U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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: EUREKA, SD **COOP ID: 392797**

Climate Division: SD 2 **NWS Call Sign:** **Elevation: 1,860 Feet** **Lat: 45˚47N** **Lon: 99˚38W**

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	20.4	.2	10.3	58	1981	23	23.7	1990	-44	1916	13	-4.2	1982	1697	0	.0	.0	.3	23.1	31.0	15.1
Feb	27.9	7.7	17.8	67	1958	25	29.4	1998	-44+	1936	16	2.5	1979	1322	0	.0	.0	1.9	16.2	27.9	8.7
Mar	39.9	18.4	29.2	85	1910	23	37.2	1973	-29	1917	4	20.7	1996	1112	0	.0	.0	7.6	8.6	28.4	2.9
Apr	56.9	31.0	44.0	96+	1992	30	52.9	1987	-7	1975	1	35.4	1975	634	2	.0	.2	21.7	.9	17.4	.1
May	69.8	43.6	56.7	107+	1934	30	64.8	1977	12+	1967	2	51.2	1979	283	25	.0	.6	30.2	.0	3.1	.0
Jun	78.2	52.9	65.6	107	1988	24	76.8	1988	29	1917	1	60.0	1993	91	108	.2	2.5	30.0	.0	.0	.0
Jul	84.7	58.0	71.4	114+	1936	6	76.7	1988	32	1917	3	62.9	1992	32	229	1.0	8.7	31.0	.0	.0	.0
Aug	83.8	56.2	70.0	109+	1988	16	74.9	1983	29	1914	26	63.9	1992	42	197	.8	7.7	31.0	.0	.0	.0
Sep	73.3	45.4	59.4	107	1931	7	65.5	1998	15	1974	30	54.2	1993	210	40	.2	2.3	29.6	.0	2.2	.0
Oct	59.1	33.6	46.4	94	1922	3	50.6	1973	-6	1925	29	42.4	1976	579	0	.0	@	24.7	.5	14.3	@
Nov	37.6	18.4	28.0	78	1965	2	40.6	1999	-23	1940	14	15.3	1985	1110	0	.0	.0	5.9	11.1	28.1	1.9
Dec	24.6	5.9	15.3	62	1939	6	25.8	1997	-45	1917	10	-2.3	1983	1542	0	.0	.0	.6	21.3	31.0	10.2
Ann	54.7	30.9	42.8	114+	Jul 1936	6	76.8	Jun 1988	-45	Dec 1917	10	-4.2	Jan 1982	8654	601	2.2	22.0	214.5	81.7	183.4	38.9

\+ 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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1877-2001

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

Issue Date: February 2004

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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: EUREKA, SD **COOP ID: 392797**

Climate Division: SD 2 **NWS Call Sign:** **Elevation: 1,860 Feet** **Lat: 45˚47N** **Lon: 99˚38W**

Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	.35	.30	1.16	1950	24	1.21	1997	.00	1974
Feb	.45	.31	1.89	2000	26	2.17	2000	.01	1985
Mar	.93	.75	1.85	1968	18	2.40	1977	.05	1971
Apr	1.79	1.81	2.44	1989	28	5.30+	1989	.07	1987
May	2.63	2.16	3.54	1942	30	6.61	1991	.46	1976
Jun	3.17	2.87	6.73	1964	18	6.50	1993	.47	1974
Jul	2.78	2.41	3.47	1927	16	10.34	1993	.63	1988
Aug	2.30	2.10	3.02	1960	25	4.86	1992	.24	1982
Sep	1.43	1.02	2.16	1946	18	4.64	1973	.08	1974
Oct	1.66	.97	2.92	1982	9	5.88	1982	.08	1988
Nov	.72	.57	1.49	1922	5	2.78	2000	.02+	1990
Dec	.33	.31	.80	1909	2	1.02	1993	.00	1986
Ann	18.54	19.14	6.73	Jun 1964	18	10.34	Jul 1993	.00+	Dec 1986

