

Climatology of the United States

No. 20

1971-2000

Station: WINNER, SD

COOP ID: 399367

Climate Division: SD 8

NWS Call Sign:

Elevation: 2,010 Feet Lat: 43° 22N

Lon: 99° 52W

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	33.5	11.9	22.7	73	1981	24	36.1	1990	-27	1966	29	6.1	1978	1312	0	.0	.0	4.6	13.3	29.2	8.1
Feb	39.7	17.4	28.6	75+	1995	21	38.3	1999	-27	1996	2	12.3	1978	1020	0	.0	.0	8.6	9.4	24.8	4.1
Mar	49.8	25.5	37.7	88	1978	30	45.2	1986	-18+	1998	11	28.4	1996	847	0	.0	.0	16.1	3.8	22.6	1.0
Apr	62.2	36.1	49.2	99	1980	21	57.1	1981	7	1997	8	42.0	1995	481	5	.0	.5	24.8	.4	11.0	.0
May	73.6	47.6	60.6	99+	1969	27	66.5	1987	20	1981	10	54.7	1995	186	48	.0	1.7	30.6	.0	1.4	.0
Jun	83.5	57.2	70.4	109	1988	24	79.2	1988	34	1998	3	64.6	1998	36	196	.9	7.9	30.0	.0	.0	.0
Jul	90.0	62.5	76.3	111	1964	23	82.0	1974	40+	1972	3	67.5	1992	9	358	4.0	16.6	31.0	.0	.0	.0
Aug	88.7	61.0	74.9	112	1965	13	81.2	1983	39+	1964	12	68.1	1992	14	319	2.7	15.0	31.0	.0	.0	.0
Sep	79.7	50.9	65.3	105	1979	9	72.6	1998	24	1965	26	60.6	1993	92	101	.7	6.7	29.8	.0	.7	.0
Oct	65.7	39.3	52.5	96+	1997	2	56.5	1974	6	1991	30	48.6	1976	388	1	.0	.6	27.7	.3	7.1	.0
Nov	45.8	25.4	35.6	86	1999	7	47.6	1999	-12	1959	14	21.0	1985	881	0	.0	.0	12.3	5.3	22.5	1.1
Dec	36.0	15.2	25.6	74	1998	1	34.7	1979	-29	1989	22	7.4	1983	1221	0	.0	.0	5.7	11.5	29.3	5.1
Ann	62.4	37.5	50.0	112	Aug 1965	13	82.0	Jul 1974	-29	Dec 1989	22	6.1	Jan 1978	6487	1028	8.3	49.0	252.2	44.0	148.6	19.4

+ 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

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: WINNER, SD

COOP ID: 399367

Climate Division: SD 8

NWS Call Sign:

