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: BISMARCK MUNICIPAL AP, ND **COOP ID: 320819**

Climate Division: ND 8 **NWS Call Sign: BIS** **Elevation: 1,651 Feet** **Lat: 46˚47N** **Lon: 100˚45W**

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	21.1	-.6	10.2	62	1981	23	23.6	1990	-44	1950	18	-3.8	1982	1711	0	.0	.0	.3	22.7	31.0	16.1
Feb	28.5	7.8	18.1	69	1992	29	30.4	1998	-43	1994	9	-.1	1979	1329	0	.0	.0	1.7	16.3	27.9	9.1
Mar	40.2	19.1	29.7	80+	1967	29	39.5	1973	-28+	1995	8	19.8	1996	1109	0	.0	.0	8.0	9.0	28.2	3.1
Apr	55.9	30.6	43.3	93+	1992	30	51.2	1987	-12	1975	1	35.6	1979	660	2	.0	.1	20.4	1.0	17.6	.1
May	69.1	42.8	56.0	96	1980	21	62.2	1977	15	1967	3	50.3	1974	305	18	.0	.5	29.7	.0	3.8	.0
Jun	77.8	51.6	64.7	107	1988	27	75.7	1988	30	1969	2	59.8	1982	93	80	.2	2.8	30.0	.0	.1	.0
Jul	84.5	56.4	70.4	109	1973	11	76.3	1989	35	1971	30	64.0	1992	19	180	.8	7.6	31.0	.0	.0	.0
Aug	83.3	54.7	69.0	107+	1973	27	75.3	1983	33+	1988	29	62.5	1977	44	161	.6	8.0	31.0	.0	.0	.0
Sep	71.6	43.7	57.7	105	1959	8	63.5	1998	11	1974	30	52.7	1974	256	30	.3	1.6	29.1	.0	2.6	.0
Oct	58.2	32.1	45.2	95+	1963	4	48.8	2000	-10+	1991	31	40.7	1991	625	0	.0	.1	23.5	.7	15.3	@
Nov	38.2	17.8	28.0	79	1999	7	38.6	1999	-30	1985	29	14.3	1985	1112	0	.0	.0	6.2	9.8	28.1	2.4
Dec	25.7	4.8	15.2	65	1979	4	28.2	1997	-43	1967	31	-.8	1983	1539	0	.0	.0	1.0	20.0	30.9	11.3
Ann	54.5	30.1	42.3	109	Jul 1973	11	76.3	Jul 1989	-44	Jan 1950	18	-3.8	Jan 1982	8802	471	1.9	20.7	211.9	79.5	185.5	42.1

\+ 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

Issue Date: February 2004

(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

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: BISMARCK MUNICIPAL AP, ND **COOP ID: 320819**

Climate Division: ND 8 **NWS Call Sign: BIS** **Elevation: 1,651 Feet** **Lat: 46°47N** **Lon: 100°45W**

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	.40	.67	1952	21	1.13	1999	.07	1973
Feb	.51	.40	1.02	2000	25	1.74	2000	.03	1985
Mar	.85	.64	1.24	1966	3	3.19	1975	.09	1981
Apr	1.46	1.06	1.96	1997	5	5.46	1975	.12	1988
May	2.22	1.71	1.94	1978	24	6.96	1999	.28	1984
Jun	2.59	2.50	3.07	1953	15	5.10	2000	.50	1974
Jul	2.58	2.11	4.32	1993	15	13.75	1993	.46	1976
Aug	2.15	1.62	4.63	1998	21	9.29	1998	.03	1971
Sep	1.61	1.24	4.31	1994	15	6.93	1977	.23	1974
Oct	1.28	.87	1.32	1971	1	4.30	1982	.02	1993
Nov	.70	.62	.72	1956	2	2.09	1986	.00	1990
Dec	.44	.48	.57	1960	5	.84	1993	.02	1986
Ann	16.84	16.58	4.63	Aug 1998	21	13.75	Jul 1993	.00	Nov 1990