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.1	1.1	.1	.0
Feb	4.8	1.5	.1	@
Mar	5.9	2.7	.3	.1
Apr	7.4	4.1	1.1	.1
May	9.3	5.6	1.7	.7
Jun	9.7	6.3	2.0	.8
Jul	8.6	5.2	1.7	.6
Aug	7.2	4.1	1.4	.6
Sep	6.1	3.4	.9	.3
Oct	6.1	3.4	.9	.4
Nov	5.0	2.1	.4	.1
Dec	4.1	1.1	.0	.0
Ann	79.3	40.6	10.6	3.7

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.04	.09	.15	.20	.25	.30	.36	.43	.53	.68	.82
Feb	.05	.08	.14	.20	.27	.35	.43	.54	.69	.94	1.19
Mar	.14	.22	.35	.48	.61	.76	.93	1.13	1.41	1.86	2.29
Apr	.20	.33	.58	.83	1.10	1.40	1.75	2.18	2.77	3.75	4.71
May	.69	.93	1.31	1.65	1.98	2.33	2.71	3.17	3.77	4.71	5.59
Jun	.81	1.11	1.57	1.97	2.37	2.80	3.27	3.82	4.55	5.71	6.79
Jul	.50	.74	1.15	1.53	1.92	2.34	2.82	3.40	4.16	5.41	6.59
Aug	.40	.60	.94	1.25	1.58	1.92	2.32	2.81	3.45	4.49	5.48
Sep	.14	.25	.44	.64	.86	1.10	1.38	1.74	2.23	3.03	3.83
Oct	.12	.22	.44	.66	.92	1.21	1.56	2.01	2.63	3.68	4.72
Nov	.03	.06	.13	.23	.34	.47	.64	.85	1.17	1.71	2.25
Dec	.01	.04	.08	.13	.18	.24	.31	.40	.53	.74	.94
Ann	11.48	12.77	14.46	15.77	16.95	18.11	19.32	20.67	22.33	24.77	26.91

\+ 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: 1877-2001
(3) Derived from 1971-2000 serially complete daily data

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

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Services

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: EUREKA, SD **COOP ID: 392797**

Climate Division: SD 2 **NWS Call Sign:** **Elevation: 1,860 Feet** **Lat: 45°47N** **Lon: 99°38W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.5	5.3	9	4
Feb	6.8	6.3	8	4
Mar	8.1	6.0	4	2
Apr	3.1	1.0	1	#
May	#	.0	#	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.9	.0	#	0
Nov	6.6	5.0	2	#
Dec	4.8	5.0	6	3
Ann	35.8	28.6	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	12.0	1996	17	18.0	1996	53	1997	30	48	1997
Feb	9.0	1995	26	29.0	1987	50	1997	7	40	1997
Mar	12.0	1982	20	24.0	1995	30	1994	1	18	1997
Apr	18.0	1995	11	25.0	1995	22	1975	2	9	1975
May	#	1979	9	#	1979	2	1991	4	#	1991
Jun	.0	0	0	.0	0	#	1971	17	#	1971
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	9.0	1992	31	9.0	1992	6	1992	31	#+	1999
Nov	10.0	1985	25	25.5	2000	32	1985	30	10	1996
Dec	8.0	1988	27	17.0	1993	44	1985	31	40	1985
Ann	18.0	Apr 1995	11	29.0	Feb 1987	53	Jan 1997	30	48	Jan 1997

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.4	2.5	.6	.2	.1
Feb	2.9	2.3	.9	.2	.0
Mar	2.8	2.5	1.1	.4	@
Apr	.9	.9	.4	.2	.1
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.2	.2	.1	.1	.0
Nov	3.0	2.5	1.1	.5	.1
Dec	2.8	2.3	.8	.2	.0
Ann	16.0	13.2	5.0	1.8	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	22.9	17.5	7.9	2.7
Feb	-9.9	-9.9	-9.9	-9.9
Mar	13.0	7.9	5.2	2.3
Apr	2.3	1.2	.8	.4
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.2	.1	@	.0
Nov	6.7	3.4	1.9	.7
Dec	13.9	8.4	6.2	2.1
Ann	-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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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: EUREKA, SD **COOP ID: 392797**

