

# Climatology of the United States

No. 20

1971-2000

Station: FREEDOM, OK

COOP ID: 343358

Climate Division: OK 3

NWS Call Sign:

Elevation: 1,535 Feet Lat: 36°46N

Lon: 99°07W

## 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	45.6	17.4	31.5	86	1986	20	40.0	1986	-15	1988	8	18.9	1979	1039	0	.0	.0	14.7	5.2	28.6	1.3
Feb	52.6	23.1	37.9	94	1962	12	46.9	1976	-16	1951	1	25.1	1978	760	0	.0	@	17.9	2.9	22.2	.8
Mar	61.1	31.9	46.5	97	1989	10	52.8	1972	-4	1960	3	39.7	1996	574	0	.0	.4	25.8	.7	14.6	.0
Apr	70.6	42.9	56.8	103	1989	23	63.9	1981	14	1996	6	49.3	1983	273	26	@	1.5	29.1	.0	4.5	.0
May	79.6	54.2	66.9	109	1953	26	72.1	1996	27+	1994	1	59.6	1995	73	131	.3	4.7	31.0	.0	.1	.0
Jun	89.0	63.6	76.3	114	1953	15	81.4	1981	41	1964	1	71.1	1995	7	346	3.2	16.9	30.0	.0	.0	.0
Jul	95.0	68.4	81.7	114	1954	14	88.1	1980	49+	1990	14	78.2	1989	0	517	10.3	26.3	31.0	.0	.0	.0
Aug	93.3	66.9	80.1	110+	1951	6	86.3	2000	46	1950	21	73.3	1992	2	469	8.4	24.0	31.0	.0	.0	.0
Sep	84.9	58.1	71.5	107+	1984	10	78.6	1998	28+	1993	15	63.9	1974	32	227	2.2	12.6	30.0	.0	.3	.0
Oct	73.8	43.8	58.8	102	1954	4	63.8	1979	10	1993	31	53.8	1976	214	22	.0	2.4	30.4	@	4.0	.0
Nov	58.8	30.5	44.7	88+	1952	1	51.5	1999	3	1993	26	39.1	1993	611	0	.0	.0	23.4	.5	16.6	.0
Dec	48.1	20.2	34.2	88	1955	24	37.9+	1979	-17	1989	23	20.5	1983	957	0	.0	.0	16.2	2.8	27.4	.8
Ann	71.0	43.4	57.2	114+	Jul 1954	14	88.1	Jul 1980	-17	Dec 1989	23	18.9	Jan 1979	4542	1738	24.4	88.8	310.5	12.1	118.3	2.9

+ 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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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

037-A

**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: FREEDOM, OK**

**COOP ID: 343358**

**Climate Division: OK 3**

**NWS Call Sign:**

**Elevation: 1,535 Feet Lat: 36°46N**

**Lon: 99°07W**

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.75	.55	1.13	1999	28	2.17	1999	.00+	1986	3.5	1.8	.5	@	.00	.05	.16	.28	.40	.55	.71	.92	1.21	1.70	2.18
Feb	.92	.60	1.95	1948	27	2.90	1987	.00+	1995	4.0	2.3	.6	@	.00	.01	.08	.19	.33	.52	.75	1.07	1.54	2.38	3.24
Mar	2.19	2.02	2.00	1959	26	6.73	2000	.05	1972	5.6	4.0	1.6	.5	.13	.25	.52	.82	1.16	1.55	2.03	2.65	3.51	4.98	6.44
Apr	2.39	2.00	3.25	1948	21	5.91	1999	.12	1996	6.0	4.4	1.7	.6	.33	.53	.87	1.20	1.55	1.93	2.37	2.92	3.65	4.85	6.00
May	4.22	4.02	5.75	1979	10	9.33	1979	.38	1988	8.0	6.1	3.2	1.3	.92	1.31	1.93	2.49	3.05	3.65	4.32	5.13	6.18	7.87	9.47
Jun	3.24	2.84	2.94	1995	9	7.81	1995	.07	1976	7.6	5.5	2.6	1.0	.53	.81	1.28	1.73	2.18	2.68	3.26	3.95	4.89	6.40	7.84
Jul	2.68	2.48	5.49	1950	28	9.43	1979	.00	1983	5.8	4.2	1.8	.9	.22	.52	.95	1.34	1.75	2.19	2.70	3.31	4.13	5.47	6.75
Aug	2.63	1.39	3.56	1966	10	7.71	1986	.10	1994	6.2	4.1	1.7	.8	.13	.26	.57	.92	1.32	1.81	2.40	3.16	4.24	6.10	7.95
Sep	2.53	2.31	3.50	1959	24	6.69	1996	.14	2000	5.5	4.0	1.8	.7	.21	.39	.72	1.07	1.46	1.90	2.42	3.08	3.99	5.51	7.00
Oct	2.07	1.26	5.35	2000	25	10.18	2000	.00	1978	4.4	3.2	1.2	.4	.02	.10	.32	.58	.91	1.30	1.80	2.46	3.41	5.06	6.73
Nov	1.65	1.29	3.71	1998	1	5.09	1998	.00+	1995	4.1	2.6	.9	.4	.00	.07	.28	.52	.79	1.12	1.51	2.01	2.71	3.92	5.12
Dec	1.05	.81	1.88	1997	23	3.34	1984	.00+	1988	4.0	2.4	.7	.2	.00	.12	.32	.49	.66	.84	1.06	1.31	1.66	2.23	2.78
Ann	26.32	26.08	5.75	May 1979	10	10.18	Oct 2000	.00+	Nov 1995	64.7	44.6	18.3	6.8	18.93	20.37	22.21	23.60	24.83	26.03	27.26	28.62	30.26	32.65	34.70

