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: ENDERS LAKE, NE **COOP ID: 252741**

Climate Division: NE 7 **NWS Call Sign:** **Elevation: 3,078 Feet** **Lat: 40˚25N** **Lon: 101˚31W**

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	38.3	10.8	24.6	74	1967	23	34.8	1986	-26+	1984	19	11.5	1979	1254	0	.0	.0	6.7	10.1	31.0	6.4
Feb	44.7	15.7	30.2	79+	1999	11	38.4	1999	-23+	1960	28	18.7	1993	974	0	.0	.0	11.2	6.6	27.5	3.7
Mar	52.9	22.9	37.9	90	1967	30	43.9	1986	-27	1960	3	31.3	1996	840	0	.0	.0	17.5	3.3	27.0	.7
Apr	63.2	32.6	47.9	93	1989	23	55.1	1981	4	1973	10	41.9	1983	514	1	.0	.3	24.6	.4	14.4	.0
May	72.7	43.9	58.3	102	2000	30	64.2	1994	16	1989	1	51.6	1995	236	28	.1	1.2	30.3	.0	2.5	.0
Jun	83.7	54.0	68.9	108+	1954	25	74.5	1988	33+	1998	6	64.3	1982	41	156	1.0	7.6	29.9	.0	.0	.0
Jul	90.0	59.9	75.0	111	1954	12	79.8	1980	36	1990	13	69.7	1992	4	311	3.7	17.0	31.0	.0	.0	.0
Aug	88.2	57.6	72.9	107+	1970	7	80.1	1983	37	1993	31	67.4	1992	13	257	1.9	14.1	31.0	.0	.0	.0
Sep	79.4	47.1	63.3	105+	1959	8	70.8	1998	20+	1984	30	57.8	1974	129	78	.8	6.0	29.6	.0	2.1	.0
Oct	67.1	33.5	50.3	95	1967	4	53.8	1979	9	1991	31	46.5	1976	457	0	.0	.6	27.9	.2	14.5	.0
Nov	50.2	22.1	36.2	88	1965	15	44.8	1999	-11	1952	27	28.1	1985	865	0	.0	.0	15.8	3.6	27.2	.4
Dec	41.0	13.4	27.2	76	1970	1	34.4	1980	-38	1989	22	10.7	1983	1172	0	.0	.0	8.3	8.0	30.7	3.7
Ann	64.3	34.5	49.4	111	Jul 1954	12	80.1	Aug 1983	-38	Dec 1989	22	10.7	Dec 1983	6499	831	7.5	46.8	263.8	32.2	176.9	14.9

\+ 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: 1951-2001

(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	.45	.31	1.05	1963	11	1.65	1992	.00	1986
Feb	.48	.43	1.49	1993	11	2.13	1993	.00	1996
Mar	1.27	.84	1.87	1980	28	4.71	1981	.13	1997
Apr	2.01	1.68	2.65	1971	20	6.00	1984	.27+	1998
May	3.22	2.93	3.32	1962	17	7.15	1982	.49	1994
Jun	3.12	3.08	4.78	1956	17	5.96	1999	.86	1985
Jul	3.04	2.95	5.47	1958	19	6.38	1994	.62	1984
Aug	2.55	2.23	3.34	1999	11	9.05	1999	.15	1995
Sep	1.27	.83	3.60	1980	9	7.18	1973	.07	1983
Oct	1.21	.98	2.40	2000	30	4.03	2000	.08	1977
Nov	.79	.56	1.06	1990	3	2.36	1987	.00+	1997
Dec	.39	.26	.80	1968	22	1.67	1982	.00+	1998
Ann	19.80	18.74	5.47	Jul 1958	19	9.05	Aug 1999	.00+	Dec 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.2	1.2	.2	@
Feb	3.6	1.1	.2	@
Mar	6.1	3.2	.7	.2
Apr	7.1	4.1	1.4	.3
May	10.4	6.3	2.2	.7
Jun	8.5	5.5	1.8	.7
Jul	8.1	5.3	1.9	.8
Aug	6.7	4.2	1.7	.7
Sep	5.2	2.6	.5	.3
Oct	4.3	2.5	.9	.2
Nov	2.9	1.8	.4	@
Dec	2.9	1.0	.2	.0
Ann	69.0	38.8	12.1	3.9

