

Climatography of the United States

No. 20

1971-2000

Station: ORAL, SD

COOP ID: 396304

Climate Division: SD 5

NWS Call Sign:

Elevation: 2,960 Feet Lat: 43° 24N

Lon: 103° 16W

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	36.8	9.5	23.2	71	1981	24	33.4	1990	-33	1982	16	7.7	1979	1299	0	.0	.0	7.0	10.2	30.1	7.9
Feb	42.7	13.8	28.3	73+	1995	26	36.9	1999	-38+	1996	3	15.3	1978	1029	0	.0	.0	10.9	7.4	27.0	4.6
Mar	50.9	21.1	36.0	83	1993	27	43.8	1986	-32	1978	4	28.2	1996	899	0	.0	.0	17.1	3.7	27.5	1.3
Apr	61.2	30.9	46.1	94	1989	23	53.6	1981	-5	1975	2	40.9	1983	568	0	.0	.2	23.5	.6	17.5	.1
May	71.0	41.7	56.4	97	1992	20	62.3	1977	22+	1983	19	51.3	1983	286	17	.0	1.2	29.7	.0	3.9	.0
Jun	81.8	50.7	66.3	109	1974	27	74.5	1988	32	1998	5	59.8	1998	82	119	1.0	7.2	29.9	.0	@	.0
Jul	89.6	56.0	72.8	112	1973	7	77.4	1980	36	1971	30	65.9	1992	14	256	4.7	16.7	31.0	.0	.0	.0
Aug	88.6	53.5	71.1	108+	1995	8	78.0	1983	31	1988	28	66.2	1992	23	210	2.6	15.4	31.0	.0	.1	.0
Sep	78.6	41.7	60.2	104	1983	2	66.5	1998	17	1984	29	55.7	1974	192	47	.7	6.0	29.3	.0	4.1	.0
Oct	65.5	31.0	48.3	94	1992	2	51.6	1979	-8	1991	30	44.9	1972	520	0	.0	.6	27.1	.3	16.7	.1
Nov	48.1	20.0	34.1	83	1999	8	45.3	1999	-21	1976	27	19.7	1985	928	0	.0	.0	14.5	4.3	27.5	1.6
Dec	39.6	11.4	25.5	71	1980	18	33.5	1999	-43+	1983	24	5.4	1983	1225	0	.0	.0	7.6	8.6	30.1	5.4
Ann	62.9	31.8	47.4	112	Jul 1973	7	78.0	Aug 1983	-43+	Dec 1983	24	5.4	Dec 1983	7065	649	9.0	47.3	258.6	35.1	184.5	21.0

+ 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: 1971-2001

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

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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: ORAL, SD

COOP ID: 396304

Climate Division: SD 5

NWS Call Sign:

Elevation: 2,960 Feet Lat: 43°24N

Lon: 103°16W

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	.39	.72	1995	17	1.01	1997	.00	1989	3.7	1.4	.1	.0	.03	.06	.12	.18	.24	.30	.37	.47	.59	.79	.98
Feb	.47	.42	.65	2000	26	1.68	1987	.00+	1996	3.2	1.6	.1	.0	.00	.00	.14	.22	.30	.39	.48	.60	.75	1.00	1.24
Mar	.86	.68	1.25	1987	21	2.45	1987	.13	1988	4.9	2.9	.4	.1	.13	.21	.33	.45	.57	.70	.86	1.04	1.29	1.70	2.09
Apr	1.79	1.51	2.05	2000	19	3.99	2000	.08	1987	7.2	4.4	1.1	.4	.27	.42	.67	.92	1.18	1.46	1.79	2.18	2.72	3.59	4.42
May	2.87	2.63	3.70	1971	23	6.87	1982	.63	1974	9.4	6.4	2.0	.5	.82	1.09	1.50	1.86	2.21	2.57	2.98	3.45	4.07	5.03	5.93
Jun	2.89	2.67	3.75	1972	10	5.93	1991	.63	1973	9.5	6.6	1.9	.5	.73	1.00	1.42	1.79	2.16	2.55	2.98	3.49	4.16	5.22	6.21
Jul	2.24	1.67	2.68	1977	9	7.57	1997	.62	1991	8.0	5.0	1.5	.3	.46	.66	.99	1.29	1.59	1.92	2.29	2.73	3.31	4.25	5.13
Aug	1.82	1.65	2.75	1993	16	5.12	1993	.24	1971	6.2	3.9	1.2	.4	.32	.47	.74	.99	1.25	1.52	1.84	2.22	2.74	3.56	4.36
Sep	1.24	1.09	1.64	1998	21	3.02	1986	.03	1975	5.2	3.3	.8	.2	.09	.17	.33	.51	.70	.91	1.18	1.51	1.97	2.74	3.50
Oct	1.16	1.09	1.10	1974	31	3.59	1998	.00	1999	5.1	3.4	.6	.1	.20	.36	.56	.71	.87	1.03	1.21	1.43	1.70	2.14	2.55
Nov	.62	.53	.70	1998	3	2.22	1998	.00	1997	3.6	2.2	.1	.0	.06	.14	.24	.33	.42	.52	.63	.77	.95	1.24	1.51
Dec	.39	.42	.62	1975	31	1.04	1994	.01	1999	3.7	1.2	@	.0	.03	.06	.11	.17	.23	.29	.37	.47	.61	.84	1.07
Ann	16.73	15.99	3.75	Jun 1972	10	7.57	Jul 1997	.00+	Oct 1999	69.7	42.3	9.8	2.5	10.84	11.94	13.36	14.47	15.45	16.42	17.42	18.53	19.90	21.90	23.65

