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: PONCA CITY FAA AP, OK **COOP ID: 347201**

Climate Division: OK 2 **NWS Call Sign: PNC** **Elevation: 999 Feet** **Lat: 36˚44N** **Lon: 97˚06W**

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	43.7	23.8	33.8	79+	1950	24	42.3	1986	-12	1984	19	19.0	1979	968	0	.0	.0	11.3	6.7	25.3	.9
Feb	50.8	28.6	39.7	92	1996	22	49.9	1999	-8	1980	10	24.5	1978	719	0	.0	@	15.7	4.1	17.6	.6
Mar	60.7	37.6	49.2	92	1967	11	56.0	1986	-2	1960	3	42.4	1975	494	2	.0	.1	24.9	.6	10.4	.0
Apr	70.8	47.0	58.9	101	1972	12	65.4	1981	19+	1957	13	54.0	1973	215	32	@	.6	29.2	.0	1.9	.0
May	79.0	57.3	68.2	100	1985	30	74.9	1996	30	1967	2	63.6	1979	70	167	@	2.6	31.0	.0	.0	.0
Jun	88.1	66.8	77.5	110	1953	15	82.5	1990	44	1969	2	73.3	1992	3	376	.8	13.6	30.0	.0	.0	.0
Jul	94.1	71.6	82.9	116	1996	6	87.6	1980	50+	1972	5	78.4	1972	0	554	6.5	23.9	31.0	.0	.0	.0
Aug	93.2	70.5	81.9	110+	1951	6	89.0	2000	49	1988	29	75.6	1992	1	522	6.2	22.6	31.0	.0	.0	.0
Sep	83.9	62.0	73.0	110	2000	2	81.1	1998	28	1984	30	63.4	1974	29	267	1.1	9.4	30.0	.0	@	.0
Oct	72.7	49.8	61.3	96+	1951	3	65.2	2000	15	1993	31	53.7	1976	160	43	.0	1.1	30.3	.0	1.0	.0
Nov	57.7	37.1	47.4	87	1980	8	57.0	1999	8	1976	29	40.6	1976	528	1	.0	.0	22.5	.6	10.9	.0
Dec	46.9	27.3	37.1	79+	1955	24	42.8	1991	-10	1989	22	21.4	1983	866	0	.0	.0	13.5	3.5	22.0	.5
Ann	70.1	48.3	59.2	116	Jul 1996	6	89.0	Aug 2000	-12	Jan 1984	19	19.0	Jan 1979	4053	1964	14.6	73.9	300.4	15.5	89.1	2.0

+ 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	1.18	.79	3.67	1999	30	4.86	1999	.00+	1986
Feb	1.41	.88	2.85	1997	20	4.43	1997	.09	1996
Mar	2.94	2.42	2.30	1998	16	8.02	1973	.03	1971
Apr	3.51	3.48	3.42	1995	29	9.66	1994	.41	1987
May	4.92	4.17	4.32	1987	27	10.75	1982	1.22	1973
Jun	4.50	4.16	3.62	1997	16	12.19	1999	.40	1988
Jul	3.43	3.14	6.19	1967	25	9.27	1997	.04	1980
Aug	3.36	3.01	3.42	1958	1	8.53	1992	.14	2000
Sep	3.67	3.36	5.76	1986	29	9.65	1986	.08	2000
Oct	3.23	2.43	6.58	1986	3	12.99	1986	.15	1982
Nov	2.59	2.13	11.11	1979	20	12.14	1979	.00	1976
Dec	1.67	1.25	2.47	1971	14	5.36	1997	.00	1977
Ann	36.41	35.75	11.11	Nov 1979	20	12.99	Oct 1986	.00+	Jan 1986

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.6	2.4	.7	.2
Feb	5.7	3.0	.9	.2
Mar	8.1	5.1	2.1	.7
Apr	8.3	5.3	2.8	.9
May	10.2	6.9	3.1	1.6
Jun	8.9	6.4	3.2	1.4
Jul	6.9	4.9	2.2	1.1
Aug	6.9	4.4	2.3	1.2
Sep	7.4	4.9	2.2	1.0
Oct	7.1	4.3	2.0	.9
Nov	6.5	3.6	1.5	.6
Dec	5.5	3.0	1.1	.5
Ann	87.1	54.2	24.1	10.3

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	.00	.10	.29	.48	.67	.89	1.15	1.46	1.89	2.61	3.32
Feb	.08	.17	.34	.53	.75	1.00	1.31	1.71	2.27	3.21	4.15
Mar	.36	.59	1.00	1.42	1.85	2.33	2.90	3.59	4.54	6.09	7.60
Apr	.70	1.01	1.53	2.00	2.48	2.99	3.58	4.28	5.20	6.69	8.10
May	1.35	1.81	2.52	3.14	3.75	4.39	5.09	5.93	7.01	8.72	10.30
Jun	1.19	1.61	2.26	2.84	3.40	3.99	4.65	5.43	6.45	8.05	9.55
Jul	.40	.66	1.14	1.62	2.13	2.70	3.36	4.19	5.32	7.17	8.97
Aug	.51	.79	1.28	1.74	2.23	2.75	3.36	4.10	5.10	6.72	8.27
Sep	.47	.76	1.28	1.80	2.33	2.93	3.63	4.48	5.64	7.54	9.38
Oct	.23	.43	.84	1.28	1.78	2.35	3.04	3.92	5.14	7.19	9.22
Nov	.07	.24	.59	.96	1.37	1.85	2.42	3.15	4.17	5.89	7.59
Dec	.04	.15	.36	.60	.86	1.18	1.55	2.03	2.71	3.85	4.98
Ann	24.20	26.50	29.49	31.77	33.82	35.81	37.88	40.17	42.98	47.08	50.65

