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: AMIDON, ND **COOP ID: 320209**

Climate Division: ND 7 **NWS Call Sign:** **Elevation: 2,910 Feet** **Lat: 46˚29N** **Lon: 103˚19W**

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	26.5	4.5	15.5	64	1981	24	29.3	1992	-34+	1996	31	1.4	1982	1535	0	.0	.0	.9	18.9	30.5	11.9
Feb	33.6	11.3	22.5	68	1992	28	33.7	1992	-35	1996	2	7.2	1989	1192	0	.0	.0	3.8	12.8	27.3	6.9
Mar	43.7	19.6	31.7	81	1993	25	41.0	1986	-28	1962	1	21.3	1996	1033	0	.0	.0	9.8	8.0	27.9	2.8
Apr	57.1	30.6	43.9	91	2001	29	50.4	1987	-5+	1997	8	35.4	1975	635	1	.0	.1	19.5	1.5	17.8	.1
May	69.2	41.7	55.5	98+	2001	14	63.1	1977	5	1967	6	48.6	1996	321	24	.0	.5	28.6	.1	4.2	.0
Jun	78.7	50.7	64.7	107	1988	8	77.4	1988	31+	1998	3	58.2	1998	123	113	.2	2.3	29.9	.0	.1	.0
Jul	85.8	56.0	70.9	107	1989	9	75.4	1988	36+	1968	1	62.2	1993	34	217	1.1	7.9	31.0	.0	.0	.0
Aug	85.7	54.4	70.1	108	1949	7	76.7	1983	31	1950	19	64.1	1985	53	208	.8	9.8	31.0	.0	.0	.0
Sep	73.0	43.8	58.4	105+	1998	5	66.1	1998	17	1995	21	52.5	1986	247	49	.3	2.3	28.3	@	2.7	.0
Oct	59.3	32.4	45.9	94+	1997	3	50.7	1973	-8	1991	30	41.2	1991	593	0	.0	.2	22.4	1.0	14.8	.1
Nov	40.9	19.0	30.0	81	1999	8	42.1	1999	-26	1985	27	15.0	1985	1052	0	.0	.0	7.7	9.1	27.1	2.4
Dec	30.3	8.3	19.3	64+	1998	2	29.5	1979	-40+	1989	22	.7	1983	1417	0	.0	.0	1.9	16.8	30.6	8.0
Ann	57.0	31.0	44.0	108	Aug 1949	7	77.4	Jun 1988	-40+	Dec 1989	22	.7	Dec 1983	8235	612	2.4	23.1	214.8	68.2	183.0	32.2

\+ 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	.37	.30	.71	1986	4	1.37	1986	.01	1974
Feb	.35	.26	.50	1991	20	1.04	1998	.00+	1997
Mar	.57	.42	1.32	1987	21	2.04	1987	.00	1999
Apr	1.15	.94	1.51+	1967	16	4.00	1975	.00	1988
May	2.29	2.23	2.68	1970	8	6.03	1972	.07+	1984
Jun	3.06	2.99	4.40	1955	27	7.12	1971	.58	1995
Jul	2.24	2.03	2.75	1966	2	6.31	1987	.35	1980
Aug	1.42	1.28	2.05	1954	12	3.43	1987	.00	1971
Sep	1.37	1.02	3.15	1971	5	4.63	1977	.05	1993
Oct	1.17	.70	2.27	1982	28	6.02	1982	.04	1987
Nov	.53	.41	.82	2000	1	2.19	1985	.00+	1990
Dec	.33	.31	.42	1964	17	.97	1985	.00+	1997
Ann	14.85	13.51	4.40	Jun 1955	27	7.12	Jun 1971	.00+	Mar 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.7	1.3	@	.0
Feb	3.3	1.1	@	.0
Mar	5.1	1.9	.1	@
Apr	6.6	3.6	.4	.1
May	9.2	5.5	1.6	.3
Jun	10.4	6.4	2.2	.7
Jul	7.9	5.0	1.4	.3
Aug	5.9	3.8	.7	.2
Sep	5.8	3.6	.7	.2
Oct	4.5	2.4	.7	.2
Nov	4.8	1.9	.1	.0
Dec	4.3	1.2	.0	.0
Ann	72.5	37.7	7.9	2.0

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	.08	.13	.18	.23	.29	.37	.45	.57	.76	.95
Feb	.00	.00	.06	.12	.18	.25	.33	.43	.57	.80	1.03
Mar	.03	.09	.18	.26	.35	.45	.56	.70	.89	1.20	1.50
Apr	.04	.14	.30	.47	.65	.86	1.10	1.41	1.84	2.55	3.24
May	.27	.45	.78	1.09	1.43	1.81	2.25	2.80	3.54	4.76	5.94
Jun	.94	1.24	1.67	2.04	2.40	2.77	3.18	3.66	4.28	5.25	6.14
Jul	.49	.69	1.02	1.32	1.62	1.93	2.29	2.72	3.29	4.19	5.04
Aug	.19	.37	.61	.81	1.01	1.22	1.46	1.75	2.12	2.72	3.28
Sep	.09	.17	.35	.53	.75	.99	1.29	1.66	2.19	3.08	3.96
Oct	.03	.08	.19	.33	.51	.73	1.00	1.37	1.91	2.84	3.80
Nov	.00	.02	.09	.17	.26	.36	.49	.65	.87	1.25	1.63
Dec	.00	.07	.14	.19	.24	.29	.35	.41	.49	.62	.75
Ann	8.60	9.72	11.19	12.35	13.40	14.43	15.52	16.74	18.24	20.47	22.44

