

**Climatology
of the United States
No. 20**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: CASTLEWOOD, SD

1971-2000

COOP ID: 391519

Climate Division: SD 7

NWS Call Sign:

Elevation: 1,685 Feet Lat: 44°44N

Lon: 97°02W

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	20.4	-.9	9.8	66	1981	24	24.1	1990	-37	1988	6	-2.2	1979	1715	0	.0	.0	.5	23.6	31.0	15.5
Feb	27.4	6.6	17.0	67+	2000	23	31.1	1987	-44	1994	9	3.2	1979	1345	0	.0	.0	1.8	16.0	28.1	9.3
Mar	38.6	18.6	28.6	81	1967	30	39.0	2000	-29	1948	11	20.4	1975	1130	0	.0	.0	7.4	7.5	27.5	2.8
Apr	54.9	31.2	43.1	97	1980	21	51.0	1987	-4	1975	3	36.7	1975	659	1	.0	.1	21.6	.8	16.8	.1
May	68.4	43.8	56.1	98	1967	25	64.0	1977	12	1967	4	50.4	1997	301	25	.0	.2	29.9	.0	3.6	.0
Jun	77.3	53.8	65.6	104+	1988	25	73.1	1988	30	1964	2	60.2	1982	82	98	.1	2.5	30.0	.0	@	.0
Jul	82.5	58.4	70.5	107	1966	10	75.8	1974	34	1971	30	61.5	1992	33	203	.3	8.0	31.0	.0	.0	.0
Aug	80.5	55.8	68.2	104	1988	1	75.7	1983	31	1987	31	62.4	1992	55	153	.3	5.4	31.0	.0	@	.0
Sep	71.6	45.0	58.3	101	1976	6	63.7	1998	20+	1974	22	52.1	1993	224	23	@	1.6	29.5	.0	2.5	.0
Oct	58.7	32.1	45.4	90+	1992	3	51.0	1973	8+	1991	30	41.0	1987	607	0	.0	@	25.2	.2	14.6	.0
Nov	38.7	18.7	28.7	79	1999	9	40.7	1999	-23	1964	30	18.2	1985	1088	0	.0	.0	7.1	9.4	27.3	1.9
Dec	24.8	5.1	15.0	59	1962	1	23.9	1979	-36	1967	31	-1.8	1983	1553	0	.0	.0	.6	20.8	31.0	10.4
Ann	53.7	30.7	42.2	107	Jul 1966	10	75.8	Jul 1974	-44	Feb 1994	9	-2.2	Jan 1979	8792	503	.7	17.8	215.6	78.3	182.4	40.0

+ 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

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Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.70	.57	.97	1979	19	2.45	1979	.00+	1991	5.3	2.4	.2	.0	.00	.06	.17	.28	.39	.52	.68	.86	1.12	1.55	1.97
Feb	.55	.44	1.60	1977	23	2.38	1977	.06	1983	4.7	1.9	.1	@	.10	.15	.23	.30	.38	.46	.55	.66	.81	1.06	1.29
Mar	1.33	.96	2.07	1977	11	4.23	1977	.07	1971	6.2	3.6	.7	.1	.22	.34	.53	.72	.90	1.11	1.34	1.63	2.01	2.62	3.21
Apr	1.99	1.82	3.24	2001	6	6.42	1986	.15	1996	8.1	4.9	1.2	.3	.35	.52	.81	1.09	1.36	1.66	2.01	2.42	2.98	3.87	4.73
May	2.95	2.30	2.48	1999	16	8.29	1972	.36	1976	8.7	6.0	2.1	.6	.48	.73	1.16	1.56	1.98	2.44	2.96	3.60	4.46	5.84	7.17
Jun	4.15	3.01	4.44	1992	17	11.71	1980	.49	1988	9.5	6.9	2.7	1.0	.79	1.16	1.76	2.33	2.90	3.51	4.21	5.05	6.17	7.96	9.67
Jul	3.41	2.85	5.25	1966	13	8.24	1997	.54	1971	8.6	5.8	2.1	.8	.69	1.00	1.50	1.96	2.42	2.92	3.48	4.15	5.03	6.45	7.80
Aug	2.87	2.72	4.46	1978	27	6.37	1978	.53	1976	7.6	5.2	1.9	.6	1.03	1.30	1.69	2.02	2.33	2.65	3.00	3.40	3.92	4.72	5.45
Sep	2.31	2.17	3.22	1985	8	8.03	1985	.40	1979	6.7	4.0	1.6	.5	.40	.60	.94	1.26	1.58	1.93	2.33	2.82	3.46	4.51	5.51
Oct	1.94	1.31	2.31	1998	5	6.93	1984	.00	1989	6.0	3.7	1.4	.5	.07	.21	.49	.77	1.07	1.43	1.85	2.37	3.11	4.33	5.54
Nov	.96	.67	1.30	1970	8	3.32	1983	.00	1999	5.1	3.0	.5	.1	.02	.09	.21	.35	.50	.68	.89	1.17	1.55	2.20	2.85
Dec	.49	.47	.96	1949	11	1.51	1977	.00+	1989	4.6	1.8	@	.0	.00	.08	.17	.25	.33	.41	.51	.61	.76	1.00	1.23
Ann	23.65	24.54	5.25	Jul 1966	13	11.71	Jun 1980	.00+	Nov 1999	81.1	49.2	14.5	4.5	14.85	16.47	18.59	20.23	21.70	23.14	24.65	26.33	28.39	31.42	34.07

