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: LEMMON, SD **COOP ID: 394864**

Climate Division: SD 1 **NWS Call Sign:** **Elevation: 2,567 Feet** **Lat: 45˚56N** **Lon: 102˚09W**

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	25.7	5.8	15.8	69	1981	23	29.9	1992	-33	1966	29	.9	1979	1527	0	.0	.0	1.1	19.6	30.4	11.9
Feb	32.7	12.4	22.6	70	1992	29	33.1	1984	-33	1962	28	6.6	1979	1188	0	.0	.0	3.5	13.7	27.2	6.8
Mar	42.9	20.7	31.8	81	1967	29	42.9	1986	-27	1962	1	21.8	1996	1029	0	.0	.0	10.0	8.1	28.1	2.4
Apr	57.6	32.0	44.8	93	1980	21	52.2	1977	-4	1997	8	37.2	1975	608	2	.0	.2	21.0	1.3	16.6	.1
May	69.9	43.4	56.7	96	1969	27	64.1	1977	10	1967	3	50.4	1996	281	22	.0	.3	29.5	.0	3.1	.0
Jun	78.5	52.3	65.4	102+	1988	27	76.7	1988	32+	1998	3	60.3	1998	97	109	.4	2.6	30.0	.0	@	.0
Jul	85.1	57.7	71.4	107+	1981	7	75.8	1989	40+	1972	5	63.8	1993	27	225	1.0	8.0	31.0	.0	.0	.0
Aug	84.8	56.4	70.6	105+	1960	22	76.1	1983	33	1950	19	64.9	1992	41	214	.7	8.7	31.0	.0	.0	.0
Sep	73.8	45.7	59.8	105	1978	5	66.9	1998	18	1965	26	53.7	1986	209	52	.2	2.3	28.9	.0	2.2	.0
Oct	59.9	34.6	47.3	95	1953	1	50.5+	1974	-4	1991	30	42.9	1972	549	0	.0	.1	23.5	.5	12.8	.1
Nov	40.5	20.6	30.6	82	1999	7	43.2	1999	-18	1959	16	17.8	1985	1033	0	.0	.0	7.4	9.2	27.1	2.0
Dec	29.4	9.9	19.7	67	1998	1	30.3	1999	-33+	1990	30	2.5	1983	1406	0	.0	.0	1.8	16.9	30.4	8.3
Ann	56.7	32.6	44.7	107+	Jul 1981	7	76.7	Jun 1988	-33+	Dec 1990	30	.9	Jan 1979	7995	624	2.3	22.2	218.7	69.3	177.9	31.6

\+ 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	.44	.36	.90	1997	4	.99+	1997	.05	1991
Feb	.51	.38	.68	1975	21	1.64	1979	.00	1985
Mar	.98	.78	1.42	1966	3	3.13	1987	.08	1981
Apr	1.86	1.47	2.06	1967	30	4.80	1986	.12	1988
May	2.68	2.17	3.03	1972	25	7.84	1972	.32	1984
Jun	3.09	2.96	3.17	1977	21	6.58	1976	.90	1972
Jul	2.68	2.53	3.52	1969	17	9.64	1993	.45	1988
Aug	1.90	1.81	5.04	1999	12	6.90	1999	.18	2000
Sep	1.35	.90	2.10	1996	18	5.31	1977	.16	1975
Oct	1.42	.98	1.74	1972	5	4.66	1998	.00	1978
Nov	.75	.64	2.02	2000	1	2.80	2000	.00	1999
Dec	.58	.43	1.16	1967	17	2.30	1972	.00+	1997
Ann	18.24	18.60	5.04	Aug 1999	12	9.64	Jul 1993	.00+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.6	1.6	.1	.0
Feb	5.0	1.8	.1	.0
Mar	6.5	3.0	.6	.1
Apr	7.8	5.0	1.0	.2
May	9.0	6.0	1.7	.5
Jun	9.9	6.5	1.9	.6
Jul	8.2	5.1	2.1	.7
Aug	6.8	3.7	1.0	.5
Sep	5.4	3.2	.8	.2
Oct	5.4	3.0	.9	.4
Nov	5.4	2.5	.2	@
Dec	5.1	1.8	.1	.0
Ann	80.1	43.2	10.5	3.2

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	.15	.21	.28	.35	.44	.54	.68	.91	1.14
Feb	.04	.09	.17	.25	.33	.41	.51	.63	.79	1.06	1.31
Mar	.15	.23	.37	.51	.65	.80	.98	1.20	1.49	1.97	2.43
Apr	.22	.37	.63	.89	1.16	1.47	1.83	2.27	2.88	3.87	4.83
May	.48	.72	1.11	1.48	1.85	2.25	2.71	3.26	4.00	5.19	6.33
Jun	1.11	1.40	1.82	2.17	2.50	2.85	3.23	3.66	4.22	5.08	5.87
Jul	.63	.88	1.27	1.62	1.97	2.34	2.75	3.24	3.89	4.91	5.87
Aug	.16	.29	.54	.80	1.09	1.42	1.81	2.31	3.00	4.15	5.28
Sep	.15	.25	.43	.62	.82	1.05	1.31	1.64	2.09	2.83	3.56
Oct	.05	.15	.35	.55	.78	1.04	1.34	1.73	2.27	3.17	4.07
Nov	.01	.05	.14	.25	.36	.51	.68	.90	1.21	1.75	2.29
Dec	.00	.04	.13	.22	.31	.42	.55	.72	.94	1.32	1.69
Ann	12.46	13.56	14.98	16.06	17.02	17.96	18.93	20.00	21.31	23.21	24.87

