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: ARMOUR, SD **COOP ID: 390296**

Climate Division: SD 9 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 43˚20N** **Lon: 98˚21W**

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	30.0	8.2	19.1	70+	1981	24	32.7	1990	-45	1912	12	3.8	1979	1424	0	.0	.0	2.1	16.9	30.6	9.1
Feb	37.2	14.6	25.9	75	2000	21	36.7	1999	-45	1905	2	9.9	1979	1096	0	.0	.0	6.3	11.3	26.6	4.8
Mar	48.6	24.7	36.7	94	1943	30	43.3	2000	-28	1913	3	29.0	1975	879	0	.0	.0	14.4	4.1	23.7	1.0
Apr	62.4	36.1	49.3	98+	1962	25	57.5	1981	-2	1936	3	43.3	1975	478	4	.0	.3	24.9	.4	10.7	.0
May	73.7	47.8	60.8	105+	1934	30	67.5	1987	17	1908	1	56.3	1995	181	49	.0	.7	30.7	.0	1.1	.0
Jun	83.5	57.5	70.5	110	1937	23	78.1	1988	30	1902	20	64.8	1982	32	196	.5	6.8	30.0	.0	.0	.0
Jul	89.0	62.7	75.9	116	1940	24	80.6	1974	39	1971	30	67.7	1992	7	344	2.5	14.0	31.0	.0	.0	.0
Aug	87.3	60.9	74.1	112+	1936	24	79.5	1983	35	1950	20	68.1	1992	12	294	1.0	11.7	31.0	.0	.0	.0
Sep	78.5	50.5	64.5	109+	1939	6	71.4	1990	17	1899	29	59.7	1993	105	90	.3	4.7	29.8	.0	1.0	.0
Oct	64.9	38.1	51.5	99	1905	3	54.7	1973	-4	1925	29	47.3	1976	419	1	.0	.3	27.3	.2	9.0	.0
Nov	44.8	24.3	34.6	94	1903	3	45.8	1999	-22	1896	10	21.7	1985	914	0	.0	.0	11.3	5.6	24.3	.9
Dec	33.2	12.4	22.8	72	1939	6	30.8	1999	-39	1917	29	4.5	1983	1308	0	.0	.0	3.0	14.4	30.5	6.1
Ann	61.1	36.5	48.8	116	Jul 1940	24	80.6	Jul 1974	-45+	Jan 1912	12	3.8	Jan 1979	6855	978	4.3	38.5	241.8	52.9	157.5	21.9

\+ 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: 1896-2001

(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: ARMOUR, SD **COOP ID: 390296**

Climate Division: SD 9 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 43˚20N** **Lon: 98˚21W**

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	.60	.45	4.00	1907	1	2.14	1988	.04	1989
Feb	.69	.51	1.38	1969	20	2.29	1978	.03	1982
Mar	1.73	1.11	3.31	1987	17	7.21	1987	.18	1994
Apr	2.53	2.29	2.34	1995	18	6.62	1986	.33	1987
May	3.71	3.43	2.55	1897	18	8.66	1982	.53	1992
Jun	3.31	2.83	4.55	1986	10	9.82	1984	1.27	1995
Jul	3.14	2.70	3.40	1978	21	6.58	1998	.62	2000
Aug	2.29	1.93	5.46	1937	18	5.95	1980	.11	1983
Sep	2.25	2.00	4.44	1950	20	7.07	1986	.18	1980
Oct	1.75	1.50	4.10	1911	5	5.16	1998	.17	1999
Nov	1.11	1.07	1.91	2000	1	3.77	2000	.01+	1980
Dec	.61	.50	1.36	1968	22	1.91	1972	.00+	1991
Ann	23.72	23.65	5.46	Aug 1937	18	9.82	Jun 1984	.00+	Dec 1991

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	1.6	.2	@
Feb	4.8	2.0	.2	.0
Mar	6.4	3.9	1.0	.3
Apr	8.7	5.8	1.8	.3
May	10.3	6.6	2.6	.8
Jun	9.1	5.7	2.2	.8
Jul	9.1	5.8	2.0	.9
Aug	6.8	4.3	1.5	.5
Sep	6.7	3.9	1.3	.6
Oct	5.8	3.5	1.2	.4
Nov	5.0	2.8	.5	.2
Dec	4.0	2.0	.2	@
Ann	80.8	47.9	14.7	4.8

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	.09	.17	.25	.34	.45	.57	.73	.95	1.31	1.67
Feb	.04	.08	.17	.26	.37	.49	.64	.83	1.09	1.54	1.99
Mar	.21	.35	.59	.83	1.09	1.37	1.70	2.11	2.67	3.58	4.47
Apr	.54	.77	1.14	1.48	1.82	2.18	2.59	3.08	3.72	4.76	5.73
May	.99	1.34	1.87	2.35	2.81	3.30	3.84	4.48	5.32	6.63	7.86
Jun	1.05	1.37	1.83	2.23	2.61	3.01	3.45	3.96	4.62	5.65	6.60
Jul	.77	1.07	1.52	1.93	2.33	2.76	3.24	3.80	4.54	5.72	6.82
Aug	.39	.59	.92	1.24	1.56	1.91	2.31	2.79	3.44	4.49	5.49
Sep	.26	.44	.76	1.07	1.40	1.77	2.21	2.75	3.48	4.68	5.85
Oct	.20	.34	.58	.82	1.08	1.38	1.72	2.14	2.71	3.66	4.58
Nov	.05	.11	.23	.38	.55	.75	1.00	1.33	1.79	2.58	3.38
Dec	.00	.07	.18	.28	.38	.49	.61	.76	.96	1.29	1.62
Ann	15.46	17.01	19.01	20.56	21.94	23.29	24.69	26.26	28.17	30.96	33.41

