

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: CLEAR LAKE, SD

1971-2000

COOP ID: 391777

Climate Division: SD 7

NWS Call Sign:

Elevation: 1,800 Feet Lat: 44°45N

Lon: 96°41W

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	19.9	-.5	9.7	66	1981	24	24.5	1990	-31+	1982	10	-2.8	1982	1716	0	.0	.0	.3	23.7	31.0	14.3
Feb	26.6	7.0	16.8	62+	2000	22	30.0	1987	-33	1996	2	3.7	1979	1350	0	.0	.0	1.3	16.5	27.4	8.3
Mar	37.9	18.2	28.1	79	1967	30	36.6	2000	-18	1960	5	20.2	1975	1144	0	.0	.0	6.8	8.3	26.8	2.2
Apr	54.4	32.1	43.3	94	1980	21	52.2	1987	0	1975	1	35.0	1975	655	2	.0	.1	20.9	.9	14.7	@
May	68.0	45.4	56.7	98	1959	1	64.1	1977	19	1967	3	50.9	1979	285	28	.0	.0	30.1	.0	2.6	.0
Jun	76.8	55.2	66.0	102+	1988	24	73.9	1988	34	1990	3	61.3	1982	73	102	.1	1.6	30.0	.0	.0	.0
Jul	81.6	60.0	70.8	107	1966	11	75.5	1974	39	1967	4	62.9	1992	28	209	.1	5.3	31.0	.0	.0	.0
Aug	79.5	58.3	68.9	102	1955	1	75.9	1983	37+	1987	31	63.8	1992	42	162	.1	3.5	31.0	.0	.0	.0
Sep	70.1	47.7	58.9	97	1959	8	64.2	1998	19+	2000	25	53.6	1993	209	26	.0	.9	29.5	.0	1.0	.0
Oct	57.5	34.4	46.0	89+	1963	5	52.1	1973	9	1991	30	41.2	1976	591	0	.0	.0	24.6	.5	10.6	.0
Nov	37.9	19.8	28.9	78	1999	9	41.8	1999	-18	1964	30	18.4	1985	1084	0	.0	.0	6.4	10.2	25.9	1.4
Dec	23.7	5.0	14.4	60+	1998	2	25.1	1979	-30+	1989	21	-2.1	1983	1571	0	.0	.0	.6	21.3	30.6	9.5
Ann	52.8	31.9	42.4	107	Jul 1966	11	75.9	Aug 1983	-33	Feb 1996	2	-2.8	Jan 1982	8748	529	.3	11.4	212.5	81.4	170.6	35.7

+ 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/normal/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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Elevation: 1,800 Feet Lat: 44°45N

Lon: 96°41W

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	.78	.55	1.64	1997	4	2.39	1979	.00+	1990	5.7	2.4	.2	@	.00	.08	.22	.34	.47	.61	.77	.97	1.24	1.68	2.11
Feb	.66	.62	1.25+	1977	23	1.53	1977	.09	1983	5.1	2.5	.1	@	.17	.23	.33	.41	.50	.58	.68	.79	.94	1.18	1.40
Mar	1.79	1.41	1.86	1977	12	5.29	1977	.03	1971	7.2	4.1	1.3	.3	.26	.41	.67	.92	1.18	1.46	1.79	2.19	2.73	3.61	4.45
Apr	2.25	1.88	2.13	2001	23	5.85	1986	.13	1980	8.7	5.3	1.4	.4	.44	.65	.98	1.28	1.59	1.92	2.29	2.74	3.33	4.28	5.19
May	3.12	2.75	1.97	1959	30	8.51	1972	.38	1976	9.9	6.6	2.3	.6	.73	1.02	1.48	1.89	2.30	2.73	3.21	3.78	4.54	5.73	6.86
Jun	4.27	3.33	4.55	1992	16	16.12	1992	.47	1973	10.8	7.0	2.7	1.0	.59	.94	1.55	2.15	2.77	3.45	4.24	5.22	6.53	8.67	10.74
Jul	3.46	2.84	3.47	1948	21	7.27	1997	1.18	1984	9.0	6.3	2.5	1.0	1.16	1.49	1.97	2.37	2.76	3.17	3.61	4.12	4.78	5.80	6.74
Aug	3.12	2.85	2.52	1979	4	6.34	1988	1.09	1984	8.9	5.6	1.9	1.0	1.09	1.38	1.81	2.17	2.52	2.87	3.26	3.71	4.29	5.19	6.01
Sep	2.44	2.40	3.63	1957	19	6.27	1999	.38	1998	8.3	5.0	1.4	.5	.48	.70	1.06	1.39	1.72	2.08	2.48	2.97	3.61	4.65	5.63
Oct	2.03	1.48	2.58	1996	17	6.85	1984	.17	1988	6.4	4.0	1.4	.5	.19	.33	.60	.89	1.19	1.54	1.96	2.48	3.19	4.38	5.55
Nov	1.32	.96	1.87	1983	19	5.21	1983	.02	1984	5.9	3.5	.6	.2	.04	.10	.24	.41	.61	.85	1.16	1.56	2.14	3.15	4.17
Dec	.53	.42	1.26	1953	3	1.42	1977	.00	1986	4.6	2.0	.1	.0	.03	.09	.17	.25	.33	.42	.53	.66	.83	1.12	1.40
Ann	25.77	26.64	4.55	Jun 1992	16	16.12	Jun 1992	.00+	Jan 1990	90.5	54.3	15.9	5.5	16.27	18.03	20.32	22.09	23.68	25.24	26.87	28.68	30.90	34.17	37.03