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	4.4	4.0	5	4
Feb	6.6	5.5	4	2
Mar	8.7	7.0	2	2
Apr	4.3	3.0	1	#
May	.4	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.3	.0	#	0
Oct	1.3	.0	#	#
Nov	5.7	3.5	2	1
Dec	5.4	5.0	3	2
Ann	37.1	28.0	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	6.0	1986	21	10.0	1971	20	1997	1	15	1994
Feb	7.0	1979	22	21.5	1979	20	1979	22	16	1994
Mar	10.0	1977	29	27.2	1982	22	1975	29	7	1979
Apr	11.0	1989	28	13.4	1982	29	1997	10	11	1997
May	5.0	1991	3	7.0	1996	5	1996	3	#+	2000
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	8.0	1984	23	8.5	1984	8	1984	23	1	1984
Oct	5.5	1992	15	8.0	1973	10	1991	31	1	1992
Nov	10.5	1986	7	18.4	1986	16	1996	26	9	1996
Dec	10.0	1996	14	17.8	1972	30	1996	30	21	1996
Ann	11.0	Apr 1989	28	27.2	Mar 1982	30	Dec 1996	30	21	Dec 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.8	2.4	.3	.1	.0
Feb	3.6	2.3	.8	.2	.0
Mar	3.5	2.2	.7	.4	.1
Apr	1.5	1.3	.5	.3	.1
May	.1	.1	.1	.1	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	@	@	@	.0
Oct	.6	.6	.1	.1	.0
Nov	2.8	2.0	.7	.3	.1
Dec	3.5	2.3	.6	.2	@
Ann	19.5	13.2	3.8	1.7	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	17.9	11.6	7.6	1.1
Feb	11.2	5.7	3.8	2.4
Mar	10.1	5.8	4.3	1.4
Apr	2.6	1.4	.8	.2
May	.2	.1	@	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	.1	.1	.0
Oct	.5	.2	.1	.0
Nov	7.8	4.7	3.2	.5
Dec	15.8	10.2	7.5	1.0
Ann	66.2	39.8	27.4	6.6

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

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	9/08	9/12	9/14	9/16	9/18	9/20	9/22	9/24	9/27
32	9/12	9/16	9/19	9/22	9/24	9/26	9/29	10/02	10/06
28	9/19	9/24	9/28	10/01	10/04	10/07	10/10	10/14	10/19
24	9/25	10/01	10/05	10/08	10/11	10/15	10/18	10/22	10/27
20	10/08	10/14	10/18	10/22	10/25	10/29	11/01	11/05	11/11
16	10/17	10/24	10/28	11/01	11/04	11/08	11/12	11/16	11/23

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	130	125	121	118	114	110	106	99
32	150	145	141	137	134	130	127	123	117
28	174	167	162	158	154	150	145	140	134
24	194	187	182	177	173	169	165	159	152
20	217	211	206	202	199	195	191	186	180
16	241	233	227	222	218	213	208	202	194

***** 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	1527	1188	1029	608	281	97	27	41	209	549	1033	1406	7995
60	1372	1048	874	466	168	39	8	14	116	396	883	1251	6635
57	1279	966	781	385	115	19	1	5	74	306	793	1158	5882
55	1220	918	721	335	86	12	0	3	51	249	733	1096	5424
50	1077	786	577	224	35	2	0	0	17	129	596	952	4395
32	586	374	170	19	0	0	0	0	0	3	195	462	1809

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	82	110	164	404	764	1002	1221	1196	833	476	151	79	6482
55	2	10	1	29	137	324	508	486	194	10	0	0	1701
57	0	2	0	20	104	271	448	426	156	4	0	0	1431
60	0	0	0	10	64	201	361	341	108	1	0	0	1086
65	0	0	0	2	22	109	225	214	52	0	0	0	624
70	0	0	0	0	5	46	123	117	20	0	0	0	311

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	1	10	43	191	499	747	963	934	580	257	36	2	1	11	54	245	744	1491	2454	3388	3968	4225	4261	4263
45	0	1	12	106	357	597	808	779	437	153	15	0	0	1	13	119	476	1073	1881	2660	3097	3250	3265	3265
50	0	0	3	53	224	448	653	624	304	79	3	0	0	0	3	56	280	728	1381	2005	2309	2388	2391	2391
55	0	0	0	21	121	305	498	470	190	34	0	0	0	0	0	21	142	447	945	1415	1605	1639	1639	1639
60	0	0	0	7	58	177	343	320	104	9	0	0	0	0	0	7	65	242	585	905	1009	1018	1018	1018
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	11	43	143	309	460	618	594	364	177	33	3	0	11	54	197	506	966	1584	2178	2542	2719	2752	2755

(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