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: CATARINA, TX **COOP ID: 411528**

Climate Division: TX 9 **NWS Call Sign:** **Elevation: 560 Feet** **Lat: 28˚20N** **Lon: 99˚38W**

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	66.6	40.4	53.5	95	1971	3	60.0	1971	14	1962	12	46.4	1979	374	17	.0	.2	28.3	.2	5.0	.0
Feb	71.8	43.9	57.9	101+	1996	22	65.4	1999	18	1985	2	49.9	1978	230	30	.1	1.2	27.1	.1	2.2	.0
Mar	80.0	51.5	65.8	104	1971	28	70.8	2000	25	1980	2	59.6	1987	77	99	.3	5.3	30.9	.0	.7	.0
Apr	86.4	59.2	72.8	113	1984	20	77.0	1984	30	1987	1	66.5	1997	10	242	1.3	12.6	30.0	.0	.1	.0
May	92.0	67.9	80.0	110+	1984	5	88.1	1998	47	1970	3	74.6	1972	1	464	4.7	19.7	31.0	.0	.0	.0
Jun	96.1	72.8	84.5	111	1998	6	91.6	1998	55+	1979	13	81.2	1972	0	584	9.7	27.1	30.0	.0	.0	.0
Jul	99.2	74.5	86.9	114	1960	30	91.4	1998	62	1985	1	82.0	1976	0	678	17.5	30.1	31.0	.0	.0	.0
Aug	99.0	74.1	86.6	111	1969	17	89.4	2000	62	1979	25	81.7	1971	0	668	16.7	30.1	31.0	.0	.0	.0
Sep	94.2	70.2	82.2	113	2000	5	87.1	1977	46	1983	22	76.4	1974	0	516	5.0	24.5	30.0	.0	.0	.0
Oct	86.1	61.0	73.6	104	1979	3	76.7	1979	35	1977	13	65.1	1976	9	273	.3	12.0	31.0	.0	@	.0
Nov	75.7	50.8	63.3	96+	1998	4	69.2	1998	20	1976	28	55.0	1976	145	92	.0	1.1	29.6	.0	1.1	.0
Dec	67.9	42.1	55.0	96	1977	4	62.2	1984	8+	1989	24	46.6	1989	326	18	.0	.2	29.4	.1	4.0	.0
Ann	84.6	59.0	71.8	114	Jul 1960	30	91.6	Jun 1998	8+	Dec 1989	24	46.4	Jan 1979	1172	3681	55.6	164.1	359.3	.4	13.1	.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: 1959-2001

(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	.90	.76	3.43	1998	6	4.69	1992	.00+	1999
Feb	.90	.55	2.55	1991	4	3.94	1991	.00+	1999
Mar	1.03	.68	3.40	1990	30	4.66	1990	.00+	1996
Apr	1.67	1.31	2.59	1966	25	5.98	1979	.00+	1998
May	2.41	2.00	5.00	1980	14	8.10	1980	.00+	1998
Jun	3.20	2.02	4.97	1981	13	11.88	1981	.00+	1998
Jul	1.05	.59	3.00	1978	28	3.99	1990	.00+	2000
Aug	2.31	1.17	6.84	1964	23	10.56	1999	.00+	2000
Sep	2.10	1.83	9.66	1964	15	10.11	1973	.00+	2000
Oct	2.86	2.43	4.75	1971	5	11.77	1971	.00+	1996
Nov	1.07	.81	2.67	1998	6	3.57	1980	.00+	1999
Dec	.91	.44	3.50	1986	21	5.33	1986	.00+	1999
Ann	20.41	20.29	9.66	Sep 1964	15	11.88	Jun 1981	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.2	2.4	.6	.1
Feb	3.3	1.9	.6	.1
Mar	2.8	1.5	.6	.4
Apr	4.0	2.7	1.1	.6
May	5.0	3.4	1.8	.7
Jun	4.2	3.7	2.0	1.1
Jul	2.6	1.8	.9	.3
Aug	2.9	2.3	1.2	.6
Sep	3.5	3.0	1.2	.6
Oct	3.9	3.0	1.6	.9
Nov	2.7	1.7	.7	.3
Dec	2.8	1.7	.4	.1
Ann	41.9	29.1	12.7	5.8

