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: OGALLALA, NE **COOP ID: 256200**

Climate Division: NE 7 **NWS Call Sign:** **Elevation: 3,230 Feet** **Lat: 41˚08N** **Lon: 101˚43W**

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	36.6	11.4	24.0	74	1997	3	31.4	1989	-23	1979	1	7.2	1979	1271	0	.0	.0	6.1	10.5	30.8	5.7
Feb	43.4	16.3	29.9	78	1962	12	38.3	1999	-24	1951	1	18.8	1993	984	0	.0	.0	10.5	6.9	27.5	3.3
Mar	51.2	23.6	37.4	88	1967	30	43.1	1986	-23	1960	3	31.3	1996	856	0	.0	.0	17.3	2.8	26.1	.6
Apr	61.2	32.7	47.0	95	1980	22	54.6	1981	-2	1975	2	41.5	1995	542	1	.0	.2	24.5	.4	13.5	.1
May	70.9	44.2	57.6	98+	2000	29	62.2	1977	21	1954	3	51.6	1995	257	26	.0	.9	30.5	.0	2.0	.0
Jun	82.1	54.9	68.5	107	1963	30	74.1	1988	32	1969	2	63.5	1982	47	152	.7	7.8	29.9	.0	.0	.0
Jul	89.1	61.1	75.1	111	1954	11	79.1	1980	38	1952	8	69.3	1992	3	315	3.6	16.4	31.0	.0	.0	.0
Aug	87.5	59.2	73.4	106	1969	9	79.8	1983	37+	1964	30	67.5	1992	12	271	1.2	14.3	31.0	.0	.0	.0
Sep	77.8	47.5	62.7	103	1983	2	69.2	1998	19	1984	28	56.7	1993	147	76	.2	5.2	29.3	.0	1.7	.0
Oct	65.2	34.8	50.0	94	1967	4	52.9	1974	6	1997	26	46.4	1976	465	0	.0	.3	27.5	.3	11.9	.0
Nov	48.4	22.4	35.4	80+	1999	14	44.6	1999	-8+	1964	21	23.9	1985	889	0	.0	.0	15.2	3.8	27.0	.5
Dec	39.1	13.5	26.3	73+	1995	1	33.9	1980	-36	1989	22	11.1	1983	1199	0	.0	.0	7.8	8.1	30.7	3.8
Ann	62.7	35.1	48.9	111	Jul 1954	11	79.8	Aug 1983	-36	Dec 1989	22	7.2	Jan 1979	6672	841	5.7	45.1	260.6	32.8	171.2	14.0

\+ 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/normals/usnormals.html

(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

Issue Date: February 2004

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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	.49	.35	1.23	1990	20	1.26	1976	.00+	1999
Feb	.39	.23	1.00	1993	11	1.54	1993	.00+	1999
Mar	1.43	1.28	2.20	1977	11	3.75	1977	.00	1985
Apr	1.94	1.55	3.30	1971	20	4.98	1971	.00+	1992
May	3.47	3.18	3.29	1977	29	7.10	1981	.97	1974
Jun	2.69	2.68	3.36	1965	5	5.16	1982	.43	2000
Jul	2.76	2.46	3.00	1975	31	5.91	1996	.91	1974
Aug	2.03	1.77	2.75	1959	13	5.47	1996	.40	1984
Sep	1.27	.89	2.59	1996	20	6.95	1996	.10	1978
Oct	1.02	.89	2.00	1965	19	2.78	1994	.00	1988
Nov	.77	.63	1.09	1998	3	2.59	1983	.00+	1997
Dec	.48	.33	1.75	1984	11	3.35	1984	.00+	2000
Ann	18.74	17.61	3.36	Jun 1965	5	7.10	May 1981	.00+	Dec 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.4	1.4	.3	.1
Feb	2.9	1.5	.1	@
Mar	5.3	3.7	.8	.3
Apr	6.0	4.3	1.2	.4
May	8.5	6.4	2.6	.9
Jun	7.8	5.8	2.1	.5
Jul	7.5	5.0	1.8	.9
Aug	6.1	4.2	1.2	.5
Sep	4.6	3.0	.8	.3
Oct	4.2	2.7	.6	.2
Nov	3.1	2.1	.3	.1
Dec	2.2	1.2	.3	.1
Ann	61.6	41.3	12.1	4.3

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	.00	.00	.04	.13	.23	.33	.46	.61	.83	1.17	1.53
Feb	.00	.00	.00	.08	.16	.25	.35	.49	.67	.98	1.29
Mar	.06	.18	.39	.60	.83	1.08	1.38	1.76	2.27	3.13	3.96
Apr	.00	.43	.83	1.14	1.42	1.72	2.05	2.42	2.92	3.71	4.44
May	1.09	1.42	1.91	2.33	2.73	3.15	3.61	4.15	4.84	5.92	6.92
Jun	.78	1.04	1.42	1.75	2.08	2.42	2.79	3.23	3.80	4.70	5.53
Jul	.99	1.25	1.62	1.94	2.24	2.55	2.89	3.28	3.78	4.55	5.26
Aug	.35	.53	.83	1.11	1.39	1.70	2.05	2.48	3.04	3.96	4.84
Sep	.08	.16	.32	.49	.68	.91	1.19	1.54	2.03	2.87	3.70
Oct	.03	.10	.24	.39	.55	.74	.97	1.25	1.64	2.30	2.96
Nov	.00	.05	.16	.28	.40	.55	.72	.94	1.25	1.76	2.26
Dec	.00	.00	.00	.06	.15	.26	.40	.58	.84	1.29	1.75
Ann	12.22	13.44	15.03	16.24	17.34	18.40	19.51	20.74	22.25	24.45	26.38

