

The Climate of Cleveland County

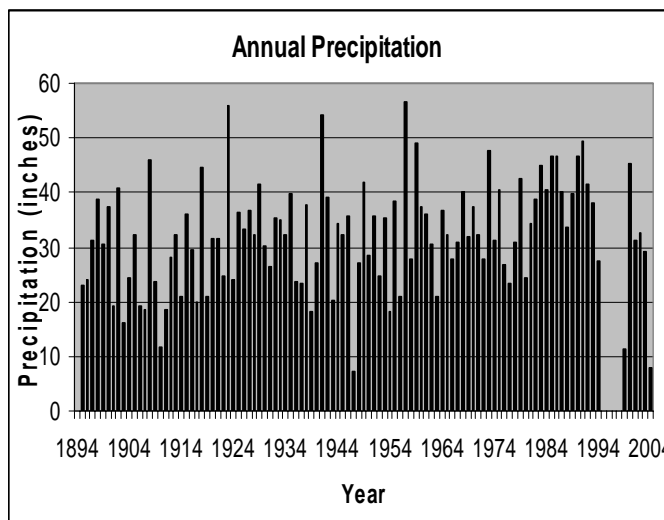
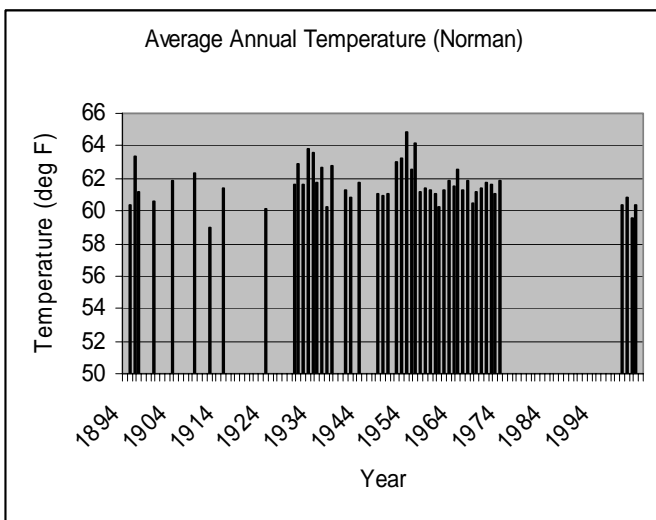


Cleveland County is part of the Central Great Plains in the far western regions of the county and transitions to Crosstimbers over most of the county. Average annual precipitation ranges from about 36 inches in western Cleveland County to nearly 40 inches in the east. May and September are the wettest months, on average, but much of the spring through fall receives sufficient rainfall. Nearly every winter has at least one inch of snow, with one year in three having ten or more inches.

Temperatures average near 61 degrees, with a slight increase from north to south. Temperatures range from an average daytime high of 94 degrees in July to an average low of 28 degrees in January. Cleveland County averages a growing season of 209 days, but plants that can withstand short periods of colder temperatures may have an additional three to six weeks.

Winds from the south to southeast are quite dominant, averaging near ten miles-per-hour. Relative humidity, on average, ranges from 45% to 88% during the day. During the year, humidity is highest in May and lowest in August. Winter months tend to be cloudier than summer months. The percentage of possible sunshine ranges from an average of about 55% in winter to nearly 80% in summer.

Thunderstorms occur on about 49 days each year, predominantly in the spring and summer. During the period 1950 - 2003, Cleveland County recorded 55 tornadoes. The most recent significant tornado (F2 intensity or greater) occurred on May 8, 2003. This F4 tornado took nearly the same path as the May 3, 1999 tornado. The May 3, 1999 tornado was one of the costliest natural disasters in US history and ranks among the deadliest in Oklahoma history. Typically, there are about 3 events each year of hail exceeding one inch in diameter. As information collection improves, both the number of reported tornadoes and the number of severe hail events have increased.



