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: CAMP CROOK, SD **COOP ID: 391294**

Climate Division: SD 3 **NWS Call Sign:** **Elevation: 3,120 Feet** **Lat: 45˚33N** **Lon: 103˚58W**

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	30.4	6.8	18.6	69	1981	23	30.8	1992	-57	1916	12	2.0	1979	1438	0	.0	.0	2.0	14.8	30.5	10.7
Feb	36.4	12.3	24.4	72	1982	21	35.2	1999	-50	1936	15	9.2	1979	1138	0	.0	.0	6.0	9.8	27.2	6.3
Mar	45.9	20.1	33.0	81+	1943	30	42.6	1986	-33	1897	12	23.2	1996	992	0	.0	.0	13.1	5.0	27.9	2.1
Apr	58.0	30.4	44.2	94	1901	30	50.5	1987	-12	1899	2	37.3	1997	625	0	.0	@	22.8	1.0	17.9	.1
May	68.8	40.5	54.7	101	1939	19	60.6	1977	4+	1967	3	49.4	1983	334	14	.0	.6	29.6	.0	5.4	.0
Jun	78.5	49.9	64.2	108	1919	29	75.9	1988	24	1902	20	59.3	1998	116	93	.3	3.3	29.9	.0	.3	.0
Jul	86.7	54.4	70.6	113	1939	11	74.8	1974	32	1899	28	62.5	1992	34	206	1.9	11.7	31.0	.0	.0	.0
Aug	86.8	52.5	69.7	114	1900	1	77.0	1983	27	1911	28	63.7	1992	49	193	1.1	12.6	31.0	.0	.2	.0
Sep	75.8	41.6	58.7	105+	1897	7	66.2	1998	9	1926	25	53.4	1984	229	41	.3	3.6	29.2	.0	4.9	.0
Oct	61.7	31.1	46.4	95	1922	3	49.7	1973	-17	1925	29	43.1	1976	578	0	.0	.2	25.8	.5	16.9	.1
Nov	42.9	18.8	30.9	84	1999	7	39.6	1999	-28	1985	27	14.7	1985	1025	0	.0	.0	10.0	6.7	27.6	2.3
Dec	33.5	9.5	21.5	70	1939	5	30.7	1999	-46	1989	21	1.9	1983	1350	0	.0	.0	3.0	13.0	30.6	7.2
Ann	58.8	30.7	44.7	114	Aug 1900	1	77.0	Aug 1983	-57	Jan 1916	12	1.9	Dec 1983	7908	547	3.6	32.0	233.4	50.8	189.4	28.8

\+ 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

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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	.31	.26	1.80	1913	3	1.05	1971	.00+	1985
Feb	.28	.19	1.00	1930	27	1.04	1978	.00+	1992
Mar	.62	.38	1.66	1946	21	1.95	1982	.00	1981
Apr	1.43	1.27	2.25	1967	30	3.73	1991	.02	1987
May	2.75	2.15	2.45	1929	26	6.93	1982	.25	1994
Jun	2.58	2.29	2.90	1930	22	6.42	1976	1.14	1980
Jul	2.05	1.81	4.57	1989	14	6.02	1989	.18	1980
Aug	1.19	.96	2.20	1927	14	3.10	1980	.34	1994
Sep	1.11	1.03	2.64	1923	28	4.44	1986	.03	1993
Oct	1.23	.84	2.58	1971	2	4.21	1971	.00	1987
Nov	.52	.40	2.92	2000	1	3.07	2000	.00	1987
Dec	.30	.20	.52	1935	13	.95	1996	.00+	1997
Ann	14.37	14.12	4.57	Jul 1989	14	6.93	May 1982	.00+	Dec 1997

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.0	1.1	.1	.0
Feb	3.5	.8	.0	.0
Mar	5.0	2.1	.3	.0
Apr	7.0	4.0	1.0	.1
May	9.3	5.7	1.8	.6
Jun	10.6	5.8	1.6	.4
Jul	8.0	4.3	1.2	.4
Aug	6.2	3.0	.6	.1
Sep	4.9	2.5	.6	.2
Oct	5.3	2.7	.6	.3
Nov	4.4	1.4	.2	@
Dec	3.5	1.1	.0	.0
Ann	71.7	34.5	8.0	2.1

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	.00	.01	.05	.09	.14	.20	.28	.38	.52	.77	1.02
Feb	.00	.00	.06	.11	.16	.21	.28	.36	.46	.64	.82
Mar	.05	.12	.22	.31	.40	.50	.62	.76	.95	1.26	1.56
Apr	.14	.24	.43	.63	.85	1.09	1.38	1.74	2.23	3.06	3.86
May	.48	.72	1.12	1.50	1.88	2.30	2.78	3.35	4.12	5.36	6.54
Jun	1.01	1.25	1.59	1.87	2.14	2.41	2.70	3.04	3.48	4.14	4.74
Jul	.21	.36	.64	.93	1.24	1.58	1.99	2.50	3.20	4.36	5.50
Aug	.34	.46	.63	.78	.92	1.07	1.24	1.43	1.69	2.09	2.46
Sep	.07	.14	.28	.43	.60	.80	1.04	1.34	1.77	2.48	3.19
Oct	.03	.10	.26	.43	.62	.85	1.13	1.49	2.00	2.85	3.71
Nov	.02	.05	.12	.20	.28	.38	.49	.64	.84	1.18	1.52
Dec	.00	.00	.04	.09	.14	.20	.27	.37	.51	.74	.97
Ann	8.44	9.50	10.92	12.02	13.02	14.00	15.04	16.20	17.63	19.75	21.61

