

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: GLAD VALLEY 2 W, SD

1971-2000

COOP ID: 393316

Climate Division: SD 3

NWS Call Sign:

Elevation: 2,910 Feet Lat: 45° 25N

Lon: 101° 49W

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	24.8	3.2	14.0	69	1981	23	29.2	1992	-36	1966	29	-.4	1979	1580	0	.0	.0	1.4	18.9	30.8	12.0
Feb	31.0	9.8	20.4	72	1992	29	31.8	1998	-38	1994	9	3.2	1979	1249	0	.0	.0	4.2	13.5	27.6	7.0
Mar	40.6	18.7	29.7	81	1967	29	38.8	1986	-27	1980	1	20.6	1996	1096	0	.0	.0	9.6	7.4	28.2	2.4
Apr	55.3	30.1	42.7	94+	1989	22	50.7	1987	-3	1975	2	35.3	1975	669	0	.0	.2	20.4	1.5	17.2	.1
May	67.4	42.4	54.9	100	1969	27	61.9	1977	15	1967	3	49.3	1996	329	15	.0	.3	29.4	.0	2.9	.0
Jun	77.4	51.9	64.7	104	1988	24	76.2	1988	34	1982	3	58.4	1982	118	107	.2	3.0	30.0	.0	.0	.0
Jul	84.5	57.9	71.2	110	1960	20	76.1	1974	37	1967	3	62.5	1992	33	226	1.4	9.5	31.0	.0	.0	.0
Aug	83.8	55.2	69.5	109	1980	6	76.1	1983	33	1964	12	63.7	1992	59	198	.8	9.7	31.0	.0	.0	.0
Sep	72.8	44.3	58.6	105	1959	8	66.6	1998	17	1974	30	52.9	1986	236	42	.2	2.7	29.1	.0	2.4	.0
Oct	58.6	32.1	45.4	98	1963	4	49.0	1989	-7	1991	31	41.2	1976	609	0	.0	.2	24.5	.4	13.5	.1
Nov	39.8	18.7	29.3	79	1999	7	42.3	1999	-17+	1985	27	14.9	1985	1073	0	.0	.0	8.8	8.4	27.1	1.8
Dec	28.2	7.1	17.7	71	1965	4	29.2	1999	-35	1990	30	-.7	1983	1469	0	.0	.0	2.5	16.6	30.6	8.2
Ann	55.4	31.0	43.2	110	Jul 1960	20	76.2	Jun 1988	-38	Feb 1994	9	-.7	Dec 1983	8520	588	2.6	25.6	221.9	66.7	180.3	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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1949-2001

(3) Derived from 1971-2000 serially complete daily data

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NWS Call Sign:

Elevation: 2,910 Feet Lat: 45°25N

Lon: 101°49W

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	.38	.38	.84	1997	4	1.51	1997	.00+	1991	3.7	1.5	.1	.0	.00	.00	.00	.08	.19	.29	.39	.51	.66	.91	1.14
Feb	.53	.40	.86	1978	12	1.77	1978	.00+	1990	4.2	1.8	.1	.0	.00	.00	.08	.18	.28	.39	.51	.66	.88	1.22	1.55
Mar	1.03	.80	2.65	1950	23	3.06	1975	.00+	1988	5.4	2.8	.7	.1	.00	.13	.32	.49	.66	.84	1.04	1.29	1.62	2.16	2.68
Apr	2.00	1.83	2.12	1973	19	5.02	1986	.12	1981	7.5	4.3	1.1	.4	.31	.48	.77	1.05	1.33	1.65	2.00	2.44	3.02	3.97	4.88
May	3.13	3.09	2.25	1986	23	7.65	1996	.31	1994	8.6	6.1	2.1	.6	.59	.87	1.32	1.75	2.18	2.65	3.17	3.81	4.66	6.02	7.32
Jun	2.91	2.58	3.90	1994	8	6.54	1993	1.07	1980	9.0	5.8	2.2	.5	1.01	1.28	1.68	2.02	2.34	2.68	3.04	3.47	4.01	4.85	5.63
Jul	2.48	1.84	3.10	1987	18	7.60	1993	.10	1988	7.4	4.6	1.5	.6	.42	.63	1.00	1.33	1.68	2.06	2.50	3.02	3.73	4.86	5.95
Aug	1.43	1.08	1.90	1953	18	3.40	1974	.25	1971	6.1	3.5	.7	.1	.24	.36	.57	.77	.97	1.19	1.44	1.75	2.15	2.82	3.45
Sep	1.20	.80	2.13	1996	20	5.77	1996	.12	1979	5.2	3.0	.5	.2	.14	.23	.40	.56	.74	.94	1.18	1.46	1.86	2.51	3.14
Oct	1.48	1.17	2.26	1972	5	4.30	1982	.00	1978	4.9	2.9	.7	.2	.08	.22	.45	.66	.89	1.15	1.45	1.83	2.33	3.17	3.98
Nov	.56	.50	.80	1989	26	1.74	2000	.00+	1999	4.4	1.8	.1	.0	.00	.00	.11	.20	.30	.41	.54	.71	.93	1.30	1.66
Dec	.39	.29	.54	1972	30	1.22	1996	.00+	1989	3.5	1.6	.1	.0	.00	.00	.05	.13	.21	.29	.39	.50	.66	.91	1.16
Ann	17.52	18.07	3.90	Jun 1994	8	7.65	May 1996	.00+	Nov 1999	69.9	39.7	9.9	2.7	10.26	11.56	13.28	14.63	15.85	17.05	18.31	19.73	21.47	24.06	26.34