Elevation: 2,010 Feet Lat: 43°22N

Lon: 99°52W

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	.53	.46	1.20	1988	19	1.30	1996	.00	1989	4.3	1.7	.1	@	.05	.11	.20	.28	.35	.44	.53	.65	.81	1.06	1.29
Feb	.63	.42	1.60	1977	23	2.00	1977	.10	1982	4.5	1.8	.2	.1	.07	.12	.21	.30	.39	.49	.62	.77	.97	1.31	1.64
Mar	1.73	1.33	3.10	1948	5	6.87	1977	.12	2000	6.1	4.4	1.1	.3	.19	.32	.56	.80	1.06	1.35	1.69	2.11	2.68	3.63	4.56
Apr	2.63	2.40	2.65	1995	18	6.39	1995	.56	1996	8.2	6.0	1.9	.4	.63	.87	1.26	1.60	1.94	2.30	2.70	3.18	3.81	4.81	5.74
May	3.85	3.45	3.42	1991	16	9.02	1991	.26	1992	9.8	7.5	2.4	1.1	.74	1.09	1.65	2.17	2.70	3.27	3.91	4.69	5.71	7.36	8.93
Jun	3.38	2.96	5.00	1977	12	5.83	1994	1.15	1976	9.0	6.2	2.2	.9	1.32	1.64	2.08	2.45	2.80	3.16	3.54	3.99	4.55	5.42	6.21
Jul	3.30	3.00	4.35	1958	3	7.32	1992	.92	1991	8.8	6.8	2.4	.8	1.18	1.49	1.94	2.31	2.67	3.04	3.44	3.91	4.51	5.43	6.28
Aug	2.17	2.08	4.01	1949	18	4.77	1980	.40	2000	7.0	4.6	1.4	.6	.54	.74	1.06	1.34	1.61	1.91	2.23	2.62	3.13	3.93	4.68
Sep	2.09	1.26	2.60	1951	8	7.67	1986	.25	1972	5.9	4.3	1.4	.4	.23	.39	.69	.98	1.29	1.64	2.05	2.56	3.25	4.39	5.50
Oct	1.91	1.63	2.45	1997	12	5.90	1998	.03	1992	5.5	3.4	1.5	.4	.10	.21	.43	.69	.98	1.33	1.76	2.31	3.08	4.39	5.71
Nov	.96	1.02	1.92	1956	2	2.13	1983	.05	1984	4.8	2.7	.4	.1	.14	.22	.36	.50	.64	.79	.96	1.18	1.47	1.93	2.38
Dec	.54	.44	.85	1964	25	1.46	1996	.00	1986	4.5	2.1	.1	.0	.04	.10	.18	.26	.35	.43	.54	.66	.83	1.11	1.37
Ann	23.72	23.58	5.00	Jun 1977	12	9.02	May 1991	.00+	Jan 1989	78.4	51.5	15.1	5.1	14.80	16.44	18.58	20.24	21.74	23.20	24.73	26.44	28.53	31.61	34.32

+ 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: WINNER, SD

COOP ID: 399367

Climate Division: SD 8

NWS Call Sign:

Elevation: 2,010 Feet

Lat: 43°22N

Lon: 99°52W

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	6.4	5.3	2	2	12.0	1988	19	16.5	1979	13	1982	24	6	1988	3.2	2.6	1.0	.3	.1	17.8	11.0	4.5	.7
Feb	7.1	5.8	2	1	12.0	1971	19	16.0+	1978	15	1978	17	9	1978	3.8	3.1	1.0	.3	.1	12.1	8.2	3.7	1.2
Mar	9.4	7.5	1	1	11.0	1987	25	27.5	1987	16+	1987	25	5	1977	2.8	2.7	1.0	.7	.1	7.0	4.3	2.8	.7
Apr	4.7	.0	#	0	28.0	1995	18	51.5	1995	8	1982	8	1	1982	1.0	.9	.6	.3	.1	.9	.4	.1	.0
May	.1	.0	0	0	1.5	1979	10	1.5	1979	0	0	0	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	.2	.0	0	0	6.0	1985	28	6.0	1985	0	0	0	0	0	@	@	@	@	.0	.0	.0	.0	.0
Oct	2.3	.0	#	0	15.0	1995	23	22.5	1995	7	1972	30	#+	1999	.6	.5	.2	.1	@	.4	.2	.1	.0
Nov	7.7	6.0	1	#	9.0	1996	16	29.0	1985	16	1985	30	7	1985	3.1	2.8	1.3	.6	.0	5.6	3.4	2.5	.6
Dec	7.6	7.3	1	1	11.0	1989	10	18.0	1989	15	1985	4	9	1983	3.6	3.1	1.0	.2	@	12.5	7.9	4.7	1.4
Ann	45.5	31.9	N/A	N/A	28.0	Apr 1995	18	51.5	Apr 1995	16+	Mar 1987	25	9+	Dec 1983	18.1	15.7	6.1	2.5	.4	56.3	35.4	18.4	4.6