Temperature (deg Fahrenheit)												
	AVERAGES (1971-2000)			EXTREMES (1952-2003)				AVG # DAYS PER MONTH (1971-2000)				
	Daily Max	Daily Min	Daily Avg	Record High		Record Low		Max>100	Max>90	Max<32	Min<32	Min<0
Jan	49.3	27.5	38.4	80	(22nd, 1967)	-6	(8th, 1988)			4	21	*
Feb	55.6	32.0	43.8	91	(22nd, 1996)	-2	(4th, 1996)		*	2	14	*
Mar	64.2	39.8	52.0	95	(11th, 1967)	4	(3rd, 1960)		*	*	7	
Apr	73.3	48.9	61.1	100	(12th, 1972)	19	(3rd, 1975)	*	*		1	
May	80.4	58.7	69.6	102	(24th, 2000)	33	(3rd, 1954)	*	2			
Jun	87.8	65.9	76.8	107	(14th, 1953)	44	(5th, 1964)	1	12			
Jul	94.0	70.5	82.2	110	(12th, 1954)	53	(21st, 1970)	6	24			
Aug	93.5	69.6	81.5	112	(5th, 1964)	50	(26th, 1962)	5	24			
Sep	85.7	62.2	74.0	110	(3rd, 2000)	36	(24th, 1989)	1	11			
Oct	75.1	50.7	62.9	100	(4th, 1963)	18	(31st, 1993)	*	1		1	
Nov	61.0	38.9	50.0	85	(1st, 1952)	10	(3rd, 1991)			*	8	
Dec	51.2	30.1	40.7	85	(24th, 1955)	-11	(23rd, 1989)			2	18	*
Annual	72.7	49.7	61.2	112	(Aug 5, 1964)	-11	(Dec 23, 1989)	12	75	9	70	*

Precipitation (inches)											
	AVERAGE	EXTREMES (1952-2003)				AVG # DAYS PER MONTH (1971-2000)					
	1971-2000	Monthly Max	Daily Max		any	meas	0.10"+	0.25"+	0.50"+	1.00"+	
Jan	1.22"	4.26" (1998)	2.82"	(4th, 1998)	7	4	2	1	1	*	
Feb	1.69"	4.01" (1997)	2.18"	(21st, 1997)	7	5	3	2	1	1	
Mar	2.73"	6.78" (1973)	2.82"	(17th, 1987)	9	7	5	3	2	1	
Apr	3.34"	8.33" (1957)	3.60"	(26th, 1963)	8	7	5	3	2	1	
May	5.21"	12.33" (1957)	7.65"	(28th, 1987)	11	9	7	5	3	2	
Jun	3.85"	10.01" (1989)	4.09"	(5th, 1985)	8	7	5	4	3	1	
Jul	2.54"	9.32" (1959)	4.07"	(21st, 1961)	7	5	4	2	2	1	
Aug	2.50"	11.80" (1996)	3.86"	(23rd, 1969)	7	6	4	3	2	1	
Sep	3.79"	10.97" (1970)	4.90"	(22nd, 1970)	8	6	5	4	3	1	
Oct	3.60"	13.13" (1983)	8.60"	(19th, 1983)	7	6	4	3	2	1	
Nov	2.22"	7.13" (1964)	2.48"	(17th, 1964)	8	6	4	3	2	*	
Dec	1.96"	5.24" (1991)	2.72"	(8th, 1980)	8	5	3	2	1	1	
Annual	34.67"	13.13" (Oct 1983)	8.60"	(Oct 19, 1983)	93	74	51	35	23	11	

Snow and Sleet (inches)											
	AVERAGE	EXTREMES (1952-2003)					AVG # DAYS PER MONTH (1971-2000)				
	1971-2000	Monthly Max	Daily Max		Greatest Depth	any	meas	0.50"+	1.00"+	Pot. Glazing	
Jan	2.7"	19.0" (1988)	13.0"	(7th, 1988)	7.0"	(9th, 1965)	2	1	1	1	3
Feb	1.1"	10.0" (1968)	6.0"	(21st, 1966)	8.0"	(17th, 1978)	1	1	1	*	1
Mar	0.6"	11.0" (1968)	8.8"	(12th, 1958)	6.0"	(12th, 1958)	1	*	*	*	*
Apr	0.1"	2.0" (1973)	2.0"	(8th, 1973)	0.1"	(12th, 1957)	*	*	*	*	
May		0.0" (1954)	0.0"	(1st, 1954)							
Jun		0.0" (1954)	0.0"	(15th, 1954)	1.0"	(4th, 1989)					
Jul											
Aug											
Sep											
Oct	0.0"	0.2" (1993)	0.2"	(30th, 1993)	0.1"	(30th, 1993)	*	*			*
Nov	0.6"	6.0" (2001)	4.5"	(18th, 1972)	6.0"	(29th, 2001)	1	*	*	*	*
Dec	1.0"	11.5" (1954)	5.5"	(28th, 1954)	6.0"	(30th, 1969)	2	1	1	*	1
Annual	6.1"	19.0" (Jan 1988)	13.0"	(Jan 7, 1988)	8.0"	(Feb 17, 1978)	8	4	3	2	6

