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: LONG VALLEY, SD **COOP ID: 394983**

Climate Division: SD 5 **NWS Call Sign:** **Elevation: 2,470 Feet** **Lat: 43˚28N** **Lon: 101˚30W**

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	35.4	10.7	23.1	73	1987	12	34.6	1990	-33+	1949	24	8.4	1979	1300	0	.0	.0	5.8	12.2	29.3	8.2
Feb	40.9	15.6	28.3	75+	1995	21	39.0	1999	-30+	1996	3	14.6	1978	1029	0	.0	.0	9.2	8.0	25.4	4.4
Mar	48.9	23.2	36.1	84	1995	11	42.6	1986	-26	1998	11	27.8	1998	898	0	.0	.0	15.4	4.2	24.9	1.3
Apr	60.2	33.3	46.8	95	1980	21	54.9	1981	6+	1997	8	40.3	1995	548	0	.0	.3	23.7	.6	14.2	.0
May	71.1	44.4	57.8	101	1969	27	63.2	1985	14	1954	3	53.1	1983	244	18	.0	1.1	30.0	.0	2.3	.0
Jun	81.5	53.9	67.7	107+	1988	24	75.4	1988	31	1951	2	61.6	1998	56	137	.7	6.3	29.9	.0	.1	.0
Jul	88.5	59.6	74.1	112	1952	24	80.5	1974	37+	1971	30	66.1	1992	15	296	3.4	14.4	31.0	.0	.0	.0
Aug	88.1	58.3	73.2	110	1980	6	77.9	1973	34	1988	28	67.2	1992	15	269	2.2	14.5	31.0	.0	.0	.0
Sep	78.3	48.6	63.5	106	1948	15	68.7	1978	17+	1984	29	58.1	1993	132	85	.6	5.7	29.6	.0	1.8	.0
Oct	64.7	37.1	50.9	97+	1963	5	54.2	1974	0+	1991	31	47.3	1972	439	0	.0	.4	26.9	.3	10.5	.1
Nov	46.7	23.5	35.1	85	1999	8	46.5	1999	-19	1985	28	20.1	1985	898	0	.0	.0	13.0	5.3	24.5	1.3
Dec	38.1	14.1	26.1	72	1948	3	36.4	1999	-38	1964	16	6.6	1983	1205	0	.0	.0	7.1	9.7	28.7	5.5
Ann	61.9	35.2	48.6	112	Jul 1952	24	80.5	Jul 1974	-38	Dec 1964	16	6.6	Dec 1983	6779	805	6.9	42.7	252.6	40.3	161.7	20.8

\+ 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: 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	.35	.26	.80	1992	7	1.53	1997	.05+	1995
Feb	.48	.30	.90	1991	18	1.88	1987	.00	1985
Mar	1.43	1.16	1.95	2000	8	4.37	1977	.10	1978
Apr	2.19	2.05	2.00	1970	12	5.55	1986	.19	1998
May	3.08	2.54	2.43	1973	27	6.98+	1996	.22	1985
Jun	3.07	2.67	4.00	1988	30	7.09	1988	.36	1987
Jul	2.78	2.85	4.00	1961	27	5.38	1976	.60	1991
Aug	1.69	1.70	3.10	1960	6	3.57	1996	.27	1971
Sep	1.40	1.06	2.14	1955	20	3.86	1996	.16	1975
Oct	1.39	1.04	2.31	1949	10	4.95	1998	.18	1976
Nov	.64	.48	.80	1977	8	1.74	1998	.03	1979
Dec	.37	.30	.76	1951	6	1.20	1993	.00	1986
Ann	18.87+	18.42+	4.00+	Jun 1988	30	7.09	Jun 1988	.00+	Dec 1986

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	1.3	.1	.0
Feb	4.2	1.5	.2	.0
Mar	6.7	3.6	1.0	.2
Apr	9.1	4.9	1.5	.3
May	9.8	6.6	2.0	.8
Jun	9.0	5.8	1.8	.7
Jul	7.8	5.4	1.9	.5
Aug	6.1	3.5	1.2	.2
Sep	5.6	3.0	1.0	.3
Oct	5.7	3.0	.8	.3
Nov	5.0	2.3	.2	.0
Dec	4.3	1.4	@	.0
Ann	77.4	42.3	11.7	3.3

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	.04	.06	.11	.16	.21	.27	.34	.42	.54	.74	.93
Feb	.01	.05	.11	.18	.26	.35	.45	.59	.78	1.09	1.40
Mar	.18	.29	.49	.69	.90	1.14	1.41	1.75	2.21	2.97	3.70
Apr	.33	.52	.83	1.13	1.45	1.79	2.19	2.67	3.32	4.37	5.38
May	.61	.89	1.34	1.76	2.18	2.62	3.13	3.74	4.55	5.85	7.08
Jun	.71	1.00	1.45	1.85	2.25	2.67	3.15	3.72	4.47	5.65	6.77
Jul	.89	1.15	1.54	1.88	2.20	2.53	2.90	3.32	3.88	4.74	5.53
Aug	.50	.66	.90	1.11	1.31	1.52	1.75	2.02	2.38	2.93	3.44
Sep	.14	.25	.44	.63	.84	1.08	1.36	1.71	2.19	2.98	3.75
Oct	.17	.28	.47	.67	.87	1.10	1.37	1.70	2.15	2.88	3.59
Nov	.08	.13	.22	.30	.40	.50	.62	.78	.98	1.32	1.64
Dec	.02	.05	.10	.15	.21	.28	.35	.45	.58	.80	1.01
Ann	11.13	12.52	14.35	15.79	17.09	18.36	19.70	21.21	23.06	25.80	28.22

