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: GRANVILLE, ND **COOP ID: 323686**

Climate Division: ND 2 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 48˚16N** **Lon: 100˚51W**

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	18.6	-1.5	8.6	51	1990	10	23.9	1990	-40	1968	4	-9.0	1982	1752	0	.0	.0	.1	24.3	30.9	17.9
Feb	26.1	6.8	16.5	67	1958	25	28.3	1987	-39	1979	8	1.6	1989	1359	0	.0	.0	.6	17.8	27.9	11.1
Mar	37.3	18.0	27.7	75+	1966	31	37.7	2000	-31+	1972	2	17.9	1996	1158	0	.0	.0	5.4	10.4	29.2	4.5
Apr	55.4	30.4	42.9	96	1980	22	52.0	1987	-12+	1979	2	32.5	1979	666	3	.0	.1	19.7	1.6	18.8	.3
May	69.6	42.7	56.2	100	1980	23	65.0	1977	17+	1967	3	47.2	1979	305	31	@	.9	29.4	.0	4.1	.0
Jun	78.1	51.7	64.9	103+	1988	21	76.3	1988	27+	1969	12	57.9	1985	114	110	.3	3.0	30.0	.0	.1	.0
Jul	82.9	55.7	69.3	108	1988	28	74.8	1989	32	1967	3	63.0	1992	38	171	.6	5.6	31.0	.0	.0	.0
Aug	83.2	53.7	68.5	106	1949	7	74.3	1983	28	1982	27	59.9	1980	71	177	.6	7.0	31.0	.0	.1	.0
Sep	70.7	44.2	57.5	104	1978	6	64.7	1998	17+	1974	30	50.1	1984	262	36	.1	1.4	28.8	.0	2.5	.0
Oct	57.3	32.8	45.1	97	1963	4	50.1	1973	-5	1991	31	37.0	1976	619	0	.0	.1	22.6	.9	15.4	.1
Nov	37.3	17.8	27.6	78	1999	7	40.1	1999	-27	1985	29	12.0	1996	1124	0	.0	.0	5.0	11.7	28.1	3.3
Dec	23.6	4.2	13.9	58+	1979	5	28.9	1999	-40+	1983	23	-1.6	1983	1585	0	.0	.0	.3	21.5	30.8	13.3
Ann	53.3	29.7	41.6	108	Jul 1988	28	76.3	Jun 1988	-40+	Dec 1983	23	-9.0	Jan 1982	9053	528	1.6	18.1	203.9	88.2	187.9	50.5

\+ 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: GRANVILLE, ND **COOP ID: 323686**

Climate Division: ND 2 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 48°16N** **Lon: 100°51W**

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	.37	.28	1.80	1989	7	.99	1980	.05	1983
Feb	.49	.26	3.82	1998	28	4.24	1998	.00	1982
Mar	.83	.52	2.50	1985	28	2.78	1985	.00	1994
Apr	1.39	.97	1.99	1975	28	5.64	1975	.11+	1987
May	2.37	2.08	4.75	1999	17	10.56	1999	.22	1980
Jun	3.47	3.43	3.65	1952	28	7.02	1982	.29	1974
Jul	2.83	2.49	2.55	2000	4	8.44	1993	.47	1988
Aug	1.91	1.51	3.70	1968	24	5.17	1991	.36	1996
Sep	1.67	1.59	2.40	1954	16	3.75	1971	.00	1976
Oct	1.32	.67	1.80	1994	6	7.18	1994	.02	1999
Nov	.64	.53	1.80	1995	2	2.00	1995	.00+	1999
Dec	.41	.37	.77	1977	17	1.24	1975	.00+	1997
Ann	17.70	17.76	4.75	May 1999	17	10.56	May 1999	.00+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.5	1.7	.1	.1
Feb	3.7	1.4	.2	@
Mar	4.4	2.2	.4	.1
Apr	5.4	3.4	.9	.3
May	6.9	4.4	1.6	.3
Jun	9.5	6.5	2.2	.8
Jul	7.0	4.8	2.0	.8
Aug	6.1	4.0	1.2	.4
Sep	5.2	3.6	1.0	.3
Oct	4.2	2.6	.8	.3
Nov	3.5	2.1	.2	@
Dec	3.8	1.1	.1	.0
Ann	64.2	37.8	10.7	3.4

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	.06	.09	.15	.20	.25	.31	.37	.46	.56	.74	.91
Feb	.00	.02	.07	.13	.20	.30	.42	.58	.82	1.23	1.65
Mar	.03	.09	.20	.32	.45	.60	.78	1.01	1.33	1.87	2.40
Apr	.11	.20	.38	.57	.78	1.03	1.32	1.69	2.20	3.06	3.92
May	.33	.53	.87	1.20	1.54	1.92	2.36	2.90	3.62	4.80	5.94
Jun	.98	1.31	1.81	2.24	2.67	3.11	3.60	4.18	4.93	6.11	7.21
Jul	.48	.73	1.14	1.53	1.92	2.36	2.85	3.45	4.25	5.55	6.78
Aug	.49	.67	.95	1.20	1.44	1.69	1.97	2.31	2.74	3.43	4.07
Sep	.16	.36	.63	.88	1.13	1.39	1.70	2.07	2.56	3.35	4.11
Oct	.03	.08	.20	.36	.56	.81	1.12	1.54	2.15	3.23	4.33
Nov	.00	.00	.14	.24	.36	.48	.63	.81	1.05	1.46	1.86
Dec	.00	.00	.07	.15	.23	.31	.40	.52	.68	.93	1.18
Ann	10.70	11.98	13.65	14.95	16.13	17.29	18.50	19.85	21.52	23.98	26.14