+ 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

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Climate Division: SD 7

NWS Call Sign:

Elevation: 1,685 Feet

Lat: 44° 44N

Lon: 97° 02W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	6.2	4.2	5	4	10.0	1979	19	24.6	1979	26	1979	31	16	1997	4.1	2.7	.8	.2	.1	20.1	13.2	9.1	1.6
Feb	3.8	2.8	5	4	6.0	1990	16	8.1	1971	26	1979	13	24	1979	2.8	1.9	.4	.1	.0	17.2	11.9	6.6	1.8
Mar	5.4	3.6	3	2	11.0	1985	3	20.0	1985	20	1979	1	13	1997	2.2	1.9	.7	.2	@	8.4	5.9	3.7	1.4
Apr	1.1	.0	#	#	7.0	1995	12	10.0	1995	10	1975	1	2	1975	.5	.5	.1	.1	.0	1.1	.5	.4	@
May	#	.0	#	0	#	1979	9	#	1979	#	1979	9	#	1979	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.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	#	.0	#	0	#	1995	21	#	1995	#	1995	21	#	1995	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.2	.0	#	0	3.0	1971	28	3.0	1971	3	1971	28	#+	1991	.1	.1	@	.0	.0	.1	@	.0	.0
Nov	4.2	2.9	1	#	10.0	1977	9	19.3	1977	14	1993	25	5	1985	2.5	2.0	.5	.2	@	4.8	1.9	1.2	.5
Dec	4.5	4.0	3	2	8.0	1987	28	11.1	1977	18	1985	13	15	1985	2.9	1.9	.3	.1	.0	16.3	9.8	5.7	.1
Ann	25.4	17.5	N/A	N/A	11.0	Mar 1985	3	24.6	Jan 1979	26+	Feb 1979	13	24	Feb 1979	15.1	11.0	2.8	.9	.1	68.0	43.2	26.7	5.4

+ 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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NWS Call Sign:

Elevation: 1,685 Feet

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Lon: 97° 02W

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	6/16	6/08	6/03	5/29	5/25	5/21	5/17	5/11	5/04
32	5/27	5/22	5/19	5/16	5/13	5/10	5/07	5/03	4/28
28	5/18	5/13	5/09	5/06	5/03	4/30	4/27	4/23	4/17
24	5/08	5/02	4/28	4/25	4/22	4/19	4/15	4/11	4/06
20	4/25	4/19	4/16	4/13	4/10	4/07	4/04	3/31	3/26
16	4/15	4/10	4/06	4/03	3/31	3/29	3/26	3/22	3/17
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	9/04	9/07	9/10	9/12	9/14	9/16	9/18	9/21	9/24
32	9/10	9/14	9/17	9/20	9/22	9/24	9/27	9/30	10/04
28	9/17	9/22	9/25	9/28	9/30	10/03	10/06	10/09	10/13
24	9/26	10/01	10/05	10/07	10/10	10/13	10/16	10/19	10/24
20	10/04	10/10	10/14	10/17	10/20	10/23	10/26	10/30	11/05
16	10/13	10/18	10/22	10/25	10/28	10/31	11/04	11/07	11/13
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	136	127	121	116	111	106	101	95	86
32	152	145	140	135	131	127	123	118	111
28	169	163	158	153	150	146	141	137	130
24	192	185	179	175	171	167	162	157	150
20	217	209	203	198	193	188	183	176	168
16	232	225	219	214	210	206	201	196	188

* 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:

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Climate Division: SD 7 NWS Call Sign: Elevation: 1,685 Feet Lat: 44° 44N Lon: 97° 02W

Degree Days to Selected Base Temperatures (°F)													
Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1715	1345	1130	659	301	82	33	55	224	607	1088	1553	8792
60	1560	1205	975	514	188	28	9	17	118	453	938	1398	7403
57	1467	1121	882	430	134	13	3	7	71	362	848	1305	6643
55	1405	1065	820	377	104	6	0	3	47	304	788	1243	6162
50	1250	932	669	257	48	1	0	0	12	177	643	1088	5077
32	723	485	223	24	0	0	0	0	0	6	215	571	2247

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	31	63	116	356	747	1006	1193	1121	789	421	118	41	6002
55	0	0	0	19	137	323	480	411	146	6	0	0	1522
57	0	0	0	12	106	269	421	353	109	3	0	0	1273
60	0	0	0	6	67	195	334	270	67	1	0	0	940
65	0	0	0	1	25	98	203	153	23	0	0	0	503
70	0	0	0	0	7	36	109	72	5	0	0	0	229

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	35	200	541	799	976	914	590	250	28	0	0	1	36	236	777	1576	2552	3466	4056	4306	4334	4334
45	0	0	14	115	391	649	821	759	444	142	11	0	0	0	14	129	520	1169	1990	2749	3193	3335	3346	3346
50	0	0	2	59	262	502	666	604	309	70	1	0	0	0	2	61	323	825	1491	2095	2404	2474	2475	2475
55	0	0	0	27	152	355	511	450	189	26	0	0	0	0	0	27	179	534	1045	1495	1684	1710	1710	1710
60	0	0	0	13	73	224	358	302	103	7	0	0	0	0	0	13	86	310	668	970	1073	1080	1080	1080
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	2	33	152	345	509	637	594	376	184	29	0	0	2	35	187	532	1041	1678	2272	2648	2832	2861	2861

(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/normal/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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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