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: STILWELL 5 NNW, OK **COOP ID: 348506**

Climate Division: OK 6 **NWS Call Sign:** **Elevation: 1,000 Feet** **Lat: 35˚54N** **Lon: 94˚39W**

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	46.6	26.0	36.3	75	1970	28	44.6	1990	-12	1977	10	24.2	1979	890	0	.0	.0	13.7	3.6	22.3	.5
Feb	52.8	30.7	41.8	85	1996	22	50.7	1976	-9	1996	4	29.9	1978	651	0	.0	.0	18.0	2.2	15.6	.3
Mar	61.7	38.8	50.3	90+	1967	11	55.2	1974	3	1996	9	43.8	1996	458	1	.0	@	27.3	.2	8.2	.0
Apr	70.3	46.7	58.5	91	1960	6	65.3	1981	22+	1962	2	52.6	1983	215	21	.0	.0	29.5	.0	2.0	.0
May	76.8	55.2	66.0	92+	1987	21	71.0	1987	31+	1960	1	60.7	1976	73	104	.0	.2	31.0	.0	.0	.0
Jun	84.1	63.1	73.6	100	1988	30	77.8	1977	41	1998	7	69.7	1974	8	266	@	5.6	30.0	.0	.0	.0
Jul	90.0	67.3	78.7	108+	1977	25	85.1	1980	47+	1971	31	75.2	1989	0	422	1.6	18.3	31.0	.0	.0	.0
Aug	89.6	65.8	77.7	107	1964	4	84.6	1980	46	1967	12	71.5	1992	4	398	1.9	17.1	31.0	.0	.0	.0
Sep	81.9	59.1	70.5	106	2000	3	77.0	1998	31	1984	30	63.4	1974	37	203	.4	5.9	30.0	.0	.1	.0
Oct	72.2	48.4	60.3	94	1963	11	64.6	1971	23	2000	9	54.0	1976	178	32	.0	.1	30.7	.0	1.4	.0
Nov	59.3	38.1	48.7	87	1999	14	57.4	1999	5	1976	29	42.1	1976	491	3	.0	.0	24.8	.1	8.9	.0
Dec	49.5	29.2	39.4	79	1998	5	46.2	1984	-12	1989	23	25.4	1983	795	0	.0	.0	16.5	2.3	18.8	.4
Ann	69.6	47.4	58.5	108+	Jul 1977	25	85.1	Jul 1980	-12+	Dec 1989	23	24.2	Jan 1979	3800	1450	3.9	47.2	313.5	8.4	77.3	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	2.45	2.22	3.40	1998	4	8.61	1998	.16	1986
Feb	2.76	2.56	2.75	1966	9	6.59	1997	.26	1996
Mar	4.56	4.25	2.77	1978	24	9.96	1973	.69	1971
Apr	4.79	4.56	4.80	1957	3	9.82	1990	.24	1989
May	5.96	6.22	4.67	1990	3	13.77	1990	1.29	1972
Jun	5.16	4.48	3.70	2000	21	14.70	2000	.59	1994
Jul	3.21	2.89	4.32	1960	23	9.92	1994	.22	1980
Aug	3.48	3.36	3.81	1986	10	8.94	1986	.00	2000
Sep	4.87	4.37	6.45	1996	27	11.11	1974	1.09	1979
Oct	4.16	3.75	6.45	1986	1	11.61	1986	.30	1978
Nov	4.89	4.67	4.41	1994	5	12.42	1996	.68	1989
Dec	3.65	3.28	3.50	2001	16	8.67	1982	.49	1989
Ann	49.94+	50.63+	6.45+	Sep 1996	27	14.70	Jun 2000	.00	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.3	4.3	1.4	.7
Feb	8.6	4.7	1.9	.8
Mar	10.7	6.8	3.1	1.5
Apr	11.0	7.0	3.3	1.4
May	12.6	7.8	4.2	2.1
Jun	10.3	7.0	3.7	1.8
Jul	7.6	4.8	2.2	1.0
Aug	7.8	4.7	2.1	1.1
Sep	9.9	6.7	2.9	1.4
Oct	9.2	5.6	2.5	1.2
Nov	9.5	6.0	3.3	1.7
Dec	9.3	5.4	2.4	1.0
Ann	115.8	70.8	33.0	15.7

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	.28	.46	.80	1.15	1.51	1.92	2.40	2.99	3.79	5.12	6.42
Feb	.55	.80	1.21	1.58	1.95	2.35	2.81	3.35	4.08	5.23	6.33
Mar	1.38	1.81	2.46	3.02	3.56	4.12	4.74	5.47	6.42	7.89	9.25
Apr	1.20	1.65	2.35	2.97	3.58	4.22	4.94	5.79	6.90	8.66	10.30
May	2.03	2.60	3.42	4.12	4.78	5.47	6.22	7.10	8.23	9.97	11.57
Jun	1.02	1.49	2.24	2.94	3.64	4.39	5.25	6.28	7.64	9.82	11.90
Jul	.20	.39	.78	1.22	1.71	2.29	2.99	3.89	5.14	7.26	9.38
Aug	.39	.81	1.40	1.90	2.41	2.95	3.56	4.30	5.27	6.84	8.32
Sep	1.42	1.88	2.58	3.18	3.77	4.38	5.06	5.85	6.88	8.50	10.00
Oct	.80	1.17	1.78	2.35	2.92	3.53	4.23	5.07	6.19	7.98	9.69
Nov	1.34	1.80	2.51	3.12	3.73	4.36	5.06	5.89	6.96	8.66	10.24
Dec	.70	1.03	1.56	2.06	2.56	3.10	3.71	4.44	5.42	6.99	8.48
Ann	32.99	36.18	40.31	43.48	46.33	49.09	51.96	55.16	59.06	64.77	69.74

