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: SEMINOLE, OK **COOP ID: 348042**

Climate Division: OK 5 **NWS Call Sign:** **Elevation: 900 Feet** **Lat: 35˚14N** **Lon: 96˚40W**

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	49.0	25.5	37.3	80+	1950	24	45.5	1990	-8	1977	10	26.0	1978	859	0	.0	.0	17.1	3.0	21.5	.2
Feb	55.8	30.2	43.0	90	1996	22	52.8	1976	-3	1951	1	30.3	1978	620	0	.0	@	19.9	1.6	14.3	.1
Mar	63.8	38.2	51.0	95	1974	31	57.1	1974	7+	1960	3	45.9	1996	434	1	.0	.1	28.0	.1	6.3	.0
Apr	73.3	48.3	60.8	99	1972	12	65.8	1981	24	1957	13	55.3	1997	165	40	.0	.5	29.9	.0	.8	.0
May	80.7	58.6	69.7	100+	1985	30	74.2	1974	35	1954	3	64.9	1976	30	174	.1	3.7	31.0	.0	.0	.0
Jun	88.4	66.8	77.6	105	1960	22	81.5	1977	46	1970	3	73.9	2000	1	379	.7	15.7	30.0	.0	.0	.0
Jul	94.5	71.4	83.0	111	1954	12	88.4	1978	52+	1971	31	80.1	1989	0	556	6.5	26.5	31.0	.0	.0	.0
Aug	94.3	69.5	81.9	110+	1956	6	86.3	1983	52	1956	20	75.5	1992	0	525	7.5	25.9	31.0	.0	.0	.0
Sep	86.2	61.8	74.0	110	2000	3	81.0	1998	36	1984	30	66.7	1974	19	288	1.5	12.5	30.0	.0	.0	.0
Oct	75.8	50.1	63.0	98+	1956	6	66.6	1979	18	1993	31	57.5	1976	121	57	.0	1.8	30.8	.0	.6	.0
Nov	61.9	38.3	50.1	88	1969	10	57.8	1999	10	1976	29	43.6	1972	453	4	.0	.0	26.2	.1	7.8	.0
Dec	52.2	28.9	40.6	87	1955	24	45.7	1984	-9	1989	23	27.9	1983	758	0	.0	.0	20.1	1.8	17.8	.2
Ann	73.0	49.0	61.0	111	Jul 1954	12	88.4	Jul 1978	-9	Dec 1989	23	26.0	Jan 1978	3460	2024	16.3	86.7	325.0	6.6	69.1	.5

\+ 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

Issue Date: February 2004

(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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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	1.67	1.49	2.62	1985	1	5.36	1998	.00+	1986
Feb	2.16	1.81	3.70	1983	1	5.88	1993	.00	1996
Mar	3.42	3.49	2.33	1992	4	9.82	1990	.18	1971
Apr	4.05	3.94	4.80	1998	26	8.88	1990	.34	1989
May	5.44	4.86	6.67	1949	18	15.50	1982	.80	1988
Jun	4.75	5.05	3.10	1979	9	12.11	1992	.36	1994
Jul	2.63	2.08	4.44	1992	27	12.56	1996	.00+	1999
Aug	2.63	2.26	6.63	1958	21	7.66	1996	.00	2000
Sep	4.48	4.09	6.50	1970	23	12.49	1993	.53	1978
Oct	4.06	2.78	8.45	1983	20	12.75	1983	.37	1992
Nov	3.28	2.98	5.41	1979	21	9.19	1994	.00	1989
Dec	2.30	1.83	2.73	1992	14	6.31	1991	.11	1977
Ann	40.87	40.74	8.45	Oct 1983	20	15.50	May 1982	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.3	3.4	1.2	.5
Feb	4.8	3.5	1.6	.7
Mar	7.1	5.4	2.6	1.1
Apr	7.2	5.6	2.7	1.2
May	8.5	6.7	3.6	2.0
Jun	7.2	5.8	3.4	1.6
Jul	4.7	3.5	1.5	.8
Aug	5.0	4.0	1.7	.8
Sep	7.5	5.6	2.9	1.4
Oct	6.1	4.6	2.5	1.4
Nov	5.6	4.2	2.1	1.0
Dec	5.5	3.7	1.6	.7
Ann	74.5	56.0	27.4	13.2

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	.17	.47	.74	1.01	1.31	1.66	2.08	2.66	3.60	4.52
Feb	.07	.24	.55	.86	1.20	1.60	2.06	2.65	3.46	4.83	6.17
Mar	.68	.99	1.49	1.95	2.42	2.92	3.48	4.17	5.07	6.52	7.90
Apr	.95	1.33	1.92	2.45	2.98	3.54	4.16	4.91	5.89	7.44	8.90
May	1.42	1.93	2.72	3.42	4.10	4.82	5.62	6.57	7.81	9.76	11.59
Jun	1.09	1.53	2.23	2.85	3.47	4.13	4.87	5.75	6.91	8.75	10.49
Jul	.00	.13	.50	.89	1.33	1.83	2.45	3.21	4.30	6.13	7.95
Aug	.22	.52	.95	1.33	1.73	2.16	2.65	3.25	4.05	5.35	6.60
Sep	.81	1.20	1.86	2.47	3.09	3.77	4.54	5.46	6.70	8.69	10.59
Oct	.43	.74	1.30	1.86	2.47	3.15	3.96	4.96	6.32	8.58	10.78
Nov	.32	.71	1.25	1.73	2.22	2.74	3.33	4.05	5.01	6.56	8.03
Dec	.19	.34	.65	.97	1.32	1.72	2.19	2.79	3.62	5.01	6.38
Ann	28.28	30.69	33.79	36.16	38.27	40.31	42.42	44.77	47.61	51.76	55.35

