

# Climatography of the United States

No. 20

1971-2000

Station: GOODWELL RESEARCH STA, OK

COOP ID: 343628

Climate Division: OK 3

NWS Call Sign:

Elevation: 3,310 Feet Lat: 36° 36N

Lon: 101° 37W

## 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	48.1	18.2	33.2	82	1953	12	42.2	1986	-22	1959	4	21.7	1979	987	0	.0	.0	14.7	5.6	29.9	1.8
Feb	53.9	22.4	38.2	88	1963	1	45.9	1976	-13	1951	1	25.2	1978	752	0	.0	.0	17.1	3.7	24.5	.9
Mar	62.0	29.7	45.9	94	1995	22	51.9	1972	-9	1948	6	39.6	1998	593	0	.0	.1	24.0	1.1	19.2	@
Apr	71.1	38.7	54.9	100	1989	23	62.1	1981	9	1979	4	48.2	1997	321	18	@	.7	27.5	.2	7.1	.0
May	79.5	48.8	64.2	104	1953	26	69.3	1974	25	1967	2	59.1	1983	109	84	.5	3.4	30.8	.0	.5	.0
Jun	90.0	59.0	74.5	111+	1953	24	79.9	1994	39	1954	3	68.5	1989	12	296	2.6	14.0	30.0	.0	.0	.0
Jul	95.0	64.0	79.5	108+	1957	3	86.0	1980	45	1952	8	76.6	1992	0	449	5.7	22.7	31.0	.0	.0	.0
Aug	92.9	62.4	77.7	108	1969	11	83.1	1983	45	1967	27	72.3	1974	2	394	3.4	20.3	31.0	.0	.0	.0
Sep	85.1	53.7	69.4	109	1995	6	75.9	1998	28	1985	30	61.3	1974	43	174	.9	9.6	29.7	.0	.2	.0
Oct	74.4	41.3	57.9	98	2000	2	61.6	1979	11	1993	30	50.9	1976	236	13	.0	1.6	29.7	.1	4.4	.0
Nov	59.9	28.9	44.4	89	1980	9	51.3	1999	-5	1976	28	35.7	1972	619	0	.0	.0	21.5	.8	20.1	.1
Dec	50.0	20.6	35.3	85	1955	24	41.5	1980	-13+	1989	22	23.5	1983	920	0	.0	.0	15.9	4.3	29.1	1.1
Ann	71.8	40.6	56.3	111+	Jun 1953	24	86.0	Jul 1980	-22	Jan 1959	4	21.7	Jan 1979	4594	1428	13.1	72.4	302.9	15.8	135.0	3.9

+ 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

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# 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: GOODWELL RESEARCH STA, OK**

**COOP ID: 343628**

**Climate Division: OK 3**

**NWS Call Sign:**

**Elevation: 3,310 Feet Lat: 36°36N**

**Lon: 101°37W**

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	.29	.22	1.10	2001	29	.94	1990	.00+	1998	2.6	.9	.1	.0	.00	.00	.04	.10	.16	.22	.29	.38	.49	.68	.86
Feb	.36	.19	1.27	1948	27	1.58	1985	.00+	2000	2.5	1.1	.2	.0	.00	.00	.00	.02	.08	.17	.28	.43	.63	1.00	1.37
Mar	1.10	.76	1.51	1973	24	4.83	1973	.00+	1997	4.6	2.9	.5	.1	.00	.07	.23	.40	.58	.79	1.05	1.36	1.79	2.53	3.25
Apr	1.40	.75	1.98	1999	14	4.86	1977	.00+	1996	4.4	2.7	1.1	.3	.00	.10	.32	.54	.77	1.03	1.35	1.73	2.27	3.16	4.04
May	3.14	2.88	3.45	1971	29	6.26	1987	.00	1998	8.0	5.3	1.8	.8	.71	1.16	1.68	2.09	2.48	2.88	3.32	3.83	4.48	5.50	6.43
Jun	2.46	2.39	3.51	1962	26	6.48	1992	.00	1998	8.0	5.1	1.6	.7	.46	.80	1.21	1.55	1.88	2.21	2.59	3.02	3.59	4.48	5.30
Jul	2.38	2.03	3.02	1965	14	7.13	1973	.12	1999	6.6	4.3	1.7	.6	.28	.46	.80	1.13	1.48	1.88	2.34	2.91	3.68	4.96	6.20
Aug	2.06	1.93	3.86	1959	7	5.43	1996	.00	2000	7.0	4.2	1.4	.6	.09	.27	.57	.87	1.20	1.56	2.00	2.53	3.27	4.50	5.70
Sep	1.57	1.14	2.94	1985	12	7.27	1985	.00	2000	5.6	2.9	1.1	.4	.04	.15	.36	.58	.83	1.12	1.47	1.91	2.53	3.56	4.59
Oct	1.20	.66	2.50	1998	1	5.84	1998	.00	1975	3.7	2.2	.8	.4	.01	.05	.16	.31	.50	.73	1.02	1.41	1.98	2.98	3.99
Nov	.61	.36	1.13	1968	2	2.78	1971	.00+	2000	2.9	1.6	.3	.1	.00	.00	.00	.08	.18	.32	.49	.72	1.05	1.64	2.22
Dec	.34	.25	.69	1982	27	1.90	1991	.00+	2000	2.4	1.2	.2	.0	.00	.00	.00	.09	.16	.24	.33	.44	.59	.84	1.07
Ann	16.91	16.16	3.86	Aug 1959	7	7.27	Sep 1985	.00+	Dec 2000	58.3	34.4	10.8	4.0	12.18	13.10	14.28	15.17	15.96	16.73	17.51	18.38	19.44	20.97	22.28