+ 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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NWS Call Sign:

Elevation: 1,800 Feet

Lat: 44° 45N

Lon: 96° 41W

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	10.3	6.0	7	4	10.0	1979	19	34.0	1979	33	1979	27	19+	1997	5.0	4.0	1.3	.6	@	22.8	16.2	13.0	7.1
Feb	7.2	6.5	6	3	6.0	1974	21	14.0+	1997	28	1979	4	25	1979	3.8	3.2	1.0	.2	.0	20.8	15.4	10.6	5.0
Mar	10.7	11.0	3	2	13.0	1985	3	26.5	1985	26	1978	3	15	1979	3.4	2.9	1.6	.7	.2	12.9	9.5	5.8	2.8
Apr	3.7	2.0	#	#	12.0	1995	12	23.5	1995	12	1995	12	3	1975	1.0	1.0	.5	.3	@	2.4	1.2	.7	.1
May	.1	.0	#	0	2.0	1976	2	2.0	1976	#	1976	2	#	1976	@	@	.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	.1	.0	0	0	2.0	1984	25	2.0	1984	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Oct	1.1	.0	#	0	9.0	1995	23	13.0	1995	9	1995	23	1	1995	.4	.4	.1	@	.0	.6	.2	.1	.0
Nov	9.4	7.5	2	1	12.0	1977	9	29.0	1985	20	1985	30	6+	2000	3.5	3.2	1.3	.5	.1	9.0	5.6	3.0	1.3
Dec	7.9	7.8	4	2	9.0	1977	31	22.0	2000	28	1985	1	17	1985	3.6	2.9	1.1	.3	.0	16.8	12.6	9.4	4.4
Ann	50.5	40.8	N/A	N/A	13.0	Mar 1985	3	34.0	Jan 1979	33	Jan 1979	27	25	Feb 1979	20.7	17.6	6.9	2.6	.3	85.3	60.7	42.6	20.7

+ 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

Complete documentation available from:

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NWS Call Sign:

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Lon: 96° 41W

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	5/30	5/26	5/23	5/20	5/17	5/15	5/12	5/09	5/05
32	5/22	5/17	5/14	5/11	5/08	5/06	5/03	4/29	4/25
28	5/12	5/07	5/03	4/30	4/27	4/24	4/21	4/17	4/12
24	4/29	4/25	4/21	4/19	4/16	4/14	4/11	4/08	4/03
20	4/17	4/13	4/10	4/08	4/05	4/03	4/01	3/29	3/25
16	4/12	4/07	4/04	4/01	3/29	3/27	3/24	3/21	3/16
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	9/10	9/14	9/17	9/19	9/21	9/24	9/26	9/29	10/03
32	9/18	9/22	9/25	9/27	9/29	10/01	10/04	10/06	10/10
28	9/24	9/29	10/02	10/05	10/08	10/10	10/13	10/16	10/21
24	10/03	10/08	10/12	10/15	10/18	10/21	10/24	10/28	11/02
20	10/10	10/16	10/20	10/23	10/27	10/30	11/03	11/07	11/12
16	10/25	10/29	11/02	11/04	11/07	11/10	11/13	11/16	11/20
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	146	139	134	130	126	122	118	113	107
32	160	154	150	147	143	140	136	132	126
28	181	175	171	167	163	160	156	151	145
24	204	197	192	188	184	181	177	172	165
20	225	217	212	208	204	199	195	190	183
16	244	236	231	226	222	218	213	208	200

* 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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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	1716	1350	1144	655	285	73	28	42	209	591	1084	1571	8748
60	1561	1210	989	512	176	23	7	11	106	437	934	1416	7382
57	1468	1126	896	430	125	10	0	3	62	346	844	1323	6633
55	1406	1070	834	379	96	4	0	1	41	289	784	1261	6165
50	1251	932	681	263	44	0	0	0	9	166	640	1106	5092
32	725	483	224	30	0	0	0	0	0	5	216	590	2273

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	32	57	103	367	766	1020	1204	1143	807	437	122	42	6100
55	0	0	0	27	149	334	491	431	157	8	0	0	1597
57	0	0	0	18	115	280	429	372	119	4	0	0	1337
60	0	0	0	10	74	203	343	286	73	1	0	0	990
65	0	0	0	2	28	102	209	162	26	0	0	0	529
70	0	0	0	0	8	38	110	75	6	0	0	0	237

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	2	39	209	561	808	983	923	610	281	37	1	0	2	41	250	811	1619	2602	3525	4135	4416	4453	4454
45	0	0	13	124	414	658	828	768	465	168	14	0	0	0	13	137	551	1209	2037	2805	3270	3438	3452	3452
50	0	0	1	64	281	509	673	613	325	90	2	0	0	0	1	65	346	855	1528	2141	2466	2556	2558	2558
55	0	0	0	32	167	363	519	459	205	39	0	0	0	0	0	32	199	562	1081	1540	1745	1784	1784	1784
60	0	0	0	14	83	229	366	308	110	12	0	0	0	0	0	14	97	326	692	1000	1110	1122	1122	1122
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	32	143	345	519	652	605	374	169	27	0	0	1	33	176	521	1040	1692	2297	2671	2840	2867	2867

(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.
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.

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| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
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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