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: PIERCE 1 E, TX **COOP ID: 417020**

Climate Division: TX 8 **NWS Call Sign:** **Elevation: 105 Feet** **Lat: 29˚14N** **Lon: 96˚11W**

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	62.0	41.8	51.9	85+	1939	21	58.7	1998	4	1949	31	42.3	1978	428	18	.0	.0	26.4	.2	6.0	.0
Feb	66.1	44.5	55.3	95	1986	19	64.5	2000	8	1949	1	44.3	1978	296	25	.0	@	25.5	.1	3.4	.0
Mar	73.3	51.4	62.4	93+	1946	30	70.1	2000	20	1920	1	56.3	1996	137	56	.0	.2	30.6	.0	1.1	.0
Apr	79.6	58.1	68.9	99+	1960	1	73.1	1981	29	1916	9	64.1	1997	30	145	.0	1.1	30.0	.0	.1	.0
May	85.7	66.3	76.0	100+	1984	3	80.4	1998	40	1954	4	71.3	1976	2	342	@	6.5	31.0	.0	.0	.0
Jun	91.3	70.9	81.1	104	1936	21	83.8	1990	50	1919	3	78.2	1988	0	482	.3	21.2	30.0	.0	.0	.0
Jul	94.3	72.8	83.6	107	1954	27	87.4	1998	51	1971	11	81.3	1975	0	574	1.6	28.1	31.0	.0	.0	.0
Aug	94.8	71.6	83.2	108	1962	14	85.6	1999	58	1967	13	80.4	1975	0	565	2.6	28.0	31.0	.0	.0	.0
Sep	90.0	67.3	78.7	112	2000	5	82.2	1980	42+	1942	28	74.0	1975	0	410	.6	18.8	30.0	.0	.0	.0
Oct	82.4	58.2	70.3	100+	1991	12	73.4	1991	27	1917	30	62.8	1976	21	186	@	4.8	31.0	.0	.0	.0
Nov	72.5	50.3	61.4	94	1963	7	67.4	1994	10	1911	30	53.2	1976	178	71	.0	.2	29.3	@	1.3	.0
Dec	64.5	43.1	53.8	93	1933	10	63.5	1984	7	1989	23	45.8	1983	364	16	.0	.0	28.1	.2	4.1	.0
Ann	79.7	58.0	68.9	112	Sep 2000	5	87.4	Jul 1998	4	Jan 1949	31	42.3	Jan 1978	1456	2890	5.1	108.9	353.9	.5	16.0	.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: 1904-2001

(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	3.42	2.91	6.00	1929	5	8.14	1979	.20	1971
Feb	2.84	2.55	3.80	1908	12	8.32	1992	.27	1989
Mar	2.74	2.66	7.50	1921	30	7.94	1997	.23	1971
Apr	3.18	2.32	6.20	1991	5	15.18	1997	.00	1987
May	5.18	5.12	7.35	1952	28	13.76	1975	.29	1998
Jun	4.69	4.34	6.49	1960	26	11.66	1973	1.01	1998
Jul	3.10	2.51	4.80	1939	12	8.82	1976	.00	1994
Aug	3.57	2.85	8.32	1945	28	7.30+	1994	.86	1999
Sep	5.81	4.52	8.60	1983	19	14.11	1973	1.15	1994
Oct	4.61	3.86	7.95	1994	19	16.61	1973	.70	1979
Nov	3.55	3.32	8.85	1943	2	12.37	2000	.07	1999
Dec	3.23	2.72	5.24	1914	2	8.44	1991	.64	1980
Ann	45.92	43.14	8.85	Nov 1943	2	16.61	Oct 1973	.00+	Jul 1994

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.7	5.8	2.3	1.2
Feb	6.6	4.8	1.8	.9
Mar	6.4	4.6	1.7	1.0
Apr	5.3	4.2	1.8	.9
May	6.7	5.3	3.2	1.7
Jun	6.9	5.7	3.1	1.7
Jul	6.3	5.1	2.0	1.0
Aug	7.9	6.2	2.5	1.0
Sep	7.7	6.7	3.3	1.8
Oct	6.1	5.2	2.6	1.4
Nov	6.7	5.2	2.6	1.2
Dec	7.1	5.2	2.0	.8
Ann	81.4	64.0	28.9	14.6

