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: NIOBRARA, NE **COOP ID: 255960**

Climate Division: NE 3 **NWS Call Sign:** **Elevation: 1,380 Feet** **Lat: 42˚45N** **Lon: 98˚02W**

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	31.3	10.1	20.7	70	1989	22	33.7	1990	-31+	1970	19	5.3	1979	1373	0	.0	.0	3.2	15.5	30.2	8.2
Feb	37.7	16.4	27.1	78	1995	21	38.1	1999	-31	1962	28	11.2	1979	1062	0	.0	.0	6.7	10.2	25.7	4.2
Mar	49.0	26.1	37.6	89	1968	30	44.8	2000	-29	1962	1	29.1	1975	850	0	.0	.0	15.1	3.8	22.9	.6
Apr	62.8	37.1	50.0	97+	1989	22	58.3	1981	1	1975	3	43.2	1983	457	6	.0	.6	25.4	.3	9.6	.0
May	74.0	48.4	61.2	104	1967	25	68.3	1987	21	1976	3	56.3	1979	182	63	.0	1.0	30.8	.0	1.2	.0
Jun	83.6	57.8	70.7	109	1988	21	78.4	1988	35	1950	4	65.1	1974	32	202	.4	7.6	30.0	.0	.0	.0
Jul	88.2	63.2	75.7	109+	1995	12	79.4	1987	39	1971	30	69.2	1992	6	338	1.7	13.1	31.0	.0	.0	.0
Aug	86.5	61.7	74.1	107	1988	15	80.4	1983	34	1950	20	69.0	1992	10	293	.9	11.0	31.0	.0	.0	.0
Sep	78.0	51.5	64.8	102	1956	2	71.9	1998	24	1949	29	59.0	1974	109	100	@	4.1	29.8	.0	.9	.0
Oct	65.1	39.1	52.1	95+	1997	2	55.5	2000	12+	1993	31	45.5	1976	403	2	.0	.2	28.1	.2	7.7	.0
Nov	45.0	25.5	35.3	85	1953	15	46.9	1999	-18	1959	14	23.9	1985	893	0	.0	.0	11.5	4.8	23.0	.6
Dec	33.9	14.3	24.1	74	1998	2	32.2	1999	-33	1989	22	5.5	1983	1269	0	.0	.0	3.5	12.9	30.0	5.0
Ann	61.3	37.6	49.5	109+	Jul 1995	12	80.4	Aug 1983	-33	Dec 1989	22	5.3	Jan 1979	6646	1004	3.0	37.6	246.1	47.7	151.2	18.6

\+ 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	.35	.28	.94	1988	19	1.03	1988	.00	1987
Feb	.53	.34	1.85	2000	24	2.49	1971	.00+	1985
Mar	1.47	.89	2.71	1987	17	7.33	1987	.01	1994
Apr	2.56	2.18	1.93	1978	30	6.68	1984	.26	1981
May	3.62	3.75	3.98	1992	16	8.11	1982	.84	1989
Jun	3.23	2.87	7.20	1967	7	6.14	1983	.84	1976
Jul	3.21	2.45	3.30	1999	20	9.41	1978	.73	2000
Aug	2.57	2.27	2.65	1980	26	6.47	1980	.16	1983
Sep	2.17	1.97	2.52	1986	16	6.56	1973	.38	1998
Oct	1.71	1.36	1.98	1968	16	6.04	1982	.01	1999
Nov	1.02	1.08	1.60	2001	24	2.70	1983	.00	1980
Dec	.37	.33	1.00	1953	3	1.51	1982	.00	1986
Ann	22.81	23.15	7.20	Jun 1967	7	9.41	Jul 1978	.00+	Jan 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.2	1.1	.2	.0
Feb	3.5	1.4	.1	.1
Mar	5.9	3.5	1.0	.2
Apr	8.4	5.1	1.7	.6
May	9.5	6.4	2.2	.9
Jun	8.9	6.0	2.4	.8
Jul	8.5	5.6	2.1	.8
Aug	7.0	4.6	1.6	.7
Sep	6.8	4.4	1.3	.5
Oct	5.6	3.3	1.2	.5
Nov	4.7	2.6	.5	.2
Dec	3.4	1.4	@	.0
Ann	75.4	45.4	14.3	5.3