TEMPERATURE AND PRECIPITATION

From Norman Cooperative Observer Station (346386); October 1894 – December 2003

Latitude: 3511N Longitude: 09727W Elevation: 1108 ft

Exceedence values (2 in 10 years)				
Month:	Maximum Temperature Higher Than:	Minimum Temperature Lower Than:	Precipitation Less Than:	Precipitation More Than:
January	75	0	0.36	2.33
February	78	8	0.57	2.36
March	89	15	0.96	3.69
April	92	28	1.83	4.55
May	96	39	2.74	7.88
June	101	50	1.51	6.18
July	106	57	1.01	4.42
August	107	54	1.16	4.36
September	102	41	1.25	6.16
October	94	29	1.04	4.93
November	83	17	0.61	3.76
December	76	6	0.56	2.93
Annual	108	-1	25.70	41.47

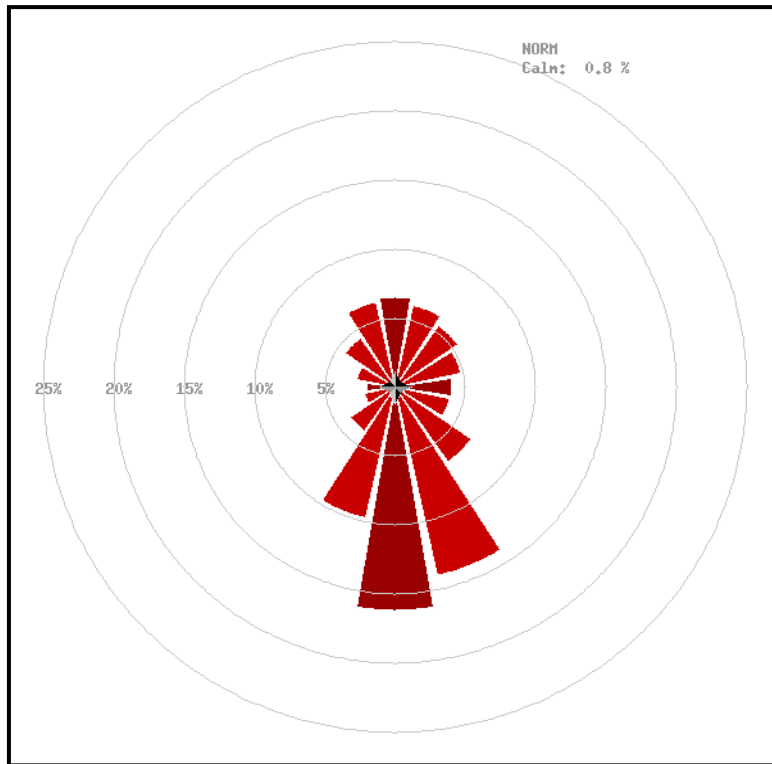
First Freezing Temperature in Fall			
Probability	24 F or Lower	28 F or Lower	32 F or Lower
1 Year in 10 Earlier Than –	November 2	October 10	October 7
2 Years in 10 Earlier Than –	November 2	October 27	October 17
5 Years in 10 Earlier Than –	November 15	November 6	October 27
Last Freezing Temperature in Spring			
Probability	24 F or Lower	28 F or Lower	32 F or Lower
1 Year in 10 Later Than –	April 13	April 13	May 2
2 Years in 10 Later Than –	April 5	April 9	April 25
5 Years in 10 Later Than –	March 21	March 30	April 11

Number of Days in Growing Season			
Probability	Higher than 24 F	Higher than 28 F	Higher than 32 F
9 Years in 10	225	212	189
8 Years in 10	235	214	193
5 Years in 10	250	233	209
2 Years in 10	271	244	224
1 Year in 10	282	258	232

WINDS

From Norman Mesonet Site (NORM); Jan 1994 – Dec 2001

Latitude: 3511N Longitude: 09727W Elevation: 1108 ft



Wind Roses show the prevailing direction from which the wind is blowing. North is up in the image. The circles show the percentage of time from which the wind is blowing in that direction. For example, Norman records a south wind about 10 percent of the time, with northerly winds just over 9 percent of the time.