+ 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

Complete documentation available from:  
[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

# 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](http://www.ncdc.noaa.gov)

Station: FREEDOM, OK

COOP ID: 343358

Climate Division: OK 3

NWS Call Sign:

Elevation: 1,535 Feet

Lat: 36°46N

Lon: 99°07W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	1.6	1.0	1	#	4.0	1975	2	5.5	1977	8	1988	12	4	1979	1.2	.7	.2	.0	.0	1.9	.7	.1	.0
Feb	1.5	.3	#	0	7.0	1975	16	13.5	1975	8	1975	16	5	1975	.7	.5	.2	@	.0	.7	.3	.2	.0
Mar	1.5	.0	#	0	5.0	1993	12	8.0	1998	16	1988	17	5	1988	.4	.3	.2	.1	.0	.4	.3	.1	.0
Apr	#	.0	#	0	#	1979	4	#	1979	2	1983	4	#	1983	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	#	0	.0	0	0	.0	0	#	1993	8	#	1993	.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	0	2.0	1991	31	2.0	1991	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Nov	1.1	.0	#	0	4.0	1991	8	7.0	1972	6	1972	21	1	1972	.5	.5	.2	.0	.0	.3	@	.0	.0
Dec	1.4	.0	#	0	5.0	1995	19	7.0	1995	5+	1997	23	1	1997	.8	.7	.3	.1	.0	1.4	.5	.1	.0
Ann	7.2	1.3	N/A	N/A	7.0	Feb 1975	16	13.5	Feb 1975	16	Mar 1988	17	5+	Mar 1988	3.6	2.7	1.1	.2	.0	4.7	1.8	.5	.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

Complete documentation available from:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

**Climatography  
of the United States  
No. 20  
1971-2000**

**Station: FREEDOM, OK**

**COOP ID: 343358**

**Climate Division: OK 3**

**NWS Call Sign:**

**Elevation: 1,535 Feet**

**Lat: 36° 46N**

**Lon: 99° 07W**

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	5/10	5/05	5/02	4/29	4/26	4/23	4/20	4/17	4/12
32	4/26	4/22	4/20	4/18	4/15	4/13	4/11	4/08	4/05
28	4/21	4/16	4/12	4/08	4/05	4/02	3/30	3/26	3/21
24	4/13	4/06	4/01	3/28	3/24	3/20	3/16	3/11	3/04
20	4/02	3/26	3/21	3/17	3/13	3/10	3/05	3/01	2/22
16	3/25	3/15	3/09	3/03	2/26	2/21	2/15	2/09	1/31
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	9/23	9/27	10/01	10/03	10/06	10/09	10/11	10/15	10/19
32	9/28	10/03	10/07	10/11	10/14	10/17	10/20	10/24	10/30
28	10/09	10/15	10/20	10/23	10/27	10/31	11/03	11/08	11/14
24	10/20	10/26	10/30	11/03	11/06	11/10	11/13	11/17	11/23
20	10/28	11/04	11/09	11/13	11/17	11/21	11/25	11/30	12/07
16	11/04	11/12	11/17	11/21	11/25	11/29	12/04	12/09	12/16
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	179	173	169	166	162	159	155	151	145
32	201	194	189	185	181	177	172	167	160
28	229	220	214	209	204	199	193	187	178
24	251	242	236	231	226	221	216	210	201
20	276	266	259	253	248	242	236	229	220
16	305	293	285	278	271	265	258	249	238

\* 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

Complete documentation available from:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

**Climatography  
of the United States  
No. 20  
1971-2000**

**Station: FREEDOM, OK**

**COOP ID: 343358**

**Climate Division: OK 3**

**NWS Call Sign:**

**Elevation: 1,535 Feet    Lat: 36°46N    Lon: 99°07W**

Degree Days to Selected Base Temperatures (°F)													
Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1039	760	574	273	73	7	0	2	32	214	611	957	4542
60	884	628	424	166	26	0	0	0	8	105	462	802	3505
57	792	550	339	115	12	0	0	0	3	60	377	709	2957
55	731	499	286	86	6	0	0	0	1	39	323	647	2618
50	581	378	173	35	1	0	0	0	0	9	203	499	1879
32	157	90	8	0	0	0	0	0	0	0	10	101	366

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	141	253	457	743	1081	1329	1540	1490	1186	831	390	167	9608
55	2	19	22	139	374	639	827	777	496	157	12	0	3464
57	1	14	14	108	317	579	765	715	438	116	6	0	3073
60	0	8	6	69	239	489	672	622	354	68	2	0	2529
65	0	0	0	26	131	346	517	469	227	22	0	0	1738
70	0	0	0	8	57	216	363	322	128	4	0	0	1098

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	46	128	310	555	862	1118	1321	1262	972	630	225	61	46	174	484	1039	1901	3019	4340	5602	6574	7204	7429	7490
45	16	65	197	411	707	968	1166	1107	822	482	133	24	16	81	278	689	1396	2364	3530	4637	5459	5941	6074	6098
50	1	26	112	282	553	818	1011	952	672	339	67	5	1	27	139	421	974	1792	2803	3755	4427	4766	4833	4838
55	0	7	57	170	404	668	856	797	527	213	27	0	0	7	64	234	638	1306	2162	2959	3486	3699	3726	3726
60	0	0	25	92	260	518	701	642	386	118	8	0	0	0	25	117	377	895	1596	2238	2624	2742	2750	2750
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	72	131	236	370	556	731	846	807	631	419	183	79	72	203	439	809	1365	2096	2942	3749	4380	4799	4982	5061

(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:  
[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

## 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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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 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.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
|---|---|

## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)