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.6	1.4	.1	.0
Feb	7.2	1.7	@	@
Mar	8.2	2.2	.4	.0
Apr	8.1	3.9	.7	.2
May	9.4	5.3	1.2	.4
Jun	10.9	5.8	1.9	.3
Jul	9.2	4.9	1.6	.5
Aug	8.1	4.2	1.3	.4
Sep	7.0	3.1	.8	.3
Oct	6.1	2.6	.9	.3
Nov	7.1	2.0	.2	.0
Dec	7.6	1.3	.0	.0
Ann	96.5	38.4	9.1	2.4

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	.08	.13	.19	.25	.31	.38	.46	.55	.67	.87	1.06
Feb	.07	.11	.19	.26	.33	.41	.51	.62	.78	1.03	1.28
Mar	.14	.21	.34	.45	.57	.70	.85	1.03	1.28	1.67	2.05
Apr	.12	.22	.41	.61	.84	1.09	1.39	1.78	2.30	3.19	4.05
May	.39	.58	.90	1.21	1.52	1.85	2.24	2.70	3.32	4.33	5.28
Jun	.75	1.00	1.37	1.69	2.00	2.33	2.69	3.11	3.66	4.52	5.32
Jul	.39	.60	.97	1.33	1.70	2.11	2.58	3.15	3.92	5.17	6.37
Aug	.16	.30	.58	.87	1.20	1.58	2.04	2.62	3.42	4.77	6.10
Sep	.19	.31	.54	.76	1.00	1.27	1.58	1.97	2.49	3.36	4.20
Oct	.05	.12	.26	.43	.62	.86	1.15	1.54	2.08	3.02	3.96
Nov	.02	.07	.17	.27	.38	.51	.66	.86	1.13	1.59	2.04
Dec	.09	.13	.20	.26	.32	.38	.45	.54	.65	.83	1.00
Ann	9.76	11.02	12.70	14.01	15.21	16.38	17.62	19.00	20.71	23.25	25.49

\+ 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: BISMARCK MUNICIPAL AP, ND **COOP ID: 320819**

Climate Division: ND 8 **NWS Call Sign: BIS** **Elevation: 1,651 Feet** **Lat: 46°47N** **Lon: 100°45W**

Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

Snow Fall >= Thresholds

Snow Depth >= Thresholds

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	8.3	6.3	5	4	13.2	1996	17	22.2	1999	19	1982	25	13	1994	9.1	2.3	.7	.3	@	25.8	19.3	12.3	4.1
Feb	8.1	6.1	4	3	8.9	1979	22	25.6	1979	28	1979	23	17	1979	8.3	2.7	.6	.1	.0	19.8	13.4	8.5	3.4
Mar	8.6	6.4	2	2	11.6	1982	19	31.1	1975	27+	1979	3	11	1979	6.5	2.2	1.0	.4	@	12.6	8.3	4.6	1.4
Apr	4.0	1.8	#	1	15.2	1997	5	18.7	1984	22	1975	1	5	1975	2.6	.9	.5	.2	.1	2.9	1.6	1.1	.4
May	.3	.0	#	0	6.5	1991	3	6.5	1991	3	1991	4	#	2000	.1	.1	@	@	.0	.1	@	.0	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1991	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.2	.0	#	0	3.6	1984	23	5.0	1984	2	1984	24	#	1984	.1	.1	@	.0	.0	@	.0	.0	.0
Oct	2.3	.7	#	0	8.6	1991	29	23.7	1991	10+	1991	30	1	1991	1.6	.6	.2	.1	.0	.7	.3	.1	.1
Nov	9.3	6.4	2	1	10.8	1993	24	29.9	1993	19	1993	27	6	1986	6.5	2.6	.9	.5	@	10.2	6.0	4.0	1.1
Dec	8.2	8.6	3	2	10.0	1988	26	17.2	1977	13	1977	8	10	1993	9.6	2.5	.5	.1	@	21.7	14.0	8.6	1.5
Ann	49.3	36.3	N/A	N/A	15.2	Apr 1997	5	31.1	Mar 1975	28	Feb 1979	23	17	Feb 1979	44.4	14.0	4.4	1.7	.1	93.8	62.9	39.2	12.0

