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: WILBURTON 9 ENE, OK **COOP ID: 349634**

Climate Division: OK 9 **NWS Call Sign:** **Elevation: 635 Feet** **Lat: 34˚57N** **Lon: 95˚10W**

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	50.5	28.1	39.3	80+	1950	26	47.0	1990	-9	1962	11	27.5	1979	796	0	.0	.0	17.5	2.7	21.9	.4
Feb	57.0	32.0	44.5	90	1996	22	52.8	1976	-16	1951	2	32.9	1978	578	3	.0	@	20.5	1.2	16.2	.2
Mar	66.0	40.2	53.1	93	1974	31	58.4	1974	4	1996	9	47.9	1996	374	5	.0	.1	28.6	.1	7.8	.0
Apr	74.7	47.7	61.2	92+	1948	7	65.7	1981	25+	1950	6	56.5	1983	148	33	.0	.3	29.9	.0	1.7	.0
May	81.3	56.8	69.1	96	1998	31	73.9	1987	32+	1954	4	63.3	1976	42	167	.0	1.8	31.0	.0	.0	.0
Jun	88.3	64.4	76.4	108	1953	19	80.3	1994	42+	1948	2	73.0	1974	1	342	.2	12.9	30.0	.0	.0	.0
Jul	94.5	68.7	81.6	111+	1954	13	87.2	1998	48+	1970	22	78.5	1989	0	514	5.8	25.0	31.0	.0	.0	.0
Aug	94.2	67.6	80.9	111	1998	2	86.1	1980	48+	1966	25	74.6	1992	1	492	6.4	24.5	31.0	.0	.0	.0
Sep	85.9	60.9	73.4	113	1998	4	80.4	1998	33	1989	24	67.0	1974	18	269	1.3	10.6	30.0	.0	@	.0
Oct	75.9	49.5	62.7	101	1953	1	66.3	1971	19	1993	31	55.8	1976	125	53	.0	1.5	30.9	.0	1.7	.0
Nov	62.6	39.6	51.1	88	1955	15	57.3	1973	6	1976	29	44.7	2000	424	6	.0	.0	26.4	.1	9.3	.0
Dec	53.5	31.1	42.3	81	1948	13	49.7	1984	-10	1989	23	29.9	1983	703	0	.0	.0	20.8	1.3	18.6	.2
Ann	73.7	48.9	61.3	113	Sep 1998	4	87.2	Jul 1998	-16	Feb 1951	2	27.5	Jan 1979	3210	1884	13.7	76.7	327.6	5.4	77.2	.8

\+ 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	2.76	2.22	4.38	1998	4	9.17	1998	.00	1986
Feb	2.78	2.38	5.34	1966	9	8.04	1997	.26	1995
Mar	4.31	4.15	4.05	1977	27	8.34	1973	1.91	1971
Apr	4.74	4.22	3.95	1986	4	9.90	1990	.91	1987
May	6.11	5.73	7.19	1960	19	16.45	1990	1.72	1988
Jun	5.15	4.98	3.55	1957	1	10.27	2000	1.39	1994
Jul	3.48	3.31	5.02	1972	4	8.19	1992	.00	1993
Aug	2.61	2.59	7.70	1964	15	6.72	1977	.07	2000
Sep	5.05	4.57	6.05	1950	16	11.78	1992	.88	1982
Oct	4.42	3.74	6.45	1971	17	12.28	1971	.17	1978
Nov	5.31	4.71	5.20	1985	15	15.66	1994	.03	1989
Dec	3.70	3.63	4.49	1971	10	9.75	1971	.09	1989
Ann	50.42	49.15	7.70	Aug 1964	15	16.45	May 1990	.00+	Jul 1993

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.4	5.1	1.7	.7
Feb	7.3	5.0	1.9	.9
Mar	8.8	6.7	2.9	1.3
Apr	9.5	7.4	3.0	1.6
May	10.3	8.0	4.3	2.2
Jun	9.2	6.9	3.6	1.7
Jul	6.6	4.6	2.0	1.0
Aug	6.8	5.0	1.7	.6
Sep	8.5	6.6	3.3	1.5
Oct	8.1	5.7	2.5	1.3
Nov	7.6	5.9	3.4	1.8
Dec	8.0	5.6	2.4	1.1
Ann	98.1	72.5	32.7	15.7

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	.20	.49	.93	1.33	1.76	2.22	2.75	3.41	4.29	5.72	7.11
Feb	.47	.72	1.12	1.50	1.89	2.32	2.80	3.39	4.18	5.45	6.67
Mar	1.90	2.29	2.82	3.26	3.67	4.08	4.52	5.02	5.66	6.62	7.49
Apr	1.45	1.90	2.57	3.15	3.71	4.29	4.93	5.69	6.66	8.18	9.59
May	1.80	2.38	3.25	4.00	4.74	5.50	6.34	7.34	8.62	10.63	12.50
Jun	1.74	2.23	2.94	3.54	4.12	4.72	5.37	6.13	7.11	8.62	10.02
Jul	.11	.37	.85	1.35	1.91	2.54	3.30	4.25	5.58	7.80	9.99
Aug	.40	.62	1.00	1.36	1.73	2.14	2.61	3.19	3.96	5.21	6.41
Sep	1.46	1.94	2.66	3.28	3.90	4.53	5.24	6.07	7.14	8.83	10.39
Oct	.64	1.01	1.64	2.26	2.90	3.60	4.41	5.40	6.74	8.92	11.02
Nov	.50	.88	1.60	2.34	3.14	4.05	5.13	6.47	8.32	11.40	14.41
Dec	.44	.72	1.24	1.76	2.31	2.92	3.63	4.52	5.72	7.70	9.62
Ann	35.24	38.16	41.90	44.76	47.29	49.75	52.29	55.11	58.53	63.49	67.79

