

Climatology of the United States

No. 20

1971-2000

Station: BISON, SD

COOP ID: 390701

Climate Division: SD 3

NWS Call Sign:

Elevation: 2,780 Feet Lat: 45° 32N

Lon: 102° 28W

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	27.5	6.8	17.2	67	1981	23	31.4	1992	-30	1954	20	2.5	1979	1484	0	.0	.0	1.5	17.8	30.3	11.0
Feb	34.0	13.4	23.7	71+	1992	29	34.1	1999	-31	1989	3	9.1	1979	1157	0	.0	.0	4.6	12.2	27.1	6.1
Mar	43.7	21.6	32.7	80	1967	29	41.3	1986	-28	1980	1	23.4	1996	1003	0	.0	.0	11.1	6.9	27.3	2.2
Apr	57.7	32.6	45.2	92	1980	21	52.4	1987	-6	1954	2	38.0	1975	597	1	.0	.1	22.1	1.2	16.5	.1
May	69.5	43.7	56.6	94	1958	29	62.7	1977	14	1967	3	50.8	1996	278	18	.0	.4	29.9	.0	3.2	.0
Jun	78.9	53.0	66.0	104	1974	26	75.8	1988	28	1985	2	60.2	1993	87	115	.3	3.2	29.9	.0	.1	.0
Jul	86.0	58.4	72.2	107+	1989	8	76.8	1974	38	1950	13	63.4	1992	26	248	1.2	10.0	31.0	.0	.0	.0
Aug	86.2	56.9	71.6	107	1960	22	77.0	1983	33	1950	18	65.1	1992	33	235	.8	10.5	31.0	.0	.0	.0
Sep	74.8	46.5	60.7	107	1960	3	68.3	1998	20	1983	22	54.6	1984	190	59	.2	2.7	29.3	.0	2.3	.0
Oct	60.5	35.3	47.9	92	1997	2	51.2	1979	-7	1991	30	43.8	1976	531	0	.0	.1	24.8	.5	12.5	.1
Nov	41.3	21.2	31.3	81	1999	7	43.6	1999	-17+	1985	27	17.6	1985	1012	0	.0	.0	8.5	8.4	26.0	1.8
Dec	30.9	10.5	20.7	69	1979	4	31.2	1999	-34	1983	24	2.5	1983	1372	0	.0	.0	2.3	15.5	30.3	7.5
Ann	57.6	33.3	45.5	107+	Jul 1989	8	77.0	Aug 1983	-34	Dec 1983	24	2.5+	Dec 1983	7770	676	2.5	27.0	226.0	62.5	175.6	28.8

+ 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/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

007-A

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: BISON, SD

COOP ID: 390701

Climate Division: SD 3

NWS Call Sign:

Elevation: 2,780 Feet Lat: 45°32N

Lon: 102°28W

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	.44	.35	1.13	1997	4	1.55	1997	.00+	1987	3.3	1.9	.1	@	.00	.05	.13	.20	.27	.35	.44	.55	.70	.95	1.19
Feb	.49	.41	.80	1998	26	2.35	1998	.00+	1985	3.5	2.0	.1	.0	.00	.02	.09	.16	.24	.34	.46	.60	.81	1.16	1.52
Mar	1.21	.89	2.40	1950	27	3.96	1989	.00	1981	5.2	3.3	.6	.2	.09	.22	.42	.60	.78	.98	1.21	1.49	1.87	2.48	3.07
Apr	2.11	2.16	3.24	1967	30	5.30	1986	.25	1987	6.9	4.9	1.3	.3	.36	.54	.85	1.14	1.43	1.76	2.12	2.57	3.17	4.13	5.06
May	2.72	2.41	2.10	1982	20	7.28	1996	.09	1994	7.5	5.8	2.2	.5	.39	.62	1.01	1.39	1.78	2.22	2.72	3.33	4.15	5.49	6.78
Jun	2.82	2.48	2.90	1969	25	5.81	1993	1.15	1974	8.5	6.6	1.7	.6	1.04	1.31	1.69	2.00	2.30	2.61	2.95	3.34	3.84	4.60	5.30
Jul	2.27	1.72	2.55	1993	16	9.31	1993	.23	1975	7.3	5.1	1.4	.5	.34	.53	.86	1.18	1.50	1.86	2.27	2.77	3.44	4.53	5.58
Aug	1.47	1.43	3.32	1999	12	4.46	1999	.11	1990	5.1	3.2	.9	.2	.18	.29	.50	.71	.92	1.17	1.45	1.80	2.27	3.06	3.82
Sep	1.20	.78	1.94	1996	18	4.18	1977	.10	1979	4.3	3.0	.7	.2	.11	.20	.36	.53	.71	.92	1.16	1.47	1.89	2.59	3.28
Oct	1.46	1.08	1.99	1994	6	5.48	1982	.00+	1993	3.9	2.9	1.0	.4	.00	.00	.28	.53	.78	1.07	1.41	1.83	2.40	3.36	4.30
Nov	.57	.39	1.00	1977	20	1.65	1977	.00	1999	3.5	2.0	.3	@	.02	.06	.14	.22	.31	.41	.54	.69	.91	1.27	1.62
Dec	.50	.36	.86	1971	7	1.89	1972	.00+	1997	3.2	1.7	.2	.0	.00	.00	.04	.12	.21	.31	.44	.61	.84	1.24	1.64
Ann	17.26	17.45	3.32	Aug 1999	12	9.31	Jul 1993	.00+	Nov 1999	62.2	42.4	10.5	2.9	9.94	11.25	12.98	14.33	15.57	16.78	18.06	19.49	21.26	23.89	26.22

