

Climatology of the United States

No. 20

1971-2000

Station: MURDO, SD

COOP ID: 395891

Climate Division: SD 6

NWS Call Sign:

Elevation: 2,320 Feet Lat: 43° 53N

Lon: 100° 42W

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	29.8	7.9	18.9	75	1974	16	31.1	1990	-31	1966	29	3.9	1978	1430	0	.0	.0	3.3	15.3	30.2	9.5
Feb	36.3	13.4	24.9	74	1982	21	36.3	1999	-28	1994	9	7.8	1978	1124	0	.0	.0	7.2	10.7	26.7	5.2
Mar	46.0	23.1	34.6	87	1978	30	41.2	2000	-21	1960	4	23.9	1996	944	0	.0	.0	14.2	5.1	25.7	1.4
Apr	58.5	34.2	46.4	102	1962	25	53.9+	1987	5	1997	8	40.2	1983	562	2	.0	.3	23.0	.7	13.6	.0
May	69.8	45.5	57.7	100	1969	27	63.7	1987	19+	1967	3	52.9	1983	255	26	.0	1.1	30.0	.0	1.4	.0
Jun	80.0	55.1	67.6	108	1974	20	75.8	1988	32+	1998	3	61.9	1993	63	140	.5	5.5	30.0	.0	@	.0
Jul	87.5	60.8	74.2	112+	1966	10	80.6	1974	41+	1971	30	66.5	1992	16	300	3.3	14.2	31.0	.0	.0	.0
Aug	86.3	59.5	72.9	111	1959	18	79.3	1983	41	1962	28	66.1	1992	21	266	2.5	13.3	31.0	.0	.0	.0
Sep	76.6	49.2	62.9	106	1971	2	69.8	1998	22	1995	22	57.3	1993	146	82	.8	5.5	29.5	.0	1.1	.0
Oct	62.1	37.0	49.6	99	1963	4	52.2	1974	0	1991	30	45.1	1972	479	0	.0	.5	26.2	.3	9.1	@
Nov	42.9	22.0	32.5	85	1999	9	45.2	1999	-21	1959	14	16.9	1985	977	0	.0	.0	10.9	6.4	25.3	1.2
Dec	32.4	11.4	21.9	71	1998	2	32.5	1999	-29+	1990	30	4.2	1983	1336	0	.0	.0	4.3	13.1	30.3	5.8
Ann	59.0	34.9	47.0	112+	Jul 1966	10	80.6	Jul 1974	-31	Jan 1966	29	3.9	Jan 1978	7353	816	7.1	40.4	240.6	51.6	163.4	23.1

+ 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: MURDO, SD

COOP ID: 395891

Climate Division: SD 6

NWS Call Sign:

Elevation: 2,320 Feet Lat: 43°53N

Lon: 100°42W

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	.46	.37	1.11	1997	4	1.50	1997	.00+	1989	3.9	1.5	.1	@	.00	.00	.09	.17	.25	.34	.44	.57	.75	1.04	1.33
Feb	.55	.40	1.35	1991	18	2.14	1987	.01	1985	3.2	1.7	.2	.1	.02	.05	.11	.18	.27	.37	.49	.65	.88	1.28	1.68
Mar	1.67	1.35	1.93	1998	29	6.08	1977	.05	1978	5.7	3.8	1.0	.4	.13	.24	.46	.69	.94	1.24	1.59	2.03	2.64	3.66	4.67
Apr	2.24	1.71	2.48	1971	20	5.94	1978	.00	1992	7.6	5.1	1.5	.4	.15	.38	.74	1.07	1.41	1.79	2.23	2.76	3.49	4.67	5.81
May	2.98	2.87	2.72	1983	1	6.43	1982	.55	1985	9.1	6.5	1.8	.6	.97	1.25	1.67	2.02	2.36	2.72	3.11	3.56	4.14	5.05	5.89
Jun	3.33	2.96	3.50	1991	2	6.61	1997	.48	1973	9.4	6.5	2.2	.8	.72	1.03	1.52	1.96	2.40	2.88	3.41	4.05	4.89	6.23	7.50
Jul	2.79	2.54	2.70	1962	13	6.47	1981	.36	1988	7.6	5.7	2.0	.7	.63	.89	1.30	1.67	2.03	2.42	2.86	3.39	4.08	5.18	6.21
Aug	1.63	1.66	2.81	1999	30	3.88	1999	.24	1989	5.8	3.7	.9	.3	.32	.47	.71	.93	1.15	1.39	1.66	1.98	2.41	3.10	3.76
Sep	1.25	.77	2.60	1989	20	4.64	1996	.00+	1979	4.5	2.8	.9	.2	.00	.08	.28	.47	.68	.92	1.20	1.54	2.03	2.83	3.63
Oct	1.64	1.34	3.50	1949	10	4.14	1982	.06	1978	4.8	3.3	1.1	.4	.19	.32	.55	.78	1.02	1.29	1.61	2.00	2.53	3.41	4.26
Nov	.76	.74	1.68	1956	2	2.32	1985	.00	1975	4.6	2.3	.4	@	.03	.09	.21	.32	.44	.57	.74	.94	1.22	1.68	2.13
Dec	.47	.40	.90	1994	15	1.33	1994	.04	1986	4.4	1.5	.1	.0	.06	.10	.17	.23	.30	.38	.47	.58	.72	.96	1.20
Ann	19.77+	19.93+	3.50+	Jun 1991	2	6.61	Jun 1997	.00+	Apr 1992	70.6	44.4	12.2	3.9	11.95	13.37	15.24	16.69	18.00	19.29	20.64	22.15	24.00	26.75	29.16

