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: CARNEGIE 5 NE, OK **COOP ID: 341504**

Climate Division: OK 7 **NWS Call Sign:** **Elevation: 1,481 Feet** **Lat: 35˚11N** **Lon: 98˚35W**

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	47.1	22.6	34.9	84	1950	25	41.3	1990	-13	1988	8	24.3	1979	934	0	.0	.0	17.1	3.5	24.7	.2
Feb	53.1	27.5	40.3	89	1996	22	49.6	1976	-7	1951	2	27.6	1978	691	0	.0	.0	19.4	2.0	16.5	.2
Mar	61.3	35.4	48.4	94+	1956	31	52.5	1974	2	1948	13	43.6	1996	516	0	.0	.2	27.7	.2	9.0	.0
Apr	70.7	45.5	58.1	103	1972	12	63.9	1981	19	1971	7	52.5	1997	232	25	@	1.0	29.6	.0	1.8	.0
May	79.1	55.9	67.5	108	1985	30	74.7	1996	29	1960	1	62.9	1976	65	143	.3	5.0	31.0	.0	.0	.0
Jun	88.4	65.9	77.2	113	1980	28	83.0	1998	45	1964	1	72.7	1989	3	367	2.6	17.6	30.0	.0	.0	.0
Jul	94.0	69.7	81.9	113	1954	25	88.4	1998	51+	1990	14	77.8	1975	0	523	8.7	26.4	31.0	.0	.0	.0
Aug	93.1	68.1	80.6	113+	1951	6	87.1	2000	47	1962	26	73.7	1992	1	485	8.2	24.5	31.0	.0	.0	.0
Sep	85.1	60.3	72.7	110	1951	1	81.6	1998	26	1984	30	64.5	1974	29	260	1.9	12.9	30.0	.0	.1	.0
Oct	74.3	48.0	61.2	100	1951	3	65.4	1979	12	1993	31	54.5	1976	162	42	.0	1.8	30.8	.0	1.3	.0
Nov	59.9	35.3	47.6	88+	1952	1	56.5	1999	7	1991	3	41.8	1972	522	0	.0	.0	25.1	.1	9.8	.0
Dec	49.4	26.0	37.7	86	1955	24	42.8	1999	-14	1989	23	26.0	1983	846	0	.0	.0	19.0	2.1	21.6	.1
Ann	71.3	46.7	59.0	113+	Jun 1980	28	88.4	Jul 1998	-14	Dec 1989	23	24.3	Jan 1979	4001	1845	21.7	89.4	321.7	7.9	84.8	.5

+ 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

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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	1.09	1.00	1.43	1949	26	3.54	1973	.00+	1996
Feb	1.28	1.07	1.79	1955	4	4.00	1990	.00+	1996
Mar	2.35	1.96	3.17	1985	4	7.09	1973	.00	1997
Apr	2.79	2.43	3.28	1978	10	7.18	1997	.00	1987
May	5.73	4.84	8.60	1949	18	12.30	1977	.41	1988
Jun	4.29	3.62	4.94	1995	4	12.50	1989	.43	1998
Jul	2.18	1.65	3.75	1953	19	8.69	1975	.00	1980
Aug	2.54	2.36	2.80	1991	30	7.93	1996	.00	2000
Sep	3.12	2.53	5.85	1961	13	7.73	1988	.24	1998
Oct	2.79	2.19	6.32	1983	20	11.44	1983	.04	1978
Nov	1.66	1.61	4.30	1994	20	6.70	1994	.00+	1995
Dec	1.38	.93	2.60	1965	24	4.79	1999	.08	1977
Ann	31.20	30.81	8.60	May 1949	18	12.50	Jun 1989	.00+	Aug 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.9	2.0	.9	.3
Feb	4.3	3.0	.8	.3
Mar	5.6	3.8	1.5	.6
Apr	5.9	4.2	1.9	.8
May	8.6	6.5	3.7	2.0
Jun	7.0	5.6	3.1	1.6
Jul	4.5	3.2	1.6	.7
Aug	5.8	4.3	1.5	.8
Sep	6.2	4.4	1.8	.9
Oct	5.8	4.2	1.7	.9
Nov	5.1	3.1	1.2	.4
Dec	4.0	2.7	1.1	.4
Ann	66.7	47.0	20.8	9.7

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	.00	.00	.19	.37	.56	.78	1.04	1.36	1.80	2.55	3.28
Feb	.00	.00	.27	.49	.71	.96	1.25	1.61	2.09	2.90	3.68
Mar	.09	.28	.62	.97	1.34	1.76	2.26	2.89	3.75	5.19	6.60
Apr	.14	.40	.82	1.23	1.67	2.15	2.72	3.43	4.40	6.00	7.55
May	.89	1.38	2.21	3.00	3.82	4.72	5.75	7.00	8.69	11.43	14.05
Jun	.70	1.07	1.69	2.28	2.89	3.55	4.31	5.23	6.46	8.46	10.38
Jul	.05	.19	.47	.78	1.13	1.53	2.02	2.65	3.53	5.02	6.50
Aug	.17	.42	.83	1.20	1.59	2.02	2.53	3.14	3.97	5.33	6.65
Sep	.28	.49	.91	1.34	1.82	2.36	3.00	3.80	4.91	6.76	8.57
Oct	.17	.34	.68	1.06	1.49	1.99	2.60	3.37	4.45	6.28	8.11
Nov	.00	.12	.39	.64	.92	1.23	1.60	2.05	2.69	3.74	4.77
Dec	.06	.12	.27	.45	.67	.92	1.24	1.65	2.23	3.24	4.26
Ann	20.28	22.32	24.98	27.02	28.85	30.64	32.50	34.57	37.10	40.81	44.05