+ 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: 1949-2001

(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Station: GLAD VALLEY 2 W, SD

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Climate Division: SD 3

NWS Call Sign:

Elevation: 2,910 Feet

Lat: 45°25N

Lon: 101°49W

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	5.2	5.6	5	2	6.0	1996	18	14.5	1994	35	1986	31	31	1986	3.4	2.7	.5	.2	.0	22.0	19.4	16.4	11.0
Feb	7.2	4.8	6	#	12.0	1978	12	24.5	1978	48	1986	24	38	1986	3.5	2.7	.7	.1	@	14.0	11.4	10.2	7.1
Mar	11.0	8.8	3	1	12.0	1982	19	37.0	1982	38	1978	7	24	1978	3.5	3.1	1.3	.6	.1	12.7	10.0	8.0	5.3
Apr	6.9	6.0	#	0	18.0	1994	26	22.0	1986	24	1975	2	8	1975	1.9	1.9	.8	.3	.2	2.4	1.8	1.5	.8
May	.1	.0	0	0	3.0	1991	2	3.0	1991	0	0	0	0	0	.1	.1	@	.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	1973	15	2.0	1973	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Oct	2.2	.0	#	0	8.0	1996	27	13.5	1992	3+	1980	16	#+	1980	.7	.6	.2	.2	.0	.4	.1	.0	.0
Nov	6.6	3.8	1	#	8.0	1977	19	29.5	1985	27	1985	30	9	1985	3.2	2.6	.8	.2	.0	9.2	4.0	2.7	1.7
Dec	5.8	4.5	3	#	7.0	1972	30	13.4	1975	31	1985	20	27	1985	3.2	2.5	.6	.1	.0	15.0	10.1	5.5	2.5
Ann	45.1	33.5	N/A	N/A	18.0	Apr 1994	26	37.0	Mar 1982	48	Feb 1986	24	38	Feb 1986	19.5	16.2	4.9	1.7	.3	75.7	56.8	44.3	28.4

+ 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

Complete documentation available from:

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Climate Division: SD 3

NWS Call Sign:

Elevation: 2,910 Feet

Lat: 45° 25N

Lon: 101° 49W

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	6/11	6/05	6/01	5/28	5/24	5/21	5/17	5/12	5/06
32	5/23	5/19	5/16	5/13	5/11	5/09	5/06	5/03	4/29
28	5/18	5/13	5/09	5/05	5/02	4/29	4/26	4/22	4/17
24	5/09	5/03	4/29	4/26	4/23	4/19	4/16	4/12	4/06
20	4/28	4/22	4/18	4/14	4/10	4/07	4/03	3/29	3/23
16	4/13	4/08	4/05	4/02	3/30	3/28	3/25	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	8/31	9/05	9/08	9/11	9/14	9/16	9/19	9/23	9/28
32	9/12	9/16	9/19	9/22	9/24	9/26	9/29	10/02	10/06
28	9/16	9/21	9/24	9/27	9/30	10/03	10/05	10/09	10/14
24	9/24	9/29	10/03	10/07	10/10	10/13	10/16	10/20	10/25
20	10/01	10/07	10/12	10/15	10/19	10/22	10/26	10/30	11/06
16	10/15	10/21	10/25	10/29	11/02	11/05	11/09	11/13	11/19
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	133	126	120	116	112	108	103	98	91
32	152	146	142	139	135	132	128	124	118
28	170	163	158	154	150	145	141	136	129
24	192	184	179	174	169	165	160	154	146
20	217	208	201	196	191	186	180	174	165
16	237	230	225	220	216	211	207	201	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

Complete documentation available from:
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Station: GLAD VALLEY 2 W, SD

COOP ID: 393316

Climate Division: SD 3 NWS Call Sign: Elevation: 2,910 Feet Lat: 45° 25N Lon: 101° 49W

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	1580	1249	1096	669	329	118	33	59	236	609	1073	1469	8520
60	1425	1109	941	524	205	54	10	22	135	455	923	1314	7117
57	1332	1028	848	440	145	30	3	11	88	363	833	1221	6342
55	1270	978	786	387	111	19	1	6	63	304	773	1159	5857
50	1121	847	638	266	50	5	0	1	21	171	634	1011	4765
32	622	426	201	27	0	0	0	0	0	4	218	520	2018

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	65	102	128	348	709	980	1216	1163	797	418	135	74	6135
55	0	9	0	18	108	309	504	456	170	4	0	0	1578
57	0	4	0	11	80	259	444	399	135	2	0	0	1334
60	0	0	0	5	46	194	358	317	92	0	0	0	1012
65	0	0	0	0	15	107	226	198	42	0	0	0	588
70	0	0	0	0	3	48	127	110	16	0	0	0	304

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	42	193	495	760	986	955	582	260	45	1	0	11	53	246	741	1501	2487	3442	4024	4284	4329	4330
45	0	1	10	104	352	610	831	800	443	154	15	0	0	1	11	115	467	1077	1908	2708	3151	3305	3320	3320
50	0	1	2	52	220	461	676	645	304	80	4	0	0	1	3	55	275	736	1412	2057	2361	2441	2445	2445
55	0	0	0	23	123	317	521	492	190	28	0	0	0	0	0	23	146	463	984	1476	1666	1694	1694	1694
60	0	0	0	7	54	192	369	339	105	7	0	0	0	0	0	7	61	253	622	961	1066	1073	1073	1073
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	16	40	139	303	472	634	607	370	182	40	3	0	16	56	195	498	970	1604	2211	2581	2763	2803	2806

(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