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: ASHLEY, ND **COOP ID: 320382**

Climate Division: ND 9 **NWS Call Sign:** **Elevation: 2,001 Feet** **Lat: 46˚02N** **Lon: 99˚23W**

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	20.5	-1.3	9.6	60	1981	23	23.2	1990	-35+	1972	15	-3.7	1982	1718	0	.0	.0	.2	23.8	30.9	16.3
Feb	27.5	6.0	16.8	65	1958	25	29.1	1987	-40	1994	9	1.0	1979	1351	0	.0	.0	1.4	17.2	28.0	9.9
Mar	39.0	18.0	28.5	78+	1963	28	36.7	1973	-26	1995	8	19.5	1996	1131	0	.0	.0	5.9	9.5	28.8	3.8
Apr	55.6	31.2	43.4	97	1980	21	51.1	1977	-10	1970	1	36.2	1975	650	1	.0	.1	20.0	1.3	18.7	.1
May	68.8	44.1	56.5	98	1969	27	63.9	1977	15+	1967	2	50.8	1996	287	22	.0	.5	29.4	.0	3.9	.0
Jun	77.4	53.5	65.5	103+	1988	25	74.9	1988	28	1969	20	60.3	1985	92	105	.1	2.0	30.0	.0	.0	.0
Jul	84.0	58.3	71.2	107	1977	18	75.9	1975	32	1967	3	62.6	1992	34	224	.7	6.9	31.0	.0	.0	.0
Aug	82.8	55.7	69.3	105+	1988	16	75.2	1983	32+	1964	13	63.7	1992	48	179	.4	6.1	31.0	.0	.0	.0
Sep	71.9	44.7	58.3	102	1983	2	65.0	1978	13	1974	30	52.2	1993	235	34	.1	1.5	29.2	.0	3.0	.0
Oct	58.3	32.1	45.2	94	1958	13	50.9	1975	-2	1991	31	40.3	1976	613	0	.0	@	23.4	.7	15.1	.1
Nov	37.7	17.0	27.4	78	1975	5	39.2	1999	-23	1964	30	16.1	1985	1129	0	.0	.0	5.8	11.2	28.3	2.4
Dec	24.8	4.3	14.6	60	1969	1	24.7	1999	-38	1967	31	-1.6	1983	1565	0	.0	.0	.6	21.2	30.9	11.5
Ann	54.0	30.3	42.2	107	Jul 1977	18	75.9	Jul 1975	-40	Feb 1994	9	-3.7	Jan 1982	8853	565	1.3	17.1	207.9	84.9	187.6	44.1

\+ 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

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: ASHLEY, ND **COOP ID: 320382**

Climate Division: ND 9 **NWS Call Sign:** **Elevation: 2,001 Feet** **Lat: 46˚02N** **Lon: 99˚23W**

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	.41	.36	.71	1978	25	1.27	1997	.00	1974
Feb	.39	.29	.92	2000	26	1.60	1987	.00	1985
Mar	.94	.83	1.80	1973	14	2.46	1973	.03	1971
Apr	1.49	1.23	1.53	1998	26	5.57	1986	.00+	1988
May	2.73	2.84	3.29	1958	13	4.98	1999	.37	1976
Jun	3.48	3.22	3.70	1964	18	8.18	1993	.49	1974
Jul	2.52	2.12	3.96	1966	31	7.60	1993	.38	1988
Aug	2.30	1.93	3.45	1969	4	5.34	1998	.35	1982
Sep	1.57	1.16	1.52	1996	20	4.75	1996	.17	1976
Oct	1.57	.97	2.89	1971	2	5.04	1998	.05	1987
Nov	.61	.48	1.25	1977	8	2.41	1977	.00	1980
Dec	.29	.21	.70	1965	11	.87	1977	.01	1986
Ann	18.30	17.67	3.96	Jul 1966	31	8.18	Jun 1993	.00+	Apr 1988

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.7	1.4	.1	.0
Feb	5.0	1.5	@	.0
Mar	6.4	2.5	.5	.1
Apr	8.0	3.8	.8	.1
May	10.5	5.7	1.6	.5
Jun	11.5	6.5	2.2	.8
Jul	9.6	5.3	1.5	.5
Aug	8.6	4.5	1.4	.5
Sep	8.7	3.7	1.0	.1
Oct	7.6	3.3	.7	.3
Nov	5.7	2.0	.2	@
Dec	5.0	.9	.0	.0
Ann	92.3	41.1	10.0	2.9

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	.03	.08	.15	.21	.27	.34	.42	.51	.64	.85	1.04
Feb	.03	.07	.13	.19	.25	.31	.39	.48	.60	.80	1.00
Mar	.13	.20	.34	.47	.60	.76	.93	1.15	1.44	1.92	2.38
Apr	.00	.34	.65	.88	1.10	1.33	1.58	1.86	2.24	2.84	3.40
May	.82	1.07	1.46	1.80	2.12	2.46	2.83	3.27	3.84	4.73	5.55
Jun	.97	1.30	1.80	2.24	2.66	3.11	3.60	4.18	4.94	6.13	7.24
Jul	.70	.94	1.30	1.62	1.92	2.25	2.61	3.03	3.58	4.44	5.25
Aug	.56	.77	1.11	1.41	1.70	2.02	2.37	2.79	3.34	4.20	5.02
Sep	.21	.34	.57	.78	1.01	1.27	1.56	1.92	2.41	3.20	3.97
Oct	.10	.19	.38	.60	.84	1.12	1.46	1.89	2.50	3.53	4.56
Nov	.01	.04	.12	.20	.30	.41	.55	.74	.99	1.43	1.88
Dec	.03	.05	.09	.13	.17	.22	.28	.35	.45	.61	.77
Ann	11.65	12.88	14.49	15.73	16.84	17.93	19.06	20.33	21.88	24.15	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: ASHLEY, ND **COOP ID: 320382**

