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: BEACH, ND **COOP ID: 320590**

Climate Division: ND 7 **NWS Call Sign:** **Elevation: 2,789 Feet** **Lat: 46˚55N** **Lon: 104˚00W**

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	25.0	5.3	15.2	61	1995	10	29.4	1992	-34+	1954	21	-1.8	1979	1546	0	.0	.0	.7	19.6	30.7	12.0
Feb	31.7	12.3	22.0	68	1992	2	34.1	1984	-41	1962	28	5.3	1979	1205	0	.0	.0	3.0	13.0	27.4	7.3
Mar	42.5	20.4	31.5	80	1986	29	43.9	1986	-40	1962	1	20.4	1996	1040	0	.0	.0	9.4	7.4	28.7	2.4
Apr	56.6	30.4	43.5	90	1980	22	50.7	1987	-8	1997	8	35.9	1975	645	0	.0	.1	21.3	1.3	18.8	.1
May	68.4	41.4	54.9	99	1980	23	61.5	1988	13	1954	3	49.3	1996	328	14	.0	.4	29.4	@	4.2	.0
Jun	78.0	50.2	64.1	107	1988	24	77.1	1988	30+	1998	4	58.2	1998	127	100	.2	2.4	30.0	.0	.2	.0
Jul	84.7	54.8	69.8	108	1960	21	75.2	1985	35+	1972	4	61.4	1993	45	192	.6	6.6	31.0	.0	.0	.0
Aug	84.6	53.3	69.0	108	1949	8	76.6	1983	28	1994	31	62.8	1985	71	194	.3	6.9	31.0	.0	@	.0
Sep	72.8	43.3	58.1	102+	1998	4	65.8	1998	17	1995	21	53.0	1984	251	43	.2	1.9	28.7	.0	3.3	.0
Oct	58.1	32.1	45.1	93	1953	2	48.5	1973	-5+	1991	31	40.5	1972	618	0	.0	.1	22.6	.7	15.9	.1
Nov	39.5	19.3	29.4	79	1999	7	40.8	1999	-20	1996	24	15.6	1985	1068	0	.0	.0	7.3	8.9	27.7	2.8
Dec	28.9	9.2	19.1	61	1998	1	30.9	1979	-38	1989	22	2.1	1983	1426	0	.0	.0	1.5	16.9	30.6	8.6
Ann	55.9	31.0	43.5	108+	Jul 1960	21	77.1	Jun 1988	-41	Feb 1962	28	-1.8	Jan 1979	8370	543	1.3	18.4	215.9	67.8	187.5	33.3

\+ 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

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: BEACH, ND **COOP ID: 320590**

Climate Division: ND 7 **NWS Call Sign:** **Elevation: 2,789 Feet** **Lat: 46°55N** **Lon: 104°00W**

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	.43	.34	1.00	1969	27	.99	1971	.00	1992
Feb	.47	.31	1.01	1998	25	2.49	1998	.00	1983
Mar	.62	.50	1.10	1989	26	1.87	1989	.00+	1994
Apr	1.56	1.48	1.80	1993	19	3.44	1975	.07	1988
May	2.41	2.27	1.71	1989	29	6.37	1978	.26	1984
Jun	2.63	2.83	2.73	1957	17	5.49	1991	.76	1979
Jul	1.93	1.40	2.45	1971	10	5.58	1993	.17	1973
Aug	1.41	1.33	3.88	1968	23	3.86	1980	.20	1994
Sep	1.53	1.06	2.10	1996	18	4.53	1991	.13	1993
Oct	1.20	.80	2.40	1998	5	4.69	1982	.14	1973
Nov	.70	.52	2.65	2000	1	5.18	2000	.00+	1990
Dec	.37	.30	.43+	2001	5	1.24	1988	.00	1991
Ann	15.26	15.11	3.88	Aug 1968	23	6.37	May 1978	.00+	Mar 1994

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.3	1.5	.1	.0
Feb	4.4	1.5	.2	@
Mar	5.1	2.4	.2	.1
Apr	7.1	4.0	.9	.1
May	9.5	5.4	1.1	.3
Jun	10.0	5.9	1.5	.5
Jul	8.0	4.8	.9	.2
Aug	5.8	3.4	.8	.2
Sep	6.3	3.7	.9	.3
Oct	4.7	2.5	.8	.2
Nov	4.5	1.7	.3	@
Dec	5.1	1.2	.0	.0
Ann	75.8	38.0	7.7	1.9

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	.05	.10	.17	.23	.30	.36	.44	.53	.65	.84	1.02
Feb	.01	.04	.10	.17	.24	.33	.43	.57	.76	1.08	1.40
Mar	.00	.08	.20	.30	.40	.51	.63	.77	.97	1.28	1.59
Apr	.21	.33	.56	.77	1.00	1.25	1.54	1.90	2.39	3.18	3.94
May	.43	.65	1.00	1.33	1.66	2.03	2.44	2.94	3.60	4.68	5.70
Jun	.89	1.13	1.50	1.81	2.10	2.41	2.74	3.13	3.63	4.40	5.11
Jul	.46	.64	.92	1.17	1.42	1.69	1.98	2.34	2.80	3.53	4.22
Aug	.26	.39	.60	.79	.98	1.19	1.43	1.72	2.10	2.72	3.30
Sep	.21	.34	.55	.77	.99	1.24	1.52	1.87	2.35	3.12	3.87
Oct	.07	.14	.29	.45	.63	.85	1.11	1.44	1.91	2.71	3.50
Nov	.00	.04	.14	.24	.36	.49	.65	.85	1.14	1.61	2.08
Dec	.03	.08	.14	.19	.25	.30	.37	.45	.56	.73	.90
Ann	9.38	10.45	11.86	12.95	13.93	14.90	15.91	17.03	18.42	20.45	22.24