+ 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	4.5	2.4	1	#	8.0	2000	28	16.7	1979	10	1977	10	4	1977	2.6	1.3	.6	.2	.0	5.1	2.3	1.0	@
Feb	3.2	1.7	#	#	6.7	1993	15	12.8	1978	8	1975	24	3	1979	2.2	1.0	.4	.1	.0	3.8	1.8	.5	.0
Mar	1.4	.0	#	0	12.1	1989	6	14.7	1989	14	1989	6	2	1989	.6	.4	.1	.1	@	.6	.3	.2	.1
Apr	.0	.0	#	0	.3	1973	10	.3	1973	#+	1997	12	#+	1997	@	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.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	#	1989	20	#	1989	#	1996	22	#	1996	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.1	.0	#	0	4.5	1975	26	5.1	1972	4+	1995	11	#+	2000	.6	.4	.1	.0	.0	.7	.2	.0	.0
Dec	1.6	.4	#	#	5.0	2000	13	5.5	1975	5	2000	13	1+	2000	1.3	.7	.2	@	.0	1.9	.4	@	.0
Ann	11.8	4.5	N/A	N/A	12.1	Mar 1989	6	16.7	Jan 1979	14	Mar 1989	6	4	Jan 1977	7.3	3.8	1.4	.4	@	12.1	5.0	1.7	.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	5/08	5/03	4/30	4/27	4/24	4/21	4/18	4/15	4/10
32	4/23	4/19	4/16	4/14	4/11	4/09	4/07	4/04	3/31
28	4/13	4/08	4/04	4/01	3/29	3/26	3/23	3/20	3/15
24	4/01	3/26	3/21	3/18	3/14	3/11	3/07	3/03	2/25
20	3/23	3/15	3/09	3/04	2/28	2/23	2/18	2/13	2/05
16	3/09	3/01	2/24	2/19	2/15	2/10	2/05	1/31	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	9/26	9/30	10/04	10/07	10/09	10/12	10/15	10/19	10/23
32	10/05	10/11	10/16	10/20	10/23	10/27	10/30	11/04	11/10
28	10/23	10/28	11/01	11/05	11/08	11/11	11/14	11/18	11/24
24	10/26	11/01	11/06	11/10	11/14	11/18	11/22	11/26	12/03
20	11/09	11/16	11/21	11/25	11/29	12/03	12/07	12/12	12/19
16	11/12	11/23	12/01	12/08	12/14	12/21	12/27	1/04	1/16

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	187	180	176	172	168	164	160	155	149
32	215	208	203	198	194	190	185	180	173
28	244	236	231	227	223	219	214	209	202
24	273	263	256	249	244	238	232	225	215
20	301	291	285	279	273	268	262	256	246
16	336	319	310	303	297	291	284	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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	890	651	458	215	73	8	0	4	37	178	491	795	3800
60	736	520	314	112	23	1	0	0	11	82	354	646	2799
57	648	442	235	67	9	0	0	0	4	45	278	560	2288
55	591	392	189	44	4	0	0	0	1	29	233	503	1986
50	449	278	100	11	0	0	0	0	0	6	140	370	1354
32	99	39	2	0	0	0	0	0	0	0	7	67	214

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	232	312	567	796	1055	1248	1445	1417	1156	877	508	294	9907
55	11	21	42	149	346	558	732	704	467	193	44	18	3285
57	6	15	26	112	289	498	670	642	409	148	29	13	2857
60	1	8	12	67	209	409	577	549	326	91	15	6	2270
65	0	0	1	21	104	266	422	398	203	32	3	0	1450
70	0	0	0	4	38	145	274	257	111	7	0	0	836

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	95	184	371	585	841	1045	1237	1209	951	664	315	130	95	279	650	1235	2076	3121	4358	5567	6518	7182	7497	7627
45	45	105	243	440	686	895	1082	1054	801	512	205	64	45	150	393	833	1519	2414	3496	4550	5351	5863	6068	6132
50	17	51	145	301	531	745	927	899	652	363	117	31	17	68	213	514	1045	1790	2717	3616	4268	4631	4748	4779
55	1	21	71	185	379	595	772	744	503	232	62	10	1	22	93	278	657	1252	2024	2768	3271	3503	3565	3575
60	0	3	33	94	237	445	617	589	364	125	22	0	0	3	36	130	367	812	1429	2018	2382	2507	2529	2529
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	62	116	229	369	551	720	841	821	640	419	187	76	62	178	407	776	1327	2047	2888	3709	4349	4768	4955	5031

(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