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: GARDEN CITY 1 E, TX **COOP ID: 413445**

Climate Division: TX 4 **NWS Call Sign:** **Elevation: 2,640 Feet** **Lat: 31˚52N** **Lon: 101˚30W**

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	56.4	26.7	41.6	84+	2000	20	47.2	1998	0+	1979	3	34.0	1979	727	0	.0	.0	22.4	1.7	23.8	.1
Feb	62.1	31.1	46.6	91	1986	20	53.3	2000	5+	1981	12	39.7	1978	516	0	.0	@	23.6	1.0	16.3	.0
Mar	70.8	37.9	54.4	97	1971	28	61.0	1974	10+	1971	4	47.8	1987	337	6	.0	.5	29.4	.2	7.6	.0
Apr	78.7	46.4	62.6	100+	1972	14	67.5	1986	18	1973	9	55.1	1973	140	67	@	4.0	29.6	.0	1.8	.0
May	86.2	56.7	71.5	107	2000	25	79.4	1996	34+	1979	5	66.9	1976	34	234	1.4	11.9	31.0	.0	.0	.0
Jun	91.6	64.8	78.2	114	1994	27	84.0	1990	45+	1975	1	75.1	1997	0	396	3.1	19.7	30.0	.0	.0	.0
Jul	94.0	68.0	81.0	108+	1998	13	85.8	1980	54	1968	5	74.2	1976	0	496	3.9	25.7	31.0	.0	.0	.0
Aug	92.6	66.7	79.7	110	1969	18	83.7	1982	52	1966	25	74.1	1971	0	454	2.1	23.5	31.0	.0	.0	.0
Sep	86.2	60.3	73.3	106	1977	27	78.9	1977	35+	1996	28	65.9	1974	16	262	.8	12.1	30.0	.0	.0	.0
Oct	77.7	49.6	63.7	102+	1979	2	68.4	1979	22	1980	30	54.4	1976	113	71	.1	2.5	30.5	.0	.9	.0
Nov	66.2	36.8	51.5	89+	1996	21	56.4	1999	10	1976	29	45.2	1976	412	7	.0	.0	26.7	.2	9.8	.0
Dec	58.2	28.7	43.5	84	1977	9	47.7	1981	-3	1989	22	33.7	1983	668	0	.0	.0	23.9	1.3	20.7	.1
Ann	76.7	47.8	62.3	114	Jun 1994	27	85.8	Jul 1980	-3	Dec 1989	22	33.7	Dec 1983	2963	1993	11.4	99.9	339.1	4.4	80.9	.2

\+ 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: 1912-2001

(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	.73	.62	1.50	1932	15	2.34	1992	.00+	1999
Feb	.71	.34	1.70	1997	20	2.95	1989	.00+	1999
Mar	.70	.29	4.80	1926	21	5.21	2000	.00+	1991
Apr	1.14	.89	3.55	1922	26	4.09	1997	.00+	2000
May	2.18	1.96	3.57	1961	19	5.86	1992	.08	1974
Jun	1.91	1.68	4.09	1977	25	4.86	1977	.00+	1998
Jul	1.86	.87	8.75	1945	7	8.06	1976	.00+	1999
Aug	2.02	1.88	6.25	1934	24	5.59	1992	.00+	2000
Sep	2.97	2.45	4.55	1929	10	9.76	1980	.00+	1998
Oct	1.66	1.02	5.20	1986	4	9.31	1986	.00+	1996
Nov	.75	.55	3.50	2001	15	3.11	1984	.00+	1999
Dec	.69	.55	2.00	1932	23	3.14	1991	.00+	1999
Ann	17.32	16.77	8.75	Jul 1945	7	9.76	Sep 1980	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.0	1.7	.4	.1
Feb	2.6	1.7	.5	.1
Mar	1.7	1.4	.4	.1
Apr	2.6	2.1	.8	.3
May	4.3	3.3	1.5	.7
Jun	3.7	3.0	1.5	.6
Jul	3.0	2.6	1.1	.6
Aug	4.2	3.4	1.4	.5
Sep	4.5	3.8	1.9	1.0
Oct	3.4	2.8	1.1	.3
Nov	2.3	1.7	.5	.1
Dec	2.2	1.7	.5	.1
Ann	37.5	29.2	11.6	4.5

