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: GREAT SALT PLAINS DAM, OK **COOP ID: 343740**

Climate Division: OK 3 **NWS Call Sign:** **Elevation: 1,200 Feet** **Lat: 36˚45N** **Lon: 98˚08W**

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	44.2	20.8	32.5	83	1967	22	41.8	1990	-10	1988	8	17.7	1979	1007	0	.0	.0	12.4	6.2	27.2	1.0
Feb	50.7	26.0	38.4	93	1996	23	48.3	1976	-7	1982	6	24.8	1978	751	0	.0	@	15.4	3.9	19.7	.7
Mar	60.4	35.1	47.8	92	1994	18	52.2	1991	-3	1948	11	42.3	1984	536	0	.0	.1	25.3	.5	10.9	.0
Apr	69.8	45.0	57.4	98	1954	6	65.3	1981	21	1975	3	50.0	1983	256	28	.0	.8	28.9	.0	1.7	.0
May	79.1	55.7	67.4	105	1953	31	72.6+	1998	31+	1954	3	62.3	1995	67	140	.1	3.9	30.9	.0	.0	.0
Jun	89.3	64.7	77.0	114	1953	15	84.0	1990	47+	1969	2	71.8	1982	6	365	2.9	16.7	30.0	.0	.0	.0
Jul	95.5	69.5	82.5	114+	1954	14	87.9	1980	52	1960	31	79.8	1972	0	543	9.5	25.6	31.0	.0	.0	.0
Aug	94.0	67.8	80.9	111	1964	6	87.7	2000	49	1988	31	74.5	1992	2	494	8.2	23.9	31.0	.0	.0	.0
Sep	84.8	59.5	72.2	109+	1990	2	80.4	1998	34+	1985	30	64.0	1974	29	243	2.1	11.0	29.9	.0	.0	.0
Oct	73.3	47.1	60.2	101	1951	3	65.1	1979	14	1993	31	54.6	1976	180	31	.0	1.6	30.4	.0	1.1	.0
Nov	57.9	34.4	46.2	88	1980	9	54.8	1999	9+	1975	26	39.8	1991	565	0	.0	.0	22.6	.5	11.6	.0
Dec	47.3	24.6	36.0	82	1966	7	40.5	1999	-12+	1989	22	20.7	1983	901	0	.0	.0	14.4	3.5	25.1	.6
Ann	70.5	45.9	58.2	114+	Jul 1954	14	87.9	Jul 1980	-12+	Dec 1989	22	17.7	Jan 1979	4300	1844	22.8	83.6	302.2	14.6	97.3	2.3

\+ 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	.86	.64	1.80	1975	31	2.74	1999	.00+	1996
Feb	1.11	.82	2.00	2001	23	2.92	1990	.02	1988
Mar	2.77	2.07	3.00	1988	3	9.87	1973	.01	1971
Apr	2.80	2.46	4.54	1970	18	7.37	1999	.06	1996
May	4.54	3.81	4.02	1987	5	14.81	1993	.40	1971
Jun	3.81	3.49	3.78	1957	23	10.48	1999	.21	1973
Jul	3.05	2.75	4.66	1950	29	9.91	1979	.00	1983
Aug	3.50	1.95	6.74	1995	3	12.78	1995	.17	2000
Sep	2.92	2.02	3.96	1987	28	8.98	1987	.00	2000
Oct	2.76	2.20	4.47	1998	31	14.71	1998	.00	1978
Nov	2.12	2.01	4.27	1998	1	5.57	1998	.00+	1989
Dec	1.01	.80	1.48	1953	3	3.56	1999	.00	1976
Ann	31.25	31.00	6.74	Aug 1995	3	14.81	May 1993	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.4	1.8	.6	.1
Feb	3.9	2.4	.7	.3
Mar	6.3	4.0	1.8	.9
Apr	6.7	4.5	1.8	.7
May	8.5	6.3	2.9	1.3
Jun	8.1	5.8	2.8	1.1
Jul	5.9	3.9	1.8	1.0
Aug	6.6	4.6	2.0	1.0
Sep	6.4	4.0	1.7	.8
Oct	5.2	3.4	1.5	.7
Nov	4.9	2.7	1.0	.4
Dec	4.0	2.3	.6	.1
Ann	69.9	45.7	19.2	8.4

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	.00	.14	.27	.42	.59	.80	1.06	1.42	2.03	2.64
Feb	.04	.10	.22	.36	.53	.74	.99	1.33	1.80	2.61	3.44
Mar	.14	.28	.61	.98	1.40	1.91	2.53	3.33	4.47	6.40	8.35
Apr	.42	.66	1.07	1.45	1.86	2.30	2.80	3.42	4.26	5.61	6.91
May	.79	1.18	1.85	2.47	3.11	3.80	4.59	5.54	6.82	8.88	10.84
Jun	.46	.76	1.30	1.83	2.39	3.02	3.75	4.65	5.87	7.88	9.83
Jul	.27	.61	1.11	1.55	2.01	2.51	3.07	3.76	4.69	6.18	7.61
Aug	.19	.39	.81	1.28	1.82	2.46	3.23	4.22	5.62	8.00	10.37
Sep	.19	.48	.94	1.37	1.82	2.31	2.89	3.60	4.56	6.14	7.66
Oct	.03	.16	.46	.83	1.27	1.79	2.45	3.30	4.52	6.63	8.76
Nov	.00	.24	.63	.97	1.31	1.69	2.12	2.64	3.35	4.51	5.63
Dec	.03	.10	.24	.38	.54	.73	.95	1.24	1.63	2.29	2.94
Ann	20.20	22.26	24.94	27.00	28.85	30.66	32.54	34.64	37.20	40.96	44.24