\+ 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	2.9	.5	#	#
Feb	1.7	.0	#	0
Mar	.4	.0	#	0
Apr	#	.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	.3	.0	#	0
Dec	.7	.0	#	0
Ann	6.0	.5	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	10.0	1995	23	15.7	1995	12	1995	23	2	1977
Feb	10.0	1975	23	14.0	1979	5	1979	25	1	1979
Mar	4.0	1971	3	4.0	1971	4	1971	3	#+	1994
Apr	#	1973	9	#	1973	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	.1	1993	30	.1	1993	0	0	0	0	0
Nov	2.0	1976	14	2.0+	1993	2	1993	26	#+	2000
Dec	4.0	1975	25	7.0	1975	4+	2000	31	1	2000
Ann	10.0+	Jan 1995	23	15.7	Jan 1995	12	Jan 1995	23	2	Jan 1977

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.3	1.0	.4	.2	@
Feb	.6	.4	.1	.1	.1
Mar	.2	.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
Nov	.3	.2	.0	.0	.0
Dec	.8	.5	.2	.0	.0
Ann	3.2	2.2	.7	.3	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	1.4	.7	.4	.0
Feb	.3	.0	.0	.0
Mar	.1	.1	.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	.0	.0
Dec	.2	.1	.0	.0
Ann	2.2	.9	.4	.0

+ 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	5/01	4/27	4/23	4/21	4/18	4/15	4/13	4/09	4/05
32	4/20	4/16	4/13	4/10	4/08	4/05	4/03	3/31	3/27
28	4/12	4/07	4/03	3/31	3/28	3/25	3/22	3/19	3/14
24	3/28	3/22	3/17	3/13	3/09	3/06	3/02	2/25	2/19
20	3/17	3/09	3/03	2/26	2/21	2/16	2/11	2/05	1/28
16	3/10	2/28	2/20	2/13	2/07	2/01	1/25	1/16	1/03

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	9/23	9/28	10/02	10/05	10/08	10/12	10/15	10/19	10/24
32	10/08	10/13	10/17	10/20	10/23	10/26	10/29	11/02	11/07
28	10/18	10/25	10/29	11/02	11/06	11/10	11/14	11/19	11/25
24	10/31	11/06	11/10	11/14	11/18	11/21	11/25	11/29	12/05
20	11/09	11/16	11/22	11/26	12/01	12/05	12/10	12/16	12/23
16	11/24	12/04	12/11	12/17	12/23	12/29	1/04	1/12	1/24

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	192	186	181	177	173	169	165	160	153
32	220	212	207	202	198	193	188	183	175
28	247	239	232	227	222	217	212	205	197
24	279	270	264	258	253	247	241	235	226
20	317	305	296	289	282	275	268	259	247
16	>365	350	331	320	312	305	297	288	276

***** 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	796	578	374	148	42	1	0	1	18	125	424	703	3210
60	642	447	235	61	11	0	0	0	3	49	290	556	2294
57	557	372	166	29	4	0	0	0	0	24	220	471	1843
55	498	326	129	16	1	0	0	0	0	13	180	415	1578
50	362	224	59	2	0	0	0	0	0	2	99	290	1038
32	54	24	0	0	0	0	0	0	0	0	2	34	114

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	281	374	655	876	1148	1331	1537	1515	1242	951	575	354	10839
55	13	31	70	201	436	641	824	802	552	252	62	22	3906
57	9	22	46	154	377	581	762	740	492	201	42	16	3442
60	2	13	21	97	291	491	669	647	405	133	22	8	2799
65	0	3	5	33	167	342	514	492	269	53	6	0	1884
70	0	0	0	7	79	203	359	344	158	14	0	0	1164

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	118	214	427	639	900	1091	1287	1261	997	699	345	159	118	332	759	1398	2298	3389	4676	5937	6934	7633	7978	8137
45	59	122	293	492	745	941	1132	1106	847	545	223	77	59	181	474	966	1711	2652	3784	4890	5737	6282	6505	6582
50	26	64	180	348	591	791	977	951	697	392	132	41	26	90	270	618	1209	2000	2977	3928	4625	5017	5149	5190
55	6	27	98	218	437	641	822	796	549	257	62	16	6	33	131	349	786	1427	2249	3045	3594	3851	3913	3929
60	0	9	43	119	289	491	667	641	407	146	26	0	0	9	52	171	460	951	1618	2259	2666	2812	2838	2838
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	92	160	281	420	601	742	846	823	663	457	225	116	92	252	533	953	1554	2296	3142	3965	4628	5085	5310	5426

(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