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: OKEENE, OK **COOP ID: 346629**

Climate Division: OK 4 **NWS Call Sign:** **Elevation: 1,215 Feet** **Lat: 36˚07N** **Lon: 98˚19W**

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	47.6	24.2	35.9	83	1967	22	44.5	1990	-11	1984	19	22.4	1979	902	0	.0	.0	16.1	4.4	25.4	.4
Feb	54.0	28.8	41.4	91	1996	22	50.0	1976	-13	1996	4	28.9	1978	669	0	.0	@	18.7	2.4	17.9	.3
Mar	63.3	37.0	50.2	93+	1967	11	55.1	1972	0	1960	3	43.7	1996	462	1	.0	.2	27.1	.3	9.6	.0
Apr	73.2	46.0	59.6	101	1972	12	66.1	1981	20	1975	3	53.8	1983	201	39	@	.9	29.6	.0	2.0	.0
May	81.7	56.1	68.9	105	1985	30	74.7	1996	31	1954	3	64.2	1995	45	167	.2	5.1	31.0	.0	.0	.0
Jun	91.3	65.3	78.3	112	1953	15	83.3	1990	41	1954	4	73.6	1982	2	400	2.6	18.5	30.0	.0	.0	.0
Jul	96.5	70.2	83.4	111	1954	14	89.6	1980	49	1952	9	80.4	1975	0	569	9.5	27.0	31.0	.0	.0	.0
Aug	95.4	68.7	82.1	113	1964	6	87.9	2000	50+	1950	20	75.2	1992	1	529	9.4	25.1	31.0	.0	.0	.0
Sep	87.0	60.7	73.9	110	2000	4	81.6	1998	33	1989	24	65.5	1974	21	287	2.3	12.5	30.0	.0	.0	.0
Oct	76.0	49.0	62.5	100+	1951	3	66.3	1979	13	1993	31	56.9	1976	126	48	@	2.0	30.7	.0	1.2	.0
Nov	60.3	36.7	48.5	89+	1980	8	55.8	1999	8	1975	26	43.3	2000	495	0	.0	.0	24.4	.1	10.3	.0
Dec	49.8	27.4	38.6	81	1951	31	43.4	1980	-13	1989	23	25.1	1983	820	0	.0	.0	17.7	2.5	22.9	.5
Ann	73.0	47.5	60.3	113	Aug 1964	6	89.6	Jul 1980	-13+	Feb 1996	4	22.4	Jan 1979	3744	2040	24.0	91.3	317.3	9.7	89.3	1.2

+ 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	.91	.89	1.60	1975	31	2.65	1975	.00+	1996
Feb	1.37	.96	2.22	1997	20	4.41	1997	.00	1991
Mar	2.63	2.29	4.10	1974	10	9.27	1973	.00	1971
Apr	2.79	2.33	2.80	1997	10	7.42	1999	.40+	1996
May	4.76	4.16	6.53	1957	16	12.27	1980	.75	1988
Jun	4.05	3.33	6.60	1972	11	10.05	1992	.30	1998
Jul	2.47	2.28	3.98	1989	14	7.02	1996	.00+	1984
Aug	2.83	2.39	3.27	1961	15	6.89	1974	.00	2000
Sep	3.41	2.88	5.06	1974	20	10.85	1986	.00	2000
Oct	2.82	2.51	7.48	1986	3	12.32	1986	.26	1977
Nov	2.07	1.77	3.40	1994	20	6.78	1992	.00	1989
Dec	1.36	1.22	1.80	1997	24	4.14	1999	.00	1976
Ann	31.47	29.25	7.48	Oct 1986	3	12.32	Oct 1986	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.7	2.2	.7	.2
Feb	3.4	2.7	.9	.4
Mar	4.7	4.0	1.9	.8
Apr	5.5	4.6	1.9	.8
May	7.4	6.3	3.2	1.5
Jun	6.3	5.6	2.5	1.2
Jul	4.2	3.6	1.8	.9
Aug	5.0	4.1	1.9	.9
Sep	4.7	4.0	2.0	1.0
Oct	4.1	3.5	1.9	.9
Nov	4.4	3.2	1.4	.5
Dec	3.6	2.8	1.0	.3
Ann	56.0	46.6	21.1	9.4

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	.27	.43	.58	.75	.93	1.16	1.44	1.92	2.37
Feb	.04	.14	.33	.53	.75	1.00	1.30	1.68	2.21	3.09	3.96
Mar	.11	.32	.70	1.09	1.50	1.97	2.53	3.22	4.18	5.77	7.34
Apr	.46	.70	1.11	1.49	1.89	2.32	2.81	3.41	4.20	5.50	6.74
May	.85	1.27	1.97	2.62	3.28	4.00	4.82	5.81	7.13	9.25	11.28
Jun	.70	1.05	1.64	2.20	2.77	3.38	4.09	4.94	6.08	7.93	9.69
Jul	.00	.43	.93	1.32	1.71	2.11	2.57	3.09	3.80	4.94	6.03
Aug	.11	.33	.74	1.15	1.60	2.11	2.71	3.47	4.51	6.26	7.97
Sep	.23	.58	1.12	1.63	2.15	2.73	3.39	4.21	5.31	7.12	8.86
Oct	.22	.41	.78	1.17	1.60	2.10	2.69	3.43	4.46	6.19	7.89
Nov	.16	.38	.71	1.01	1.33	1.68	2.07	2.56	3.21	4.27	5.29
Dec	.09	.23	.44	.64	.85	1.08	1.35	1.68	2.13	2.86	3.57
Ann	22.32	24.09	26.36	28.09	29.62	31.10	32.63	34.32	36.37	39.35	41.93