\+ 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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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	4.1	2.8	2	1	8.0	1992	7	9.3	1975	13	1986	6	7	1986	3.4	2.1	.5	.1	.0	16.2	8.0	4.8	.3
Feb	5.8	5.5	2	1	9.0	1991	18	20.0	1987	15+	1987	28	11	1978	3.5	2.4	.8	.2	.0	13.0	7.6	4.2	1.1
Mar	10.9	8.5	2	1	12.0	1977	11	51.0	1977	26	1975	29	7	1977	3.9	3.0	1.4	.7	.1	9.4	6.2	3.8	1.6
Apr	5.1	2.1	#	#	12.0	1995	11	26.0	1995	18	1995	11	3	1995	2.0	1.6	.9	.3	@	2.5	1.2	.6	.3
May	.1	.0	0	0	2.0	1972	1	2.0	1972	0	0	0	0	0	.1	.1	.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	0	#	1985	29	#	1985	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	1.6	.0	#	0	8.0	1975	24	10.5	1995	6	1975	24	1	1991	.6	.6	.2	.1	.0	.7	.5	.1	.0
Nov	7.0	5.0	1	1	7.0	1973	3	28.0	1985	22	1985	30	11	1985	3.3	2.5	.9	.2	.0	8.4	4.7	2.3	.7
Dec	5.3	5.0	2	1	4.5	1994	8	12.5	1993	22	1985	3	14	1985	3.5	2.4	.7	.0	.0	15.4	8.0	5.1	1.6
Ann	39.9	28.9	N/A	N/A	12.0+	Apr 1995	11	51.0	Mar 1977	26	Mar 1975	29	14	Dec 1985	20.3	14.7	5.4	1.6	.1	65.6	36.2	20.9	5.6

+ 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	6/07	6/01	5/27	5/24	5/20	5/17	5/13	5/09	5/03
32	5/25	5/20	5/17	5/14	5/11	5/08	5/05	5/01	4/26
28	5/17	5/12	5/08	5/05	5/02	4/30	4/27	4/23	4/18
24	5/05	4/30	4/27	4/23	4/20	4/18	4/14	4/11	4/06
20	4/25	4/20	4/16	4/13	4/10	4/07	4/03	3/30	3/25
16	4/16	4/11	4/07	4/04	4/01	3/29	3/25	3/22	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	9/06	9/10	9/12	9/15	9/17	9/19	9/22	9/24	9/28
32	9/13	9/17	9/20	9/23	9/25	9/28	9/30	10/04	10/08
28	9/15	9/21	9/26	9/30	10/04	10/07	10/11	10/16	10/22
24	9/28	10/04	10/08	10/12	10/15	10/19	10/22	10/26	11/01
20	10/07	10/13	10/17	10/20	10/23	10/26	10/29	11/02	11/07
16	10/14	10/22	10/27	10/31	11/04	11/09	11/13	11/18	11/26

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	140	133	128	123	119	115	110	105	98
32	157	150	145	141	137	133	128	123	116
28	178	170	164	158	153	148	143	137	128
24	198	191	186	181	177	173	168	163	156
20	219	211	205	200	195	191	186	180	171
16	244	234	228	222	217	212	206	200	190

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1300	1029	898	548	244	56	15	15	132	439	898	1205	6779
60	1145	889	743	403	131	16	3	3	60	288	748	1050	5479
57	1053	811	650	321	82	6	0	1	32	204	666	958	4784
55	993	760	590	270	57	2	0	0	20	156	609	899	4356
50	850	628	446	161	17	0	0	0	5	67	472	755	3401
32	384	250	85	4	0	0	0	0	0	1	131	309	1164

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	107	144	210	446	797	1071	1304	1277	943	586	223	127	7235
55	2	10	2	22	141	383	591	564	272	28	11	3	2029
57	0	6	0	13	104	327	529	502	225	14	8	1	1729
60	0	0	0	5	61	247	439	411	163	4	0	0	1330
65	0	0	0	0	18	137	296	269	85	0	0	0	805
70	0	0	0	0	3	62	175	149	36	0	0	0	425

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	18	38	97	255	561	838	1062	1029	703	354	79	23	18	56	153	408	969	1807	2869	3898	4601	4955	5034	5057
45	3	10	45	152	409	689	907	874	557	233	38	5	3	13	58	210	619	1308	2215	3089	3646	3879	3917	3922
50	0	2	21	86	271	539	752	719	415	130	12	0	0	2	23	109	380	919	1671	2390	2805	2935	2947	2947
55	0	0	5	39	156	392	597	565	286	62	1	0	0	0	5	44	200	592	1189	1754	2040	2102	2103	2103
60	0	0	0	15	77	259	442	412	180	24	1	0	0	0	0	15	92	351	793	1205	1385	1409	1410	1410
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	22	43	91	190	347	530	678	655	450	251	70	24	22	65	156	346	693	1223	1901	2556	3006	3257	3327	3351

(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

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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