+ 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

Complete documentation available from:

www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

Climatography of the United States

No. 20 1971-2000

Station: WINNER, SD

COOP ID: 399367

Climate Division: SD 8

NWS Call Sign:

Elevation: 2,010 Feet

Lat: 43° 22N

Lon: 99° 52W

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	5/26	5/21	5/17	5/14	5/11	5/09	5/05	5/02	4/27
32	5/19	5/14	5/11	5/08	5/05	5/02	4/29	4/26	4/21
28	5/09	5/04	4/30	4/27	4/24	4/21	4/17	4/14	4/08
24	4/30	4/24	4/20	4/16	4/13	4/10	4/06	4/02	3/27
20	4/21	4/16	4/12	4/09	4/06	4/03	3/30	3/26	3/21
16	4/10	4/06	4/02	3/30	3/27	3/24	3/21	3/18	3/13
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	9/11	9/15	9/18	9/20	9/22	9/24	9/27	9/29	10/03
32	9/17	9/22	9/26	9/30	10/03	10/06	10/09	10/13	10/18
28	9/27	10/02	10/06	10/09	10/12	10/15	10/18	10/22	10/27
24	10/07	10/12	10/16	10/19	10/22	10/24	10/28	10/31	11/05
20	10/13	10/19	10/24	10/28	10/31	11/04	11/08	11/13	11/19
16	10/25	10/31	11/04	11/07	11/11	11/14	11/17	11/21	11/27
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	150	144	140	136	133	130	126	122	116
32	172	165	159	155	150	146	141	136	128
28	194	186	180	175	171	166	162	156	148
24	214	206	200	195	191	186	182	176	168
20	237	227	220	214	208	202	196	189	179
16	252	244	238	233	228	223	218	212	203

* 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:
www.ncdc.noaa.gov/oa/climate/normal/usnormals.html

**Climatography
of the United States
No. 20
1971-2000**

Station: WINNER, SD

COOP ID: 399367

Climate Division: SD 8

NWS Call Sign:

Elevation: 2,010 Feet Lat: 43° 22N Lon: 99° 52W

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	1312	1020	847	481	186	36	9	14	92	388	881	1221	6487
60	1158	884	692	344	96	10	0	2	33	241	736	1066	5262
57	1069	807	601	271	59	3	0	0	15	167	652	974	4618
55	1012	754	543	226	40	1	0	0	8	125	596	914	4219
50	868	625	401	134	12	0	0	0	0	55	463	771	3329
32	414	258	70	4	0	0	0	0	0	1	132	324	1203

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	125	162	247	518	886	1150	1372	1328	999	636	241	126	7790
55	10	14	6	50	213	461	659	615	317	48	15	3	2411
57	5	11	2	35	170	403	597	553	264	28	11	1	2080
60	1	4	0	18	114	320	504	462	193	9	5	0	1630
65	0	0	0	5	48	196	358	319	101	1	0	0	1028
70	0	0	0	0	15	104	225	194	44	0	0	0	582

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	15	44	123	316	646	917	1134	1089	767	414	89	20	15	59	182	498	1144	2061	3195	4284	5051	5465	5554	5574
45	3	18	65	202	492	767	979	934	619	283	44	4	3	21	86	288	780	1547	2526	3460	4079	4362	4406	4410
50	0	1	30	120	350	617	824	779	474	174	16	0	0	1	31	151	501	1118	1942	2721	3195	3369	3385	3385
55	0	0	8	67	222	469	669	624	338	93	4	0	0	0	8	75	297	766	1435	2059	2397	2490	2494	2494
60	0	0	0	29	124	328	514	471	221	42	0	0	0	0	0	29	153	481	995	1466	1687	1729	1729	1729
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	15	39	97	217	405	592	735	707	483	269	67	15	15	54	151	368	773	1365	2100	2807	3290	3559	3626	3641

(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.

- | | |
|---|---|
| <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 |
|---|---|

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