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: STILLWATER 2 W, OK **COOP ID: 348501**

Climate Division: OK 5 **NWS Call Sign:** **Elevation: 895 Feet** **Lat: 36˚07N** **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	47.1	21.9	34.5	81+	1894	16	41.7	1990	-12	1918	12	22.0	1979	944	0	.0	.0	13.7	5.1	26.6	.7
Feb	53.1	26.9	40.0	92	1996	23	49.3	1976	-18+	1905	13	26.9	1978	704	0	.0	@	16.4	3.1	19.4	.4
Mar	62.0	36.5	49.3	98	1907	19	54.4	1986	-5	1948	12	43.5	1975	487	0	.0	.1	24.7	.4	10.1	@
Apr	71.7	46.1	58.9	104	1972	13	65.7	1981	16	1936	3	51.6	1983	213	30	@	.5	29.2	.0	1.9	.0
May	79.3	56.9	68.1	101	1985	31	73.6	1996	29	1903	1	62.8	1976	52	150	@	2.3	31.0	.0	.0	.0
Jun	87.7	66.2	77.0	106	1936	22	81.5	1990	43	1919	5	72.4	1992	2	361	.3	11.6	30.0	.0	.0	.0
Jul	93.6	71.0	82.3	113+	1936	18	88.1	1980	50	1894	22	79.6	1989	0	536	4.1	23.3	31.0	.0	.0	.0
Aug	93.4	69.2	81.3	115	1936	11	86.2	1983	43	1915	31	74.6	1992	1	505	4.9	22.3	31.0	.0	.0	.0
Sep	84.9	60.7	72.8	111	2000	4	80.3	1998	31	1984	30	65.2	1974	27	260	1.1	9.7	29.9	.0	@	.0
Oct	74.8	47.8	61.3	99+	1898	3	64.6	2000	12	1917	30	55.1	1976	154	38	.0	.9	30.6	.0	1.7	.0
Nov	60.8	36.5	48.7	88	1911	11	56.0	1999	7+	1894	17	42.8	1972	492	1	.0	.0	23.6	.4	11.0	.0
Dec	50.6	26.3	38.5	84	1955	24	43.2	1991	-15	1989	23	23.5	1983	823	0	.0	.0	16.9	3.0	22.7	.5
Ann	71.6	47.2	59.4	115	Aug 1936	11	88.1	Jul 1980	-18+	Feb 1905	13	22.0	Jan 1979	3899	1881	10.4	70.7	308.0	12.0	93.4	1.6

+ 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: 1893-2001

(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	1.30	1.06	3.51	1894	19	3.66	1998	.00+	1986
Feb	1.62	1.32	2.70	1915	21	5.38	1987	.06	1991
Mar	3.22	3.07	3.34	1990	11	7.73	1973	.00	1971
Apr	3.45	3.14	5.50	1993	29	8.30	1993	.17	1989
May	5.41	5.30	7.00	1957	21	14.60	1982	1.70	1985
Jun	4.32	4.08	4.64	1961	4	8.32	1995	.81	1977
Jul	2.69	2.51	5.57	1953	12	6.32	1996	.00	1983
Aug	3.05	3.01	6.89	1942	14	8.50	1992	.05	2000
Sep	4.13	4.12	6.05	1959	24	12.41	1973	.05	2000
Oct	3.21	2.39	6.23	1959	2	8.72	1998	.66	1993
Nov	2.57	2.42	4.32	1974	3	6.65	1992	.00	1989
Dec	1.74	1.49	2.63	1898	18	5.10	1991	.15	1976
Ann	36.71	36.42	7.00	May 1957	21	14.60	May 1982	.00+	Nov 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.5	2.8	.7	.3
Feb	4.6	3.3	1.0	.4
Mar	6.9	5.6	2.4	1.0
Apr	7.3	5.3	2.2	.9
May	9.1	6.8	3.7	1.5
Jun	8.1	6.2	3.2	1.5
Jul	5.6	4.1	2.0	.9
Aug	6.3	4.2	1.7	.9
Sep	7.1	5.1	2.7	1.3
Oct	6.1	4.1	1.8	.9
Nov	5.5	4.2	1.8	.7
Dec	4.6	3.2	1.2	.4
Ann	75.7	54.9	24.4	10.7

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	.06	.23	.42	.64	.89	1.19	1.58	2.13	3.06	3.98
Feb	.11	.21	.41	.63	.88	1.17	1.52	1.96	2.58	3.63	4.67
Mar	.46	.88	1.43	1.88	2.33	2.80	3.34	3.97	4.80	6.11	7.35
Apr	.58	.88	1.38	1.85	2.34	2.87	3.47	4.21	5.19	6.78	8.30
May	1.44	1.95	2.73	3.42	4.10	4.81	5.60	6.53	7.75	9.66	11.45
Jun	1.01	1.41	2.05	2.61	3.17	3.77	4.44	5.23	6.28	7.94	9.50
Jul	.21	.51	.94	1.34	1.74	2.19	2.70	3.32	4.16	5.51	6.82
Aug	.36	.59	1.02	1.45	1.90	2.41	3.00	3.73	4.72	6.36	7.95
Sep	.58	.92	1.51	2.08	2.68	3.34	4.11	5.04	6.30	8.36	10.35
Oct	.58	.86	1.33	1.77	2.21	2.70	3.25	3.91	4.80	6.22	7.59
Nov	.18	.45	.86	1.24	1.64	2.07	2.57	3.18	4.00	5.34	6.63
Dec	.18	.31	.54	.79	1.05	1.34	1.69	2.13	2.72	3.71	4.67
Ann	25.60	27.74	30.48	32.56	34.42	36.22	38.08	40.14	42.65	46.28	49.44