+ 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

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Station: MURDO, SD

COOP ID: 395891

Climate Division: SD 6

NWS Call Sign:

Elevation: 2,320 Feet

Lat: 43° 53N

Lon: 100° 42W

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	5.4	4.5	2	2	8.0	1996	18	16.8	1996	14	1997	1	7	1997	3.4	2.3	.7	.2	.0	20.8	12.8	7.4	.0
Feb	5.8	3.0	2	#	14.0	1991	18	24.5	1987	29	1978	19	18	1978	2.2	1.7	.6	.3	.1	6.2	3.3	1.9	.0
Mar	9.7	7.5	1	#	12.0	1995	27	30.0	1987	26	1975	29	11	1978	3.1	2.6	1.2	.6	.1	7.7	4.8	3.6	1.8
Apr	4.4	3.0	#	0	10.0	1995	11	39.0	1995	22	1975	1	3	1975	1.2	1.2	.7	.3	.1	1.9	1.3	.7	.2
May	.2	.0	#	0	3.0	1979	9	5.0	1979	#	1995	3	#	1995	.1	.1	@	.0	.0	.0	.0	.0	.0
Jun	.1	.0	#	0	2.0	1998	3	2.0	1998	2	1998	3	#	1998	@	@	.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	2.5	1985	28	2.5	1985	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Oct	1.0	.0	#	0	6.0	1975	24	9.0	1975	4+	1979	31	1	1971	.4	.3	.1	.1	.0	.4	.1	.0	.0
Nov	7.0	4.2	1	#	7.0	1993	13	32.5	1985	10	1996	28	4+	2000	3.0	2.3	.9	.4	.0	5.6	3.0	1.1	.2
Dec	6.2	6.6	2	#	11.0	1994	15	14.8	1983	18	1996	31	11	1996	3.4	2.2	.6	.2	@	5.1	.5	.1	.0
Ann	39.9	28.8	N/A	N/A	14.0	Feb 1991	18	39.0	Apr 1995	29	Feb 1978	19	18	Feb 1978	16.8	12.7	4.8	2.1	.3	47.7	25.8	14.8	2.2

+ 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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Station: MURDO, SD

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Climate Division: SD 6

NWS Call Sign:

Elevation: 2,320 Feet

Lat: 43° 53N

Lon: 100° 42W

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	5/18	5/15	5/13	5/10	5/08	5/04	4/30
32	5/20	5/15	5/11	5/08	5/06	5/03	4/30	4/27	4/22
28	5/09	5/04	5/01	4/28	4/26	4/23	4/20	4/17	4/12
24	4/28	4/23	4/19	4/16	4/13	4/10	4/07	4/04	3/30
20	4/17	4/13	4/09	4/06	4/04	4/01	3/29	3/26	3/21
16	4/11	4/06	4/02	3/30	3/27	3/24	3/21	3/17	3/12
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	9/10	9/14	9/17	9/20	9/22	9/25	9/28	10/01	10/05
32	9/18	9/23	9/27	9/30	10/02	10/05	10/08	10/12	10/16
28	9/22	9/28	10/02	10/06	10/09	10/12	10/15	10/19	10/25
24	10/05	10/10	10/14	10/17	10/20	10/23	10/27	10/30	11/05
20	10/13	10/19	10/23	10/26	10/30	11/02	11/06	11/10	11/15
16	10/22	10/28	11/01	11/05	11/08	11/11	11/15	11/19	11/25
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	151	144	140	136	132	128	124	119	113
32	166	160	156	152	149	145	142	138	132
28	188	180	175	170	165	161	156	150	142
24	209	202	197	193	189	185	181	176	169
20	231	223	218	213	209	204	199	194	186
16	250	242	236	230	226	221	216	209	201

* 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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Climate Division: SD 6 NWS Call Sign: Elevation: 2,320 Feet Lat: 43° 53N Lon: 100° 42W

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	1430	1124	944	562	255	63	16	21	146	479	977	1336	7353
60	1275	986	789	420	147	20	3	5	69	326	827	1181	6048
57	1183	910	696	340	98	9	0	2	39	239	738	1088	5342
55	1122	858	636	291	72	4	0	1	24	185	685	1027	4905
50	976	728	492	185	28	0	0	0	6	82	545	884	3926
32	491	336	114	9	0	0	0	0	0	1	171	408	1530

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	84	136	193	440	794	1067	1307	1268	926	545	184	95	7039
55	2	14	2	32	153	382	594	555	260	16	8	1	2019
57	0	10	0	21	117	326	532	494	215	8	1	0	1724
60	0	1	0	10	73	248	442	404	156	2	0	0	1336
65	0	0	0	2	26	140	300	266	82	0	0	0	816
70	0	0	0	0	6	65	179	152	36	0	0	0	438

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	7	31	80	255	573	844	1081	1041	704	346	69	6	7	38	118	373	946	1790	2871	3912	4616	4962	5031	5037
45	1	6	36	152	425	694	926	886	557	222	27	1	1	7	43	195	620	1314	2240	3126	3683	3905	3932	3933
50	0	1	12	85	281	544	771	731	415	125	10	0	0	1	13	98	379	923	1694	2425	2840	2965	2975	2975
55	0	0	2	39	166	398	616	576	290	56	2	0	0	0	2	41	207	605	1221	1797	2087	2143	2145	2145
60	0	0	0	14	87	262	462	424	183	19	0	0	0	0	0	14	101	363	825	1249	1432	1451	1451	1451
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	9	33	74	183	352	537	694	665	443	232	62	12	9	42	116	299	651	1188	1882	2547	2990	3222	3284	3296

(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