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: LAWTON, OK **COOP ID: 345063**

Climate Division: OK 7 **NWS Call Sign:** **Elevation: 1,150 Feet** **Lat: 34˚37N** **Lon: 98˚27W**

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	49.9	26.4	38.2	85	1950	25	44.6	1990	-2	1988	8	27.1	1979	831	0	.0	.0	17.2	3.5	24.3	.1
Feb	55.9	31.4	43.7	89	1996	23	53.6	1976	0+	1951	2	30.7	1978	604	0	.0	.0	19.5	2.1	15.1	@
Mar	64.6	40.1	52.4	98	1971	27	57.1	1974	6+	1948	11	46.0	1996	396	2	.0	.3	27.7	.2	6.3	.0
Apr	73.4	49.3	61.4	99	1972	12	67.0	1981	22	1957	13	55.1	1997	158	48	.0	.8	29.5	.0	.7	.0
May	81.5	59.4	70.5	108	2000	24	76.6	1996	33	1954	3	66.2	1976	32	201	.4	5.4	31.0	.0	.0	.0
Jun	90.0	68.1	79.1	114	1994	28	84.1	1990	46+	1982	11	75.1	1983	1	422	2.2	17.3	30.0	.0	.0	.0
Jul	95.7	72.6	84.2	114	1980	4	90.8	1980	52	1982	12	80.8	1976	0	593	8.6	26.5	31.0	.0	.0	.0
Aug	94.7	71.5	83.1	111	1964	6	88.5	1983	54+	1961	24	77.2	1992	0	561	8.3	25.4	31.0	.0	.0	.0
Sep	86.1	63.4	74.8	109	1951	2	82.3	1998	35	1984	30	68.1	1974	14	306	1.6	12.8	30.0	.0	.0	.0
Oct	75.6	51.5	63.6	104	1977	1	67.5	1979	20	1993	31	57.6	1976	108	63	@	2.1	30.8	.0	.6	.0
Nov	61.9	39.4	50.7	88	1980	8	56.8	1999	11	1975	26	45.1	2000	434	3	.0	.0	25.2	.2	8.8	.0
Dec	52.1	29.7	40.9	88	1955	24	44.6	1988	-8	1989	22	29.9	1983	748	0	.0	.0	19.7	2.3	21.1	.2
Ann	73.5	50.2	61.9	114+	Jun 1994	28	90.8	Jul 1980	-8	Dec 1989	22	27.1	Jan 1979	3326	2199	21.1	90.6	322.6	8.3	76.9	.3

\+ 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	1.15	1.22	1.70	1949	23	3.42	1973	.00+	1986
Feb	1.44	1.11	2.85	1990	27	4.61	1990	.00	1996
Mar	2.54	2.28	2.80	1953	30	6.34	1985	.00	1971
Apr	2.91	2.64	4.63	1992	17	6.23	1997	.10	1989
May	5.08	4.41	4.60	1952	18	16.33	1982	.14	1998
Jun	3.97	3.93	4.35	1953	6	10.28	1999	.61	1988
Jul	2.01	1.35	3.68	1990	21	8.41	1990	.00	1980
Aug	2.36	1.49	4.60	1969	23	9.45	1996	.00	2000
Sep	3.37	3.07	5.02	1969	22	7.48	1991	.36	1979
Oct	3.24	2.45	6.25	1953	23	11.08	2000	.16	1978
Nov	1.89	1.22	2.60	1998	1	4.92	2000	.03	1989
Dec	1.68	1.34	2.70	1991	20	5.83	1991	.00	1977
Ann	31.64	31.29	6.25	Oct 1953	23	16.33	May 1982	.00+	Aug 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.2	2.4	.7	.3
Feb	4.3	2.6	.9	.4
Mar	6.2	4.1	2.0	.7
Apr	6.1	4.5	2.1	.8
May	7.8	5.9	3.2	1.8
Jun	7.3	5.2	2.9	1.5
Jul	4.7	2.9	1.1	.7
Aug	5.6	3.9	1.5	.5
Sep	6.3	4.8	2.2	1.1
Oct	5.7	4.0	2.0	1.0
Nov	4.9	3.0	1.0	.4
Dec	4.3	2.9	1.2	.5
Ann	67.4	46.2	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	.40	.61	.85	1.11	1.45	1.91	2.65	3.39
Feb	.04	.15	.35	.55	.78	1.05	1.36	1.76	2.31	3.24	4.16
Mar	.18	.44	.84	1.22	1.61	2.04	2.53	3.14	3.96	5.29	6.58
Apr	.41	.64	1.06	1.47	1.89	2.35	2.89	3.55	4.45	5.90	7.31
May	.55	.93	1.64	2.35	3.11	3.96	4.96	6.20	7.90	10.70	13.43
Jun	.95	1.32	1.90	2.41	2.93	3.47	4.08	4.81	5.76	7.26	8.68
Jul	.06	.19	.47	.75	1.07	1.44	1.89	2.45	3.24	4.57	5.88
Aug	.10	.30	.65	.99	1.37	1.79	2.28	2.91	3.76	5.18	6.56
Sep	.45	.72	1.20	1.67	2.16	2.71	3.34	4.12	5.17	6.89	8.56
Oct	.24	.44	.86	1.30	1.80	2.37	3.06	3.93	5.14	7.18	9.20
Nov	.14	.26	.50	.76	1.05	1.38	1.78	2.29	3.00	4.19	5.37
Dec	.05	.17	.41	.65	.91	1.22	1.59	2.05	2.70	3.78	4.85
Ann	20.49	22.57	25.28	27.36	29.23	31.06	32.95	35.07	37.65	41.44	44.76

