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: PALACIOS MUNICIPAL AP, TX **COOP ID: 416750**

Climate Division: TX 8 **NWS Call Sign: PSX** **Elevation: 12 Feet** **Lat: 28˚44N** **Lon: 96˚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	61.8	44.0	52.9	82+	1950	26	59.3	2000	13	1949	31	44.4	1978	394	10	.0	.0	26.8	@	3.5	.0
Feb	64.5	47.0	55.8	88	1962	9	64.1	2000	13	1951	2	46.6	1978	274	16	.0	.0	26.2	.1	2.2	.0
Mar	70.3	53.8	62.1	88+	1980	12	68.9	2000	23	1980	2	56.3	1996	139	48	.0	.0	30.7	.0	.7	.0
Apr	76.2	60.7	68.5	96	1953	30	72.6	1972	32	1987	3	64.5	1983	32	136	.0	.1	30.0	.0	@	.0
May	82.5	68.8	75.7	98	1984	3	79.4	1996	37	1976	20	71.9	1976	1	332	.0	.7	31.0	.0	.0	.0
Jun	87.6	74.6	81.1	98	1953	27	84.6	1998	56	1946	5	78.9	1973	0	483	.0	9.2	30.0	.0	.0	.0
Jul	89.7	77.0	83.4	100+	1954	28	85.7	1998	63	1967	16	81.4	1976	0	569	.0	22.0	31.0	.0	.0	.0
Aug	90.2	75.8	83.0	101+	1954	31	85.1	1988	60+	1992	29	79.8	1992	0	559	.0	24.1	31.0	.0	.0	.0
Sep	87.2	70.8	79.0	107	2000	5	82.2	1980	49+	1992	30	74.6	1974	0	420	.1	12.6	30.0	.0	.0	.0
Oct	80.6	62.0	71.3	95+	1995	1	74.6	1998	30	1993	31	63.3	1976	16	211	.0	1.3	31.0	.0	@	.0
Nov	71.5	52.9	62.2	92	1963	5	68.8	1973	25	1959	18	53.4	1976	163	79	.0	@	29.6	.0	.6	.0
Dec	64.3	45.9	55.1	83+	1992	4	64.1	1984	9	1989	23	43.9	1989	332	25	.0	.0	28.4	.2	2.4	.0
Ann	77.2	61.1	69.2	107	Sep 2000	5	85.7	Jul 1998	9	Dec 1989	23	43.9	Dec 1989	1351	2888	.1	70.0	355.7	.3	9.4	.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	3.18	3.02	4.46	1944	12	10.28	1991	.30	1971
Feb	2.45	1.54	3.32	1952	22	6.90	1982	.18	1976
Mar	2.70	1.79	5.15	1993	15	9.24	1993	.17	1975
Apr	2.80	2.48	8.64	1991	5	9.26	1991	.00	1987
May	4.55	4.48	9.65	1951	7	13.23	1972	.00	1998
Jun	4.31	3.18	6.83	1960	26	10.12	1973	.13	1984
Jul	3.99	2.70	6.54	1990	16	12.82	1983	.10	1986
Aug	3.36	2.79	4.78	1946	30	9.26	1996	.08	1990
Sep	6.58	4.87	8.63	1998	10	23.75	1979	.57	1989
Oct	5.01	4.62	8.90	1974	31	15.21	1986	.66	1999
Nov	3.39	2.92	5.16	1977	1	9.20	1992	.22	1999
Dec	3.08	2.01	6.65	1995	17	8.23	1995	.67	1989
Ann	45.40	43.38	9.65	May 1951	7	23.75	Sep 1979	.00+	May 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.3	5.3	1.9	.8
Feb	7.7	3.9	1.4	.6
Mar	7.0	3.4	1.6	.8
Apr	6.0	3.1	1.5	.8
May	6.6	4.4	2.5	1.5
Jun	7.7	5.1	2.3	1.4
Jul	6.4	4.3	2.0	1.0
Aug	8.4	5.3	2.2	.9
Sep	9.3	6.4	3.3	1.7
Oct	7.2	4.6	2.6	1.6
Nov	7.7	4.5	2.0	1.0
Dec	8.7	4.7	1.9	1.0
Ann	92.0	55.0	25.2	13.1