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	.02	.06	.13	.19	.26	.34	.44	.55	.71	.97	1.23
Feb	.01	.04	.10	.17	.24	.33	.44	.58	.78	1.11	1.45
Mar	.13	.23	.40	.58	.77	.98	1.23	1.55	1.98	2.69	3.39
Apr	.35	.53	.82	1.10	1.38	1.68	2.03	2.46	3.02	3.93	4.80
May	.93	1.23	1.69	2.09	2.48	2.89	3.34	3.87	4.56	5.63	6.63
Jun	.88	1.17	1.62	2.01	2.39	2.79	3.23	3.75	4.43	5.48	6.47
Jul	.95	1.24	1.67	2.04	2.39	2.76	3.17	3.64	4.25	5.20	6.08
Aug	.20	.37	.70	1.06	1.45	1.89	2.43	3.10	4.03	5.60	7.14
Sep	.10	.19	.35	.53	.72	.94	1.21	1.54	2.01	2.79	3.55
Oct	.08	.15	.30	.47	.65	.87	1.13	1.46	1.93	2.72	3.50
Nov	.00	.08	.21	.34	.47	.61	.78	.98	1.26	1.73	2.18
Dec	.00	.00	.06	.12	.18	.26	.36	.48	.66	.95	1.24
Ann	14.35	15.41	16.77	17.80	18.71	19.59	20.50	21.50	22.71	24.46	25.98

\+ 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: 1951-2001
(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	6.1	6.0	2	1
Feb	3.9	3.5	1	1
Mar	7.2	5.9	#	#
Apr	2.4	.5	#	0
May	.1	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.4	.0	#	0
Nov	4.5	3.5	1	#
Dec	5.5	4.8	1	1
Ann	30.1	24.2	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	11.5	1994	27	14.0	1992	14	1993	13	9	1993
Feb	12.0	1993	11	12.0	1978	12	1993	16	5	1993
Mar	12.0	1977	12	28.5	1980	25	1980	30	3	1980
Apr	7.0	1980	1	12.0	1980	21	1980	1	6	1980
May	2.0	1978	6	2.0	1978	2	1978	6	#+	1979
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	4.2	1997	26	6.7	1997	8	1995	23	1+	1997
Nov	9.0	1983	27	15.0	1975	12	1983	30	2	1983
Dec	9.5	1982	25	20.0	1982	20	1982	29	7	1983
Ann	12.0+	Feb 1993	11	28.5	Mar 1980	25	Mar 1980	30	9	Jan 1993

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.8	2.0	.7	.3	.1
Feb	2.2	1.4	.4	.2	@
Mar	2.6	1.9	.8	.2	.1
Apr	1.1	.9	.3	.1	.0
May	@	@	.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	.2	.1	@	.0	.0
Nov	1.9	1.5	.8	.2	.0
Dec	2.3	1.5	.6	.3	.0
Ann	13.1	9.3	3.6	1.3	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	13.4	6.3	3.2	1.0
Feb	7.2	3.0	1.0	.0
Mar	3.0	1.1	.4	.2
Apr	1.1	.6	.5	.3
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	.2	.1	.1	.0
Nov	3.3	1.5	.6	.2
Dec	7.7	4.0	1.8	.5
Ann	35.9	16.6	7.6	2.2

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

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

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	142	137	132	127	123	118	112	104
32	162	155	150	146	143	139	135	130	123
28	183	177	172	168	164	160	156	151	144
24	197	190	185	181	177	173	168	163	156
20	222	214	209	204	200	195	190	185	177
16	254	245	238	233	227	222	216	210	201

***** 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	1254	974	840	514	236	41	4	13	129	457	865	1172	6499
60	1099	834	685	370	131	10	0	2	57	306	715	1017	5226
57	1006	750	592	290	85	4	0	1	30	220	625	924	4527
55	944	697	530	240	60	2	0	0	18	169	565	862	4087
50	790	567	380	136	21	0	0	0	3	69	425	711	3102
32	306	189	36	1	0	0	0	0	0	0	76	248	856

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	75	139	219	478	815	1105	1330	1267	938	566	201	99	7232
55	0	3	0	28	162	417	617	554	266	22	0	0	2069
57	0	0	0	17	125	359	555	493	218	12	0	0	1779
60	0	0	0	8	78	276	462	401	156	4	0	0	1385
65	0	0	0	1	28	156	311	257	78	0	0	0	831
70	0	0	0	0	7	70	176	136	31	0	0	0	420

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	1	36	103	274	566	861	1080	1015	705	345	79	13	1	37	140	414	980	1841	2921	3936	4641	4986	5065	5078
45	0	8	49	170	419	711	925	860	558	220	30	0	0	8	57	227	646	1357	2282	3142	3700	3920	3950	3950
50	0	0	16	95	278	561	770	705	415	121	8	0	0	0	16	111	389	950	1720	2425	2840	2961	2969	2969
55	0	0	2	45	159	413	615	550	285	55	0	0	0	0	2	47	206	619	1234	1784	2069	2124	2124	2124
60	0	0	0	16	77	270	462	398	174	12	0	0	0	0	0	16	93	363	825	1223	1397	1409	1409	1409
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	24	60	120	217	360	541	688	644	454	278	93	35	24	84	204	421	781	1322	2010	2654	3108	3386	3479	3514

(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