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: FORT SUPPLY 3 SE, OK **COOP ID: 343304**

Climate Division: OK 3 **NWS Call Sign:** **Elevation: 2,030 Feet** **Lat: 36˚33N** **Lon: 99˚32W**

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	45.8	17.4	31.6	86	1986	21	40.5	1986	-15	1959	4	18.2	1979	1034	0	.0	.0	14.3	6.1	28.9	1.4
Feb	52.0	21.7	36.9	92	1962	12	45.8	1976	-12	1951	1	23.9	1978	789	0	.0	@	16.9	3.6	21.9	.6
Mar	60.4	30.9	45.7	95	1989	11	51.2	1992	-10	1948	11	39.8	1998	601	0	.0	.2	24.2	1.0	13.7	.0
Apr	70.2	40.9	55.6	98	1989	24	62.7	1981	18+	1973	9	48.2	1983	305	21	.1	1.0	28.5	.1	3.7	.0
May	78.0	51.9	65.0	105+	1996	18	71.2	1996	30	1966	13	58.7	1995	99	97	.3	2.8	30.8	.0	@	.0
Jun	87.1	62.0	74.6	110+	1953	15	79.7	1994	36	1998	6	68.9	1989	14	300	1.4	11.7	30.0	.0	.0	.0
Jul	93.2	66.4	79.8	110	1978	19	85.4	1980	49	1952	9	76.3	1989	0	459	4.6	22.6	31.0	.0	.0	.0
Aug	92.0	64.4	78.2	109	1964	6	84.6	1983	47	1988	29	72.0	1992	3	412	4.5	20.6	31.0	.0	.0	.0
Sep	83.8	55.3	69.6	107	2000	4	75.8	1998	29	1984	30	60.3	1974	45	181	1.2	10.0	29.8	.0	.1	.0
Oct	72.9	42.6	57.8	98+	1977	1	62.2	1979	15	1993	30	52.6	1976	237	12	.0	1.6	30.1	@	2.9	.0
Nov	58.4	29.4	43.9	89+	1980	9	51.7	1999	4	1975	26	37.2	1972	633	0	.0	.0	22.3	.8	16.3	.0
Dec	47.8	20.7	34.3	86	1955	24	39.6	1994	-13	1989	23	19.6	1983	953	0	.0	.0	15.9	3.9	27.7	1.0
Ann	70.1	42.0	56.1	110+	Jul 1978	19	85.4	Jul 1980	-15	Jan 1959	4	18.2	Jan 1979	4713	1482	12.1	70.5	304.8	15.5	115.2	3.0

\+ 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	.61	.40	1.30	1949	10	2.05	1980	.00+	1996
Feb	.89	.61	1.85	1985	23	3.98	1985	.00+	1996
Mar	2.16	1.89	1.96	2000	22	6.78	2000	.02+	1997
Apr	2.17	1.94	1.86	1959	8	7.21	1999	.06	1996
May	4.16	3.64	6.58	1979	10	11.63	1982	.66	1988
Jun	3.34	3.41	3.21	1971	9	8.36	2000	.09	1976
Jul	2.38	1.75	4.94	1986	20	9.73	1996	.00	1983
Aug	2.46	1.91	4.36	1974	29	8.45	1974	.15	2000
Sep	2.32	2.49	2.28	1962	20	5.46	1985	.00	2000
Oct	1.90	1.03	5.22	1985	10	9.78	2000	.00+	1978
Nov	1.36	.94	2.30	1981	1	4.24	1981	.00+	1999
Dec	.93	.73	1.68	1973	4	3.46	1984	.00+	1983
Ann	24.68	24.17	6.58	May 1979	10	11.63	May 1982	.00+	Sep 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.3	1.8	.3	.1
Feb	3.8	2.2	.5	.2
Mar	5.7	3.9	1.7	.7
Apr	6.6	4.4	1.5	.5
May	8.5	5.7	2.6	1.2
Jun	7.6	5.3	2.4	1.0
Jul	6.1	3.8	1.5	.7
Aug	6.5	4.6	1.7	.7
Sep	6.3	4.1	1.7	.6
Oct	4.4	2.9	1.0	.5
Nov	4.5	2.7	.9	.3
Dec	3.6	2.0	.6	.1
Ann	66.9	43.4	16.4	6.6

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	.02	.10	.18	.28	.40	.55	.74	1.00	1.46	1.92
Feb	.00	.02	.10	.22	.36	.53	.76	1.05	1.48	2.23	2.99
Mar	.08	.17	.40	.68	1.01	1.41	1.91	2.57	3.52	5.16	6.82
Apr	.33	.51	.82	1.12	1.43	1.77	2.17	2.65	3.29	4.34	5.34
May	.93	1.31	1.92	2.47	3.02	3.61	4.27	5.05	6.09	7.74	9.30
Jun	.37	.63	1.09	1.56	2.06	2.61	3.26	4.07	5.18	7.00	8.77
Jul	.30	.60	1.00	1.34	1.68	2.04	2.44	2.93	3.56	4.58	5.54
Aug	.20	.37	.69	1.03	1.41	1.84	2.35	3.00	3.89	5.39	6.86
Sep	.05	.19	.49	.81	1.18	1.62	2.14	2.82	3.76	5.36	6.96
Oct	.00	.05	.25	.50	.81	1.18	1.65	2.26	3.15	4.68	6.23
Nov	.00	.00	.24	.50	.75	1.03	1.34	1.73	2.26	3.10	3.93
Dec	.00	.08	.23	.38	.53	.70	.90	1.15	1.49	2.05	2.60
Ann	16.62	18.15	20.12	21.63	22.97	24.28	25.64	27.15	28.99	31.67	34.01