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	.58	.86	1.33	1.76	2.20	2.68	3.22	3.88	4.75	6.16	7.51
Feb	.32	.51	.86	1.20	1.56	1.96	2.43	3.00	3.77	5.04	6.27
Mar	.24	.43	.79	1.17	1.58	2.04	2.59	3.29	4.24	5.82	7.38
Apr	.10	.31	.71	1.11	1.56	2.06	2.67	3.43	4.48	6.23	7.97
May	.05	.26	.75	1.35	2.07	2.94	4.02	5.44	7.46	10.97	14.51
Jun	.32	.59	1.14	1.74	2.40	3.16	4.07	5.23	6.84	9.55	12.23
Jul	.13	.29	.70	1.21	1.81	2.56	3.49	4.73	6.50	9.58	12.72
Aug	.22	.43	.85	1.31	1.83	2.43	3.15	4.07	5.35	7.52	9.68
Sep	.61	1.07	1.96	2.87	3.87	5.00	6.34	8.02	10.33	14.18	17.95
Oct	.54	.91	1.61	2.30	3.05	3.90	4.89	6.12	7.80	10.58	13.29
Nov	.35	.60	1.06	1.53	2.04	2.62	3.29	4.14	5.29	7.20	9.07
Dec	.55	.82	1.27	1.69	2.12	2.59	3.12	3.76	4.62	6.00	7.32
Ann	27.01	30.32	34.71	38.13	41.22	44.26	47.45	51.03	55.43	61.94	67.68

+ 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	0	0	.2	1973	11	.2	1973	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	.1	.0	#	0	1.0	1994	1	1.0	1994	1	1973	9	#	1973	.1	.0	.0	.0	.0	@	.0	.0	.0
Mar	#	.0	0	0	#	1989	5	#	1989	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	#	1994	.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	#	1976	28	#	1976	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	#	.0	0	0	#	1989	22	#	1989	#+	1989	24	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	.1	.0	N/A	N/A	1.0	Feb 1994	1	1.0	Feb 1994	1	Feb 1973	9	#+	May 1994	.1	.0	.0	.0	.0	.0	.0	.0	.0

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	3/24	3/17	3/11	3/07	3/03	2/27	2/22	2/17	2/10
32	3/21	3/08	2/26	2/18	2/10	2/02	1/25	1/14	12/29
28	2/25	2/13	2/05	1/29	1/22	1/14	1/04	12/17	0/00
24	2/07	1/26	1/17	1/07	12/24	0/00	0/00	0/00	0/00
20	1/08	12/22	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	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	11/08	11/15	11/20	11/24	11/28	12/01	12/06	12/11	12/17
32	11/16	11/25	12/01	12/06	12/11	12/16	12/22	12/29	1/08
28	12/04	12/14	12/22	12/28	1/04	1/11	1/21	0/00	0/00
24	12/22	1/04	1/14	1/26	2/14	0/00	0/00	0/00	0/00
20	12/30	1/15	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	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	299	288	281	275	269	263	257	250	240
32	>365	338	322	311	302	294	285	276	262
28	>365	>365	>365	>365	345	334	325	316	305
24	>365	>365	>365	>365	>365	>365	>365	>365	345
20	>365	>365	>365	>365	>365	>365	>365	>365	>365
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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	394	274	139	32	1	0	0	0	0	16	163	332	1351
60	268	167	60	6	0	0	0	0	0	3	88	215	807
57	206	119	30	1	0	0	0	0	0	1	55	160	572
55	171	90	18	0	0	0	0	0	0	0	38	128	445
50	95	37	3	0	0	0	0	0	0	0	14	61	210
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	649	666	932	1094	1353	1473	1592	1582	1410	1219	906	716	13592
55	107	112	236	404	640	783	879	869	720	506	254	131	5641
57	79	84	186	345	578	723	817	807	660	444	211	101	5035
60	48	49	123	260	485	633	724	714	570	354	154	63	4177
65	10	16	48	136	332	483	569	559	420	211	79	25	2888
70	7	5	12	53	188	333	414	404	272	97	31	9	1825

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	444	504	728	888	1131	1253	1364	1355	1196	1000	699	509	444	948	1676	2564	3695	4948	6312	7667	8863	9863	10562	11071
45	311	370	574	738	976	1103	1209	1200	1046	845	549	367	311	681	1255	1993	2969	4072	5281	6481	7527	8372	8921	9288
50	198	249	426	589	821	953	1054	1045	896	691	411	239	198	447	873	1462	2283	3236	4290	5335	6231	6922	7333	7572
55	109	145	287	439	666	803	899	890	746	537	282	139	109	254	541	980	1646	2449	3348	4238	4984	5521	5803	5942
60	53	69	165	294	511	653	744	735	596	384	172	75	53	122	287	581	1092	1745	2489	3224	3820	4204	4376	4451
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	253	292	454	595	815	914	987	965	849	685	443	297	253	545	999	1594	2409	3323	4310	5275	6124	6809	7252	7549

(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