\+ 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

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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	5.9	6.0	1	#
Feb	4.0	2.3	1	#
Mar	7.3	6.5	#	#
Apr	3.0	.5	#	0
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.1	.0	0	0
Oct	.4	.0	#	0
Nov	3.1	1.8	#	#
Dec	3.3	3.1	1	#
Ann	27.1	20.2	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	9.5	1990	20	15.0	1976	15	1988	20	6	1988
Feb	10.0	1993	11	15.7	1978	11	1993	12	5	1993
Mar	16.0	1980	28	30.5	1980	8	1995	27	1	1995
Apr	10.0	1995	18	21.8	1995	10	1995	18	1	1997
May	#	1995	1	#+	1995	#	1995	1	#	1995
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	1.5	1989	13	1.5	1989	0	0	0	0	0
Oct	2.0	1995	23	3.0	1995	3	1995	24	#+	1995
Nov	6.0	1985	14	14.0	1990	8	1979	21	2	1985
Dec	9.0	1978	2	11.5	1978	11	1985	11	9	1978
Ann	16.0	Mar 1980	28	30.5	Mar 1980	15	Jan 1988	20	9	Dec 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.2	1.5	.5	.4	.0
Feb	2.0	1.3	.3	@	@
Mar	3.0	2.3	.8	.4	.1
Apr	1.1	.9	.5	.2	@
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
Oct	.4	.2	.0	.0	.0
Nov	1.6	1.2	.4	.2	.0
Dec	1.4	.8	.4	.1	.0
Ann	11.7	8.2	2.9	1.3	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	5.4	2.5	1.3	.1
Feb	2.9	1.6	1.3	.4
Mar	3.1	1.4	.4	.0
Apr	.5	.4	.2	@
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	@	.0	.0
Nov	1.2	.4	.1	.0
Dec	2.2	1.3	.1	.0
Ann	15.5	7.6	3.4	.5

+ 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	5/22	5/18	5/16	5/14	5/12	5/10	5/07	5/05	5/01
32	5/18	5/14	5/11	5/08	5/06	5/03	5/01	4/28	4/23
28	5/07	5/03	4/30	4/28	4/26	4/24	4/22	4/19	4/15
24	4/25	4/21	4/18	4/15	4/12	4/09	4/07	4/03	3/30
20	4/13	4/09	4/05	4/03	3/31	3/29	3/26	3/23	3/18
16	4/08	4/02	3/28	3/24	3/21	3/17	3/13	3/08	3/02

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	9/18	9/20	9/23	9/25	9/28	10/01	10/05
32	9/13	9/19	9/23	9/27	9/30	10/03	10/06	10/11	10/16
28	9/22	9/28	10/02	10/05	10/09	10/12	10/15	10/19	10/25
24	10/04	10/09	10/13	10/16	10/19	10/22	10/25	10/29	11/03
20	10/10	10/15	10/19	10/22	10/26	10/29	11/01	11/05	11/11
16	10/26	10/30	11/03	11/06	11/08	11/11	11/14	11/18	11/22

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	152	145	141	137	133	130	126	121	115
32	168	161	155	151	146	142	137	132	124
28	184	177	173	169	165	161	157	152	146
24	210	203	197	193	189	185	181	175	168
20	224	218	214	211	208	204	201	197	192
16	255	247	241	237	232	228	223	217	210

***** 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	1271	984	856	542	257	47	3	12	147	465	889	1199	6672
60	1116	844	701	397	148	13	0	3	70	313	739	1044	5388
57	1023	763	608	314	98	5	0	1	39	226	649	951	4677
55	961	712	546	262	71	2	0	0	24	173	591	889	4231
50	810	581	397	153	27	0	0	0	6	72	453	740	3239
32	331	209	46	2	0	0	0	0	0	0	101	278	967

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	83	148	213	451	792	1095	1335	1282	919	558	202	102	7180
55	0	7	0	21	150	407	622	569	254	19	2	0	2051
57	0	3	0	13	115	350	560	507	208	10	0	0	1766
60	0	0	0	6	71	268	467	416	149	3	0	0	1380
65	0	0	0	1	26	152	315	271	76	0	0	0	841
70	0	0	0	0	6	69	179	149	31	0	0	0	434

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	5	35	101	279	578	876	1095	1035	695	342	76	9	5	40	141	420	998	1874	2969	4004	4699	5041	5117	5126
45	0	8	49	174	426	726	940	880	547	220	29	0	0	8	57	231	657	1383	2323	3203	3750	3970	3999	3999
50	0	0	14	96	287	578	785	725	407	116	8	0	0	0	14	110	397	975	1760	2485	2892	3008	3016	3016
55	0	0	1	45	169	431	630	571	279	50	0	0	0	0	1	46	215	646	1276	1847	2126	2176	2176	2176
60	0	0	0	15	86	289	478	420	170	13	0	0	0	0	0	15	101	390	868	1288	1458	1471	1471	1471
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	20	55	109	206	356	556	701	668	444	262	83	32	20	75	184	390	746	1302	2003	2671	3115	3377	3460	3492

(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