

# Climatography of the United States

No. 20

1971-2000

Station: RALPH 1 N, SD

COOP ID: 396907

Climate Division: SD 1

NWS Call Sign:

Elevation: 2,790 Feet Lat: 45°47N

Lon: 103°04W

## 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	27.0	4.4	15.7	69+	1992	31	30.2	1992	-42	1949	21	.6	1979	1529	0	.0	.0	1.7	16.8	30.7	12.0
Feb	33.8	10.8	22.3	72	1992	1	33.7	1999	-37	1994	9	5.3	1979	1196	0	.0	.0	5.0	11.3	27.8	6.5
Mar	43.7	19.1	31.4	79+	1997	31	40.6	1986	-34	1998	11	21.1	1975	1042	0	.0	.0	11.9	6.1	28.6	2.9
Apr	57.3	29.7	43.5	95	1980	21	50.6	1987	-8	1997	8	35.9	1975	645	0	.0	.1	22.1	1.0	19.0	.1
May	68.8	40.6	54.7	95	1969	27	62.9	1977	4	1967	3	49.2	1996	332	14	.0	.5	29.8	.0	5.4	.0
Jun	78.0	49.4	63.7	104	1979	13	74.4	1988	26	1964	2	57.9	1998	121	81	.2	2.9	30.0	.0	.4	.0
Jul	85.4	54.4	69.9	112	1981	7	74.2	1989	32+	1972	4	63.0	1993	38	190	1.5	10.1	31.0	.0	.1	.0
Aug	85.5	52.6	69.1	107	1958	9	75.7	1983	28	1964	12	62.7	1977	59	183	.8	10.8	31.0	.0	.1	.0
Sep	74.1	41.4	57.8	105+	1978	6	64.9	1998	14+	1995	22	53.0	1986	251	34	.3	2.7	29.2	.0	4.6	.0
Oct	60.2	30.6	45.4	95	1963	4	48.7	1973	-12	1991	30	41.1	1976	608	0	.0	.2	25.1	.4	17.6	.2
Nov	41.3	17.3	29.3	82	1999	7	40.2	1999	-22	1966	9	14.9	1985	1072	0	.0	.0	9.0	8.0	28.3	2.8
Dec	30.5	7.4	19.0	66	1998	1	29.9	1999	-37	1989	22	.9	1983	1427	0	.0	.0	2.8	14.5	30.7	8.9
Ann	57.1	29.8	43.5	112	Jul 1981	7	75.7	Aug 1983	-42	Jan 1949	21	.6	Jan 1979	8320	502	2.8	27.3	228.6	58.1	193.3	33.4

+ 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](http://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

084-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: RALPH 1 N, SD

COOP ID: 396907

Climate Division: SD 1

NWS Call Sign:

Elevation: 2,790 Feet Lat: 45°47N

Lon: 103°04W

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	.42	.38	.95	1986	21	1.53	1997	.00	1974	4.5	1.4	.1	.0	.02	.06	.12	.18	.25	.32	.41	.51	.66	.90	1.13
Feb	.44	.36	.90	2000	10	1.64	2000	.00	1985	4.6	1.3	.1	.0	.01	.05	.11	.17	.24	.32	.41	.53	.70	.98	1.26
Mar	.73	.61	1.77	1987	21	2.57	1982	.08	1981	5.8	2.2	.2	.1	.11	.17	.27	.37	.48	.60	.73	.89	1.12	1.48	1.82
Apr	1.69	1.31	2.06	1975	28	4.84	1989	.20	1988	7.4	4.0	1.2	.3	.22	.36	.60	.84	1.08	1.36	1.67	2.06	2.59	3.46	4.29
May	2.84	2.76	2.60	1972	26	6.92	1972	.59	1984	8.9	6.0	1.7	.7	.59	.85	1.27	1.65	2.03	2.44	2.90	3.45	4.18	5.35	6.46
Jun	2.98	3.21	3.00	1976	14	5.62	1976	.91	1987	9.1	6.3	1.9	.6	1.04	1.32	1.73	2.08	2.41	2.75	3.12	3.55	4.10	4.95	5.74
Jul	2.12	1.67	1.82	1989	14	7.83	1993	.19	1988	7.6	4.7	1.4	.3	.36	.55	.86	1.15	1.44	1.77	2.14	2.59	3.18	4.15	5.08
Aug	1.38	1.14	2.77	1976	14	3.72	1999	.15	1971	6.1	3.4	.7	.2	.22	.33	.53	.72	.92	1.13	1.38	1.68	2.09	2.74	3.37
Sep	1.23	.96	2.35	1955	20	4.56	1973	.07	1975	5.5	2.7	.6	.3	.09	.17	.33	.50	.69	.91	1.17	1.50	1.95	2.72	3.49
Oct	1.37	.85	2.00	1982	9	4.96	1982	.08	1978	4.9	2.7	.8	.3	.10	.18	.36	.55	.76	1.00	1.29	1.67	2.18	3.05	3.91
Nov	.58	.45	1.33	2000	1	1.83	2000	.00	1980	5.1	2.0	.1	@	.04	.09	.19	.27	.36	.46	.58	.72	.91	1.23	1.54
Dec	.40	.40	.50+	2000	1	1.06	1972	.01	1991	4.4	1.6	.1	.0	.04	.06	.12	.17	.24	.30	.39	.49	.63	.87	1.10
Ann	16.18	16.52	3.00	Jun 1976	14	7.83	Jul 1993	.00+	Feb 1985	73.9	38.3	8.9	2.8	10.03	11.16	12.64	13.79	14.82	15.83	16.89	18.07	19.52	21.66	23.53

