

# Climatography of the United States

## No. 20

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801  
www.ncdc.noaa.gov

Station: SHAMROCK 2, TX

1971-2000

COOP ID: 418236

Climate Division: TX 2

NWS Call Sign:

Elevation: 2,360 Feet Lat: 35° 13N

Lon: 100° 15W

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	48.4	22.9	35.7	85	1967	22	42.4	1986	-13	1984	19	23.6	1979	910	0	.0	.0	16.7	4.3	26.9	.4
Feb	54.1	27.4	40.8	90	1996	23	49.1	1976	-5	1996	4	27.8	1978	679	0	.0	@	18.8	3.1	19.7	.4
Mar	62.4	34.5	48.5	97	1971	27	54.2	1972	1	1980	2	43.7	1996	513	0	.0	.3	26.1	.5	11.7	.0
Apr	71.6	44.0	57.8	100+	1989	24	64.0	1972	21+	1997	13	51.3	1997	244	28	.1	1.4	28.9	@	2.3	.0
May	79.2	54.2	66.7	106	2000	24	73.6	1996	31	1970	2	62.0	1976	66	118	.6	4.8	30.9	.0	.0	.0
Jun	87.6	63.5	75.6	113	1980	25	81.2	1994	43	1964	1	70.3	1982	9	325	2.3	13.7	30.0	.0	.0	.0
Jul	93.3	68.2	80.8	109	1980	3	87.4	1980	53	1990	14	77.0	1975	0	489	6.4	24.5	31.0	.0	.0	.0
Aug	91.5	66.9	79.2	108	1969	13	84.4	1983	53+	1988	30	73.8	1992	1	440	3.9	22.1	31.0	.0	.0	.0
Sep	83.6	58.8	71.2	105+	2000	12	78.4	1998	30	1984	30	64.7	1974	28	213	1.2	10.8	29.9	.0	.1	.0
Oct	73.0	46.7	59.9	102	2000	4	63.5	1979	16	1993	31	52.7	1976	185	24	.1	1.7	30.3	@	1.4	.0
Nov	59.4	34.2	46.8	87	1980	9	55.4	1999	10+	1976	28	39.5	1972	547	0	.0	.0	23.6	.5	12.7	.0
Dec	50.1	25.5	37.8	81+	1996	10	42.3	1994	-8	1989	23	24.5	1983	844	0	.0	.0	18.0	2.8	24.9	.3
Ann	71.2	45.6	58.4	113	Jun 1980	25	87.4	Jul 1980	-13	Jan 1984	19	23.6	Jan 1979	4026	1637	14.6	79.3	315.2	11.2	99.7	1.1

+ 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: 1962-2001

(3) Derived from 1971-2000 serially complete daily data

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**Climate Division: TX 2**

**NWS Call Sign:**

**Elevation: 2,360 Feet Lat: 35°13N**

**Lon: 100°15W**

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	.56	.55	1.00	1998	4	1.22	1991	.00+	1996	2.9	1.6	.3	@	.00	.00	.07	.20	.31	.43	.56	.72	.94	1.29	1.64
Feb	.84	.77	1.32	1997	21	2.42	1997	.00+	1995	3.7	2.4	.4	.1	.00	.00	.13	.26	.40	.57	.78	1.04	1.40	2.01	2.62
Mar	1.88	1.63	2.50	2000	23	6.74	2000	.00+	1972	4.6	3.4	1.2	.5	.00	.10	.37	.65	.96	1.32	1.76	2.31	3.08	4.38	5.67
Apr	2.19	1.59	3.02	1997	25	10.44	1997	.00+	1996	5.3	3.5	1.5	.5	.00	.21	.59	.94	1.30	1.70	2.16	2.72	3.49	4.76	5.99
May	3.92	3.38	5.65	2001	4	10.28	1982	.57	1988	8.2	6.1	2.8	1.2	.74	1.09	1.67	2.20	2.74	3.32	3.97	4.77	5.82	7.52	9.13
Jun	3.74	2.90	8.24	1995	4	11.14	1995	.04	1998	7.1	5.2	2.5	1.1	.31	.56	1.06	1.57	2.14	2.80	3.57	4.55	5.90	8.16	10.39
Jul	2.17	1.84	3.37	1967	4	7.22	1988	.04	1974	5.2	3.4	1.7	.7	.17	.31	.59	.89	1.22	1.60	2.06	2.63	3.43	4.76	6.08
Aug	2.27	2.16	2.76	1972	30	5.57	1972	.00	2000	5.7	4.0	1.4	.6	.16	.40	.77	1.10	1.45	1.83	2.27	2.81	3.53	4.71	5.85
Sep	2.83	2.19	3.52	1988	3	7.22+	1991	.00+	2000	6.4	4.6	1.8	.9	.00	.23	.70	1.14	1.61	2.14	2.76	3.51	4.56	6.29	7.98
Oct	1.92	1.23	3.26	1998	31	7.32	1998	.00	1992	4.6	3.0	1.2	.4	.04	.15	.39	.66	.97	1.33	1.77	2.33	3.12	4.48	5.83
Nov	1.17	1.01	2.30	1998	1	3.30	1992	.00+	1999	4.0	2.4	.8	.2	.00	.00	.26	.46	.67	.89	1.15	1.48	1.91	2.63	3.33
Dec	.83	.49	1.60	1984	15	3.25	1991	.00+	1985	3.1	1.7	.6	.1	.00	.03	.12	.23	.37	.53	.73	.99	1.37	2.01	2.65
Ann	24.32	24.25	8.24	Jun 1995	4	11.14	Jun 1995	.00+	Sep 2000	60.8	41.3	16.2	6.3	14.84	16.57	18.84	20.60	22.20	23.76	25.39	27.22	29.47	32.79	35.70