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	3.1	.3	#	0
Feb	1.6	.0	#	0
Mar	.5	.0	#	0
Apr	.0	.0	0	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	0	0
Nov	.3	.0	#	0
Dec	.6	.0	#	0
Ann	6.1	.3	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	10.0	1977	9	12.0	1988	10	1977	9	#+	2000
Feb	5.8	1978	18	15.5	1978	5	1978	18	1	1978
Mar	10.0	1989	6	10.0	1989	1	1999	13	#	1999
Apr	.0	0	0	.0	0	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	.0	0	0	.0	0	0	0	0	0	0
Nov	2.5	1980	17	2.5	1980	3	1980	17	#+	1995
Dec	3.5	1985	13	3.5	1985	3	1987	15	#+	1997
Ann	10.0+	Mar 1989	6	15.5	Feb 1978	10	Jan 1977	9	1	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.7	.5	.3	.1	.1
Feb	.6	.3	.3	.1	.0
Mar	.2	.2	.1	.1	.1
Apr	.0	.0	.0	.0	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.0	.0	.0	.0	.0
Nov	.2	.1	.0	.0	.0
Dec	.2	.2	.1	.0	.0
Ann	1.9	1.3	.8	.3	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.2	.1	.1	.1
Feb	.2	.1	.0	.0
Mar	.0	.0	.0	.0
Apr	.0	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	.1	.1	.0	.0
Dec	.1	.0	.0	.0
Ann	.6	.3	.1	.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	4/23	4/18	4/15	4/12	4/10	4/07	4/04	4/01	3/28
32	4/11	4/06	4/03	3/31	3/28	3/25	3/23	3/19	3/14
28	4/03	3/28	3/23	3/19	3/15	3/12	3/08	3/03	2/25
24	3/24	3/16	3/11	3/06	3/01	2/25	2/20	2/14	2/07
20	3/12	3/03	2/25	2/20	2/16	2/11	2/06	1/31	1/22
16	3/06	2/25	2/18	2/12	2/07	2/01	1/26	1/19	1/07

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	10/10	10/15	10/18	10/21	10/24	10/27	10/30	11/03	11/08
32	10/20	10/26	10/30	11/02	11/05	11/08	11/12	11/16	11/21
28	10/28	11/04	11/09	11/13	11/17	11/20	11/24	11/29	12/06
24	11/07	11/13	11/17	11/21	11/25	11/28	12/02	12/06	12/13
20	11/12	11/21	11/26	12/02	12/06	12/11	12/16	12/22	12/30
16	11/18	11/30	12/09	12/16	12/23	12/30	1/07	1/17	2/01

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	218	210	205	201	197	193	188	183	176
32	240	234	229	225	221	218	214	209	203
28	274	264	257	251	245	240	234	227	217
24	297	287	280	273	268	262	255	248	238
20	328	314	305	298	291	284	277	269	258
16	>365	361	338	326	316	306	297	286	272

***** 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	859	620	434	165	30	1	0	0	19	121	453	758	3460
60	705	490	290	78	6	0	0	0	4	47	317	605	2542
57	616	414	214	43	2	0	0	0	0	23	245	518	2075
55	559	366	169	26	1	0	0	0	0	13	202	461	1797
50	418	259	85	6	0	0	0	0	0	2	116	326	1212
32	78	36	1	0	0	0	0	0	0	0	4	39	158

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	242	343	592	865	1167	1368	1579	1547	1260	959	545	303	10770
55	10	28	47	201	455	678	866	834	570	259	54	13	4015
57	5	21	29	158	394	618	804	772	510	207	37	7	3562
60	1	13	13	103	305	528	711	679	424	138	19	2	2936
65	0	0	1	40	174	379	556	525	288	57	4	0	2024
70	0	0	0	10	78	237	401	373	176	16	0	0	1291

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	124	233	444	684	949	1152	1350	1329	1046	755	371	164	124	357	801	1485	2434	3586	4936	6265	7311	8066	8437	8601
45	58	142	311	535	794	1002	1195	1174	896	601	250	83	58	200	511	1046	1840	2842	4037	5211	6107	6708	6958	7041
50	26	75	194	392	639	852	1040	1019	746	452	149	37	26	101	295	687	1326	2178	3218	4237	4983	5435	5584	5621
55	5	31	107	256	486	702	885	864	596	309	75	12	5	36	143	399	885	1587	2472	3336	3932	4241	4316	4328
60	0	10	51	148	333	552	730	709	451	188	34	1	0	10	61	209	542	1094	1824	2533	2984	3172	3206	3207
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	93	163	285	442	632	787	894	869	698	488	229	110	93	256	541	983	1615	2402	3296	4165	4863	5351	5580	5690

(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