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: LA TUNA 1 S, TX **COOP ID: 414931**

Climate Division: TX 5 **NWS Call Sign:** **Elevation: 3,800 Feet** **Lat: 31˚58N** **Lon: 106˚36W**

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	59.6	29.7	44.7	78+	1971	31	49.1	2000	-5+	1962	12	40.6	1992	632	0	.0	.0	27.0	.1	22.2	.0
Feb	65.8	33.6	49.7	89	1986	21	55.1	1986	9	1951	2	44.9	1990	429	0	.0	.0	27.0	.2	12.3	.0
Mar	73.2	38.9	56.1	96	1943	28	61.8	1972	12+	1965	5	50.9	1977	286	8	.0	@	30.9	.0	4.7	.0
Apr	80.7	45.3	63.0	98	1989	23	68.5	1989	27+	1988	1	57.2	1973	130	70	.0	2.5	29.9	@	.6	.0
May	89.0	54.2	71.6	105+	1951	28	77.6	2000	33	1951	2	66.1	1975	22	226	.6	13.7	31.0	.0	.0	.0
Jun	97.2	63.6	80.4	112+	1994	27	85.8	1994	45+	1965	11	77.5	1975	0	462	9.5	27.0	30.0	.0	.0	.0
Jul	97.2	68.1	82.7	111	1951	8	86.1	1981	53+	1984	31	78.6+	1976	0	546	10.0	28.2	31.0	.0	.0	.0
Aug	94.3	66.7	80.5	108+	1972	2	84.1	1994	51+	1988	7	77.0	1974	0	480	2.7	26.1	31.0	.0	.0	.0
Sep	89.6	61.0	75.3	102+	1983	5	79.4	1998	34	1945	30	70.7	1974	4	313	.4	16.5	30.0	.0	.0	.0
Oct	80.5	49.1	64.8	97	1972	2	68.2	1988	24	1993	31	58.8	1976	78	72	.0	2.9	30.9	.0	.6	.0
Nov	68.0	37.0	52.5	86+	1988	8	56.8	1985	4	1976	29	45.5	1976	378	3	.0	.0	29.1	.1	9.0	.0
Dec	59.1	30.0	44.6	76+	1973	2	48.6	1977	4	1953	24	40.6	1974	633	0	.0	.0	27.1	.1	22.1	.0
Ann	79.5	48.1	63.8	112+	Jun 1994	27	86.1	Jul 1981	-5+	Jan 1962	12	40.6+	Jan 1992	2592	2180	23.2	116.9	354.9	.5	71.5	.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: 1943-2001

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

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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	.45	.33	.80+	1999	29	1.99	1993	.00+	2000
Feb	.34	.26	.90	1958	21	1.27	1973	.00+	2000
Mar	.20	.13	.85	1952	1	.78	1992	.00+	1996
Apr	.08	.00	.89	1966	25	.54	1981	.00+	2000
May	.35	.06	1.83	1981	2	1.83	1981	.00+	2000
Jun	.83	.22	2.40	1999	17	3.59	1972	.00+	1998
Jul	1.47	1.49	2.47	1955	20	4.09	1997	.11	1984
Aug	2.12	1.68	2.50	1987	24	7.41	1993	.00	1995
Sep	1.20	1.01	3.15	1958	11	3.99	1980	.00+	2000
Oct	.89	.46	1.27	1958	13	3.91	1998	.00+	1995
Nov	.35	.18	1.00	1986	3	1.67	1986	.00+	1999
Dec	.69	.44	1.80	1984	19	3.68	1986	.00+	1996
Ann	8.97	8.57	3.15	Sep 1958	11	7.41	Aug 1993	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.9	1.4	.2	.0
Feb	2.2	1.0	.1	.0
Mar	1.3	.8	@	.0
Apr	.8	.3	.0	.0
May	1.5	.7	.2	.1
Jun	1.9	1.4	.7	.2
Jul	5.3	3.4	1.1	.2
Aug	6.0	4.2	1.6	.5
Sep	5.2	2.7	.6	.2
Oct	3.4	2.1	.6	.1
Nov	2.1	1.1	.2	@
Dec	2.7	1.9	.4	.1
Ann	35.3	21.0	5.7	1.4

