U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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: TILDEN 4 SSE, TX **COOP ID: 419031**

Climate Division: TX 9 **NWS Call Sign:** **Elevation: 345 Feet** **Lat: 28˚25N** **Lon: 98˚32W**

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	66.2	40.1	53.2	95	1971	4	60.8	1998	9+	1962	12	45.5	1985	390	22	.0	.1	27.0	.2	5.5	.0
Feb	71.3	44.1	57.7	100	1996	22	65.7	2000	16+	1905	13	48.3	1978	233	28	@	.7	26.2	.1	3.2	.0
Mar	79.3	51.5	65.4	104+	1984	28	70.3	2000	20	1980	2	59.7	1996	79	92	.1	3.0	30.8	.0	.8	.0
Apr	85.4	57.8	71.6	108	1984	21	76.1	1986	33	1973	9	66.7	1992	13	211	.5	8.0	30.0	.0	.0	.0
May	90.8	66.0	78.4	109	1983	3	84.0	1989	38	1908	1	73.8	1976	1	416	1.8	16.8	31.0	.0	.0	.0
Jun	95.7	70.7	83.2	113	1998	16	89.6	1998	54	1979	11	80.1	1973	0	545	5.8	26.4	30.0	.0	.0	.0
Jul	98.7	72.2	85.5	119	1910	2	89.7	1998	56	1905	11	80.5	1976	0	633	13.3	29.8	31.0	.0	.0	.0
Aug	98.6	71.5	85.1	113	1909	19	87.4	1985	59	1967	13	81.6	1971	0	621	12.7	30.1	31.0	.0	.0	.0
Sep	93.6	67.6	80.6	110+	2000	10	84.6	1986	41	1909	29	74.7	1974	0	468	3.5	23.8	30.0	.0	.0	.0
Oct	85.6	59.0	72.3	103	1977	9	75.2	1996	26	1993	31	63.4	1976	11	238	.1	10.9	30.9	.0	.0	.0
Nov	75.3	50.1	62.7	99	1909	3	68.4	1973	22	1903	27	54.4	1976	150	81	.0	1.2	29.5	.0	1.1	.0
Dec	67.7	42.2	55.0	92	1977	5	63.0	1984	5	1989	23	44.2	1989	336	24	.0	.1	28.4	.2	4.4	.0
Ann	84.0	57.7	70.9	119	Jul 1910	2	89.7	Jul 1998	5	Dec 1989	23	44.2	Dec 1989	1213	3379	37.8	150.9	355.8	.5	15.0	.0

\+ 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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1903-2001

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

Issue Date: February 2004

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Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	1.15	1.14	2.95	1968	20	3.20	1992	.00	1996
Feb	1.27	.86	1.90	1987	25	4.64	1992	.00+	1999
Mar	1.33	.89	2.08	1994	9	5.06	1994	.00	1971
Apr	1.95	1.71	3.44	1908	19	5.38	1992	.00	1983
May	3.10	2.39	3.85	1986	11	9.22	1997	.00	1998
Jun	3.37	3.11	5.12	1994	10	9.65	1994	.00	1980
Jul	1.52	1.21	5.82	1976	5	12.74	1976	.00+	2000
Aug	2.56	2.11	4.08	1980	11	7.53	1980	.00	1985
Sep	2.91	2.30	6.93	1967	22	9.51	1972	.13	1987
Oct	2.14	1.56	2.89	1960	17	6.95	1976	.00	1987
Nov	1.38	1.25	2.13	1977	2	3.97	1980	.00+	1999
Dec	1.19	.67	3.70	1991	21	8.91	1991	.03+	1977
Ann	23.87	22.82	6.93	Sep 1967	22	12.74	Jul 1976	.00+	Jul 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.9	2.7	.7	.1
Feb	5.1	2.6	.8	.2
Mar	5.0	2.4	.9	.4
Apr	5.4	3.1	1.6	.5
May	6.6	4.5	1.9	1.0
Jun	5.9	4.5	2.3	1.3
Jul	4.1	2.5	.8	.4
Aug	5.1	3.2	1.5	.8
Sep	6.5	3.8	1.6	.9
Oct	5.0	3.2	1.4	.6
Nov	4.9	2.4	.9	.4
Dec	6.1	2.2	.6	.2
Ann	66.6	37.1	15.0	6.8

