

Climatology of the United States

No. 20

1971-2000

Station: WACO DAM, TX

COOP ID: 419417

Climate Division: TX 3

NWS Call Sign:

Elevation: 495 Feet

Lat: 31° 36N

Lon: 97° 13W

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	56.9	33.3	45.1	86	1971	31	51.8	1990	6+	1982	11	35.8	1979	618	0	.0	.0	21.8	.9	15.6	.0
Feb	62.3	37.5	49.9	97	1996	22	58.1	2000	4	1985	2	39.8	1978	430	7	.0	.2	22.7	.8	8.6	.0
Mar	70.0	45.5	57.8	96	1971	29	63.0	1974	15	1980	2	52.4	1996	242	17	.0	.2	29.6	@	2.7	.0
Apr	77.6	53.4	65.5	94+	2000	24	70.7	1972	28	1997	14	60.1	1997	76	90	.0	.9	29.9	.0	.4	.0
May	84.2	62.7	73.5	98+	1998	8	78.7	1996	42+	1997	5	69.6	1976	7	269	.0	4.9	31.0	.0	.0	.0
Jun	91.4	70.0	80.7	109	1998	15	85.6	1998	54	1970	3	77.4	1983	0	471	.7	19.3	30.0	.0	.0	.0
Jul	95.9	73.9	84.9	109	1980	3	90.0	1998	56	1994	28	81.0	1976	0	617	5.4	27.9	31.0	.0	.0	.0
Aug	95.9	72.9	84.4	108	1969	12	88.3	2000	55	1992	28	79.4	1992	0	602	5.8	27.5	31.0	.0	.0	.0
Sep	89.7	66.2	78.0	112	2000	5	84.0	1977	39	2000	26	70.8	1974	4	391	1.2	16.8	30.0	.0	.0	.0
Oct	79.5	55.4	67.5	101	2000	4	70.2	1979	26	1993	31	58.9	1976	50	125	.1	3.4	30.9	.0	.2	.0
Nov	67.5	44.7	56.1	89+	1989	15	62.1	1999	17	1976	29	48.5	1976	290	23	.0	.0	27.9	@	3.3	.0
Dec	59.4	36.0	47.7	84	1977	5	55.1	1984	-4	1989	23	38.1	1983	538	2	.0	.0	24.6	.7	10.8	.1
Ann	77.5	54.3	65.9	112	Sep 2000	5	90.0	Jul 1998	-4	Dec 1989	23	35.8	Jan 1979	2255	2614	13.2	101.1	340.4	2.4	41.6	.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

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1965-2001

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

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: WACO DAM, TX

COOP ID: 419417

Climate Division: TX 3

NWS Call Sign:

Elevation: 495 Feet Lat: 31°36N

Lon: 97°13W

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	2.06	1.69	2.22	1998	6	5.12	1991	.05	1971	7.5	4.4	1.2	.5	.26	.43	.72	1.00	1.31	1.64	2.03	2.51	3.16	4.23	5.27
Feb	2.64	2.31	2.37	1992	25	7.72	1997	.17	1996	6.9	4.4	1.7	.9	.38	.60	.98	1.35	1.73	2.15	2.63	3.22	4.02	5.32	6.58
Mar	2.83	2.92	2.83	1965	30	6.02	1990	.16	1972	7.7	5.0	1.9	.7	.59	.85	1.26	1.64	2.02	2.43	2.89	3.44	4.16	5.33	6.43
Apr	3.11	2.70	3.48	1967	11	7.89	1977	.14	1983	6.5	4.1	2.2	1.0	.63	.91	1.37	1.78	2.21	2.66	3.17	3.79	4.60	5.90	7.14
May	4.69	4.26	4.55	1968	10	12.77	1975	.61	1998	8.8	5.9	2.9	1.3	.91	1.33	2.02	2.66	3.30	3.99	4.77	5.71	6.96	8.96	10.86
Jun	3.44	3.22	2.42	1976	25	8.96	2000	.77	1980	7.1	4.9	2.3	1.1	.66	.97	1.47	1.94	2.41	2.92	3.50	4.19	5.12	6.60	8.01
Jul	2.56	1.69	4.30	1973	15	11.16	1976	.00	1993	5.0	3.2	1.5	.7	.03	.14	.42	.76	1.16	1.65	2.26	3.06	4.21	6.18	8.18
Aug	2.04	1.31	3.23	1991	14	9.76	1974	.05	1980	5.1	3.0	1.3	.7	.06	.14	.35	.60	.91	1.29	1.77	2.41	3.33	4.94	6.57
Sep	3.13	2.50	3.33	1970	17	7.35	1974	.04	1982	6.9	4.4	1.8	1.0	.26	.48	.89	1.32	1.80	2.34	2.99	3.81	4.93	6.81	8.67
Oct	3.80	2.83	4.85	1974	31	10.85	1984	.27	1999	7.2	4.9	2.5	1.2	.43	.72	1.26	1.79	2.35	2.98	3.72	4.64	5.89	7.95	9.96
Nov	2.95	2.85	2.83	1965	4	7.67	2000	.33	1989	7.6	4.4	1.9	.8	.60	.87	1.30	1.69	2.09	2.52	3.00	3.58	4.35	5.58	6.74
Dec	2.96	2.88	3.00	2000	31	7.05	1991	.14	1977	7.5	4.6	1.8	.8	.50	.76	1.19	1.59	2.01	2.46	2.98	3.61	4.45	5.81	7.11
Ann	36.21	36.40	4.85	Oct 1974	31	12.77	May 1975	.00	Jul 1993	83.8	53.2	23.0	10.7	24.58	26.79	29.64	31.82	33.77	35.66	37.62	39.79	42.44	46.30	49.66