\+ 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	1.8	.0	#	0
Feb	.9	.0	#	0
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	#	.0	0	0
Dec	.0	.0	#	0
Ann	2.7	.0	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	9.0	1988	7	13.0	1988	5	1973	13	1	1973
Feb	3.0	1972	11	3.0+	1980	3+	1983	4	#+	1983
Mar	#	1974	21	#+	1974	0	0	0	0	0
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	#	1974	29	#	1974	0	0	0	0	0
Dec	.3	1989	7	.3	1989	3	1984	5	#+	1989
Ann	9.0	Jan 1988	7	13.0	Jan 1988	5	Jan 1973	13	1	Jan 1973

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.3	.3	.3	.1	.0
Feb	.3	.3	.1	.0	.0
Mar	.0	.0	.0	.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	.0	.0	.0	.0	.0
Dec	.1	.0	.0	.0	.0
Ann	.7	.6	.4	.1	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.4	.3	.3	.0
Feb	.1	.1	.0	.0
Mar	.0	.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	.0	.0	.0	.0
Dec	.0	.0	.0	.0
Ann	.5	.4	.3	.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	4/19	4/14	4/11	4/08	4/06	4/03	3/31	3/28	3/23
32	4/11	4/07	4/03	4/01	3/29	3/26	3/23	3/20	3/16
28	3/31	3/25	3/20	3/16	3/12	3/09	3/05	2/28	2/22
24	3/21	3/12	3/05	2/28	2/23	2/17	2/12	2/05	1/27
20	3/09	3/01	2/23	2/17	2/13	2/08	2/03	1/28	1/19
16	2/28	2/19	2/13	2/07	2/02	1/27	1/21	1/12	0/00

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	10/09	10/15	10/19	10/22	10/25	10/28	11/01	11/05	11/10
32	10/21	10/27	10/31	11/04	11/07	11/11	11/14	11/19	11/25
28	11/02	11/07	11/11	11/14	11/17	11/20	11/23	11/27	12/02
24	11/10	11/17	11/22	11/26	11/30	12/03	12/07	12/12	12/19
20	11/15	11/24	11/30	12/05	12/10	12/15	12/21	12/27	1/05
16	11/24	12/05	12/12	12/19	12/25	12/31	1/08	1/18	0/00

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	219	213	209	205	202	198	195	190	184
32	242	236	231	227	223	219	215	210	204
28	273	264	259	253	249	244	239	233	225
24	310	300	292	285	279	273	266	259	248
20	334	321	312	305	298	292	285	277	266
16	>365	>365	354	338	327	318	308	298	285

***** 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	831	604	396	158	32	1	0	0	14	108	434	748	3326
60	677	473	255	74	8	0	0	0	2	40	297	594	2420
57	586	399	182	40	3	0	0	0	0	18	225	505	1958
55	526	351	142	25	1	0	0	0	0	9	182	448	1684
50	385	248	66	5	0	0	0	0	0	1	98	311	1114
32	52	33	1	0	0	0	0	0	0	0	2	29	117

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	243	358	630	880	1192	1411	1616	1584	1282	978	560	304	11038
55	5	32	58	215	480	721	903	871	592	274	51	10	4212
57	3	23	37	171	419	661	841	809	532	221	33	5	3755
60	1	14	16	114	332	571	748	716	445	150	16	1	3124
65	0	0	2	48	201	422	593	561	306	63	3	0	2199
70	0	0	0	14	101	278	438	408	187	19	0	0	1445

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	103	205	418	644	947	1169	1364	1327	1036	723	329	129	103	308	726	1370	2317	3486	4850	6177	7213	7936	8265	8394
45	43	118	281	496	792	1019	1209	1172	886	570	214	61	43	161	442	938	1730	2749	3958	5130	6016	6586	6800	6861
50	14	59	170	353	637	869	1054	1017	736	419	119	22	14	73	243	596	1233	2102	3156	4173	4909	5328	5447	5469
55	0	22	87	225	483	719	899	862	587	284	57	4	0	22	109	334	817	1536	2435	3297	3884	4168	4225	4229
60	0	5	36	118	335	570	744	707	446	167	19	0	0	5	41	159	494	1064	1808	2515	2961	3128	3147	3147
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	92	153	260	403	619	786	897	874	679	458	210	103	92	245	505	908	1527	2313	3210	4084	4763	5221	5431	5534

(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

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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