+ 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: 1971-2001

(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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Federal Building
151 Patton Avenue
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Station: ORAL, SD

COOP ID: 396304

Climate Division: SD 5

NWS Call Sign:

Elevation: 2,960 Feet

Lat: 43°24N

Lon: 103°16W

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	3.7	3.5	2	1	12.0	1993	9	12.0	1993	17	1993	12	7	1993	2.8	1.7	.5	.2	@	10.3	4.3	2.2	.8
Feb	4.4	2.5	1	1	8.0	1991	18	20.5	1987	9	1991	19	4	1993	2.8	1.9	.6	.2	.0	5.4	1.9	.9	.0
Mar	5.3	3.8	1	#	10.0	1998	8	16.0	1975	10+	1996	25	4	1980	2.8	2.0	.6	.3	@	3.7	1.7	.7	.1
Apr	2.8	1.5	#	#	8.0	1984	27	11.5	1984	8	1984	27	1	1997	1.3	1.1	.5	.2	.0	1.4	.4	.1	.0
May	.1	.0	#	0	3.0	1991	3	3.0	1991	3+	1991	3	#+	1991	@	@	@	.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	1.0	1984	25	1.0	1984	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Oct	1.2	.0	#	0	10.0	1991	29	14.3	1991	10	1991	29	1	1991	.4	.3	.1	@	@	.3	.1	.1	@
Nov	3.1	3.0	1	#	6.5	1975	25	10.5	1998	12	1985	30	5	1985	2.1	1.6	.4	.1	.0	5.0	2.9	1.2	@
Dec	4.9	3.0	2	1	15.0	1975	31	18.0	1975	15	1975	31	8	1985	2.7	1.8	.6	.3	@	10.5	4.9	3.0	.2
Ann	25.5	17.3	N/A	N/A	15.0	Dec 1975	31	20.5	Feb 1987	17	Jan 1993	12	8	Dec 1985	14.9	10.4	3.3	1.3	@	36.6	16.2	8.2	1.1

+ 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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Elevation: 2,960 Feet

Lat: 43° 24N

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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	6/22	6/14	6/08	6/03	5/29	5/24	5/19	5/13	5/05
32	5/27	5/23	5/19	5/16	5/14	5/11	5/08	5/05	4/30
28	5/17	5/13	5/10	5/07	5/05	5/03	4/30	4/27	4/23
24	5/04	4/30	4/27	4/24	4/22	4/19	4/16	4/13	4/09
20	4/25	4/20	4/16	4/13	4/10	4/07	4/03	3/30	3/25
16	4/17	4/12	4/08	4/05	4/02	3/30	3/26	3/23	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	9/03	9/06	9/09	9/11	9/13	9/16	9/18	9/21	9/24
32	9/07	9/12	9/15	9/18	9/20	9/23	9/26	9/29	10/03
28	9/14	9/20	9/24	9/27	10/01	10/04	10/08	10/12	10/17
24	9/27	10/03	10/07	10/10	10/13	10/17	10/20	10/24	10/30
20	10/05	10/11	10/15	10/18	10/21	10/25	10/28	11/01	11/07
16	10/20	10/25	10/28	10/31	11/03	11/05	11/08	11/12	11/16
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	124	118	112	107	101	96	89	80
32	149	142	137	133	129	125	121	116	109
28	169	162	157	152	148	144	139	134	127
24	196	189	183	178	174	170	165	159	152
20	216	209	203	198	194	190	185	179	172
16	235	228	223	218	214	210	206	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

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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	1299	1029	899	568	286	82	14	23	192	520	928	1225	7065
60	1144	889	744	421	168	31	2	5	100	366	778	1070	5718
57	1051	807	651	337	112	15	0	2	60	275	692	977	4979
55	991	757	589	283	82	8	0	1	39	218	637	915	4520
50	847	626	443	168	30	1	0	0	10	101	498	770	3494
32	379	243	73	3	0	0	0	0	0	1	139	305	1143

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	104	138	197	425	754	1027	1266	1210	845	504	201	103	6774
55	2	8	0	15	123	345	553	498	195	8	9	0	1756
57	0	1	0	8	91	291	491	437	155	3	4	0	1481
60	0	0	0	3	54	218	400	347	105	1	0	0	1128
65	0	0	0	0	17	119	256	210	47	0	0	0	649
70	0	0	0	0	4	52	138	103	16	0	0	0	313

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	11	30	91	232	520	797	1025	978	621	305	66	14	11	41	132	364	884	1681	2706	3684	4305	4610	4676	4690
45	0	6	42	134	371	647	870	823	477	184	25	1	0	6	48	182	553	1200	2070	2893	3370	3554	3579	3580
50	0	0	13	70	239	501	715	668	340	95	5	0	0	0	13	83	322	823	1538	2206	2546	2641	2646	2646
55	0	0	2	28	134	356	561	514	219	34	0	0	0	0	2	30	164	520	1081	1595	1814	1848	1848	1848
60	0	0	0	9	62	222	408	363	121	11	0	0	0	0	0	9	71	293	701	1064	1185	1196	1196	1196
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	25	46	105	198	338	496	633	603	419	264	79	27	25	71	176	374	712	1208	1841	2444	2863	3127	3206	3233

(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