+ 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

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**NWS Call Sign:**

**Elevation: 3,310 Feet**

**Lat: 36°36N**

**Lon: 101°37W**

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	4.1	3.0	1	#	16.0	1990	19	18.0	1990	14	1990	19	5	1974	2.0	1.0	.4	.2	@	3.4	1.4	.5	.1
Feb	2.7	1.0	#	#	8.0	1971	21	13.0	1990	12	1983	2	3	1983	1.4	1.0	.2	.1	.0	2.0	.9	.4	@
Mar	3.0	1.0	#	#	14.0	1994	9	14.0	1994	4	1988	3	1	1988	1.1	.9	.4	.1	@	1.1	.5	.0	.0
Apr	1.5	.0	#	0	10.0	1988	1	17.0	1988	11	1988	2	1	1988	.5	.4	.2	.2	@	.4	.3	.2	@
May	.1	.0	#	0	2.5	1978	3	3.5	1978	3	1978	3	#+	1979	.1	.1	.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	.1	.0	#	0	2.0	1984	29	2.0	1984	2	1984	29	#	1984	@	@	.0	.0	.0	@	.0	.0	.0
Oct	#	.0	#	0	#	1984	15	#+	1984	#+	1979	31	#+	1979	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.8	.5	#	0	8.0	1990	4	13.1	1972	8	1972	29	2	1972	.9	.7	.1	.1	.0	1.2	.7	.6	.0
Dec	2.0	.0	#	#	8.0	1987	14	8.0	1986	8	1987	14	2	1987	1.1	.9	.2	.1	.0	2.1	.7	.3	.0
Ann	15.3	5.5	N/A	N/A	16.0	Jan 1990	19	18.0	Jan 1990	14	Jan 1990	19	5	Jan 1974	7.1	5.0	1.5	.8	@	10.2	4.5	2.0	.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	5/15	5/11	5/08	5/05	5/02	4/29	4/27	4/23	4/19
32	5/10	5/04	5/01	4/28	4/25	4/22	4/18	4/15	4/09
28	4/27	4/22	4/18	4/16	4/13	4/10	4/07	4/04	3/30
24	4/11	4/06	4/03	3/31	3/28	3/25	3/22	3/19	3/14
20	4/08	4/01	3/27	3/23	3/20	3/16	3/12	3/07	2/28
16	3/30	3/24	3/19	3/15	3/11	3/07	3/03	2/26	2/19
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	9/28	10/01	10/04	10/07	10/09	10/12	10/15	10/20
32	10/01	10/06	10/10	10/13	10/16	10/19	10/22	10/26	10/31
28	10/12	10/17	10/21	10/24	10/27	10/30	11/02	11/06	11/11
24	10/25	10/29	11/02	11/05	11/07	11/10	11/13	11/16	11/21
20	10/30	11/05	11/09	11/12	11/15	11/19	11/22	11/26	12/02
16	11/07	11/13	11/18	11/22	11/26	11/30	12/04	12/08	12/15
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	177	170	165	161	157	153	149	144	137
32	194	187	182	178	174	170	165	160	153
28	215	209	204	200	196	193	189	184	177
24	246	238	233	228	224	219	214	209	201
20	266	257	251	245	240	235	230	223	215
16	284	276	269	264	259	254	249	243	235

\* 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)

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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	987	752	593	321	109	12	0	2	43	236	619	920	4594
60	832	612	440	204	45	2	0	0	12	119	472	765	3503
57	739	535	353	147	23	0	0	0	4	69	388	672	2930
55	678	482	297	115	13	0	0	0	1	45	335	611	2577
50	532	357	174	52	3	0	0	0	0	12	216	465	1811
32	129	65	4	0	0	0	0	0	0	0	14	84	296

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	165	237	434	688	997	1274	1472	1415	1121	800	385	187	9175
55	2	10	13	113	297	584	759	702	433	132	16	1	3062
57	0	7	8	85	245	524	697	640	376	94	9	0	2685
60	0	0	2	51	175	436	604	547	293	51	3	0	2162
65	0	0	0	18	84	296	449	394	174	13	0	0	1428
70	0	0	0	5	30	176	296	249	88	2	0	0	846

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	52	106	231	438	729	1013	1208	1149	865	543	191	62	52	158	389	827	1556	2569	3777	4926	5791	6334	6525	6587
45	17	51	139	306	574	863	1053	994	717	399	107	24	17	68	207	513	1087	1950	3003	3997	4714	5113	5220	5244
50	0	16	67	192	426	713	898	839	570	264	45	5	0	16	83	275	701	1414	2312	3151	3721	3985	4030	4035
55	0	2	27	101	283	563	743	684	430	158	15	0	0	2	29	130	413	976	1719	2403	2833	2991	3006	3006
60	0	0	6	44	165	416	588	529	295	74	2	0	0	0	6	50	215	631	1219	1748	2043	2117	2119	2119
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	75	125	206	306	455	643	774	739	549	366	166	84	75	200	406	712	1167	1810	2584	3323	3872	4238	4404	4488

(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)