\+ 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	3.9	1.0	1	0
Feb	1.6	.0	#	0
Mar	1.5	.0	#	0
Apr	.2	.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	.2	.0	0	0
Nov	.5	.0	#	0
Dec	3.4	1.0	#	0
Ann	11.3	2.0	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	10.0	1987	18	14.0+	1988	14	1988	7	4	1975
Feb	6.0	1983	1	8.0+	1993	14	1971	23	9	1975
Mar	14.0	1994	9	16.0	1994	5	1995	2	#+	2000
Apr	4.0	1973	8	5.0	1973	4	1973	8	#+	1979
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	4.0	1991	31	4.0	1991	0	0	0	0	0
Nov	4.0	1988	20	4.0+	1991	4	1972	19	#	1972
Dec	6.0	1987	14	15.0	1987	12	1987	16	2	1987
Ann	14.0	Mar 1994	9	16.0	Mar 1994	14+	Jan 1988	7	9	Feb 1975

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.2	1.1	.4	.2	@
Feb	.5	.5	.4	.2	.0
Mar	.4	.4	.2	@	@
Apr	.1	.1	@	.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	.1	.1	@	.0	.0
Nov	.2	.2	.1	.0	.0
Dec	1.1	1.0	.6	.2	.0
Ann	3.6	3.4	1.7	.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.7	.5	.1	.0
Feb	.2	.1	.0	.0
Mar	.0	.0	.0	.0
Apr	.2	.1	.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	1.5	1.5	.9	.0
Ann	2.6	2.2	1.0	.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	5/02	4/28	4/25	4/23	4/20	4/18	4/15	4/12	4/08
32	4/18	4/14	4/11	4/09	4/07	4/04	4/02	3/30	3/26
28	4/09	4/04	4/01	3/29	3/26	3/23	3/20	3/16	3/11
24	4/01	3/26	3/22	3/18	3/15	3/11	3/08	3/03	2/25
20	3/26	3/17	3/11	3/05	2/28	2/23	2/18	2/11	2/02
16	3/09	3/01	2/23	2/18	2/13	2/08	2/03	1/28	1/19

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	10/09	10/12	10/16	10/19	10/23	10/27	11/02
32	10/14	10/20	10/24	10/27	10/31	11/03	11/06	11/10	11/16
28	10/21	10/27	11/01	11/05	11/08	11/12	11/16	11/20	11/27
24	10/28	11/05	11/11	11/15	11/20	11/25	11/29	12/05	12/13
20	11/08	11/15	11/21	11/25	11/30	12/04	12/08	12/14	12/21
16	11/13	11/24	12/02	12/09	12/15	12/21	12/28	1/04	1/15

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	191	186	182	178	174	169	164	157
32	226	219	214	210	206	202	198	193	186
28	249	241	236	231	227	223	218	213	205
24	278	268	261	255	250	244	238	231	221
20	312	299	290	281	274	266	258	248	235
16	344	325	315	307	300	293	286	277	266

***** 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	902	669	462	201	45	2	0	1	21	126	495	820	3744
60	749	538	318	108	13	0	0	0	5	47	353	665	2796
57	659	463	240	67	5	0	0	0	0	22	275	575	2306
55	600	415	194	45	2	0	0	0	0	12	227	518	2013
50	459	308	105	14	0	0	0	0	0	2	130	378	1396
32	100	62	3	0	0	0	0	0	0	0	4	56	225

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	220	325	566	827	1145	1388	1592	1551	1256	945	499	259	10573
55	7	34	44	182	434	698	879	838	566	243	33	8	3966
57	4	26	27	144	375	638	817	776	506	191	20	4	3528
60	2	17	13	95	290	548	724	683	421	124	9	0	2926
65	0	0	1	39	167	400	569	529	287	48	0	0	2040
70	0	0	0	11	78	261	414	379	176	13	0	0	1332

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	88	176	362	603	907	1147	1350	1307	1020	703	289	102	88	264	626	1229	2136	3283	4633	5940	6960	7663	7952	8054
45	35	102	239	454	752	997	1195	1152	870	550	185	43	35	137	376	830	1582	2579	3774	4926	5796	6346	6531	6574
50	8	48	140	317	597	847	1040	997	721	404	98	13	8	56	196	513	1110	1957	2997	3994	4715	5119	5217	5230
55	0	16	71	199	442	697	885	842	572	271	45	0	0	16	87	286	728	1425	2310	3152	3724	3995	4040	4040
60	0	2	29	104	294	547	730	687	429	157	16	0	0	2	31	135	429	976	1706	2393	2822	2979	2995	2995
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	82	137	247	388	590	766	876	849	669	450	187	86	82	219	466	854	1444	2210	3086	3935	4604	5054	5241	5327

(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