+ 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: BISMARCK MUNICIPAL AP, ND **COOP ID: 320819**

Climate Division: ND 8 **NWS Call Sign: BIS** **Elevation: 1,651 Feet** **Lat: 46˚47N** **Lon: 100˚45W**

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	6/19	6/12	6/06	6/01	5/28	5/23	5/18	5/13	5/05
32	5/28	5/23	5/20	5/17	5/14	5/11	5/09	5/05	5/01
28	5/18	5/14	5/10	5/07	5/04	5/01	4/28	4/25	4/20
24	5/06	5/01	4/28	4/25	4/22	4/19	4/16	4/12	4/07
20	4/26	4/21	4/17	4/14	4/11	4/09	4/05	4/02	3/28
16	4/16	4/12	4/08	4/05	4/03	3/31	3/28	3/25	3/21

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	9/03	9/06	9/09	9/12	9/15	9/18	9/23
32	9/09	9/13	9/16	9/19	9/21	9/23	9/26	9/29	10/03
28	9/15	9/20	9/24	9/27	9/30	10/02	10/06	10/09	10/14
24	9/24	9/29	10/03	10/06	10/09	10/12	10/15	10/19	10/24
20	9/29	10/05	10/10	10/14	10/17	10/21	10/25	10/29	11/05
16	10/10	10/16	10/21	10/25	10/29	11/01	11/05	11/10	11/16

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	128	120	114	108	103	98	93	87	78
32	148	141	137	133	129	125	121	117	110
28	169	162	156	152	148	143	139	133	126
24	189	183	178	173	169	165	161	156	150
20	215	206	199	193	188	183	177	170	161
16	234	225	219	213	208	203	197	191	182

***** 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: BISMARCK MUNICIPAL AP, ND **COOP ID: 320819**

Climate Division: ND 8 **NWS Call Sign: BIS** **Elevation: 1,651 Feet** **Lat: 46˚47N** **Lon: 100˚45W**

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	1711	1329	1109	660	305	93	19	44	256	625	1112	1539	8802
60	1543	1173	941	506	183	46	7	21	139	460	961	1388	7368
57	1450	1089	848	422	127	24	1	10	89	369	871	1295	6595
55	1388	1033	786	369	96	15	0	5	62	309	811	1233	6107
50	1234	904	641	248	40	3	0	1	19	175	668	1078	5011
32	721	465	211	21	0	0	0	0	0	5	236	568	2227

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	5	24	109	354	737	976	1186	1142	766	415	79	9	5802
55	0	0	0	17	118	294	473	431	148	15	0	0	1496
57	0	0	0	10	87	241	412	371	114	8	0	0	1243
60	0	0	0	5	52	170	321	286	73	3	0	0	910
65	0	0	0	2	18	80	180	161	30	0	0	0	471
70	0	0	0	0	4	28	80	72	11	0	0	0	195

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	2	25	171	498	744	948	902	537	211	21	0	0	2	27	198	696	1440	2388	3290	3827	4038	4059	4059
45	0	0	5	93	352	594	793	747	392	114	7	0	0	0	5	98	450	1044	1837	2584	2976	3090	3097	3097
50	0	0	0	42	225	444	638	592	260	48	0	0	0	0	0	42	267	711	1349	1941	2201	2249	2249	2249
55	0	0	0	18	123	303	483	439	154	13	0	0	0	0	0	18	141	444	927	1366	1520	1533	1533	1533
60	0	0	0	5	56	174	330	294	77	2	0	0	0	0	0	5	61	235	565	859	936	938	938	938
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	2	29	135	313	464	609	574	340	160	23	0	0	2	31	166	479	943	1552	2126	2466	2626	2649	2649

(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