\+ 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:
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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	5.5	4.7	2	1
Feb	5.7	4.5	1	#
Mar	4.2	3.8	2	#
Apr	2.2	1.0	#	0
May	.6	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	#	0
Oct	1.0	.0	#	0
Nov	4.3	2.5	1	0
Dec	4.2	4.4	2	#
Ann	27.9	20.9	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	6.5	1989	24	13.3	1977	14	1986	7	6	1986
Feb	24.0	1998	28	27.0	1998	17	1972	10	11	1972
Mar	6.0	1987	21	12.5	1987	23	1998	2	18	1998
Apr	9.0	1994	26	9.0	1994	14	1984	28	1+	1987
May	6.0	1972	1	8.0	1972	10	1983	12	#+	1984
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	3.0	1972	26	4.0	1972	7	1984	24	1	1984
Oct	4.0	1991	29	10.0	1991	3	1972	31	#+	1985
Nov	5.0	1971	17	12.0	1998	11	1993	28	5	1993
Dec	5.5	1988	26	12.5	1972	13	1985	20	11	1985
Ann	24.0	Feb 1998	28	27.0	Feb 1998	23	Mar 1998	2	18	Mar 1998

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.3	1.9	.6	.2	.0
Feb	2.6	1.6	.5	.1	.1
Mar	2.0	1.3	.2	.1	.0
Apr	.7	.4	.2	.1	.0
May	.2	.2	.1	@	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	@	.0	.0
Oct	.4	.4	.2	.0	.0
Nov	2.4	1.9	.5	.2	.0
Dec	2.1	1.3	.4	.1	.0
Ann	13.8	9.1	2.7	.8	.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	3.2	1.1	.2	.0
Apr	.7	.1	.0	.0
May	.2	.1	.1	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.2	.0	.0	.0
Oct	.3	.1	.0	.0
Nov	-9.9	-9.9	-9.9	-9.9
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

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

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	9/01	9/05	9/08	9/11	9/13	9/16	9/18	9/21	9/26
32	9/11	9/15	9/18	9/20	9/22	9/25	9/27	9/30	10/04
28	9/15	9/21	9/25	9/28	10/01	10/04	10/08	10/12	10/17
24	9/22	9/28	10/02	10/06	10/10	10/13	10/17	10/21	10/27
20	9/30	10/07	10/11	10/16	10/20	10/23	10/28	11/01	11/08
16	10/17	10/22	10/26	10/29	11/02	11/05	11/08	11/12	11/17

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	134	126	120	114	109	104	99	93	84
32	146	140	136	132	129	125	122	117	111
28	169	162	157	153	148	144	140	135	128
24	194	185	179	174	169	165	159	153	145
20	215	207	201	196	191	186	181	175	167
16	235	227	221	216	212	207	203	197	189

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1535	1192	1033	635	321	123	34	53	247	593	1052	1417	8235
60	1380	1052	878	490	204	59	10	20	148	439	902	1262	6844
57	1287	973	785	407	147	34	3	9	101	348	812	1169	6075
55	1226	922	725	354	115	22	1	5	76	290	758	1107	5601
50	1079	791	581	237	54	7	0	1	30	164	618	957	4519
32	584	381	174	19	0	0	0	0	0	5	219	469	1851

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	72	112	164	374	726	980	1206	1179	792	435	158	75	6273
55	1	10	2	20	128	313	494	471	177	7	6	0	1629
57	0	5	0	13	98	264	434	413	143	3	0	0	1373
60	0	0	0	6	62	199	348	330	100	1	0	0	1046
65	0	0	0	1	24	113	217	208	49	0	0	0	612
70	0	0	0	0	7	52	119	117	19	0	0	0	314

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	8	44	177	455	712	932	909	546	231	45	1	0	8	52	229	684	1396	2328	3237	3783	4014	4059	4060
45	0	0	18	94	311	562	777	754	405	138	17	0	0	0	18	112	423	985	1762	2516	2921	3059	3076	3076
50	0	0	2	47	197	415	622	600	278	70	6	0	0	0	2	49	246	661	1283	1883	2161	2231	2237	2237
55	0	0	0	17	108	278	467	447	172	26	0	0	0	0	0	17	125	403	870	1317	1489	1515	1515	1515
60	0	0	0	4	46	159	319	300	88	7	0	0	0	0	0	4	50	209	528	828	916	923	923	923
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	8	45	128	280	437	594	570	338	166	36	2	0	8	53	181	461	898	1492	2062	2400	2566	2602	2604

(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