+ 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

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

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No. 20

1971-2000

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Station: BISON, SD

COOP ID: 390701

Climate Division: SD 3

NWS Call Sign:

Elevation: 2,780 Feet

Lat: 45° 32N

Lon: 102° 28W

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	4.0	3.0	2	#	8.0	1997	4	13.0+	1977	12	1978	29	11	1978	2.5	2.3	.7	.2	.0	-9.9	-9.9	-9.9	-9.9
Feb	5.6	5.3	2	#	7.0	1998	26	16.5	1979	21	1978	20	15	1978	2.8	2.4	.8	.1	.0	-9.9	-9.9	-9.9	-9.9
Mar	7.3	5.5	1	0	9.5	1977	29	24.0	1982	15	1982	20	10	1988	3.2	2.7	.9	.4	.0	-9.9	-9.9	-9.9	-9.9
Apr	4.4	3.8	0	0	12.0	1994	26	14.0+	1994	12	1989	28	1	1989	1.1	1.1	.8	.3	@	-9.9	-9.9	-9.9	-9.9
May	.3	.0	0	0	6.0	1991	3	6.0	1991	0	0	0	0	0	.1	.1	@	@	.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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	1.0	.0	#	0	7.0	1999	1	8.0	1999	5	1973	11	#+	1996	.3	.3	.2	.1	.0	.3	.2	.1	.0
Nov	4.0	1.8	#	0	6.0	1977	20	15.5	1985	16	1985	30	5	1978	1.9	1.8	.6	.2	.0	-9.9	-9.9	-9.9	-9.9
Dec	4.3	2.5	2	0	12.0	1996	14	12.0	1983	22	1985	31	20	1985	2.2	2.1	.5	.2	@	-9.9	-9.9	-9.9	-9.9
Ann	30.9	21.9	N/A	N/A	12.0+	Dec 1996	14	24.0	Mar 1982	22	Dec 1985	31	20	Dec 1985	14.1	12.8	4.5	1.5	@	-9.9	-9.9	-9.9	-9.9

+ 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: 2,780 Feet

Lat: 45° 32N

Lon: 102° 28W

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	6/09	6/03	5/30	5/26	5/22	5/19	5/15	5/11	5/05
32	5/27	5/21	5/17	5/14	5/11	5/08	5/05	5/01	4/25
28	5/18	5/13	5/09	5/06	5/03	4/30	4/26	4/23	4/17
24	5/04	4/30	4/26	4/23	4/21	4/18	4/15	4/12	4/07
20	4/22	4/17	4/14	4/11	4/08	4/06	4/03	3/30	3/26
16	4/15	4/10	4/07	4/04	4/01	3/29	3/26	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	9/08	9/11	9/13	9/15	9/16	9/18	9/20	9/22	9/25
32	9/10	9/15	9/18	9/21	9/23	9/26	9/29	10/02	10/06
28	9/18	9/23	9/27	10/01	10/04	10/07	10/11	10/14	10/20
24	9/28	10/03	10/07	10/10	10/13	10/16	10/19	10/23	10/28
20	10/06	10/11	10/15	10/19	10/22	10/25	10/29	11/02	11/07
16	10/18	10/24	10/29	11/01	11/05	11/09	11/13	11/17	11/24
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	129	124	120	116	112	108	103	96
32	156	148	143	139	135	130	126	121	114
28	176	168	163	158	154	149	145	139	131
24	197	189	184	179	174	170	165	160	152
20	218	211	205	200	196	192	187	181	174
16	243	234	228	223	218	212	207	201	192

* 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: BISON, SD

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Climate Division: SD 3 NWS Call Sign: Elevation: 2,780 Feet Lat: 45° 32N Lon: 102° 28W

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	1484	1157	1003	597	278	87	26	33	190	531	1012	1372	7770
60	1329	1017	848	454	162	33	8	10	101	377	862	1217	6418
57	1236	938	755	373	108	16	2	4	62	288	772	1124	5678
55	1176	887	694	322	79	9	0	2	42	232	718	1063	5224
50	1033	756	549	210	30	1	0	0	12	115	577	921	4204
32	544	352	145	14	0	0	0	0	0	2	188	443	1688

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	83	119	166	408	762	1018	1245	1225	860	494	166	94	6640
55	2	11	1	26	129	337	532	514	211	11	6	0	1780
57	0	6	0	17	96	283	471	454	171	5	0	0	1503
60	0	0	0	8	56	210	384	368	120	1	0	0	1147
65	0	0	0	1	18	115	248	235	59	0	0	0	676
70	0	0	0	0	3	50	141	132	23	0	0	0	349

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	16	52	205	501	766	983	962	607	277	44	7	1	17	69	274	775	1541	2524	3486	4093	4370	4414	4421
45	0	2	17	116	356	617	828	807	461	166	17	0	0	2	19	135	491	1108	1936	2743	3204	3370	3387	3387
50	0	0	3	58	224	467	673	652	325	85	5	0	0	0	3	61	285	752	1425	2077	2402	2487	2492	2492
55	0	0	0	23	123	326	518	498	208	35	0	0	0	0	0	23	146	472	990	1488	1696	1731	1731	1731
60	0	0	0	7	53	194	364	346	118	8	0	0	0	0	0	7	60	254	618	964	1082	1090	1090	1090
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	16	49	150	312	476	633	612	384	191	36	4	0	16	65	215	527	1003	1636	2248	2632	2823	2859	2863

(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