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	.00	.00	.04	.11	.19	.28	.40	.55	.76	1.11	1.47
Feb	.00	.00	.02	.07	.13	.20	.30	.41	.58	.85	1.14
Mar	.00	.00	.00	.00	.08	.13	.19	.26	.35	.50	.64
Apr	.00	.00	.00	.00	.00	.00	.00	.06	.15	.29	.43
May	.00	.00	.00	.00	.00	.07	.19	.36	.61	1.06	1.53
Jun	.00	.00	.00	.00	.06	.27	.56	.94	1.49	2.44	3.40
Jul	.16	.27	.47	.68	.90	1.14	1.43	1.79	2.28	3.09	3.88
Aug	.12	.31	.64	.95	1.28	1.65	2.08	2.62	3.34	4.54	5.71
Sep	.00	.05	.20	.38	.58	.81	1.10	1.46	1.98	2.85	3.73
Oct	.00	.00	.13	.27	.42	.60	.81	1.09	1.47	2.12	2.77
Nov	.00	.00	.00	.03	.09	.17	.27	.41	.61	.96	1.32
Dec	.00	.00	.03	.14	.27	.42	.61	.85	1.19	1.76	2.36
Ann	3.93	4.73	5.85	6.76	7.61	8.47	9.39	10.45	11.78	13.80	15.63

\+ 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: 1943-2001
(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	#	1975	1	#+	1975	#	1971	6	#	1971	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	#	.0	0	0	#	1990	15	#	1990	0	0	0	0	0	.0	.0	.0	.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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	#	.0	0	0	#	1990	7	#+	1990	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.1	.0	0	0	2.0	1978	8	2.0	1978	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Ann	.1	.0	N/A	N/A	2.0	Dec 1978	8	2.0	Dec 1978	#	Jan 1971	6	#	Jan 1971	.1	.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

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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	4/26	4/20	4/16	4/12	4/09	4/06	4/02	3/29	3/24
32	4/08	4/03	3/30	3/27	3/24	3/21	3/18	3/14	3/09
28	3/29	3/21	3/16	3/11	3/07	3/02	2/25	2/20	2/12
24	3/10	3/03	2/26	2/22	2/18	2/14	2/10	2/05	1/29
20	3/02	2/19	2/11	2/03	1/27	1/20	1/12	1/02	12/15
16	2/01	1/22	1/14	1/07	12/30	12/18	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	10/17	10/22	10/25	10/28	10/31	11/03	11/06	11/10	11/15
32	10/25	10/30	11/03	11/06	11/09	11/12	11/15	11/19	11/24
28	10/31	11/06	11/11	11/14	11/18	11/21	11/25	11/29	12/05
24	11/14	11/20	11/23	11/27	11/30	12/03	12/06	12/10	12/15
20	11/26	12/02	12/07	12/11	12/15	12/19	12/24	12/30	1/09
16	12/06	12/15	12/22	12/29	1/06	1/21	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	224	217	212	208	204	200	196	191	185
32	249	242	237	233	230	226	222	217	210
28	286	276	268	262	256	249	243	235	225
24	310	301	295	289	284	279	273	266	257
20	>365	349	336	327	319	312	305	297	286
16	>365	>365	>365	>365	>365	363	347	336	325

***** 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	632	429	286	130	22	0	0	0	4	78	378	633	2592
60	477	293	159	58	5	0	0	0	0	24	242	478	1736
57	385	217	101	30	2	0	0	0	0	9	173	386	1303
55	324	171	70	18	0	0	0	0	0	4	133	325	1045
50	183	81	20	4	0	0	0	0	0	0	59	181	528
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	391	495	746	930	1227	1452	1569	1503	1299	1017	616	390	11635
55	2	21	103	258	515	762	856	790	609	309	59	1	4285
57	0	12	72	210	454	702	794	728	549	252	39	0	3812
60	0	4	37	148	364	612	701	635	459	173	18	0	3151
65	0	0	8	70	226	462	546	480	313	72	3	0	2180
70	0	0	1	24	117	314	391	326	181	20	0	0	1374

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	166	297	507	710	1001	1228	1334	1259	1057	765	376	161	166	463	970	1680	2681	3909	5243	6502	7559	8324	8700	8861
45	67	170	354	560	846	1078	1179	1104	907	610	239	67	67	237	591	1151	1997	3075	4254	5358	6265	6875	7114	7181
50	19	74	212	415	691	928	1024	949	757	460	127	17	19	93	305	720	1411	2339	3363	4312	5069	5529	5656	5673
55	0	20	102	273	536	778	869	794	607	309	43	0	0	20	122	395	931	1709	2578	3372	3979	4288	4331	4331
60	0	1	33	152	381	628	714	639	459	177	10	0	0	1	34	186	567	1195	1909	2548	3007	3184	3194	3194
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	158	234	357	471	644	767	852	822	692	499	274	152	158	392	749	1220	1864	2631	3483	4305	4997	5496	5770	5922

(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