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.04	.13	.29	.45	.64	.85	1.10	1.41	1.85	2.58	3.30
Feb	.00	.09	.29	.49	.70	.94	1.22	1.57	2.05	2.86	3.65
Mar	.03	.11	.29	.47	.69	.93	1.23	1.62	2.15	3.06	3.97
Apr	.04	.14	.38	.65	.96	1.33	1.78	2.36	3.17	4.57	5.97
May	.08	.30	.71	1.15	1.65	2.22	2.91	3.78	5.00	7.06	9.10
Jun	.07	.27	.70	1.17	1.70	2.33	3.10	4.09	5.47	7.83	10.18
Jul	.00	.00	.15	.35	.60	.91	1.30	1.81	2.54	3.83	5.13
Aug	.08	.28	.63	1.00	1.41	1.88	2.43	3.14	4.11	5.74	7.36
Sep	.34	.57	.98	1.39	1.82	2.30	2.86	3.55	4.50	6.05	7.56
Oct	.03	.15	.40	.69	1.03	1.43	1.93	2.58	3.49	5.06	6.64
Nov	.00	.00	.15	.35	.58	.86	1.21	1.66	2.31	3.43	4.56
Dec	.03	.08	.20	.34	.52	.75	1.03	1.40	1.95	2.89	3.86
Ann	13.14	15.02	17.53	19.51	21.32	23.11	24.99	27.12	29.76	33.68	37.17

\+ 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: 1903-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	.0	.0	#	0	.0	0	0	.0	0	5	1985	12	#+	1995	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	.1	.0	#	0	2.0	1973	9	2.0	1973	2	1973	9	#	1973	@	@	.0	.0	.0	@	.0	.0	.0
Mar	.0	.0	0	0	.0	0	0	.0	0	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	#	1993	31	#	1993	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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	.1	.0	N/A	N/A	2.0	Feb 1973	9	2.0	Feb 1973	5	Jan 1985	12	#+	Jan 1995	@	@	.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

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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	4/03	3/25	3/18	3/13	3/08	3/02	2/25	2/18	2/09
32	3/20	3/10	3/04	2/26	2/21	2/16	2/10	2/04	1/26
28	3/03	2/19	2/11	2/04	1/28	1/20	1/10	12/23	0/00
24	2/18	2/07	1/29	1/21	1/13	1/02	12/15	0/00	0/00
20	2/03	1/18	1/01	0/00	0/00	0/00	0/00	0/00	0/00
16	12/25	0/00	0/00	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	10/31	11/06	11/11	11/15	11/19	11/23	11/27	12/01	12/08
32	11/16	11/22	11/26	11/29	12/03	12/06	12/10	12/14	12/20
28	11/22	12/02	12/10	12/16	12/23	12/30	1/07	1/24	0/00
24	12/01	12/13	12/23	12/31	1/09	1/20	2/08	0/00	0/00
20	12/20	1/04	1/20	0/00	0/00	0/00	0/00	0/00	0/00
16	12/24	0/00	0/00	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	287	276	269	262	256	249	243	235	224
32	314	304	296	290	284	278	272	265	254
28	>365	>365	>365	353	335	323	311	299	284
24	>365	>365	>365	>365	>365	338	328	320	311
20	>365	>365	>365	>365	>365	>365	>365	>365	352
16	>365	>365	>365	>365	>365	>365	>365	>365	>365

***** 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

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Degree Days to Selected Base Temperatures (˚F)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	390	233	79	13	1	0	0	0	0	11	150	336	1213
60	266	140	26	1	0	0	0	0	0	2	78	218	731
57	206	96	11	0	0	0	0	0	0	0	47	162	522
55	172	72	6	0	0	0	0	0	0	0	32	130	412
50	96	29	1	0	0	0	0	0	0	0	11	63	200
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	655	719	1036	1189	1438	1535	1656	1644	1458	1249	922	711	14212
55	114	147	329	499	725	845	943	931	768	536	264	128	6229
57	86	116	272	439	663	785	881	869	708	475	219	98	5611
60	53	75	194	350	570	695	788	776	618	383	159	61	4722
65	22	28	92	211	416	545	633	621	468	238	81	24	3379
70	9	9	29	103	271	395	478	466	320	117	31	8	2236

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	433	533	800	958	1198	1303	1418	1413	1234	1019	699	486	433	966	1766	2724	3922	5225	6643	8056	9290	10309	11008	11494
45	301	400	647	808	1043	1153	1263	1258	1084	864	550	350	301	701	1348	2156	3199	4352	5615	6873	7957	8821	9371	9721
50	187	274	494	659	888	1003	1108	1103	934	709	412	226	187	461	955	1614	2502	3505	4613	5716	6650	7359	7771	7997
55	102	174	350	512	733	853	953	948	784	559	282	128	102	276	626	1138	1871	2724	3677	4625	5409	5968	6250	6378
60	48	94	220	365	578	703	798	793	634	413	176	63	48	142	362	727	1305	2008	2806	3599	4233	4646	4822	4885
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	275	340	519	632	813	863	924	913	816	682	453	313	275	615	1134	1766	2579	3442	4366	5279	6095	6777	7230	7543

(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.
Compete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normals/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 are 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/normals.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normals/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