\+ 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: 1893-2001
(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	3.1	.4	#	0	9.0	1988	7	19.0	1988	9+	1988	10	2+	1988	1.3	1.0	.4	.2	.0	3.4	1.7	.4	.0
Feb	1.7	.0	#	0	8.0	1996	2	9.8	1978	8+	1996	3	2	1978	1.0	.8	.3	@	.0	2.6	1.1	.3	.0
Mar	.7	.0	#	0	13.0	1994	9	13.0	1994	9	1999	14	#	1999	.3	.2	.1	.1	@	.3	.1	@	.0
Apr	#	.0	0	0	#	1975	2	#+	1975	#	1975	2	0	0	.0	.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	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	#	0	2.3	1972	21	2.5	1974	3	1974	30	#	1991	.2	.2	.0	.0	.0	.2	@	.0	.0
Dec	1.7	.5	#	0	10.0	1987	15	13.8	1987	10	1987	16	1+	2000	1.0	.6	.2	.1	@	1.4	.4	.2	@
Ann	7.5	.9	N/A	N/A	13.0	Mar 1994	9	19.0	Jan 1988	10	Dec 1987	16	2+	Jan 1988	3.8	2.8	1.0	.4	@	7.9	3.3	.9	.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	4/30	4/26	4/23	4/20	4/17	4/15	4/12	4/09	4/05
32	4/21	4/16	4/13	4/10	4/08	4/05	4/02	3/30	3/25
28	4/11	4/05	4/01	3/28	3/25	3/22	3/18	3/14	3/08
24	4/03	3/25	3/19	3/14	3/09	3/04	2/27	2/21	2/13
20	3/21	3/14	3/08	3/04	2/27	2/23	2/18	2/13	2/05
16	3/09	3/01	2/23	2/18	2/13	2/09	2/04	1/29	1/21

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	9/26	10/02	10/06	10/10	10/14	10/17	10/21	10/25	10/31
32	10/13	10/18	10/22	10/25	10/28	10/30	11/03	11/06	11/11
28	10/23	10/29	11/02	11/06	11/10	11/13	11/17	11/22	11/28
24	10/30	11/05	11/10	11/15	11/19	11/23	11/27	12/02	12/09
20	11/09	11/16	11/22	11/26	11/30	12/04	12/09	12/14	12/21
16	11/14	11/25	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	199	192	187	183	179	174	170	165	158
32	223	216	211	206	202	198	194	189	182
28	253	245	239	234	229	224	219	213	205
24	286	275	267	260	254	247	241	233	222
20	306	295	288	281	275	269	263	255	245
16	337	321	312	306	300	294	288	281	271

***** 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	944	704	487	213	52	2	0	1	27	154	492	823	3899
60	790	573	341	114	15	0	0	0	7	64	353	672	2929
57	699	497	259	70	6	0	0	0	3	32	276	584	2426
55	638	447	210	47	3	0	0	0	0	18	230	527	2120
50	496	335	114	14	0	0	0	0	0	3	136	391	1489
32	117	73	4	0	0	0	0	0	0	0	6	73	273

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	195	297	539	808	1120	1348	1559	1528	1223	907	505	274	10303
55	4	28	33	165	410	658	846	815	533	213	39	15	3759
57	2	21	20	128	351	598	784	753	476	165	25	10	3333
60	1	14	9	82	267	508	691	660	391	103	12	4	2742
65	0	0	0	30	150	361	536	505	260	38	1	0	1881
70	0	0	0	8	66	223	381	355	155	9	0	0	1197

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	65	152	331	570	866	1100	1305	1274	979	658	292	106	65	217	548	1118	1984	3084	4389	5663	6642	7300	7592	7698
45	26	85	217	426	711	950	1150	1119	829	506	185	48	26	111	328	754	1465	2415	3565	4684	5513	6019	6204	6252
50	5	39	126	296	557	800	995	964	681	364	106	17	5	44	170	466	1023	1823	2818	3782	4463	4827	4933	4950
55	1	16	63	182	408	650	840	809	533	232	49	6	1	17	80	262	670	1320	2160	2969	3502	3734	3783	3789
60	0	5	25	98	266	500	685	654	394	127	19	1	0	5	30	128	394	894	1579	2233	2627	2754	2773	2774
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	61	118	214	358	566	751	877	849	646	419	190	84	61	179	393	751	1317	2068	2945	3794	4440	4859	5049	5133

(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