Climate Division: SD 2 **NWS Call Sign:** **Elevation: 1,860 Feet** **Lat: 45˚47N** **Lon: 99˚38W**

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	6/08	6/02	5/29	5/26	5/22	5/19	5/16	5/12	5/06
32	5/22	5/18	5/15	5/12	5/10	5/07	5/04	5/01	4/27
28	5/17	5/12	5/08	5/05	5/02	4/29	4/26	4/22	4/17
24	5/07	5/03	4/29	4/26	4/23	4/20	4/17	4/14	4/09
20	4/25	4/20	4/16	4/13	4/10	4/08	4/04	4/01	3/27
16	4/15	4/10	4/07	4/04	4/01	3/29	3/26	3/22	3/18

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	9/01	9/05	9/08	9/11	9/14	9/16	9/19	9/23	9/27
32	9/11	9/15	9/17	9/20	9/22	9/24	9/26	9/28	10/02
28	9/20	9/26	9/29	10/02	10/05	10/08	10/11	10/15	10/20
24	9/22	9/29	10/03	10/07	10/11	10/14	10/18	10/23	10/29
20	9/30	10/07	10/12	10/16	10/20	10/24	10/28	11/02	11/08
16	10/11	10/17	10/22	10/26	10/29	11/02	11/06	11/10	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	138	130	124	118	114	109	104	98	89
32	152	146	142	138	134	131	127	123	117
28	176	169	164	160	156	151	147	142	135
24	194	186	180	175	170	165	160	154	145
20	214	206	201	196	192	187	182	177	169
16	236	227	221	216	211	206	200	194	185

***** 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/normals/usnormals.html

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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: EUREKA, SD **COOP ID: 392797**

Climate Division: SD 2 **NWS Call Sign:** **Elevation: 1,860 Feet** **Lat: 45˚47N** **Lon: 99˚38W**

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	1697	1322	1112	634	283	91	32	42	210	579	1110	1542	8654
60	1542	1182	957	492	172	34	10	13	112	425	960	1387	7286
57	1449	1098	864	411	120	17	3	4	69	334	870	1294	6533
55	1387	1042	803	361	91	10	0	2	47	276	810	1232	6061
50	1232	915	654	248	40	1	0	0	13	151	667	1077	4998
32	716	476	215	26	0	0	0	0	0	4	235	573	2245

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	42	79	126	384	765	1007	1220	1178	820	448	115	54	6238
55	0	0	0	29	143	327	507	467	176	7	0	0	1656
57	0	0	0	20	110	274	448	407	139	3	0	0	1401
60	0	0	0	10	69	201	362	323	92	1	0	0	1058
65	0	0	0	2	25	108	229	197	40	0	0	0	601
70	0	0	0	0	6	45	130	104	13	0	0	0	298

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	1	28	195	528	772	974	934	587	246	20	0	0	1	29	224	752	1524	2498	3432	4019	4265	4285	4285
45	0	0	4	114	380	622	819	779	443	140	7	0	0	0	4	118	498	1120	1939	2718	3161	3301	3308	3308
50	0	0	0	57	246	473	664	624	305	68	0	0	0	0	0	57	303	776	1440	2064	2369	2437	2437	2437
55	0	0	0	27	138	326	509	469	192	27	0	0	0	0	0	27	165	491	1000	1469	1661	1688	1688	1688
60	0	0	0	7	66	194	355	320	101	7	0	0	0	0	0	7	73	267	622	942	1043	1050	1050	1050
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	28	148	330	485	629	603	371	173	24	0	0	1	29	177	507	992	1621	2224	2595	2768	2792	2792

(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.
Compete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normals/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 are 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.

a. Temperature/ Precipitation Tables
   1. 1971-2000 Monthly Normals
   2. Cooperative Summary of the Day
   3. National Weather Service station records
   4. 1971-2000 serially complete daily data

b. Degree Day Table
   1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals
   2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data

c. Snow Tables
   1. Snow Climatology
   2. Cooperative Summary of the Day

d. Freeze Data Table
   1971-2000 serially complete daily data

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normals.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normals/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