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: OKEMAH, OK **COOP ID: 346638**

Climate Division: OK 5 **NWS Call Sign:** **Elevation: 935 Feet** **Lat: 35˚26N** **Lon: 96˚18W**

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	48.2	30.8	39.5	82	1943	24	48.4	1990	-10	1930	18	27.7	1979	793	1	.0	.0	15.3	3.7	20.2	.2
Feb	54.7	35.6	45.2	96	1914	20	54.6	1976	-6	1933	8	31.8	1978	566	4	.0	@	18.9	2.3	12.7	.1
Mar	64.1	43.8	54.0	94	1916	21	58.9	1974	-2	1948	12	48.5	1975	348	6	.0	.1	27.3	.1	5.9	.0
Apr	73.4	52.3	62.9	99	1972	12	69.0	1981	21	1936	2	57.3	1983	118	53	.0	.3	29.9	.0	.7	.0
May	80.3	61.0	70.7	97+	1934	31	74.9	1998	35	1954	3	65.2	1976	21	196	.0	1.9	31.0	.0	.0	.0
Jun	87.8	68.5	78.2	108+	1936	21	82.2	1998	45	1983	1	74.1	1982	0	395	.3	12.6	30.0	.0	.0	.0
Jul	93.6	72.4	83.0	114	1936	19	88.5	1998	53	1971	31	79.6	1976	0	557	4.9	24.2	31.0	.0	.0	.0
Aug	93.5	71.0	82.3	115	1936	10	87.2	1980	49+	1915	31	76.9	1992	0	536	6.2	24.1	31.0	.0	.0	.0
Sep	85.0	64.3	74.7	111	1939	3	82.2	1998	34	1942	27	66.0	1974	16	305	1.1	10.5	30.0	.0	.0	.0
Oct	74.4	53.9	64.2	98+	1913	1	67.4	2000	17	1917	30	58.0	1976	96	70	.0	1.1	30.8	.0	.4	.0
Nov	60.6	42.9	51.8	88	1945	6	60.1	1999	11+	1940	13	45.2	1972	405	8	.0	.0	25.3	.1	6.3	.0
Dec	50.7	33.9	42.3	83+	1918	6	47.2	1984	-9	1989	23	29.1	1983	704	0	.0	.0	17.9	2.0	15.9	.1
Ann	72.2	52.5	62.4	115	Aug 1936	10	88.5	Jul 1998	-10	Jan 1930	18	27.7	Jan 1979	3067	2131	12.5	74.8	318.4	8.2	62.1	.4

\+ 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: 1912-2001

(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	1.71	1.73	5.34	1923	31	4.33	1998	.00	1986
Feb	2.10	1.91	4.21	1983	1	5.36	1983	.00	1991
Mar	3.51	3.25	2.95	1977	27	8.75	1990	.05	1971
Apr	3.99	4.01	10.05	1945	14	9.02	1990	.45	1989
May	5.69	5.59	5.50	1949	18	9.91	1995	1.02	1996
Jun	4.84	4.41	6.76	1948	23	10.73	1992	.77	1990
Jul	2.98	2.42	6.14	1988	28	8.76	1996	.00	1980
Aug	2.42	1.83	4.87	1958	21	6.59	1977	.00	2000
Sep	4.98	4.50	6.68	1993	14	13.65	1993	.30	1978
Oct	4.02	3.02	6.60	1941	30	13.92	1985	.72	1975
Nov	3.58	3.33	4.30+	1979	21	9.35	1994	.01	1989
Dec	2.47	2.11	5.90	1932	23	6.68	1987	.00	1981
Ann	42.29	42.18	10.05	Apr 1945	14	13.92	Oct 1985	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.4	3.5	1.2	.4
Feb	5.7	4.0	1.3	.6
Mar	7.4	5.6	2.7	.9
Apr	6.9	5.9	2.7	1.2
May	9.0	7.2	4.1	1.9
Jun	7.9	6.3	3.2	1.8
Jul	4.9	3.9	1.7	1.0
Aug	5.4	3.9	1.7	.6
Sep	6.8	5.6	3.2	1.5
Oct	6.2	4.9	2.4	1.4
Nov	5.9	4.6	2.4	1.2
Dec	5.7	4.4	1.6	.8
Ann	77.2	59.8	28.2	13.3

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	.12	.30	.58	.83	1.09	1.38	1.71	2.12	2.66	3.55	4.41
Feb	.13	.34	.66	.97	1.30	1.66	2.08	2.59	3.29	4.44	5.55
Mar	.68	.99	1.51	1.98	2.47	2.98	3.57	4.28	5.22	6.72	8.16
Apr	1.06	1.44	2.01	2.52	3.02	3.55	4.13	4.82	5.72	7.13	8.45
May	1.90	2.44	3.23	3.90	4.54	5.21	5.93	6.78	7.87	9.56	11.12
Jun	1.58	2.04	2.71	3.29	3.84	4.42	5.05	5.78	6.73	8.20	9.55
Jul	.07	.27	.66	1.08	1.56	2.11	2.78	3.63	4.81	6.82	8.81
Aug	.23	.51	.91	1.26	1.62	2.01	2.46	2.99	3.71	4.87	5.98
Sep	.84	1.28	2.00	2.69	3.39	4.15	5.02	6.07	7.48	9.76	11.95
Oct	.55	.88	1.45	2.01	2.60	3.24	3.99	4.91	6.15	8.17	10.13
Nov	.33	.59	1.07	1.57	2.11	2.73	3.45	4.36	5.61	7.70	9.74
Dec	.13	.35	.73	1.09	1.48	1.91	2.42	3.05	3.90	5.31	6.69
Ann	28.24	30.89	34.33	36.97	39.32	41.61	43.99	46.64	49.86	54.57	58.68