+ 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	2.2	.0	#	#	6.0	1988	6	12.0	1988	12	1988	7	3	1979	.8	.6	.3	.1	.0	.7	.4	.2	.0
Feb	2.5	.0	#	0	14.0	1971	22	23.1	1982	14	1971	23	2	1978	.5	.4	.2	.1	.1	.3	.1	.0	.0
Mar	.5	.0	#	0	4.0	2000	11	4.5	2000	16	1988	18	1	1999	.2	.2	.1	.0	.0	.1	.0	.0	.0
Apr	.1	.0	#	0	2.0	1973	8	2.0	1973	2+	1979	4	#+	1979	@	@	.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	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.2	.0	#	0	4.0	1983	23	4.5	1983	6	1988	21	1	1988	.1	.1	.1	.0	.0	.0	.0	.0	.0
Dec	1.4	.0	#	0	6.0	1987	14	8.3	1989	10	1987	15	2	1984	.6	.5	.1	.1	.0	.6	.2	.1	.0
Ann	6.9	.0	N/A	N/A	14.0	Feb 1971	22	23.1	Feb 1982	16	Mar 1988	18	3	Jan 1979	2.2	1.8	.8	.3	.1	1.7	.7	.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	4/25	4/21	4/18	4/16	4/14	4/12	4/09	4/07	4/03
32	4/14	4/10	4/07	4/04	4/02	3/30	3/28	3/25	3/21
28	4/11	4/06	4/01	3/29	3/25	3/22	3/19	3/14	3/08
24	4/01	3/26	3/21	3/17	3/14	3/10	3/06	3/02	2/24
20	3/22	3/15	3/10	3/05	3/01	2/24	2/20	2/14	2/07
16	3/14	3/05	2/27	2/21	2/16	2/11	2/06	1/30	1/22

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	10/03	10/08	10/12	10/16	10/19	10/22	10/26	10/30	11/05
32	10/20	10/25	10/28	10/31	11/02	11/05	11/08	11/11	11/15
28	10/24	10/30	11/03	11/07	11/11	11/15	11/18	11/23	11/29
24	11/04	11/10	11/14	11/18	11/21	11/25	11/28	12/03	12/09
20	11/10	11/18	11/23	11/27	12/02	12/06	12/10	12/16	12/23
16	11/12	11/22	11/30	12/06	12/12	12/18	12/24	1/01	1/11

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	206	200	195	191	188	184	180	176	169
32	231	225	221	217	214	210	207	203	197
28	254	246	240	235	230	225	220	214	205
24	275	267	261	256	252	247	242	236	228
20	306	295	288	281	275	269	263	255	245
16	337	321	311	303	296	288	281	271	259

***** 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	1007	751	536	256	67	6	0	2	29	180	565	901	4300
60	853	620	388	151	23	0	0	0	8	82	422	746	3293
57	762	543	303	102	10	0	0	0	2	46	341	654	2763
55	703	493	252	75	5	0	0	0	0	29	290	595	2442
50	560	378	146	28	1	0	0	0	0	7	182	452	1754
32	166	100	6	0	0	0	0	0	0	0	10	91	373

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	182	277	493	762	1097	1350	1566	1515	1204	875	435	214	9970
55	6	27	26	147	389	660	853	802	514	191	25	4	3644
57	4	21	16	114	332	600	791	740	456	145	16	1	3236
60	1	14	7	73	252	510	698	647	372	89	7	0	2670
65	0	0	0	28	140	365	543	494	243	31	0	0	1844
70	0	0	0	8	63	232	388	346	141	7	0	0	1185

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	138	312	555	868	1131	1335	1291	984	651	250	77	51	189	501	1056	1924	3055	4390	5681	6665	7316	7566	7643
45	16	78	199	412	713	981	1180	1136	835	499	152	32	16	94	293	705	1418	2399	3579	4715	5550	6049	6201	6233
50	0	33	112	278	558	831	1025	981	685	357	79	7	0	33	145	423	981	1812	2837	3818	4503	4860	4939	4946
55	0	9	54	166	407	681	870	826	539	230	34	0	0	9	63	229	636	1317	2187	3013	3552	3782	3816	3816
60	0	1	21	86	265	531	715	671	401	120	11	0	0	1	22	108	373	904	1619	2290	2691	2811	2822	2822
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	50	110	206	346	553	747	870	837	640	407	163	67	50	160	366	712	1265	2012	2882	3719	4359	4766	4929	4996

(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