\+ 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: GRANVILLE, ND **COOP ID: 323686**

Climate Division: ND 2 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 48°16N** **Lon: 100°51W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	4.6	4.0	7	4
Feb	4.4	4.5	5	3
Mar	6.3	5.5	3	1
Apr	3.1	1.8	1	#
May	.2	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	#	0
Oct	2.3	.0	#	0
Nov	4.7	2.5	1	#
Dec	5.7	5.5	3	3
Ann	31.5	23.8	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	1989	6	11.5	1971	30	1982	31	20	1989
Feb	8.0	1998	28	11.0	1972	30	1982	1	20	1982
Mar	15.0	1985	28	18.5	1975	25	1979	5	20	1979
Apr	15.0	1997	6	15.0	1997	21	1979	7	9	1975
May	4.0	1991	4	4.0	1991	4+	1991	4	#+	1991
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	4.0	1972	26	4.0	1972	1	1985	23	#+	1995
Oct	13.0	1991	28	18.0	1991	15	1991	31	1	1991
Nov	10.0	1998	10	24.0	1985	19	1985	25	5	1991
Dec	6.0	1988	26	12.0	1992	15	1985	1	10	1985
Ann	15.0+	Apr 1997	6	24.0	Nov 1985	30+	Feb 1982	1	20+	Jan 1989

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.3	1.8	.6	.1	.0
Feb	2.3	1.8	.4	.1	.0
Mar	1.7	1.5	.7	.2	@
Apr	.9	.7	.4	.2	@
May	@	@	@	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	@	@	.0	.0
Oct	.7	.7	.3	.1	@
Nov	1.4	1.2	.5	.3	@
Dec	2.4	1.8	.5	.1	.0
Ann	11.8	9.5	3.4	1.1	@

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	8.4	4.7	2.2	.7
Apr	1.9	1.2	.7	.6
May	.1	.1	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	@	.0	.0	.0
Oct	1.1	.6	.3	.1
Nov	4.2	2.0	.8	.0
Dec	-9.9	-9.9	-9.9	-9.9
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

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: GRANVILLE, ND **COOP ID: 323686**

Climate Division: ND 2 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 48˚16N** **Lon: 100˚51W**

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

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	8/25	8/30	9/02	9/05	9/08	9/11	9/14	9/18	9/23
32	9/03	9/08	9/13	9/16	9/20	9/23	9/27	10/01	10/07
28	9/15	9/21	9/24	9/28	10/01	10/04	10/07	10/11	10/16
24	9/24	9/29	10/03	10/06	10/09	10/12	10/16	10/19	10/25
20	10/04	10/10	10/13	10/17	10/20	10/23	10/26	10/30	11/05
16	10/05	10/12	10/17	10/21	10/25	10/29	11/02	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	126	119	114	109	105	100	96	90	83
32	145	139	134	130	126	123	119	114	108
28	170	162	157	152	148	143	139	133	126
24	190	182	176	172	167	162	157	152	144
20	210	202	197	192	187	183	178	173	165
16	228	219	213	207	202	197	191	185	176

***** 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: GRANVILLE, ND **COOP ID: 323686**

Climate Division: ND 2 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 48˚16N** **Lon: 100˚51W**

Degree Days to Selected Base Temperatures (˚F)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1752	1359	1158	666	305	114	38	71	262	619	1124	1585	9053
60	1597	1219	1003	525	194	51	10	28	158	466	974	1430	7655
57	1504	1135	911	445	141	28	3	15	109	377	884	1337	6889
55	1442	1079	851	393	110	18	1	9	81	322	828	1275	6409
50	1287	948	709	280	53	5	0	2	32	199	689	1122	5326
32	769	502	277	42	0	0	0	0	0	12	270	615	2487

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	39	66	142	369	749	986	1156	1130	764	416	136	53	6006
55	0	0	3	31	146	314	443	425	155	13	4	0	1534
57	0	0	1	22	114	264	383	369	123	6	0	0	1282
60	0	0	0	12	75	197	298	289	82	2	0	0	955
65	0	0	0	3	31	110	171	177	36	0	0	0	528
70	0	0	0	0	10	47	83	95	13	0	0	0	248

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	1	14	170	507	746	913	876	529	215	21	0	0	1	15	185	692	1438	2351	3227	3756	3971	3992	3992
45	0	0	5	95	366	596	758	721	388	119	8	0	0	0	5	100	466	1062	1820	2541	2929	3048	3056	3056
50	0	0	0	45	238	447	603	566	256	53	0	0	0	0	0	45	283	730	1333	1899	2155	2208	2208	2208
55	0	0	0	20	137	300	448	414	152	18	0	0	0	0	0	20	157	457	905	1319	1471	1489	1489	1489
60	0	0	0	6	66	176	296	273	75	3	0	0	0	0	0	6	72	248	544	817	892	895	895	895
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	14	129	322	460	588	558	329	154	21	0	0	1	15	144	466	926	1514	2072	2401	2555	2576	2576

(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