\+ 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	2.8	1.3	1	#	7.0	1973	22	11.0	1988	11	1988	11	4	1988	1.8	1.0	.4	.1	.0	3.7	1.7	.4	.2
Feb	4.5	.4	1	#	13.0	1971	22	30.0	1971	24	1971	23	5	1971	1.7	1.1	.4	.2	@	2.8	1.8	1.4	.3
Mar	2.2	.2	#	#	15.0	1988	17	15.0	1988	15	1988	18	2	1988	.9	.6	.3	.2	@	1.4	.7	.2	.1
Apr	.3	.0	#	0	7.0	1973	9	7.0	1973	7	1973	9	1	1983	.3	.2	.1	@	.0	.1	.1	@	.0
May	#	.0	0	0	#	1978	3	#	1978	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	.1	.0	#	0	1.3	1991	31	1.3	1991	1	1991	31	#	1991	@	@	.0	.0	.0	@	.0	.0	.0
Nov	1.0	.0	#	0	5.2	1992	22	12.0	1972	13	1992	25	2	1992	.4	.4	.2	.1	.0	.6	.3	.1	.0
Dec	3.1	1.5	#	#	10.0	1987	14	14.0	1987	14	1987	15	2	1992	1.0	.9	.3	.2	@	1.7	.6	.4	.1
Ann	14.0	3.4	N/A	N/A	15.0	Mar 1988	17	30.0	Feb 1971	24	Feb 1971	23	5	Feb 1971	6.1	4.2	1.7	.8	@	10.3	5.2	2.5	.7

+ 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	5/13	5/07	5/03	4/29	4/26	4/22	4/19	4/15	4/09
32	4/24	4/20	4/16	4/14	4/11	4/09	4/06	4/03	3/30
28	4/14	4/09	4/06	4/03	4/01	3/29	3/27	3/23	3/19
24	4/08	4/03	3/30	3/27	3/24	3/21	3/17	3/13	3/08
20	4/02	3/26	3/20	3/16	3/11	3/07	3/02	2/25	2/17
16	3/19	3/12	3/07	3/03	2/27	2/23	2/19	2/14	2/08

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	9/25	9/30	10/03	10/06	10/09	10/12	10/15	10/18	10/23
32	10/04	10/09	10/13	10/16	10/19	10/22	10/25	10/29	11/03
28	10/19	10/24	10/27	10/30	11/02	11/05	11/08	11/11	11/16
24	10/23	10/29	11/02	11/06	11/09	11/13	11/16	11/21	11/27
20	10/27	11/04	11/09	11/13	11/17	11/21	11/26	12/01	12/08
16	11/08	11/15	11/20	11/24	11/28	12/02	12/06	12/11	12/17

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	188	180	174	170	165	161	156	151	143
32	209	203	198	194	190	186	182	177	170
28	234	227	222	218	214	211	207	202	195
24	252	244	239	234	230	226	221	216	208
20	280	270	262	256	250	244	238	231	221
16	299	290	283	278	273	267	262	255	246

***** 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	1034	789	601	305	99	14	0	3	45	237	633	953	4713
60	879	655	450	191	39	3	0	0	13	119	485	798	3632
57	787	577	365	137	19	0	0	0	5	68	401	705	3064
55	727	525	310	106	11	0	0	0	2	45	347	644	2717
50	581	402	192	47	2	0	0	0	0	12	226	499	1961
32	167	101	10	0	0	0	0	0	0	0	16	109	403

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	156	236	432	706	1021	1277	1482	1432	1126	799	374	179	9220
55	2	16	19	121	319	587	769	719	438	130	14	1	3135
57	1	12	12	92	265	527	707	657	381	92	8	0	2754
60	0	6	4	57	192	439	614	564	299	49	2	0	2226
65	0	0	0	21	97	300	459	412	181	12	0	0	1482
70	0	0	0	6	37	181	306	269	95	2	0	0	896

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	51	125	287	515	804	1060	1263	1218	925	595	223	67	51	176	463	978	1782	2842	4105	5323	6248	6843	7066	7133
45	19	65	181	379	650	910	1108	1063	775	446	132	28	19	84	265	644	1294	2204	3312	4375	5150	5596	5728	5756
50	1	26	103	252	497	760	953	908	627	312	68	7	1	27	130	382	879	1639	2592	3500	4127	4439	4507	4514
55	0	10	50	150	347	610	798	753	483	189	25	0	0	10	60	210	557	1167	1965	2718	3201	3390	3415	3415
60	0	0	20	77	217	460	643	598	346	100	7	0	0	0	20	97	314	774	1417	2015	2361	2461	2468	2468
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	71	120	210	337	506	705	841	800	597	385	170	74	71	191	401	738	1244	1949	2790	3590	4187	4572	4742	4816

(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