

# 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: WACO RGNL AP, TX

1971-2000

COOP ID: 419419

Climate Division: TX 3

NWS Call Sign: ACT

Elevation: 500 Feet

Lat: 31° 37N

Lon: 97° 14W

## 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	57.0	35.1	46.1	90	1943	23	54.0	1990	-5	1949	31	36.4	1979	589	2	.0	.0	22.3	.9	12.4	.0
Feb	62.3	39.3	50.8	96+	1996	22	58.1	1976	4	1985	2	41.1	1978	409	8	.0	.1	23.2	.5	6.5	.0
Mar	70.2	46.8	58.5	100	1971	28	63.6	1974	15+	1948	11	53.5	1975	235	39	@	.3	29.7	@	2.1	.0
Apr	77.6	54.2	65.9	101	1963	9	70.0	1972	27	1975	3	60.1	1973	77	111	.0	1.4	29.9	.0	.2	.0
May	84.8	63.3	74.1	102	1985	31	80.6	1996	37	1981	11	69.5	1979	7	292	.2	7.6	31.0	.0	.0	.0
Jun	92.0	70.6	81.3	109	1980	27	86.3	1990	52	1964	1	76.6	1973	0	497	2.0	21.9	30.0	.0	.0	.0
Jul	96.7	74.1	85.4	109	1998	12	90.4	1998	60+	1994	28	81.4	1975	0	637	9.4	28.7	31.0	.0	.0	.0
Aug	96.9	73.5	85.2	112	1969	11	88.8	1999	53	1992	28	79.4	1971	0	628	11.1	28.2	31.0	.0	.0	.0
Sep	90.1	67.0	78.6	111	2000	4	85.0	1977	39	1942	27	71.2	1974	6	416	1.5	18.3	30.0	.0	.0	.0
Oct	80.4	56.7	68.6	101+	1989	2	71.1	2000	25	1993	31	59.9	1976	58	170	.1	4.5	30.9	.0	.1	.0
Nov	67.8	45.8	56.8	92+	1988	7	62.7	1973	17	1976	29	49.6	1976	271	34	.0	.1	28.1	.0	2.9	.0
Dec	59.1	37.5	48.3	91	1955	24	54.9	1984	-4	1989	23	38.3	1983	512	6	.0	.0	24.5	.6	9.4	@
Ann	77.9	55.3	66.6	112	Aug 1969	11	90.4	Jul 1998	-5	Jan 1949	31	36.4	Jan 1979	2164	2840	24.3	111.1	341.6	2.0	33.6	@

+ 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: 1930-2001

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

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**Climate Division: TX 3**

**NWS Call Sign: ACT**

**Elevation: 500 Feet Lat: 31°37N**

**Lon: 97°14W**

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	1.90	1.79	3.02	1998	6	6.10	1998	.03	1971	7.4	4.0	1.2	.3	.23	.37	.64	.90	1.19	1.50	1.87	2.32	2.93	3.95	4.93
Feb	2.43	1.94	3.97	1997	12	7.91	1997	.07	1999	6.4	3.8	1.6	.7	.23	.40	.73	1.07	1.44	1.85	2.35	2.97	3.82	5.23	6.62
Mar	2.48	2.52	3.15	1990	7	5.07	1990	.09	1972	7.9	4.3	1.7	.6	.46	.68	1.04	1.38	1.72	2.09	2.51	3.02	3.69	4.78	5.81
Apr	2.99	2.74	3.46	1930	27	7.38	1977	.12	1983	6.7	4.3	2.2	1.0	.55	.82	1.25	1.66	2.08	2.52	3.03	3.65	4.47	5.79	7.04
May	4.46	3.77	4.64	1953	12	13.21	1975	.55	1998	9.0	5.6	3.0	1.4	.74	1.13	1.78	2.39	3.02	3.70	4.49	5.44	6.71	8.77	10.74
Jun	3.08	2.69	6.40	1938	17	7.60	2000	.34	1980	7.3	5.0	2.0	1.0	.49	.75	1.20	1.62	2.06	2.54	3.09	3.75	4.65	6.10	7.49
Jul	2.23	1.62	4.47	1973	15	8.58	1971	.00	1993	5.0	2.8	1.4	.6	.02	.10	.31	.59	.94	1.37	1.91	2.63	3.67	5.50	7.36
Aug	1.85	1.11	3.05	1991	14	8.91	1974	.00	1999	5.3	3.3	1.4	.7	.02	.11	.32	.57	.86	1.21	1.65	2.22	3.03	4.43	5.83
Sep	2.88	2.39	6.03	1936	27	6.80	1974	.15	1982	6.6	4.0	1.8	.8	.19	.37	.73	1.12	1.57	2.08	2.70	3.49	4.58	6.44	8.28
Oct	3.67	2.83	3.72	1972	21	10.51	1984	.12	1995	6.9	4.8	2.3	1.2	.41	.68	1.19	1.71	2.25	2.87	3.59	4.49	5.71	7.72	9.69
Nov	2.61	2.53	3.77	1952	23	7.76	2000	.29	1999	7.5	4.5	1.7	.7	.37	.59	.97	1.33	1.71	2.12	2.60	3.19	3.99	5.28	6.53
Dec	2.76	2.31	7.98	1997	20	9.81	1997	.15	1977	6.7	4.0	1.7	.7	.33	.55	.94	1.33	1.73	2.19	2.72	3.38	4.27	5.73	7.15
Ann	33.34	34.47	7.98	Dec 1997	20	13.21	May 1975	.00+	Aug 1999	82.7	50.4	22.0	9.7	21.95	24.09	26.87	29.00	30.91	32.76	34.70	36.85	39.47	43.31	46.66

