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: GREELEY, NE **COOP ID: 253425**

Climate Division: NE 5 **NWS Call Sign:** **Elevation: 2,020 Feet** **Lat: 41˚33N** **Lon: 98˚32W**

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	32.8	7.7	20.3	75	1981	24	31.2	1986	-31	1974	12	6.7	1979	1387	0	.0	.0	4.8	14.1	30.9	8.0
Feb	39.0	13.5	26.3	81	1972	28	34.8	1991	-28	1996	1	13.8	1979	1086	0	.0	.0	8.0	9.7	27.0	4.3
Mar	49.2	22.5	35.9	90	1968	30	40.7	1986	-15+	1980	1	26.4	1975	905	0	.0	.0	16.1	3.6	25.5	.9
Apr	61.7	33.6	47.7	96	1989	27	57.8	1981	6	1975	2	41.4	1997	525	4	.0	.5	24.6	.4	12.4	.0
May	71.7	45.8	58.8	101	1967	24	66.1	1977	22+	1990	1	51.9	1995	229	35	.0	.7	30.4	.0	2.0	.0
Jun	82.1	56.0	69.1	105	1988	22	75.1	1988	35+	1989	15	64.0	1975	48	169	.5	6.2	29.9	.0	.0	.0
Jul	86.8	61.1	74.0	114	1954	11	80.0	1974	36	1971	30	66.8	1992	9	287	1.3	11.9	31.0	.0	.0	.0
Aug	85.1	58.2	71.7	108	1983	16	78.7	1983	35	1978	4	66.3	1992	24	229	.7	10.2	31.0	.0	.0	.0
Sep	77.7	47.1	62.4	104+	1959	6	67.8	1998	19+	1984	30	56.7	1993	136	57	.2	4.4	29.6	.0	1.5	.0
Oct	65.6	34.1	49.9	97	1963	1	53.6	1975	4	1997	27	44.7	1976	470	0	.0	.3	27.8	.2	11.0	.0
Nov	47.0	21.2	34.1	82	1999	10	43.7	1999	-16	1986	11	24.2	1985	928	0	.0	.0	13.2	4.4	25.6	1.0
Dec	35.6	11.5	23.6	77	1962	16	31.8	1979	-26+	1989	22	5.9	1983	1286	0	.0	.0	5.3	11.4	30.6	4.9
Ann	61.2	34.4	47.8	114	Jul 1954	11	80.0	Jul 1974	-31	Jan 1974	12	5.9	Dec 1983	7033	781	2.7	34.2	251.7	43.8	166.5	19.1

\+ 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	.45	.34	.88	1990	20	1.91	1993	.00+	1994
Feb	.61	.38	2.17	1984	18	2.31	1984	.00+	1988
Mar	1.93	1.61	2.44	1987	17	8.72	1987	.04	1994
Apr	2.65	2.07	2.25	1984	21	7.17	1984	.14	1989
May	3.92	3.71	5.08	1953	10	8.07	1972	1.28	1994
Jun	3.89	3.84	3.58	1989	25	8.42	1990	.70	1991
Jul	3.84	2.91	4.75	1993	23	13.72	1993	.80	1997
Aug	2.77	2.20	7.51	1966	12	6.59	1977	.22	1971
Sep	2.34	1.89	3.15	1964	5	6.40	1985	.24	1984
Oct	1.61	1.33	2.20	1968	16	5.97	1984	.11	1996
Nov	1.44	1.16	1.96	1996	16	4.32	1983	.00	1976
Dec	.58	.41	1.00+	1965	24	2.22	1982	.00+	1994
Ann	26.03	26.47	7.51	Aug 1966	12	13.72	Jul 1993	.00+	Dec 1994

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.1	1.5	.1	.0
Feb	3.7	1.9	.3	.1
Mar	6.5	3.9	1.1	.5
Apr	8.3	5.1	2.0	.6
May	10.7	7.1	2.7	.9
Jun	9.6	6.5	2.8	.9
Jul	8.6	6.1	2.4	1.1
Aug	7.2	4.5	1.6	.9
Sep	6.7	4.3	1.6	.5
Oct	5.6	3.5	1.2	.3
Nov	4.8	2.7	1.0	.3
Dec	3.6	1.8	.3	.0
Ann	78.4	48.9	17.1	6.1