\+ 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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Services

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: BEACH, ND **COOP ID: 320590**

Climate Division: ND 7 **NWS Call Sign:** **Elevation: 2,789 Feet** **Lat: 46˚55N** **Lon: 104˚00W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.2	4.1	4	3
Feb	5.0	3.5	3	2
Mar	4.6	4.2	2	#
Apr	4.3	3.0	#	#
May	1.4	.0	#	0
Jun	#	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.4	.0	#	0
Oct	1.4	.1	#	0
Nov	3.9	3.0	1	#
Dec	4.5	3.8	2	1
Ann	30.7	21.7	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	7.5	1993	23	17.5	1971	17	1979	31	15	1979
Feb	10.0	1998	28	24.0	1998	24	1998	28	18	1979
Mar	8.0	1995	4	15.3	1975	24	1998	1	15	1998
Apr	12.5	1997	5	15.0	1984	15	1984	28	4	1997
May	12.0	1983	12	12.4	1983	10	1983	12	1	1983
Jun	#	1998	2	#	1998	#	1998	2	#	1998
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	8.0	1972	25	8.6	1972	6	1972	25	#+	1995
Oct	5.0	1995	30	5.9	1991	5	1972	30	#+	1999
Nov	11.0	2000	2	13.8	1993	14	2000	30	8	2000
Dec	4.1	1975	31	9.5	1971	14	1978	31	11	2000
Ann	12.5	Apr 1997	5	24.0	Feb 1998	24+	Mar 1998	1	18	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.3	1.9	.6	.2	.0
Feb	3.8	1.8	.4	.2	@
Mar	3.3	1.5	.4	.1	.0
Apr	2.0	1.0	.6	.2	.1
May	.4	.3	.1	.1	@
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.2	.1	@	@	.0
Oct	.8	.5	.2	@	.0
Nov	3.0	1.8	.6	.2	@
Dec	4.2	2.0	.2	.0	.0
Ann	22.0	10.9	3.1	1.0	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	18.1	12.2	8.9	3.4
Feb	10.8	7.2	5.1	3.7
Mar	8.2	4.8	2.3	1.0
Apr	2.5	1.2	.8	.4
May	.2	.1	.1	@
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	.1	.1	.0
Oct	.4	.2	.0	.0
Nov	5.5	1.9	1.4	.0
Dec	17.0	8.5	3.2	1.7
Ann	62.8	36.2	21.9	10.2

+ 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: BEACH, ND **COOP ID: 320590**

Climate Division: ND 7 **NWS Call Sign:** **Elevation: 2,789 Feet** **Lat: 46˚55N** **Lon: 104˚00W**

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

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	8/30	9/03	9/06	9/08	9/10	9/13	9/15	9/18	9/22
32	9/08	9/12	9/15	9/17	9/20	9/22	9/25	9/28	10/02
28	9/15	9/20	9/23	9/26	9/29	10/02	10/05	10/08	10/13
24	9/24	9/30	10/04	10/08	10/11	10/15	10/18	10/23	10/29
20	10/02	10/08	10/12	10/15	10/19	10/22	10/25	10/29	11/04
16	10/10	10/16	10/20	10/24	10/27	10/31	11/03	11/07	11/13

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	130	122	116	111	106	101	96	90	81
32	150	142	136	131	126	121	116	110	102
28	167	159	154	150	145	141	137	131	124
24	188	181	176	171	167	163	159	154	147
20	211	203	198	193	188	184	179	174	166
16	229	222	216	212	208	204	199	194	187

***** 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: BEACH, ND **COOP ID: 320590**

Climate Division: ND 7 **NWS Call Sign:** **Elevation: 2,789 Feet** **Lat: 46˚55N** **Lon: 104˚00W**

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	1546	1205	1040	645	328	127	45	71	251	618	1068	1426	8370
60	1391	1065	885	498	203	59	14	29	149	463	918	1271	6945
57	1299	990	793	413	143	33	7	16	100	372	828	1178	6172
55	1241	938	735	359	108	22	2	10	73	312	772	1116	5688
50	1098	806	591	236	46	6	0	2	27	179	633	965	4589
32	607	398	188	17	0	0	0	0	0	6	226	477	1919

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	84	117	171	361	709	963	1170	1146	782	411	148	74	6136
55	4	13	5	14	105	295	459	442	165	4	4	0	1510
57	1	9	1	7	77	246	402	387	132	2	0	0	1264
60	0	0	0	2	45	183	316	307	91	0	0	0	944
65	0	0	0	0	14	100	192	194	43	0	0	0	543
70	0	0	0	0	3	42	102	109	17	0	0	0	273

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	0	5	36	166	449	700	896	873	529	213	32	1	0	5	41	207	656	1356	2252	3125	3654	3867	3899	3900
45	0	0	9	85	309	550	741	718	390	115	10	0	0	0	9	94	403	953	1694	2412	2802	2917	2927	2927
50	0	0	1	39	185	402	586	565	257	50	1	0	0	0	1	40	225	627	1213	1778	2035	2085	2086	2086
55	0	0	0	13	94	264	432	412	154	15	0	0	0	0	0	13	107	371	803	1215	1369	1384	1384	1384
60	0	0	0	3	41	146	286	269	77	1	0	0	0	0	0	3	44	190	476	745	822	823	823	823
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	6	39	132	282	429	570	556	337	157	30	0	0	6	45	177	459	888	1458	2014	2351	2508	2538	2538

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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