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: CULBERTSON, NE **COOP ID: 252065**

Climate Division: NE 7 **NWS Call Sign:** **Elevation: 2,600 Feet** **Lat: 40˚14N** **Lon: 100˚50W**

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	38.7	11.7	25.2	77	1990	11	35.3	1986	-30	1918	11	13.6	1979	1235	0	.0	.0	6.9	10.2	31.0	5.6
Feb	45.4	16.6	31.0	80+	1972	29	38.9	1976	-38	1899	12	19.3	1978	953	0	.0	.0	11.6	6.6	27.5	3.3
Mar	54.0	24.4	39.2	94	1946	31	45.5	1986	-23	1960	3	32.8	1996	799	0	.0	.0	18.8	2.6	26.6	.8
Apr	64.2	34.0	49.1	101	1932	20	56.2	1981	-4	1936	1	43.0	1984	478	1	.0	.6	25.4	.3	14.2	.0
May	73.4	45.7	59.6	103	2000	30	65.0	1977	21+	1989	2	53.2	1995	204	34	.1	1.3	30.5	.0	2.1	.0
Jun	84.6	55.9	70.3	112	1938	30	76.5	1988	32+	1917	2	64.7	1982	35	192	1.2	9.8	29.9	.0	.0	.0
Jul	90.3	61.9	76.1	113+	1940	24	79.9	1980	38	1990	15	71.0	1992	1	346	3.9	17.6	31.0	.0	.0	.0
Aug	88.6	60.2	74.4	112	1937	9	81.3	1983	35	1928	24	68.1	1992	9	300	2.0	15.4	31.0	.0	.0	.0
Sep	80.2	49.3	64.8	106	1947	2	70.8	1998	20+	1984	30	58.6	1993	101	94	.6	6.8	29.6	.0	1.7	.0
Oct	68.3	35.5	51.9	100	1900	5	55.2+	1979	2	1925	30	48.1	1976	407	1	.0	.7	28.6	.2	12.3	.0
Nov	51.0	22.8	36.9	85	1931	7	43.8	1999	-16	1952	28	28.5	2000	843	0	.0	.0	16.4	2.8	27.5	.7
Dec	41.3	14.6	28.0	81	1964	24	34.4	1980	-34+	1989	23	10.2	1983	1149	0	.0	.0	8.6	7.9	30.9	3.3
Ann	65.0	36.1	50.5	113+	Jul 1940	24	81.3	Aug 1983	-38	Feb 1899	12	10.2	Dec 1983	6214	968	7.8	52.2	268.3	30.6	173.8	13.7

\+ 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: 1889-2001

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

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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	.53	.35	1.18	1988	19	1.79	1992	.00	1986
Feb	.59	.37	1.57	1971	19	1.90	1971	.01	1996
Mar	1.39	1.01	1.95	1940	1	4.06	1973	.12	1994
Apr	2.12	1.61	3.42	1942	18	4.76	1984	.27	1989
May	3.33	3.12	4.45	1891	16	7.15	1977	.25	1994
Jun	3.22	2.96	3.71	1985	26	7.42	1975	.19	1990
Jul	3.28	2.71	4.10	1981	18	6.93	1981	.68	1990
Aug	2.77	2.13	4.40	1968	28	7.07	1992	.61	1985
Sep	1.40	1.12	3.60	1901	7	6.77	1973	.08	1978
Oct	1.31	.97	3.00	1897	26	3.90	1997	.00	1999
Nov	1.07	.73	1.82	1975	20	3.29	1975	.00	1989
Dec	.47	.41	1.26	1891	14	1.80	1982	.00+	1995
Ann	21.48	21.44	4.45	May 1891	16	7.42	Jun 1975	.00+	Oct 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.2	1.4	.3	.1
Feb	3.9	1.7	.3	@
Mar	6.6	3.6	.9	.2
Apr	7.8	4.3	1.3	.5
May	10.7	7.0	2.0	.8
Jun	8.8	5.8	2.0	.7
Jul	9.2	5.7	2.2	.8
Aug	7.9	5.0	1.8	.7
Sep	6.0	2.9	.9	.2
Oct	5.2	2.4	.8	.2
Nov	4.6	2.4	.6	.2
Dec	3.3	1.2	.2	@
Ann	77.2	43.4	13.3	4.4

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	.03	.07	.15	.23	.31	.41	.52	.65	.84	1.14	1.44
Feb	.03	.06	.12	.20	.29	.40	.54	.71	.96	1.38	1.81
Mar	.15	.25	.45	.64	.85	1.08	1.36	1.70	2.17	2.94	3.70
Apr	.50	.70	1.01	1.29	1.56	1.86	2.18	2.57	3.08	3.89	4.65
May	.74	1.04	1.53	1.97	2.41	2.88	3.41	4.04	4.87	6.20	7.45
Jun	.71	1.01	1.48	1.91	2.33	2.79	3.30	3.91	4.72	6.01	7.22
Jul	.90	1.21	1.69	2.10	2.50	2.92	3.39	3.95	4.67	5.80	6.85
Aug	.57	.82	1.22	1.60	1.97	2.37	2.82	3.37	4.09	5.24	6.33
Sep	.11	.20	.38	.57	.79	1.03	1.33	1.70	2.22	3.09	3.96
Oct	.04	.13	.31	.50	.71	.95	1.23	1.60	2.10	2.95	3.79
Nov	.06	.16	.32	.48	.65	.83	1.05	1.31	1.68	2.27	2.85
Dec	.00	.03	.10	.17	.25	.34	.44	.57	.76	1.06	1.36
Ann	15.71	16.84	18.28	19.36	20.33	21.26	22.21	23.27	24.55	26.39	27.98