The table below shows the percentage of time the wind is blowing from each of the 16-point compass headings, and the percent of time the prevailing wind is recorded in each speed bin.

Maximum Gust: 60.7 mph

Maximum Sustained: 42 mph

Overall Average Speed: 9.7 mph

NRMN	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
Calm																	1.0%
1- 5 mph	1.5	1.4	1.3	1.5	1.6	2.5	4.0	1.6	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.9	21.6%
6-10 mph	3.1	2.3	2.1	2.3	2.3	2.0	3.6	6.4	2.7	2.4	1.3	1.0	0.9	1.1	1.5	1.9	37.0%
11-15 mph	2.4	2.1	1.3	1.2	0.9	0.5	0.8	5.1	3.2	2.2	0.8	0.4	0.3	0.5	0.8	1.6	23.9%
16-20 mph	1.5	1.1	0.4	0.3	0.2	0.1	0.1	1.9	2.3	1.4	0.3	0.1	0.1	0.2	0.4	1.0	11.4%
21-25 mph	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.4	1.0	0.7	0.1	0.0	0.0	0.1	0.1	0.4	3.9%
26-30 mph	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.9%
31-35 mph	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1%
35+ mph	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Totals	9.3	7.3	5.1	5.3	5.0	5.1	8.5	15.5	10.4	7.8	3.4	2.2	2.0	2.6	3.6	5.9	100.0%
BLAC	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
Max Gust	69	71	61	42	47	50	53	59	61	57	52	51	52	52	57	64	
Max 5 Min	46	42	36	31	31	36	39	41	48	38	36	37	39	38	37	47	
Avg Speed	10.7	9.9	8.1	7.4	6.9	5.4	5.4	9.9	12.4	11.6	8.2	6.9	6.9	7.9	9.3	10.7	

Due to rounding, column and row totals may not sum to exactly 100.0%.

HUMIDITY

From Norman Mesonet Site (NRMN); Jan 1994 – Dec 2003

Latitude: 3511N Longitude: 09727W Elevation: 1108 ft

Mean Monthly Humidity and Moisture					
	Daily Maximum Relative Humidity	Daily Minimum Relative Humidity	Daily Average Relative Humidity	Daily Average Dewpoint (°F)	Daily Average Vapor Deficit
January	88	46	69	28	3.2
February	85	41	64	32	4.8
March	86	43	65	37	5.4
April	87	45	66	47	7.0
May	92	51	73	59	8.0
June	92	49	72	67	10.5
July	87	42	65	68	16.2
August	85	39	62	66	17.0
September	89	45	68	60	11.3
October	89	45	68	51	7.2
November	90	48	71	40	4.3
December	89	49	71	31	3.1
Annual	88	45	68	49	8.2

Vapor pressure is given in millibars.

SOIL TEMPERATURES

From Norman Mesonet Site (NRMN); Jan 1994 – Dec 2003

Latitude: 3511N Longitude: 09727W Elevation: 1108 ft

Soil Temperatures at 10 cm (4-inch) depth				
	Average Temperature beneath sod	Average Temperature beneath bare soil	Average Daily Max Temperature	Average Daily Min Temperature
January	41	41	45	37
February	45	45	51	41
March	50	51	58	45
April	60	61	69	54
May	70	73	80	66
June	79	82	90	75
July	86	88	97	81
August	86	87	95	81
September	77	77	84	71
October	65	65	72	60
November	53	52	58	48
December	43	42	46	39
Annual	63	64	71	58

Average daily maximum and minimum temperatures based on bare soil.

TORNADOES

Significant Tornadoes (F2 intensity or greater) affecting Cleveland County, 1880 – 2003. Source: *Significant Tornadoes, 1880-1989: Volume I* and National Weather Service, Norman office.