\+ 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: 1896-2001
(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: ARMOUR, SD **COOP ID: 390296**

Climate Division: SD 9 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 43°20N** **Lon: 98°21W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.6	4.5	4	3
Feb	5.5	4.8	3	2
Mar	5.8	4.2	1	1
Apr	2.2	.0	#	#
May	#	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	.8	.0	#	0
Nov	5.6	3.9	1	#
Dec	7.2	7.4	3	2
Ann	32.7	24.8	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	18.0	1988	19	22.1	1988	28	1988	22	15	1988
Feb	7.5	1993	25	18.6	1993	19+	1997	16	14	1988
Mar	15.0	1998	31	28.0	1998	15	1998	31	5	1984
Apr	6.5	1986	14	13.0	1995	10	1998	1	1	1998
May	#	1989	5	#	1989	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	#	1995	21	#+	1995	0	0	0	0	0
Oct	7.5	1995	23	13.0	1995	8	1995	23	1	1995
Nov	12.0	1998	10	19.3	1983	13	2000	16	6	2000
Dec	8.5	1989	10	16.7	1971	26	1983	30	19	1983
Ann	18.0	Jan 1988	19	28.0	Mar 1998	28	Jan 1988	22	19	Dec 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.8	1.8	.6	.2	@
Feb	3.8	1.9	.6	.2	.0
Mar	2.8	2.1	.6	.3	@
Apr	.9	.8	.4	.1	.0
May	.0	.0	.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	.0
Oct	.3	.2	.1	.1	.0
Nov	2.7	2.0	.9	.3	.1
Dec	3.8	2.2	.7	.2	.0
Ann	18.1	11.0	3.9	1.4	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	15.8	10.6	4.7	.6
Feb	10.7	6.9	4.1	1.5
Mar	4.2	2.3	1.1	.1
Apr	.9	.7	.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	.3	.2	.1	.0
Nov	5.4	3.8	2.7	.5
Dec	13.6	11.4	8.0	3.3
Ann	50.9	35.9	21.0	6.0

+ 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: ARMOUR, SD **COOP ID: 390296**

Climate Division: SD 9 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 43˚20N** **Lon: 98˚21W**

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

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	9/11	9/15	9/17	9/20	9/22	9/24	9/26	9/29	10/03
32	9/16	9/21	9/24	9/27	9/30	10/02	10/05	10/08	10/13
28	9/24	9/29	10/03	10/07	10/10	10/13	10/17	10/21	10/26
24	10/01	10/07	10/11	10/14	10/18	10/21	10/25	10/29	11/04
20	10/15	10/20	10/23	10/26	10/29	11/01	11/04	11/07	11/12
16	10/19	10/26	11/01	11/05	11/09	11/13	11/18	11/23	11/30

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	153	147	143	139	136	132	128	124	118
32	170	163	158	153	149	145	141	136	128
28	189	183	178	174	170	166	162	158	151
24	210	203	198	193	189	185	181	176	169
20	227	221	217	213	210	206	202	198	192
16	257	248	241	235	230	224	218	211	202

***** 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: ARMOUR, SD **COOP ID: 390296**

Climate Division: SD 9 **NWS Call Sign:** **Elevation: 1,510 Feet** **Lat: 43˚20N** **Lon: 98˚21W**

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	1424	1096	879	478	181	32	7	12	105	419	914	1308	6855
60	1269	960	724	341	92	8	0	2	41	270	764	1153	5624
57	1177	884	632	266	56	2	0	0	19	190	674	1060	4960
55	1117	830	573	222	38	1	0	0	10	144	621	998	4554
50	971	701	431	129	11	0	0	0	1	63	482	852	3641
32	488	318	87	3	0	0	0	0	0	0	129	377	1402

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	87	147	231	519	891	1154	1360	1304	975	605	205	92	7570
55	3	15	5	48	216	465	647	591	296	36	7	0	2329
57	1	12	1	33	172	406	585	530	244	20	0	0	2004
60	0	5	0	17	115	322	492	438	176	7	0	0	1572
65	0	0	0	4	49	196	344	294	90	1	0	0	978
70	0	0	0	0	15	102	209	169	37	0	0	0	532

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	2	25	97	306	644	912	1114	1058	729	372	63	2	2	27	124	430	1074	1986	3100	4158	4887	5259	5322	5324
45	0	4	45	196	491	762	959	903	581	242	26	0	0	4	49	245	736	1498	2457	3360	3941	4183	4209	4209
50	0	0	17	107	343	612	804	748	436	135	8	0	0	0	17	124	467	1079	1883	2631	3067	3202	3210	3210
55	0	0	6	54	216	462	649	593	301	62	0	0	0	0	6	60	276	738	1387	1980	2281	2343	2343	2343
60	0	0	0	26	111	320	494	440	188	22	0	0	0	0	0	26	137	457	951	1391	1579	1601	1601	1601
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	3	28	83	206	400	592	733	694	467	243	52	4	3	31	114	320	720	1312	2045	2739	3206	3449	3501	3505

(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