+ 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: 1962-2001

(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:  
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**COOP ID: 418236**

**Climate Division: TX 2**

**NWS Call Sign:**

**Elevation: 2,360 Feet**

**Lat: 35° 13N**

**Lon: 100° 15W**

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	2.5	.5	#	0	8.0	1997	12	12.5	1987	11	1987	18	1	1988	1.4	1.0	.3	.2	.0	.6	.2	.1	.0
Feb	2.9	.6	#	0	8.0	1971	21	12.8	1978	8	1971	22	1	1971	.9	.7	.4	.1	.0	.4	.2	.1	.0
Mar	.2	.0	#	0	2.5	2000	17	2.5	2000	2	1988	17	#+	2000	.1	.1	.0	.0	.0	.0	.0	.0	.0
Apr	.2	.0	#	0	3.5	1973	8	3.5	1973	1	1973	8	#	1973	.1	.1	.1	.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	1.4	.0	#	0	4.4	1972	24	12.9	1972	4+	1988	20	1	1972	.7	.4	.2	.0	.0	.6	.2	.0	.0
Dec	1.4	.2	#	0	9.0	2000	27	9.0	2000	14	2000	28	2	2000	.8	.6	.3	.2	.0	.8	.5	.3	.2
Ann	8.6	1.3	N/A	N/A	9.0	Dec 2000	27	12.9	Nov 1972	14	Dec 2000	28	2	Dec 2000	4.0	2.9	1.3	.5	.0	2.4	1.1	.5	.2

+ 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:

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**Elevation: 2,360 Feet**

**Lat: 35° 13N**

**Lon: 100° 15W**

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	4/29	4/25	4/22	4/19	4/17	4/15	4/12	4/09	4/05
32	4/19	4/15	4/11	4/09	4/06	4/03	4/01	3/28	3/24
28	4/09	4/05	4/01	3/30	3/27	3/24	3/22	3/18	3/14
24	4/09	4/01	3/26	3/21	3/16	3/12	3/07	3/01	2/21
20	3/23	3/15	3/10	3/05	3/01	2/24	2/19	2/14	2/06
16	3/09	3/01	2/23	2/19	2/14	2/10	2/05	1/31	1/23
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	9/30	10/06	10/11	10/14	10/18	10/21	10/25	10/29	11/05
32	10/07	10/14	10/19	10/23	10/27	10/31	11/04	11/09	11/16
28	10/21	10/27	10/31	11/04	11/07	11/10	11/14	11/18	11/24
24	10/29	11/05	11/11	11/15	11/19	11/24	11/28	12/03	12/11
20	11/09	11/16	11/21	11/26	11/30	12/04	12/09	12/14	12/21
16	11/10	11/21	11/29	12/06	12/12	12/19	12/25	1/02	1/13
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	204	197	192	187	183	179	175	170	163
32	226	218	212	208	203	198	194	188	180
28	245	238	233	228	224	220	216	211	204
24	278	267	260	253	247	241	235	227	217
20	304	294	286	280	274	268	261	254	243
16	337	320	310	303	296	289	282	274	263

\* 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:  
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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	910	679	513	244	66	9	0	1	28	185	547	844	4026
60	756	548	364	140	21	1	0	0	6	84	405	689	3014
57	664	470	280	93	8	0	0	0	2	46	325	597	2485
55	605	419	229	67	4	0	0	0	0	29	275	538	2166
50	461	304	125	24	0	0	0	0	0	7	171	395	1487
32	92	51	3	0	0	0	0	0	0	0	9	56	211

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	205	296	512	774	1075	1306	1512	1462	1176	862	452	236	9868
55	4	21	25	151	365	616	799	749	486	178	28	4	3426
57	2	15	15	117	308	556	737	687	427	133	18	2	3017
60	0	9	6	74	227	467	644	594	342	78	8	0	2449
65	0	0	0	28	118	325	489	440	213	24	0	0	1637
70	0	0	0	8	46	199	337	291	115	4	0	0	1000

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	86	170	322	560	847	1082	1285	1238	960	640	270	106	86	256	578	1138	1985	3067	4352	5590	6550	7190	7460	7566
45	37	96	205	413	692	932	1130	1083	812	489	163	47	37	133	338	751	1443	2375	3505	4588	5400	5889	6052	6099
50	7	46	113	282	537	782	975	928	664	346	90	18	7	53	166	448	985	1767	2742	3670	4334	4680	4770	4788
55	0	16	52	172	387	632	820	773	517	219	37	0	0	16	68	240	627	1259	2079	2852	3369	3588	3625	3625
60	0	3	19	86	247	484	665	618	376	117	7	0	0	3	22	108	355	839	1504	2122	2498	2615	2622	2622
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	92	145	235	356	533	714	843	814	617	408	194	103	92	237	472	828	1361	2075	2918	3732	4349	4757	4951	5054

(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)