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	.00	.00	.09	.16	.24	.33	.44	.57	.74	1.04	1.32
Feb	.00	.03	.10	.19	.29	.41	.56	.74	1.00	1.44	1.88
Mar	.10	.21	.44	.69	.99	1.34	1.77	2.32	3.10	4.43	5.75
Apr	.40	.63	1.01	1.38	1.76	2.17	2.66	3.24	4.03	5.31	6.54
May	1.60	1.96	2.47	2.89	3.28	3.68	4.11	4.61	5.24	6.21	7.08
Jun	.93	1.30	1.87	2.37	2.88	3.41	4.00	4.71	5.64	7.12	8.50
Jul	.82	1.17	1.73	2.24	2.76	3.31	3.93	4.67	5.65	7.21	8.69
Aug	.38	.61	1.01	1.39	1.79	2.24	2.75	3.38	4.23	5.62	6.96
Sep	.31	.50	.84	1.16	1.51	1.88	2.32	2.86	3.59	4.79	5.94
Oct	.19	.32	.54	.77	1.01	1.27	1.58	1.96	2.48	3.34	4.17
Nov	.02	.09	.26	.45	.68	.95	1.29	1.73	2.36	3.43	4.51
Dec	.00	.00	.16	.26	.36	.46	.59	.73	.92	1.24	1.54
Ann	16.79	18.51	20.75	22.48	24.03	25.54	27.12	28.88	31.03	34.18	36.93

\+ 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	3.9	3.0	1	0
Feb	3.0	2.5	1	0
Mar	3.3	.0	#	0
Apr	1.0	.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	.8	.0	0	0
Nov	3.1	.0	1	0
Dec	5.7	4.0	1	#
Ann	20.8	9.5	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	8.0	1990	20	13.7	1996	12	1984	13	11	1984
Feb	10.0	1997	4	12.0	1999	10	1999	23	8	1979
Mar	8.0	1991	27	12.0	1998	10	1998	13	3	1998
Apr	4.0	1997	10	10.0	1997	10	1997	12	1	1997
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	0	0	0	0	0
Oct	8.0	1980	27	8.0	1980	6	1997	26	1	1997
Nov	11.0	1983	28	18.0	1983	13	2000	13	4+	2000
Dec	7.0	1982	27	14.0	1982	10	1982	28	3	2000
Ann	11.0	Nov 1983	28	18.0	Nov 1983	13	Nov 2000	13	11	Jan 1984

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.7	1.4	.6	.2	.0
Feb	1.6	1.3	.5	.1	.1
Mar	1.2	.9	.3	.2	.0
Apr	.3	.3	.2	.0	.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	.2	.2	.1	@	.0
Nov	.9	.8	.5	.1	.1
Dec	1.8	1.3	.6	.1	.0
Ann	7.7	6.2	2.8	.7	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	3.2	1.7	1.1	.2
Apr	.6	.3	.1	.1
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	.2	.1	.0
Nov	2.6	2.0	.7	.3
Dec	4.8	1.3	.3	.1
Ann	-9.9	-9.9	-9.9	-9.9

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

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	9/03	9/09	9/13	9/16	9/19	9/22	9/26	9/30	10/05
32	9/13	9/17	9/20	9/23	9/25	9/28	10/01	10/04	10/08
28	9/21	9/26	9/30	10/03	10/06	10/09	10/12	10/16	10/21
24	9/29	10/05	10/08	10/12	10/15	10/18	10/21	10/25	10/31
20	10/10	10/16	10/19	10/23	10/26	10/29	11/01	11/05	11/10
16	10/19	10/25	10/29	11/01	11/04	11/08	11/11	11/15	11/20

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	152	141	133	126	120	114	107	99	88
32	160	154	149	146	142	138	135	130	124
28	179	172	167	162	158	154	150	145	137
24	201	195	190	186	182	178	174	169	163
20	225	218	213	209	205	201	196	191	184
16	248	239	233	228	223	218	213	207	198

***** 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	1387	1086	905	525	229	48	9	24	136	470	928	1286	7033
60	1232	946	750	385	128	15	0	5	58	320	778	1131	5748
57	1139	862	657	307	83	6	0	1	29	238	688	1038	5048
55	1077	811	595	260	60	3	0	0	17	189	629	976	4617
50	926	680	449	159	21	0	0	0	2	93	489	822	3641
32	434	280	77	6	0	0	0	0	0	1	117	341	1256

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	70	118	195	474	829	1111	1301	1228	911	555	178	78	7048
55	0	5	1	39	176	424	588	515	237	30	1	0	2016
57	0	0	0	26	137	367	526	454	190	17	0	0	1717
60	0	0	0	13	89	286	433	365	129	5	0	0	1320
65	0	0	0	4	35	169	287	229	57	0	0	0	781
70	0	0	0	0	9	84	161	123	18	0	0	0	395

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	2	28	99	292	599	885	1064	1008	702	369	74	7	2	30	129	421	1020	1905	2969	3977	4679	5048	5122	5129
45	0	5	48	183	447	735	909	853	556	237	30	0	0	5	53	236	683	1418	2327	3180	3736	3973	4003	4003
50	0	0	19	107	305	585	754	698	412	140	11	0	0	0	19	126	431	1016	1770	2468	2880	3020	3031	3031
55	0	0	5	52	182	439	599	543	279	58	1	0	0	0	5	57	239	678	1277	1820	2099	2157	2158	2158
60	0	0	1	24	89	298	444	392	170	18	0	0	0	0	1	25	114	412	856	1248	1418	1436	1436	1436
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	16	36	100	214	381	571	702	652	456	271	71	20	16	52	152	366	747	1318	2020	2672	3128	3399	3470	3490

(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