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	.01	.03	.08	.13	.19	.25	.33	.43	.56	.79	1.02
Feb	.00	.02	.09	.16	.25	.36	.48	.64	.87	1.26	1.65
Mar	.07	.14	.31	.51	.73	1.00	1.34	1.77	2.38	3.43	4.48
Apr	.38	.60	.97	1.32	1.69	2.09	2.56	3.13	3.89	5.14	6.33
May	1.00	1.34	1.86	2.32	2.77	3.23	3.75	4.36	5.16	6.41	7.57
Jun	.96	1.27	1.73	2.13	2.51	2.91	3.36	3.88	4.55	5.60	6.58
Jul	.64	.93	1.40	1.83	2.27	2.73	3.26	3.90	4.75	6.10	7.38
Aug	.40	.61	.99	1.34	1.71	2.11	2.58	3.14	3.90	5.14	6.32
Sep	.45	.65	.97	1.26	1.55	1.86	2.21	2.64	3.20	4.09	4.94
Oct	.09	.18	.38	.61	.87	1.18	1.57	2.06	2.75	3.94	5.12
Nov	.02	.09	.22	.37	.53	.72	.95	1.24	1.66	2.35	3.05
Dec	.02	.06	.11	.17	.22	.29	.36	.46	.58	.79	.99
Ann	13.71	15.36	17.53	19.22	20.76	22.26	23.83	25.60	27.77	30.98	33.80

\+ 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	4.3	3.0	3	1
Feb	3.5	2.8	2	1
Mar	4.5	3.7	1	#
Apr	1.8	.1	#	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	.6	.0	#	0
Nov	4.4	2.0	1	#
Dec	4.6	4.0	2	1
Ann	23.7	15.6	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	12.0	1988	19	12.0+	1988	18	1983	3	9	1982
Feb	10.0	1984	18	20.0	1993	20	1993	27	16	1979
Mar	6.0	1971	18	17.7	1998	13	1979	4	5	1984
Apr	5.5	1997	10	11.0	1994	7	1997	11	1	1997
May	#	1976	2	#	1976	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	6.0	1982	19	6.0	1982	5	1991	31	#+	1999
Nov	9.0	1975	20	15.5	1979	14	1979	24	4+	2000
Dec	8.0	1982	25	13.0	1971	18	1983	31	14	1983
Ann	12.0	Jan 1988	19	20.0	Feb 1993	20	Feb 1993	27	16	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.5	1.5	.4	.2	@
Feb	2.0	1.3	.6	.3	@
Mar	2.2	1.5	.7	.2	.0
Apr	.8	.6	.3	.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	.2	.2	.1	.1	.0
Nov	1.8	1.3	.5	.2	.0
Dec	2.6	1.8	.8	.2	.0
Ann	12.1	8.2	3.4	1.3	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	15.4	8.1	4.5	.9
Feb	9.6	5.8	4.8	1.8
Mar	4.9	2.6	1.8	.3
Apr	.7	.2	.2	.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	.1	@	.0
Nov	5.2	2.4	1.3	.4
Dec	13.9	6.9	3.0	.1
Ann	49.9	26.1	15.6	3.5

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	160	152	147	142	138	133	129	123	116
32	173	166	160	156	151	147	142	137	129
28	193	186	181	177	173	169	165	160	153
24	218	212	207	202	198	195	190	185	179
20	238	230	224	219	214	210	205	199	191
16	260	251	245	239	234	229	224	217	208

***** 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	1373	1062	850	457	182	32	6	10	109	403	893	1269	6646
60	1218	922	695	323	97	8	0	2	46	260	743	1114	5428
57	1126	848	605	251	61	3	0	0	24	186	656	1021	4781
55	1067	795	549	208	42	1	0	0	14	144	601	959	4380
50	923	665	408	120	14	0	0	0	3	66	464	814	3477
32	448	285	79	3	0	0	0	0	0	1	119	344	1279

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	98	146	252	542	905	1161	1355	1305	981	623	216	99	7683
55	4	13	9	58	234	472	642	592	305	53	8	0	2390
57	1	9	3	41	190	414	580	531	255	34	3	0	2061
60	0	0	0	22	134	329	487	439	187	14	0	0	1612
65	0	0	0	6	63	202	338	293	100	2	0	0	1004
70	0	0	0	1	23	106	201	166	43	0	0	0	540

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	5	29	114	335	667	932	1122	1067	750	401	73	6	5	34	148	483	1150	2082	3204	4271	5021	5422	5495	5501
45	0	9	58	218	514	782	967	912	604	271	28	1	0	9	67	285	799	1581	2548	3460	4064	4335	4363	4364
50	0	1	26	125	366	632	812	757	457	159	8	0	0	1	27	152	518	1150	1962	2719	3176	3335	3343	3343
55	0	0	7	68	237	482	657	602	321	79	0	0	0	0	7	75	312	794	1451	2053	2374	2453	2453	2453
60	0	0	0	33	128	338	502	447	208	30	0	0	0	0	0	33	161	499	1001	1448	1656	1686	1686	1686
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	7	32	92	225	420	610	751	713	484	263	55	9	7	39	131	356	776	1386	2137	2850	3334	3597	3652	3661

(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