Date	Path	Deaths	Injuries	Rating	Counties Affected
April 25, 1893	7 miles	0	0	F2	McClain, Cleveland
April 25, 1893	15 miles	31	100	F4	McClain, Cleveland
April 8, 1896	12 miles	0	3	F3	Cleveland
May 20, 1903	unknown	0	0	F2	Cleveland
May 16, 1910	unknown	1	1	F2	Cleveland
March 28, 1924	50 miles	8	80	F4	Cleveland, Pottawatomie, Lincoln
June 9, 1937	20 miles	4	7	F3	Canadian, Cleveland
September 26, 1945	8 miles	0	0	F2	McClain, Cleveland
March 18, 1948	6 miles	0	0	F3	McClain, Cleveland
April 30, 1949	22 miles	0	48	F4	McClain, Cleveland
April 30, 1949	20 miles	3	8	F3	Cleveland, Pottawatomie, Lincoln
April 5, 1951	8 miles	0	0	F2	Cleveland
September 14, 1957	30 miles	2	6	F4	McClain, Cleveland, Pottawatomie, Seminole
April 28, 1960	7 miles	0	0	F2	Cleveland
April 28, 1960	4 miles	0	6	F2	Cleveland
May 4, 1960	5 miles	0	0	F2	Cleveland
May 5, 1960	110 miles	0	0	F3	Cleveland, Pottawatomie, Lincoln, Creek, Tulsa
May 19, 1960	unknown	0	0	F2	Cleveland
May 26, 1962	5 miles	0	0	F2	McClain, Cleveland
May 30, 1973	2 miles	1	2	F1	Cleveland
November 19, 1973	24 miles	5	53	F3	McClain, Cleveland, Oklahoma
March 10, 1977	5 miles	0	0	F2	Cleveland
March 13, 1990	28 miles	0	1	F2	Grady, McClain, Cleveland
March 13, 1990	18 miles	0	0	F2	McClain, Cleveland
March 13, 1990	19 miles	0	1	F2	Cleveland, Pottawatomie, Lincoln
October 4, 1998	3 miles	0	0	F2	Cleveland
May 3, 1999	38 miles	36	583	F5	Grady, McClain, Cleveland, Oklahoma
May 8, 2003	17 miles	0	134	F4	Cleveland, Oklahoma

About the Data:

The temperature and precipitation data from Norman are from the National Weather Service Cooperative Observer station, which records daily maximum and minimum temperatures, precipitation, and snowfall. The station has been in operation since 1894, yielding a 110-year series of data. Extremes, frost and freeze data, and growing season lengths were determined using the entire 110-year series. The means for temperature, precipitation, and snowfall were determined using a subset of the series, from 1971-2000, corresponding with official national standards set by the National Climatic Data Center.

Wind and humidity data are compiled from the Oklahoma Mesonet station at Norman which has been operational since 1994. The Norman Mesonet site was chosen because it is the only Mesonet site in the county. The Oklahoma Mesonet is a cooperative project between Oklahoma State University and The University of Oklahoma. Data are collected and archived at the Oklahoma Climatological Survey. The Mesonet records a variety of weather information at 5-minute intervals throughout the day, with at least one reporting station in every county in Oklahoma. For more information on the Mesonet, see <http://www.mesonet.org/>.

Solar radiation (sunshine) data were obtained from the *Climatic Atlas of the United States*, U.S. Department of Commerce, 1968. Severe storm information is available from the National Climatic Data Center, <http://www.ncdc.noaa.gov/>, under Weather/Climate Events: Climatology & Extreme Events, U.S. Storm Events Database. The best site for online county tornado information for Oklahoma is through the National Weather Service, Norman Office, <http://www.srh.noaa.gov/oun/tornadodata/>.

The tables and summary were prepared by the Oklahoma Climatological Survey. For more information, please contact OCS at 405-325-2541. Many climate summary products are available on the worldwide web at <http://www.ocs.ou.edu/>.

Need Additional Information?

If you cannot find what you need here, or want some help interpreting what this means for your particular needs, please contact:

The Oklahoma Climatological Survey
100 E. Boyd Street, Suite 1210
Norman, OK 73019-1012
Phone: 405-325-2541
E-mail: ocs@ou.edu

In addition to maintaining records of all weather and climate information for Oklahoma, OCS has a staff of climatologists who specialize in tailoring information for particular needs. Whether you want to know how dry it has been or are planning a construction project, OCS can help.