Climate Division: ND 9 **NWS Call Sign:** **Elevation: 2,001 Feet** **Lat: 46°02N** **Lon: 99°23W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	6.2	5.6	7	5
Feb	4.5	4.3	7	3
Mar	5.2	3.8	5	2
Apr	3.1	1.2	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	.6	.0	#	0
Nov	4.2	2.4	2	1
Dec	3.8	3.1	4	1
Ann	27.6	20.4	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	1996	18	20.6	1997	33	1978	31	28+	1997
Feb	5.0	1997	4	10.3	1979	36	1978	28	35	1978
Mar	6.0	1985	4	15.8	1984	43	1978	10	32	1997
Apr	16.8	1997	6	16.8	1997	17	1997	7	12	1975
May	1.3	1979	10	1.3	1979	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	.5	1984	24	.5	1984	0	0	0	0	0
Oct	5.0	1979	31	5.0	1979	5	1979	31	#+	1999
Nov	6.5	1982	10	16.2	1977	15	1993	28	8	2000
Dec	6.7	2000	1	10.2	1977	26	1977	31	21	2000
Ann	16.8	Apr 1997	6	20.6	Jan 1997	43	Mar 1978	10	35	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.7	2.3	.6	.2	@
Feb	3.8	2.0	.4	@	.0
Mar	4.0	2.3	.6	.1	.0
Apr	1.3	.9	.3	.1	@
May	@	@	.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
Oct	.4	.2	.1	@	.0
Nov	3.0	2.0	.6	.2	.0
Dec	4.2	1.8	.2	@	.0
Ann	21.4	11.5	2.8	.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	19.1	13.5	7.4	2.5
Feb	19.8	14.7	8.7	3.8
Mar	12.1	6.8	4.1	1.5
Apr	1.9	.8	.5	.3
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	10.3	5.3	3.0	.5
Dec	16.8	11.6	6.8	1.6
Ann	80.2	52.8	30.5	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: ASHLEY, ND **COOP ID: 320382**

Climate Division: ND 9 **NWS Call Sign:** **Elevation: 2,001 Feet** **Lat: 46˚02N** **Lon: 99˚23W**

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	6/22	6/13	6/07	6/02	5/28	5/23	5/17	5/11	5/03
32	5/25	5/21	5/18	5/16	5/14	5/11	5/09	5/06	5/02
28	5/19	5/14	5/11	5/08	5/05	5/02	4/29	4/25	4/21
24	5/11	5/06	5/03	4/30	4/27	4/24	4/21	4/18	4/13
20	5/02	4/26	4/22	4/18	4/14	4/11	4/07	4/03	3/28
16	4/16	4/12	4/08	4/06	4/03	3/31	3/29	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	8/26	8/31	9/04	9/07	9/10	9/13	9/17	9/20	9/26
32	9/10	9/13	9/16	9/18	9/20	9/22	9/25	9/27	10/01
28	9/18	9/22	9/25	9/27	9/29	10/01	10/04	10/07	10/10
24	9/21	9/26	9/30	10/03	10/06	10/09	10/13	10/16	10/22
20	10/01	10/06	10/10	10/14	10/17	10/20	10/24	10/28	11/03
16	10/08	10/14	10/19	10/23	10/26	10/30	11/03	11/08	11/14

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	138	126	118	111	105	98	91	83	72
32	147	141	136	133	129	125	122	117	111
28	166	159	155	150	147	143	139	134	127
24	181	174	169	165	162	158	154	149	143
20	212	203	196	190	185	180	174	167	158
16	227	220	214	210	206	201	197	192	184

***** 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: ASHLEY, ND **COOP ID: 320382**

Climate Division: ND 9 **NWS Call Sign:** **Elevation: 2,001 Feet** **Lat: 46˚02N** **Lon: 99˚23W**

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	1718	1351	1131	650	287	92	34	48	235	613	1129	1565	8853
60	1563	1211	976	507	174	35	10	15	134	459	979	1410	7473
57	1470	1127	883	425	120	17	3	6	87	369	889	1317	6713
55	1408	1071	821	373	91	10	0	3	62	311	829	1255	6234
50	1253	940	673	257	39	1	0	0	21	184	683	1100	5151
32	734	494	230	28	0	0	0	0	0	6	244	591	2327

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	39	67	122	369	757	1004	1213	1154	789	416	105	49	6084
55	0	0	0	24	135	323	501	444	161	8	0	0	1596
57	0	0	0	16	103	270	442	385	126	4	0	0	1346
60	0	0	0	8	63	198	356	301	83	1	0	0	1010
65	0	0	0	1	22	105	224	179	34	0	0	0	565
70	0	0	0	0	5	43	126	91	11	0	0	0	276

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	20	173	495	748	947	890	541	225	27	0	0	1	21	194	689	1437	2384	3274	3815	4040	4067	4067
45	0	0	4	99	354	598	792	735	401	127	9	0	0	0	4	103	457	1055	1847	2582	2983	3110	3119	3119
50	0	0	0	50	224	449	637	580	271	60	1	0	0	0	0	50	274	723	1360	1940	2211	2271	2272	2272
55	0	0	0	22	123	306	482	427	161	20	0	0	0	0	0	22	145	451	933	1360	1521	1541	1541	1541
60	0	0	0	10	57	180	328	281	86	7	0	0	0	0	0	10	67	247	575	856	942	949	949	949
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	23	134	310	468	617	569	350	164	24	0	0	0	23	157	467	935	1552	2121	2471	2635	2659	2659

(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