\+ 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	3.4	2.0	#	#
Feb	2.2	.1	#	#
Mar	.2	.0	#	0
Apr	.0	.0	0	0
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	.0	.0	0	0
Nov	.5	.0	#	0
Dec	1.5	.0	#	#
Ann	7.8	2.1	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	7.0	1988	7	13.0	1988	13	1988	10	3	1988
Feb	10.0	1979	7	14.1	1978	10	1979	7	2	1978
Mar	3.0	1994	9	3.0	1994	2+	1999	13	#+	1999
Apr	.0	0	0	.0	0	0	0	0	0	0
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	.0	0	0	.0	0	0	0	0	0	0
Oct	.0	0	0	.0	0	0	0	0	0	0
Nov	5.0	1972	21	5.0	1972	5	1972	21	#+	2000
Dec	6.0	1971	3	6.0+	2000	5	1984	5	1+	2000
Ann	10.0	Feb 1979	7	14.1	Feb 1978	13	Jan 1988	10	3	Jan 1988

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.2	1.1	.5	.2	.0
Feb	1.1	.8	.2	.1	@
Mar	.1	.1	@	.0	.0
Apr	.0	.0	.0	.0	.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	.0	.0	.0	.0	.0
Oct	.0	.0	.0	.0	.0
Nov	.2	.2	@	@	.0
Dec	.8	.6	.1	@	.0
Ann	3.4	2.8	.8	.3	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	2.6	1.4	.8	.3
Feb	1.7	.6	.2	@
Mar	@	.0	.0	.0
Apr	.0	.0	.0	.0
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	.0	.0	.0	.0
Nov	.2	@	@	.0
Dec	.8	.3	@	.0
Ann	5.3	2.3	1.0	.3

+ 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	4/30	4/25	4/22	4/19	4/17	4/14	4/11	4/08	4/04
32	4/17	4/14	4/11	4/09	4/07	4/05	4/03	3/31	3/28
28	4/10	4/06	4/03	3/31	3/29	3/26	3/24	3/21	3/16
24	4/04	3/27	3/21	3/17	3/12	3/08	3/03	2/26	2/18
20	3/26	3/17	3/11	3/05	2/28	2/23	2/17	2/10	2/01
16	3/04	2/24	2/18	2/14	2/09	2/04	1/30	1/24	1/14

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	9/29	10/04	10/07	10/11	10/14	10/17	10/20	10/23	10/28
32	10/08	10/14	10/19	10/23	10/27	10/30	11/04	11/08	11/15
28	10/16	10/24	10/29	11/03	11/07	11/11	11/16	11/22	11/29
24	10/31	11/07	11/12	11/16	11/20	11/24	11/29	12/04	12/11
20	11/06	11/14	11/19	11/24	11/29	12/03	12/08	12/13	12/21
16	11/16	11/25	12/01	12/06	12/11	12/16	12/21	12/28	1/07

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	198	192	187	183	179	175	171	167	160
32	222	215	210	206	202	198	193	188	181
28	248	239	233	227	222	217	212	206	197
24	285	274	266	259	252	246	239	231	220
20	309	297	288	280	273	266	258	249	237
16	>365	330	318	310	303	295	288	280	268

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	934	691	516	232	65	3	0	1	29	162	522	846	4001
60	779	561	362	127	22	0	0	0	8	72	380	691	3002
57	688	483	275	78	10	0	0	0	3	39	301	600	2477
55	627	433	220	53	5	0	0	0	0	24	252	541	2155
50	482	318	109	15	1	0	0	0	0	5	150	399	1479
32	98	60	2	0	0	0	0	0	0	0	6	59	225

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	187	293	509	783	1101	1354	1546	1507	1221	902	474	235	10112
55	3	22	14	146	393	664	833	794	531	213	30	5	3648
57	1	16	7	111	336	604	771	732	474	166	19	2	3239
60	0	10	1	69	255	514	678	639	389	106	8	0	2669
65	0	0	0	25	143	367	523	485	260	42	0	0	1845
70	0	0	0	7	65	231	369	337	156	11	0	0	1176

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	92	197	393	628	933	1163	1352	1309	1031	722	320	119	92	289	682	1310	2243	3406	4758	6067	7098	7820	8140	8259
45	40	110	264	482	778	1013	1197	1154	881	569	204	54	40	150	414	896	1674	2687	3884	5038	5919	6488	6692	6746
50	9	56	156	342	624	863	1042	999	731	420	116	23	9	65	221	563	1187	2050	3092	4091	4822	5242	5358	5381
55	0	20	80	215	469	713	887	844	583	280	56	4	0	20	100	315	784	1497	2384	3228	3811	4091	4147	4151
60	0	3	35	115	322	563	732	689	438	164	22	0	0	3	38	153	475	1038	1770	2459	2897	3061	3083	3083
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	90	147	259	405	610	779	883	852	677	467	206	95	90	237	496	901	1511	2290	3173	4025	4702	5169	5375	5470

(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