\+ 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:
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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	4.2	3.4	3	2
Feb	4.6	3.1	3	1
Mar	5.8	4.1	2	1
Apr	3.2	1.3	1	#
May	1.0	.0	#	0
Jun	#	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.5	.0	0	0
Oct	1.2	.0	#	0
Nov	3.7	3.7	1	1
Dec	3.8	2.5	3	1
Ann	28.0	18.1	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	24	16.2	1971	17	1993	15	12	1993
Feb	5.0	1978	12	18.0	1979	19	1978	16	13	1978
Mar	6.0	1977	29	20.3	1998	22	1998	11	14	1998
Apr	8.0	1994	26	17.0	1994	36	1984	27	7	1997
May	9.0	1983	12	11.0	1996	10	1984	1	1	1984
Jun	#	1973	18	#	1973	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	12.0	1984	23	13.5	1984	10	1984	23	1	1984
Oct	8.0	1999	1	8.0	1999	6	1999	1	1	1972
Nov	7.0	1977	19	13.0	1977	19	1985	30	7	1985
Dec	12.0	1983	4	13.7	1983	26	1985	19	20	1985
Ann	12.0+	Sep 1984	23	20.3	Mar 1998	36	Apr 1984	27	20	Dec 1985

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.5	2.0	.6	.2	.0
Feb	3.0	1.9	.6	.2	.0
Mar	3.2	2.0	.9	.3	.0
Apr	1.6	1.4	.4	.1	.0
May	.2	.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	@	@	@
Oct	.8	.5	.1	.1	.0
Nov	2.5	1.8	.6	.3	.0
Dec	3.4	1.6	.4	.3	@
Ann	18.3	11.5	3.8	1.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	13.9	9.8	4.3	.2
Feb	8.4	6.4	4.7	1.9
Mar	6.1	3.4	1.4	.6
Apr	1.5	.5	.2	.0
May	.1	@	@	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.2	.1	.1	@
Oct	.8	.3	@	.0
Nov	4.7	1.6	.5	.0
Dec	11.3	5.1	4.0	1.0
Ann	47.0	27.2	15.2	3.7

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

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	8/19	8/24	8/28	8/31	9/03	9/06	9/10	9/13	9/19
32	8/31	9/04	9/08	9/10	9/13	9/16	9/18	9/22	9/26
28	9/05	9/10	9/14	9/17	9/20	9/23	9/26	9/29	10/04
24	9/13	9/19	9/23	9/27	9/30	10/03	10/07	10/11	10/17
20	9/21	9/28	10/03	10/08	10/12	10/16	10/20	10/25	11/02
16	10/04	10/11	10/16	10/21	10/25	10/29	11/02	11/07	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	120	110	103	97	92	86	80	74	64
32	134	126	120	115	111	106	101	95	87
28	155	148	143	139	135	131	127	121	114
24	175	168	163	159	155	152	147	143	136
20	202	193	186	180	175	170	164	158	149
16	231	220	213	206	200	194	188	181	170

***** 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	1438	1138	992	625	334	116	34	49	229	578	1025	1350	7908
60	1283	1004	837	478	210	51	10	16	129	423	875	1195	6511
57	1191	927	744	392	149	27	3	7	82	331	785	1102	5740
55	1131	874	684	338	115	17	1	4	58	271	725	1040	5258
50	988	744	538	216	51	4	0	0	18	138	586	896	4179
32	504	354	140	10	0	0	0	0	0	2	185	415	1610

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	89	140	171	375	703	966	1194	1167	802	447	150	88	6292
55	4	16	2	13	105	293	482	458	170	4	0	0	1547
57	2	13	1	8	77	243	422	399	134	1	0	0	1300
60	0	6	0	3	45	178	336	315	91	0	0	0	974
65	0	0	0	0	14	93	206	193	41	0	0	0	547
70	0	0	0	0	3	37	110	102	15	0	0	0	267

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	11	53	197	469	737	959	929	573	250	41	4	0	11	64	261	730	1467	2426	3355	3928	4178	4219	4223
45	0	1	17	107	322	587	804	774	433	146	11	0	0	1	18	125	447	1034	1838	2612	3045	3191	3202	3202
50	0	0	2	50	200	439	649	619	297	72	2	0	0	0	2	52	252	691	1340	1959	2256	2328	2330	2330
55	0	0	0	18	105	296	495	464	183	23	0	0	0	0	0	18	123	419	914	1378	1561	1584	1584	1584
60	0	0	0	5	42	169	343	316	97	5	0	0	0	0	0	5	47	216	559	875	972	977	977	977
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	20	65	163	308	461	604	587	391	211	49	5	1	21	86	249	557	1018	1622	2209	2600	2811	2860	2865

(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