+ 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: 1930-2001

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

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Climate Division: TX 3

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Elevation: 500 Feet

Lat: 31°37N

Lon: 97°14W

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	.6	#	#	0	6.0	1982	13	6.0	1982	6	1982	13	#	1982	.5	.3	@	@	.0	.3	.1	@	.0
Feb	.2	.0	#	0	1.4	1994	10	1.4+	1994	2	1985	2	#	1994	.4	.1	.0	.0	.0	.3	.0	.0	.0
Mar	.1	.0	#	0	1.0	1987	29	1.0	1987	1	1989	5	#	1989	.1	.0	.0	.0	.0	@	.0	.0	.0
Apr	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	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	#	.0	0	0	#	1993	30	#+	1993	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.2	.0	#	0	2.4	1993	26	2.4	1993	2	1993	26	#	1993	.2	.0	.0	.0	.0	.2	.0	.0	.0
Dec	.0	.0	0	0	.2	1978	31	.2	1978	#+	1990	31	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	1.1	#	N/A	N/A	6.0	Jan 1982	13	6.0	Jan 1982	6	Jan 1982	13	#+	Feb 1994	1.2	.4	@	@	.0	.8	.1	.0	.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	4/14	4/08	4/04	3/31	3/28	3/25	3/21	3/17	3/11
32	4/06	3/29	3/23	3/18	3/13	3/08	3/03	2/25	2/17
28	3/21	3/12	3/05	2/27	2/21	2/16	2/10	2/03	1/24
24	3/02	2/21	2/15	2/09	2/04	1/29	1/23	1/16	1/05
20	2/20	2/10	2/03	1/27	1/20	1/13	1/03	0/00	0/00
16	2/02	1/16	12/29	0/00	0/00	0/00	0/00	0/00	0/00
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	10/25	10/30	11/04	11/07	11/10	11/14	11/17	11/21	11/27
32	11/01	11/07	11/12	11/15	11/19	11/23	11/26	12/01	12/07
28	11/11	11/19	11/24	11/29	12/04	12/08	12/13	12/19	12/27
24	11/22	12/01	12/08	12/13	12/19	12/24	12/30	1/07	1/18
20	12/09	12/18	12/25	12/31	1/06	1/12	1/21	0/00	0/00
16	12/27	1/08	1/20	0/00	0/00	0/00	0/00	0/00	0/00
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	250	242	236	231	227	222	217	212	204
32	280	270	262	256	250	245	238	231	221
28	318	307	298	291	285	278	271	263	251
24	>365	340	329	321	315	309	303	297	287
20	>365	>365	>365	>365	>365	345	332	319	304
16	>365	>365	>365	>365	>365	>365	>365	>365	364

\* 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	589	409	235	77	7	0	0	0	6	58	271	512	2164
60	450	283	114	22	1	0	0	0	0	10	167	379	1426
57	369	218	69	8	0	0	0	0	0	4	117	299	1084
55	320	181	46	4	0	0	0	0	0	2	90	251	894
50	214	106	13	0	0	0	0	0	0	0	40	153	526
32	17	3	0	0	0	0	0	0	0	0	0	5	25

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	454	539	830	1024	1310	1485	1661	1653	1401	1137	749	519	12762
55	35	68	184	344	597	795	948	940	711	431	153	48	5254
57	24	50	146	291	536	735	886	878	651	373	121	34	4725
60	12	29	97	215	444	645	793	785	562	291	81	19	3973
65	2	8	39	111	292	497	637	628	416	170	34	6	2840
70	0	1	10	42	162	346	483	475	281	82	10	1	1893

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	257	360	593	795	1074	1253	1421	1414	1171	898	520	304	257	617	1210	2005	3079	4332	5753	7167	8338	9236	9756	10060
45	155	240	446	645	919	1103	1266	1259	1021	743	381	190	155	395	841	1486	2405	3508	4774	6033	7054	7797	8178	8368
50	84	146	308	498	764	953	1111	1104	871	591	258	104	84	230	538	1036	1800	2753	3864	4968	5839	6430	6688	6792
55	38	79	191	352	609	803	956	949	721	438	160	52	38	117	308	660	1269	2072	3028	3977	4698	5136	5296	5348
60	12	33	101	221	455	653	801	794	573	297	84	21	12	45	146	367	822	1475	2276	3070	3643	3940	4024	4045
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	164	220	368	517	735	855	947	928	787	590	317	183	164	384	752	1269	2004	2859	3806	4734	5521	6111	6428	6611

(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.  
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.

- 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/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)