+ 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: 1965-2001

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

Complete documentation available from:
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Station: WACO DAM, TX

COOP ID: 419417

Climate Division: TX 3

NWS Call Sign:

Elevation: 495 Feet

Lat: 31°36N

Lon: 97°13W

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	.0	0	0	2.0	1977	31	2.0	1977	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Feb	#	.0	0	0	#	1989	6	#+	1989	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Mar	#	.0	0	0	#	1993	13	#	1993	0	0	0	0	0	.0	.0	.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	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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.1	.0	#	0	.4	1972	11	.8	1972	#	1990	31	#	1990	.1	.0	.0	.0	.0	.0	.0	.0	.0
Ann	.3	.0	N/A	N/A	2.0	Jan 1977	31	2.0	Jan 1977	#	Dec 1990	31	#	Dec 1990	.2	.1	.0	.0	.0	.0	.0	.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

Complete documentation available from:

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NWS Call Sign:

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Lat: 31°36N

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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	4/13	4/07	4/03	3/31	3/27	3/24	3/21	3/17	3/11
32	4/10	4/01	3/26	3/20	3/15	3/10	3/05	2/26	2/18
28	3/22	3/13	3/07	3/02	2/25	2/20	2/15	2/08	1/31
24	3/04	2/24	2/19	2/15	2/10	2/06	2/02	1/27	1/20
20	2/26	2/16	2/08	2/01	1/26	1/19	1/10	12/29	0/00
16	2/12	2/01	1/24	1/17	1/09	12/30	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	10/27	10/31	11/04	11/07	11/09	11/12	11/15	11/19	11/23
32	10/29	11/05	11/09	11/13	11/17	11/21	11/25	11/30	12/06
28	11/08	11/16	11/22	11/28	12/02	12/07	12/12	12/19	12/27
24	11/21	11/29	12/05	12/10	12/14	12/19	12/24	12/30	1/07
20	12/03	12/11	12/18	12/23	12/29	1/04	1/11	1/25	0/00
16	12/18	12/29	1/06	1/13	1/22	2/04	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	247	240	235	230	226	222	218	213	206
32	278	267	259	253	246	240	233	225	214
28	313	302	294	287	280	273	266	258	247
24	336	326	319	312	306	300	294	287	276
20	>365	>365	>365	345	332	322	313	303	290
16	>365	>365	>365	>365	>365	>365	350	337	324

* 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	618	430	242	76	7	0	0	0	4	50	290	538	2255
60	474	303	130	24	1	0	0	0	0	13	181	393	1519
57	390	235	82	9	0	0	0	0	0	5	129	311	1161
55	338	196	56	4	0	0	0	0	0	2	100	262	958
50	225	116	18	0	0	0	0	0	0	0	46	159	564
32	17	3	0	0	0	0	0	0	0	0	0	4	24

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	424	504	798	1004	1285	1461	1640	1625	1378	1099	723	492	12433
55	31	52	141	319	572	771	927	912	688	388	133	36	4970
57	22	36	104	264	510	711	865	850	628	329	102	24	4445
60	13	19	60	188	417	621	772	757	538	244	64	12	3705
65	0	7	17	90	269	471	617	602	391	125	23	2	2614
70	0	0	2	31	143	322	462	447	256	47	6	0	1716

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	225	331	561	762	1037	1216	1369	1379	1135	861	497	280	225	556	1117	1879	2916	4132	5501	6880	8015	8876	9373	9653
45	134	219	415	612	882	1066	1214	1224	985	706	360	172	134	353	768	1380	2262	3328	4542	5766	6751	7457	7817	7989
50	63	131	282	468	727	916	1059	1069	835	554	238	88	63	194	476	944	1671	2587	3646	4715	5550	6104	6342	6430
55	23	65	166	325	572	766	904	914	685	403	143	39	23	88	254	579	1151	1917	2821	3735	4420	4823	4966	5005
60	4	24	80	198	418	616	749	759	538	268	71	10	4	28	108	306	724	1340	2089	2848	3386	3654	3725	3735
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	157	215	350	493	712	841	917	924	762	562	304	182	157	372	722	1215	1927	2768	3685	4609	5371	5933	6237	6419

(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

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
- 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">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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