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	.00	.24	.40	.56	.74	.95	1.24	1.71	2.14
Feb	.00	.00	.05	.16	.28	.43	.62	.86	1.21	1.80	2.40
Mar	.00	.00	.00	.09	.21	.37	.57	.83	1.21	1.87	2.55
Apr	.00	.00	.00	.30	.55	.81	1.10	1.46	1.95	2.77	3.55
May	.24	.41	.71	1.01	1.34	1.70	2.13	2.66	3.38	4.57	5.74
Jun	.00	.23	.59	.89	1.20	1.54	1.93	2.38	3.01	4.03	5.01
Jul	.00	.00	.00	.24	.62	1.06	1.60	2.29	3.26	4.92	6.56
Aug	.00	.28	.67	.99	1.31	1.66	2.06	2.52	3.15	4.18	5.16
Sep	.00	.00	.36	.79	1.30	1.90	2.65	3.61	4.97	7.31	9.67
Oct	.00	.00	.16	.39	.66	1.00	1.43	1.99	2.79	4.19	5.61
Nov	.00	.00	.10	.27	.42	.58	.75	.97	1.25	1.71	2.17
Dec	.00	.00	.00	.12	.28	.45	.64	.88	1.21	1.77	2.30
Ann	8.95	10.38	12.31	13.84	15.26	16.66	18.15	19.84	21.94	25.09	27.91

\+ 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: 1912-2001
(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	#	1988	7	#	1988	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Feb	#	.0	0	0	#	1986	9	#+	1986	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Mar	#	.0	0	0	#	1993	12	#+	1993	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	5	2000	8	#	2000	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	1.0	.0	#	0	9.0	1998	12	9.0	1998	9	1998	12	#+	2000	.1	.1	.1	.1	.0	.1	.1	@	.0
Ann	1.0	.0	N/A	N/A	9.0	Dec 1998	12	9.0	Dec 1998	9	Dec 1998	12	#+	Dec 2000	-9.9	-9.9	-9.9	-9.9	-9.9	.1	.1	@	.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	5/01	4/25	4/21	4/17	4/14	4/11	4/08	4/03	3/29
32	4/18	4/13	4/09	4/06	4/03	3/31	3/28	3/25	3/20
28	4/07	4/02	3/30	3/27	3/24	3/22	3/19	3/15	3/10
24	4/01	3/24	3/19	3/14	3/09	3/04	2/27	2/21	2/13
20	3/23	3/13	3/06	2/27	2/22	2/16	2/10	2/03	1/24
16	3/05	2/23	2/15	2/08	2/02	1/27	1/21	1/13	1/02

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	10/04	10/11	10/15	10/20	10/23	10/27	10/31	11/05	11/11
32	10/15	10/22	10/27	10/31	11/03	11/07	11/11	11/16	11/23
28	10/26	11/01	11/05	11/08	11/12	11/15	11/18	11/23	11/28
24	11/03	11/10	11/14	11/18	11/22	11/26	11/30	12/05	12/11
20	11/12	11/21	11/27	12/02	12/07	12/12	12/17	12/23	1/01
16	11/19	11/29	12/07	12/14	12/20	12/26	1/02	1/11	1/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	214	206	201	196	191	187	182	176	169
32	235	228	222	218	213	209	204	199	191
28	253	246	240	236	232	227	223	217	210
24	287	277	270	263	258	252	245	238	228
20	323	311	302	295	288	280	273	264	252
16	>365	360	337	325	316	307	297	287	273

***** 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	727	516	337	140	34	0	0	0	16	113	412	668	2963
60	572	380	205	64	10	0	0	0	3	46	280	514	2074
57	480	303	140	34	4	0	0	0	0	23	212	423	1619
55	423	254	105	21	2	0	0	0	0	13	172	366	1356
50	282	150	41	5	0	0	0	0	0	3	92	232	805
32	15	3	0	0	0	0	0	0	0	0	1	8	27

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	311	412	692	917	1223	1386	1519	1477	1237	981	585	363	11103
55	6	18	84	248	512	696	806	764	547	281	66	9	4037
57	1	11	58	201	453	636	744	702	487	229	46	4	3572
60	0	4	29	141	365	546	651	609	400	159	25	1	2930
65	0	0	6	67	234	396	496	454	262	71	7	0	1993
70	0	0	0	24	131	252	343	303	149	23	0	0	1225

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	156	251	468	691	987	1152	1275	1239	1008	743	373	187	156	407	875	1566	2553	3705	4980	6219	7227	7970	8343	8530
45	74	152	331	543	832	1002	1120	1084	858	591	250	98	74	226	557	1100	1932	2934	4054	5138	5996	6587	6837	6935
50	27	78	206	404	677	852	965	929	708	441	147	37	27	105	311	715	1392	2244	3209	4138	4846	5287	5434	5471
55	2	31	109	269	522	702	810	774	559	303	72	7	2	33	142	411	933	1635	2445	3219	3778	4081	4153	4160
60	0	6	46	158	373	552	655	619	414	174	27	0	0	6	52	210	583	1135	1790	2409	2823	2997	3024	3024
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	155	210	337	454	633	758	838	819	660	480	269	172	155	365	702	1156	1789	2547	3385	4204	4864	5344	5613	5785

(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

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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