\+ 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)

Extremes (2)

Mean Number of Days (1)

Snow Fall >= Thresholds

Snow Depth >= Thresholds

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	2.1	1.1	#	0	6.0	1988	6	9.1	1987	13	1988	9	3	1988	1.8	.8	.2	@	.0	4.0	1.5	.4	.1
Feb	2.8	1.1	#	0	7.1	1980	7	12.5	1978	10	1971	23	2+	1982	1.8	1.2	.3	.1	.0	3.4	1.4	.6	@
Mar	1.3	.0	#	0	8.4	1999	13	8.9	1999	6	1994	9	#	2000	.7	.4	.2	.1	.0	.5	.2	@	.0
Apr	.0	.0	0	0	1.0	1997	8	1.0	1997	0	0	0	0	0	.1	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	2000	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.0	.0	0	0	.2	1997	26	.2	1997	#	1997	26	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	#	0	2.7	1996	30	4.5	1988	4	1988	20	#	1988	.3	.1	.0	.0	.0	.2	.1	.0	.0
Dec	1.7	1.0	#	0	6.8	1987	14	9.0	1987	9	1987	15	1+	1995	1.5	.8	.1	@	.0	2.0	.2	.2	.0
Ann	8.2	3.2	N/A	N/A	8.4	Mar 1999	13	12.5	Feb 1978	13	Jan 1988	9	3	Jan 1988	6.2	3.3	.8	.2	.0	10.1	3.4	1.2	.1

+ 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	5/05	4/30	4/27	4/24	4/21	4/18	4/15	4/11	4/06
32	4/16	4/13	4/10	4/08	4/06	4/04	4/01	3/30	3/26
28	4/10	4/05	4/01	3/29	3/26	3/23	3/20	3/17	3/12
24	4/04	3/27	3/22	3/17	3/13	3/08	3/03	2/26	2/18
20	3/25	3/16	3/09	3/04	2/27	2/21	2/16	2/09	1/31
16	3/15	3/06	2/28	2/23	2/18	2/12	2/07	2/01	1/23

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	9/30	10/06	10/10	10/14	10/18	10/21	10/25	10/29	11/05
32	10/13	10/18	10/22	10/26	10/29	11/01	11/05	11/09	11/14
28	10/19	10/26	10/31	11/05	11/09	11/13	11/18	11/23	11/30
24	10/29	11/05	11/10	11/14	11/18	11/22	11/26	12/01	12/08
20	11/09	11/17	11/22	11/26	11/30	12/04	12/09	12/14	12/21
16	11/10	11/21	11/30	12/07	12/14	12/20	12/28	1/05	1/17

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	201	193	188	183	179	175	170	165	158
32	228	220	215	210	206	201	197	191	184
28	252	243	237	232	227	222	217	211	202
24	279	269	262	256	250	244	238	230	220
20	311	299	290	283	276	269	262	253	241
16	340	320	310	301	294	287	279	270	258

***** 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

Complete documentation available from:
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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	968	719	494	215	70	3	0	1	29	160	528	866	4053
60	816	590	351	115	27	0	0	0	8	71	389	714	3081
57	727	515	271	71	13	0	0	0	3	39	311	628	2578
55	671	468	225	48	8	0	0	0	0	24	263	570	2277
50	529	360	131	14	1	0	0	0	0	5	164	432	1636
32	157	98	7	0	0	0	0	0	0	0	10	98	370

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	212	314	538	807	1120	1364	1577	1544	1228	906	473	255	10338
55	13	40	43	165	414	674	864	831	538	217	36	14	3849
57	7	32	28	128	358	614	802	769	481	170	24	10	3423
60	3	22	14	82	278	524	709	676	396	110	12	3	2829
65	0	0	2	32	167	376	554	522	267	43	1	0	1964
70	0	0	0	9	85	238	399	373	162	12	0	0	1278

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	62	152	327	577	878	1132	1337	1306	995	671	271	87	62	214	541	1118	1996	3128	4465	5771	6766	7437	7708	7795
45	24	85	212	433	723	982	1182	1151	845	516	170	41	24	109	321	754	1477	2459	3641	4792	5637	6153	6323	6364
50	5	42	125	299	569	832	1027	996	696	377	93	15	5	47	172	471	1040	1872	2899	3895	4591	4968	5061	5076
55	1	15	68	186	416	682	872	841	548	242	43	5	1	16	84	270	686	1368	2240	3081	3629	3871	3914	3919
60	0	5	29	103	277	532	717	686	410	139	17	0	0	5	34	137	414	946	1663	2349	2759	2898	2915	2915
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	52	109	212	361	575	770	893	869	662	413	163	61	52	161	373	734	1309	2079	2972	3841	4503	4916	5079	5140

(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