\+ 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: 1889-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	6.4	4.5	2	1
Feb	3.6	2.0	1	1
Mar	6.5	4.6	#	#
Apr	2.5	.5	#	#
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.3	.0	#	0
Oct	.9	.0	#	0
Nov	4.9	4.0	1	#
Dec	5.2	5.0	1	1
Ann	30.3	20.6	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	11.5	1990	20	17.5	1994	17	1993	10	8	1974
Feb	7.0	1994	22	12.4	1978	11	1980	9	6	1978
Mar	14.0	1984	19	17.0	1980	14	1984	19	2	1984
Apr	6.0	1994	12	19.5	1994	8	1980	3	1	1997
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	7.5	1985	29	8.5	1985	7	1985	29	#+	2000
Oct	7.0	1997	26	9.0	1995	6+	1997	27	1	1997
Nov	12.0	1975	20	20.0	1975	16	1975	28	5	1975
Dec	8.0	1973	19	15.0+	1982	14	1975	1	7	1983
Ann	14.0	Mar 1984	19	20.0	Nov 1975	17	Jan 1993	10	8	Jan 1974

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.8	2.2	.9	.3	.1
Feb	2.4	1.9	.6	.3	.0
Mar	2.8	2.1	.8	.3	@
Apr	1.1	.9	.4	.1	.0
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	.1	.1	@	@	.0
Oct	.3	.3	.1	.1	.0
Nov	2.1	1.8	.8	.2	.1
Dec	2.6	1.6	.7	.3	.0
Ann	14.2	10.9	4.3	1.6	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	12.0	6.8	3.2	.8
Feb	7.2	3.8	1.1	.1
Mar	4.4	1.8	.8	.1
Apr	1.2	.6	.2	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	.1	@	.0
Oct	.5	.2	.1	.0
Nov	4.5	2.5	1.2	.4
Dec	8.1	4.5	1.8	.4
Ann	38.0	20.3	8.4	1.8

+ 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

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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	5/29	5/24	5/20	5/17	5/14	5/12	5/09	5/05	4/30
32	5/19	5/15	5/12	5/09	5/07	5/04	5/01	4/28	4/24
28	5/08	5/04	4/30	4/27	4/24	4/21	4/18	4/15	4/10
24	4/26	4/21	4/17	4/14	4/12	4/09	4/06	4/02	3/29
20	4/17	4/12	4/07	4/04	3/31	3/28	3/24	3/20	3/14
16	4/10	4/03	3/30	3/26	3/22	3/18	3/14	3/09	3/03

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	9/13	9/17	9/20	9/22	9/24	9/27	9/29	10/02	10/06
32	9/15	9/20	9/23	9/26	9/29	10/01	10/04	10/08	10/12
28	9/27	10/02	10/06	10/09	10/12	10/15	10/18	10/21	10/26
24	10/04	10/09	10/12	10/15	10/18	10/21	10/24	10/27	11/01
20	10/15	10/20	10/24	10/27	10/30	11/02	11/06	11/09	11/15
16	10/21	10/27	11/01	11/04	11/08	11/11	11/15	11/20	11/26

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	145	140	136	132	129	125	120	113
32	164	157	152	148	144	141	137	132	125
28	189	182	178	174	170	166	162	157	151
24	208	201	197	193	189	185	181	176	170
20	235	227	222	217	212	208	203	197	189
16	256	247	241	235	230	225	220	214	205

***** 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	1235	953	799	478	204	35	1	9	101	407	843	1149	6214
60	1080	813	644	335	104	9	0	1	39	260	693	994	4972
57	987	729	551	256	63	3	0	0	18	181	603	901	4292
55	925	679	490	209	42	1	0	0	10	136	543	839	3874
50	771	548	344	111	12	0	0	0	1	54	404	690	2935
32	290	180	31	0	0	0	0	0	0	0	67	238	806

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	78	151	255	514	854	1147	1368	1314	983	617	214	112	7607
55	0	6	0	32	183	459	655	601	303	39	0	0	2278
57	0	0	0	20	141	401	593	539	251	23	0	0	1968
60	0	0	0	9	90	317	500	448	182	8	0	0	1554
65	0	0	0	1	34	192	346	300	94	1	0	0	968
70	0	0	0	0	9	98	201	171	39	0	0	0	518

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	3	39	118	300	608	902	1115	1057	738	380	82	13	3	42	160	460	1068	1970	3085	4142	4880	5260	5342	5355
45	0	12	56	191	456	752	960	902	589	247	31	0	0	12	68	259	715	1467	2427	3329	3918	4165	4196	4196
50	0	1	22	110	313	603	805	747	444	142	8	0	0	1	23	133	446	1049	1854	2601	3045	3187	3195	3195
55	0	0	4	54	189	457	650	592	312	63	0	0	0	0	4	58	247	704	1354	1946	2258	2321	2321	2321
60	0	0	0	20	98	317	495	439	198	18	0	0	0	0	0	20	118	435	930	1369	1567	1585	1585	1585
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	24	70	132	237	390	577	710	676	473	299	100	32	24	94	226	463	853	1430	2140	2816	3289	3588	3688	3720

(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.
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