10/27	10/31	11/04	11/09	11/15
16	10/20	10/25	10/30	11/02	11/06	11/09	11/13	11/17	11/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	146	140	135	131	127	123	119	115	108
32	166	159	154	150	146	142	137	132	126
28	181	174	169	165	161	157	153	148	141
24	201	194	190	186	182	178	174	169	163
20	227	218	213	208	203	198	193	187	179
16	254	244	237	231	226	220	214	207	197

***** 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	1340	1058	906	560	259	54	11	25	154	471	930	1253	7021
60	1185	918	751	415	147	15	0	5	72	320	780	1098	5706
57	1092	834	658	332	96	5	0	2	40	235	690	1005	4989
55	1030	783	596	280	69	2	0	1	24	185	630	943	4543
50	878	653	448	168	25	0	0	0	5	86	491	793	3547
32	385	259	73	4	0	0	0	0	0	1	120	318	1160

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	68	125	190	434	785	1060	1270	1204	894	553	180	88	6851
55	0	5	0	20	141	372	557	491	228	25	0	0	1839
57	0	0	0	12	106	315	495	430	184	13	0	0	1555
60	0	0	0	5	63	235	403	341	126	4	0	0	1177
65	0	0	0	0	21	124	258	206	58	0	0	0	667
70	0	0	0	0	4	50	138	103	20	0	0	0	315

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	7	38	109	302	601	878	1064	1019	718	380	76	15	7	45	154	456	1057	1935	2999	4018	4736	5116	5192	5207
45	0	11	55	189	447	728	909	864	568	250	35	0	0	11	66	255	702	1430	2339	3203	3771	4021	4056	4056
50	0	1	23	105	302	578	754	709	423	145	10	0	0	1	24	129	431	1009	1763	2472	2895	3040	3050	3050
55	0	0	4	48	175	429	599	554	291	67	0	0	0	0	4	52	227	656	1255	1809	2100	2167	2167	2167
60	0	0	0	23	86	284	444	401	181	21	0	0	0	0	0	23	109	393	837	1238	1419	1440	1440	1440
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	22	47	106	221	374	568	702	666	464	272	76	24	22	69	175	396	770	1338	2040	2706	3170	3442	3518	3542

(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