+ 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:  
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Station: RALPH 1 N, SD

COOP ID: 396907

Climate Division: SD 1

NWS Call Sign:

Elevation: 2,790 Feet

Lat: 45° 47N

Lon: 103° 04W

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	7.2	4.8	4	3	14.0	1986	21	17.7	1986	21	1986	26	15	1986	3.6	2.5	.5	.2	.1	14.6	11.9	7.8	3.5
Feb	5.1	5.7	3	1	5.0	1978	12	10.9	1998	22	1986	23	19	1986	3.2	2.0	.4	.1	.0	8.3	6.3	4.3	2.8
Mar	6.4	6.1	2	1	15.0	1987	21	19.5	1987	22	1975	30	7	1998	3.3	2.5	.7	.3	.1	5.8	3.5	2.4	.3
Apr	6.1	5.5	1	#	18.0	1997	5	18.6	1997	18	1997	9	6	1997	1.4	1.2	.7	.4	.1	2.5	1.7	1.2	.6
May	.8	.0	#	0	7.0	1983	12	10.0	1983	6	1983	12	#+	1996	.2	.2	.2	.1	.0	.5	.2	@	.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	#	1993	12	#	1993	.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	.6	.0	#	0	12.0	1984	23	15.0	1984	10	1984	23	1	1984	.1	.1	.1	@	@	.2	.1	.1	@
Oct	1.7	.0	#	0	6.0	1991	28	11.5	1991	7	1991	30	1	1991	.8	.6	.3	.1	.0	.8	.4	.3	.0
Nov	6.5	5.3	1	1	7.0	1978	9	22.0	1985	18	1985	30	8	1985	3.6	2.2	1.0	.1	.0	6.4	4.0	2.3	.5
Dec	4.4	3.0	3	1	9.5	1988	26	13.0	1988	20	1985	3	16	1985	3.4	2.6	.4	.1	.0	11.5	6.4	3.1	2.5
Ann	38.8	30.4	N/A	N/A	18.0	Apr 1997	5	22.0	Nov 1985	22+	Feb 1986	23	19	Feb 1986	19.6	13.9	4.3	1.4	.3	50.6	34.5	21.5	10.2

+ 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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**NWS Call Sign:**

**Elevation: 2,790 Feet**

**Lat: 45° 47N**

**Lon: 103° 04W**

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	7/02	6/24	6/18	6/12	6/08	6/03	5/29	5/23	5/14
32	6/18	6/10	6/04	5/30	5/25	5/20	5/15	5/09	4/30
28	5/23	5/18	5/15	5/12	5/09	5/07	5/04	4/30	4/26
24	5/14	5/09	5/06	5/02	4/29	4/27	4/23	4/20	4/15
20	5/01	4/26	4/23	4/20	4/18	4/15	4/13	4/09	4/05
16	4/28	4/22	4/17	4/14	4/10	4/07	4/03	3/30	3/24
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	8/13	8/20	8/25	8/29	9/01	9/05	9/09	9/14	9/20
32	8/30	9/04	9/08	9/11	9/14	9/17	9/20	9/24	9/29
28	9/06	9/11	9/15	9/18	9/20	9/23	9/26	9/30	10/05
24	9/12	9/17	9/22	9/25	9/29	10/02	10/05	10/10	10/15
20	9/20	9/26	10/01	10/04	10/08	10/12	10/15	10/20	10/26
16	9/29	10/05	10/10	10/14	10/18	10/22	10/26	10/31	11/06
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	122	109	100	92	85	78	70	61	48
32	141	131	124	117	112	106	99	92	82
28	156	148	143	138	133	129	124	119	111
24	174	166	160	156	151	147	142	137	129
20	195	187	182	177	172	168	163	158	150
16	213	205	200	195	190	185	180	175	167

\* 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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**No. 20**  
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**NWS Call Sign:**

**Elevation: 2,790 Feet    Lat: 45°47N    Lon: 103°04W**

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	1529	1196	1042	645	332	121	38	59	251	608	1072	1427	8320
60	1374	1056	887	499	208	53	11	21	146	453	922	1272	6902
57	1282	981	794	415	147	27	3	10	96	361	832	1179	6127
55	1221	929	733	362	113	17	1	5	69	301	772	1117	5640
50	1074	798	588	241	50	4	0	1	24	166	632	965	4543
32	582	393	175	18	0	0	0	0	0	4	215	474	1861

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	76	122	157	363	704	951	1175	1147	773	419	133	70	6090
55	2	14	2	16	105	277	463	440	152	3	0	0	1474
57	0	10	0	10	77	228	403	382	119	1	0	0	1230
60	0	0	0	4	44	163	318	301	79	0	0	0	909
65	0	0	0	0	14	81	190	183	34	0	0	0	502
70	0	0	0	0	2	30	99	97	12	0	0	0	240

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	8	42	187	474	723	941	913	551	233	33	1	0	8	50	237	711	1434	2375	3288	3839	4072	4105	4106
45	0	1	10	101	328	573	786	758	408	132	8	0	0	1	11	112	440	1013	1799	2557	2965	3097	3105	3105
50	0	0	2	48	199	423	631	603	276	59	1	0	0	0	2	50	249	672	1303	1906	2182	2241	2242	2242
55	0	0	0	17	108	282	476	450	167	18	0	0	0	0	0	17	125	407	883	1333	1500	1518	1518	1518
60	0	0	0	4	43	158	322	302	86	5	0	0	0	0	0	4	47	205	527	829	915	920	920	920
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	1	19	52	160	316	459	594	584	378	199	47	7	1	20	72	232	548	1007	1601	2185	2563	2762	2809	2816

(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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://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"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)