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	.63	.93	1.43	1.90	2.37	2.88	3.47	4.17	5.10	6.61	8.04
Feb	.38	.62	1.02	1.42	1.83	2.29	2.82	3.47	4.35	5.79	7.17
Mar	.40	.63	1.02	1.40	1.80	2.23	2.73	3.34	4.17	5.51	6.80
Apr	.10	.33	.77	1.22	1.73	2.31	3.01	3.89	5.11	7.17	9.20
May	.75	1.18	1.93	2.65	3.40	4.22	5.17	6.33	7.90	10.45	12.91
Jun	1.02	1.45	2.14	2.76	3.39	4.05	4.80	5.70	6.88	8.77	10.55
Jul	.16	.44	.91	1.37	1.85	2.39	3.03	3.81	4.88	6.65	8.38
Aug	.80	1.13	1.66	2.13	2.60	3.10	3.66	4.34	5.22	6.63	7.96
Sep	1.14	1.66	2.52	3.30	4.09	4.95	5.91	7.08	8.62	11.10	13.45
Oct	.49	.84	1.48	2.12	2.81	3.59	4.50	5.63	7.18	9.74	12.24
Nov	.34	.60	1.08	1.57	2.11	2.72	3.43	4.33	5.56	7.60	9.60
Dec	.71	1.01	1.48	1.91	2.34	2.80	3.31	3.93	4.74	6.03	7.25
Ann	29.11	32.22	36.29	39.43	42.25	45.01	47.89	51.10	55.04	60.82	65.88

\+ 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: 1904-2001
(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	#	1971	8	#	1971	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	.0	.0	0	0	.0	0	0	.0	0	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	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	#	.0	N/A	N/A	#	Jan 1971	8	#	Jan 1971	0	0	0	0	0	.0	.0	.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	4/06	3/28	3/21	3/15	3/10	3/05	2/27	2/21	2/12
32	3/22	3/12	3/04	2/25	2/19	2/13	2/06	1/30	1/19
28	3/15	3/02	2/21	2/13	2/06	1/30	1/22	1/12	12/28
24	2/14	2/04	1/27	1/20	1/12	1/02	0/00	0/00	0/00
20	1/21	1/11	1/03	12/23	0/00	0/00	0/00	0/00	0/00
16	12/28	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	10/28	11/04	11/09	11/13	11/17	11/21	11/25	11/30	12/07
32	11/03	11/14	11/22	11/29	12/06	12/13	12/20	12/28	1/08
28	11/28	12/06	12/11	12/16	12/21	12/26	1/01	1/08	1/21
24	12/06	12/18	12/27	1/05	1/14	1/28	0/00	0/00	0/00
20	12/22	1/01	1/10	1/22	0/00	0/00	0/00	0/00	0/00
16	1/14	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	282	271	264	257	251	245	239	231	221
32	334	316	305	296	288	279	270	260	246
28	>365	362	339	327	317	307	298	287	273
24	>365	>365	>365	>365	>365	346	335	325	314
20	>365	>365	>365	>365	>365	>365	>365	>365	349
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	428	296	137	30	2	0	0	0	0	21	178	364	1456
60	301	193	61	5	0	0	0	0	0	4	99	238	901
57	238	144	32	1	0	0	0	0	0	1	64	177	657
55	201	116	20	0	0	0	0	0	0	1	45	142	525
50	122	57	5	0	0	0	0	0	0	0	17	70	271
32	5	0	0	0	0	0	0	0	0	0	0	0	5

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	622	653	941	1105	1363	1472	1597	1588	1400	1188	882	675	13486
55	105	124	248	415	650	782	884	875	710	476	238	104	5611
57	79	97	199	356	588	722	822	813	650	415	196	76	5013
60	50	62	134	271	495	632	729	720	560	325	142	44	4164
65	18	25	56	145	342	482	574	565	410	186	71	16	2890
70	9	9	15	59	199	332	419	410	265	80	27	3	1827

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	409	478	710	871	1115	1230	1347	1352	1184	964	666	460	409	887	1597	2468	3583	4813	6160	7512	8696	9660	10326	10786
45	281	349	560	721	960	1080	1192	1197	1034	809	520	324	281	630	1190	1911	2871	3951	5143	6340	7374	8183	8703	9027
50	174	234	412	571	805	930	1037	1042	884	654	382	205	174	408	820	1391	2196	3126	4163	5205	6089	6743	7125	7330
55	89	135	276	423	650	780	882	887	734	501	257	117	89	224	500	923	1573	2353	3235	4122	4856	5357	5614	5731
60	40	64	157	286	495	630	727	732	584	353	154	57	40	104	261	547	1042	1672	2399	3131	3715	4068	4222	4279
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	249	297	456	582	775	850	910	902	807	643	425	285	249	546	1002	1584	2359	3209	4119	5021	5828	6471	6896	7181

(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