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	.00	.00	.20	.37	.54	.71	.91	1.15	1.47	1.98	2.47
Feb	.00	.00	.09	.23	.39	.58	.81	1.11	1.52	2.22	2.92
Mar	.00	.00	.07	.22	.39	.61	.88	1.23	1.74	2.62	3.51
Apr	.00	.00	.13	.34	.61	.95	1.38	1.96	2.81	4.30	5.82
May	.00	.57	1.07	1.45	1.80	2.16	2.56	3.00	3.60	4.55	5.43
Jun	.00	.00	.70	1.25	1.81	2.42	3.14	4.03	5.21	7.19	9.13
Jul	.00	.00	.05	.16	.33	.55	.83	1.21	1.78	2.79	3.83
Aug	.00	.00	.24	.61	1.03	1.52	2.10	2.85	3.90	5.66	7.42
Sep	.00	.23	.61	.94	1.29	1.67	2.10	2.62	3.34	4.51	5.64
Oct	.00	.15	.56	.98	1.46	2.01	2.67	3.51	4.67	6.65	8.60
Nov	.00	.00	.20	.37	.56	.77	1.02	1.34	1.76	2.48	3.18
Dec	.00	.00	.05	.20	.37	.57	.81	1.12	1.56	2.31	3.07
Ann	10.59	12.27	14.54	16.34	18.00	19.64	21.39	23.37	25.83	29.52	32.81

\+ 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: 1959-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	.0	.0	0	0
Feb	.0	.0	0	0
Mar	.0	.0	0	0
Apr	.0	.0	0	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	0	0
Nov	.0	.0	0	0
Dec	.0	.0	0	0
Ann	.0	.0	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	.0	0	0	.0	0	0	0	0	0	0
Feb	.0	0	0	.0	0	0	0	0	0	0
Mar	.0	0	0	.0	0	0	0	0	0	0
Apr	.0	0	0	.0	0	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	.0	0	0	.0	0	0	0	0	0	0
Nov	.0	0	0	.0	0	0	0	0	0	0
Dec	.0	0	0	.0	0	0	0	0	0	0
Ann	.0	0	0	.0	0	0	0	0	0	0

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.0	.0	.0	.0	.0
Feb	.0	.0	.0	.0	.0
Mar	.0	.0	.0	.0	.0
Apr	.0	.0	.0	.0	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.0	.0	.0	.0	.0
Nov	.0	.0	.0	.0	.0
Dec	.0	.0	.0	.0	.0
Ann	.0	.0	.0	.0	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.0	.0	.0	.0
Feb	.0	.0	.0	.0
Mar	.0	.0	.0	.0
Apr	.0	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	.0	.0	.0	.0
Dec	.0	.0	.0	.0
Ann	.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	3/26	3/18	3/11	3/06	3/01	2/25	2/19	2/13	2/05
32	3/19	3/09	3/02	2/24	2/19	2/13	2/07	1/31	1/22
28	2/22	2/13	2/07	2/02	1/28	1/23	1/16	1/06	0/00
24	2/04	1/24	1/16	1/08	12/31	12/19	0/00	0/00	0/00
20	1/13	12/31	12/17	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	10/29	11/06	11/12	11/16	11/21	11/26	11/30	12/06	12/14
32	11/10	11/19	11/25	11/30	12/05	12/10	12/16	12/22	12/30
28	12/01	12/08	12/13	12/18	12/22	12/27	1/02	1/11	0/00
24	12/10	12/20	12/28	1/04	1/13	1/25	0/00	0/00	0/00
20	12/19	12/31	1/13	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	292	282	275	269	264	258	252	245	235
32	326	313	304	296	289	282	274	265	252
28	>365	>365	352	339	329	322	314	305	294
24	>365	>365	>365	>365	>365	>365	358	333	314
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	374	230	77	10	1	0	0	0	0	9	145	326	1172
60	247	138	26	0	0	0	0	0	0	2	75	204	692
57	186	94	11	0	0	0	0	0	0	0	46	147	484
55	151	70	6	0	0	0	0	0	0	0	31	115	373
50	77	28	1	0	0	0	0	0	0	0	11	49	166
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	666	724	1045	1223	1486	1574	1701	1691	1506	1287	937	714	14554
55	104	150	338	533	773	884	988	978	816	574	278	116	6532
57	76	118	282	473	711	824	926	916	756	512	233	86	5913
60	45	77	203	383	618	734	833	823	666	421	172	51	5026
65	17	30	99	242	464	584	678	668	516	273	92	18	3681
70	4	10	34	126	319	434	523	513	368	147	39	4	2521

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	464	575	843	1007	1238	1344	1453	1443	1259	1048	716	492	464	1039	1882	2889	4127	5471	6924	8367	9626	10674	11390	11882
45	323	432	689	857	1083	1194	1298	1288	1109	893	567	348	323	755	1444	2301	3384	4578	5876	7164	8273	9166	9733	10081
50	203	303	538	707	928	1044	1143	1133	959	739	422	220	203	506	1044	1751	2679	3723	4866	5999	6958	7697	8119	8339
55	108	192	392	558	773	894	988	978	809	585	291	118	108	300	692	1250	2023	2917	3905	4883	5692	6277	6568	6686
60	47	102	252	415	618	744	833	823	659	431	179	51	47	149	401	816	1434	2178	3011	3834	4493	4924	5103	5154
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	300	368	549	659	821	883	932	928	832	697	464	317	300	668	1217	1876	2697	3580	4512	5440	6272	6969	7433	7750

(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