\+ 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: 1912-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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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	2.1	1.0	#	0
Feb	.9	.0	#	0
Mar	.4	.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	.8	.1	#	0
Ann	4.7	1.1	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	7.5	1988	7	12.8	1988	12	1988	8	3	1977
Feb	3.5	1980	8	4.8	1985	7	1978	9	2	1978
Mar	10.5	1989	6	10.5	1989	10	1989	5	1	1989
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	.5	1993	30	.5	1993	0	0	0	0	0
Nov	4.0	1980	17	4.0	1980	2	1974	29	#+	1976
Dec	3.0	1985	13	3.0+	1987	3+	1984	5	#+	2000
Ann	10.5	Mar 1989	6	12.8	Jan 1988	12	Jan 1988	8	3	Jan 1977

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.1	.6	.2	.1	.0
Feb	.7	.3	.2	.0	.0
Mar	.4	.4	@	@	@
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	.5	.2	@	.0	.0
Dec	.6	.2	.1	.0	.0
Ann	3.3	1.7	.5	.1	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.3	.1	.0	.0
Feb	1.4	.2	.0	.0
Mar	.1	@	@	.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	.1	.0	.0	.0
Dec	.2	.0	.0	.0
Ann	2.1	.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	4/16	4/12	4/09	4/06	4/04	4/01	3/29	3/26	3/22
32	4/11	4/06	4/02	3/30	3/27	3/24	3/20	3/17	3/11
28	4/06	3/29	3/23	3/18	3/14	3/09	3/04	2/26	2/19
24	3/27	3/18	3/11	3/06	3/01	2/24	2/18	2/12	2/03
20	3/16	3/07	3/01	2/23	2/18	2/12	2/07	1/31	1/22
16	3/02	2/21	2/14	2/08	2/02	1/27	1/21	1/12	12/28

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	10/13	10/19	10/23	10/26	10/30	11/02	11/05	11/10	11/15
32	10/23	10/29	11/02	11/06	11/09	11/13	11/16	11/20	11/26
28	11/02	11/08	11/12	11/16	11/19	11/23	11/26	12/01	12/07
24	11/08	11/15	11/21	11/25	11/29	12/04	12/08	12/14	12/21
20	11/09	11/20	11/28	12/04	12/11	12/17	12/24	1/01	1/12
16	11/18	11/29	12/07	12/13	12/20	12/26	1/03	1/12	1/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	231	223	218	213	208	204	199	194	186
32	250	242	236	231	227	222	217	212	204
28	279	269	262	256	250	244	238	231	221
24	306	294	286	279	273	267	260	252	240
20	335	316	306	298	291	284	276	268	256
16	>365	>365	346	330	319	310	300	290	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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	793	566	348	118	21	0	0	0	16	96	405	704	3067
60	644	439	213	45	3	0	0	0	3	34	274	557	2212
57	558	369	149	20	1	0	0	0	0	14	207	471	1789
55	502	325	114	10	0	0	0	0	0	7	169	415	1542
50	370	232	51	1	0	0	0	0	0	1	93	290	1038
32	67	34	1	0	0	0	0	0	0	0	2	34	138

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	298	403	681	925	1199	1385	1580	1559	1280	997	594	353	11254
55	20	51	82	246	486	695	867	846	590	292	71	21	4267
57	15	38	55	195	424	635	805	784	530	237	50	15	3783
60	7	24	26	130	334	545	712	691	443	163	26	8	3109
65	1	4	6	53	196	395	557	536	305	70	8	0	2131
70	0	0	0	14	92	251	402	384	188	22	0	0	1353

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	120	224	428	664	929	1131	1320	1303	1032	737	357	152	120	344	772	1436	2365	3496	4816	6119	7151	7888	8245	8397
45	57	135	293	515	774	981	1165	1148	882	584	236	80	57	192	485	1000	1774	2755	3920	5068	5950	6534	6770	6850
50	27	72	183	372	619	831	1010	993	732	434	142	35	27	99	282	654	1273	2104	3114	4107	4839	5273	5415	5450
55	5	34	97	236	465	681	855	838	584	291	72	10	5	39	136	372	837	1518	2373	3211	3795	4086	4158	4168
60	1	10	43	130	315	531	700	683	439	172	27	1	1	11	54	184	499	1030	1730	2413	2852	3024	3051	3052
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	77	142	259	411	611	779	892	865	688	465	210	90	77	219	478	889	1500	2279	3171	4036	4724	5189	5399	5489

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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