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: ALPINE, TX **COOP ID: 410174**

Climate Division: TX 5 **NWS Call Sign:** **Elevation: 4,530 Feet** **Lat: 30˚22N** **Lon: 103˚40W**

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	61.1	31.3	46.2	81	1963	31	53.5	2000	0	1979	2	39.9	1985	583	0	.0	.0	27.7	.4	17.3	@
Feb	65.7	34.3	50.0	86	1932	9	57.8	2000	-2	1933	8	45.6	1985	420	0	.0	.0	26.5	.3	12.0	@
Mar	71.9	39.5	55.7	91+	1971	27	61.9	1974	10+	1980	2	50.1	1987	296	8	.0	.1	30.7	.0	6.9	.0
Apr	78.7	45.8	62.3	97	1963	16	67.1	2000	20+	1987	3	55.5	1983	139	56	.0	1.2	29.6	.0	2.2	.0
May	85.4	54.7	70.1	101+	2000	24	78.5	1996	29	1929	2	65.4	1976	48	205	.2	10.0	31.0	.0	@	.0
Jun	90.1	61.7	75.9	107	1972	26	82.1	1998	38	1964	1	72.2	1979	3	331	2.1	18.0	30.0	.0	.0	.0
Jul	88.7	63.6	76.2	106+	1936	20	80.5	1980	52	1975	13	71.2	1976	0	345	.5	16.0	31.0	.0	.0	.0
Aug	87.1	61.9	74.5	103+	1951	9	78.8	1977	49+	1960	13	71.2	1990	2	295	@	12.4	31.0	.0	.0	.0
Sep	83.2	57.2	70.2	101+	1930	19	76.0	1977	36+	1989	24	65.3	1991	29	184	@	5.6	29.9	.0	.0	.0
Oct	77.6	48.0	62.8	97+	2000	1	66.5	1998	21+	1993	30	57.1	1976	115	47	.0	.8	30.7	.0	1.1	.0
Nov	68.5	38.3	53.4	87	1973	8	58.4	1998	-2	1976	29	45.3	1976	360	11	.0	.0	28.8	.1	8.3	@
Dec	61.7	32.6	47.2	83	1933	26	52.1	1977	-3	1983	29	42.1	1989	554	0	.0	.0	27.4	.3	16.0	.1
Ann	76.6	47.4	62.0	107	Jun 1972	26	82.1	Jun 1998	-3	Dec 1983	29	39.9	Jan 1985	2549	1482	2.8	64.1	354.3	1.1	63.8	.1

\+ 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: 1900-2001

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

Issue Date: February 2004

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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	.30	1.30	1946	7	1.60	1981	.00+	1999
Feb	.50	.20	2.71	1989	16	2.96	1989	.00+	1999
Mar	.34	.23	1.35	1999	27	1.57	1981	.00+	2000
Apr	.58	.37	1.40	1981	14	3.64	1987	.00+	1988
May	1.25	1.09	1.98	1977	10	3.50	1992	.07	2000
Jun	2.18	1.94	3.13	1968	15	7.01	1984	.00	1974
Jul	3.04	2.73	2.82	1977	1	9.35	1991	.05	1980
Aug	2.92	2.67	2.90	1944	18	8.20	1989	.66	1995
Sep	3.23	2.49	2.61	1986	23	11.15	1974	.11	1982
Oct	1.58	1.40	2.00	1978	23	4.44	1983	.00+	1991
Nov	.45	.40	2.35	1968	26	1.38	1984	.00+	1999
Dec	.67	.65	1.13	1942	20	2.60	1986	.00	1973
Ann	17.19	16.43	3.13	Jun 1968	15	11.15	Sep 1974	.00+	Mar 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.7	1.3	.2	.0
Feb	2.8	1.2	.1	.1
Mar	2.3	1.0	.1	@
Apr	2.7	1.5	.3	.1
May	5.2	3.0	.7	.1
Jun	7.8	4.5	1.3	.4
Jul	9.1	5.6	2.0	.7
Aug	10.0	6.2	2.0	.4
Sep	8.4	5.5	2.0	1.0
Oct	5.7	3.3	1.2	.3
Nov	2.9	1.2	.2	.0
Dec	3.6	1.5	.3	.1
Ann	64.2	35.8	10.4	3.2

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	.06	.13	.20	.30	.41	.55	.76	1.11	1.46
Feb	.00	.00	.02	.07	.14	.24	.38	.56	.84	1.35	1.88
Mar	.00	.00	.00	.06	.13	.21	.30	.43	.59	.88	1.17
Apr	.00	.00	.04	.11	.20	.31	.47	.67	.97	1.51	2.06
May	.15	.25	.42	.60	.78	.99	1.23	1.53	1.93	2.60	3.25
Jun	.14	.35	.69	1.01	1.35	1.72	2.15	2.69	3.41	4.59	5.74
Jul	.25	.45	.86	1.28	1.74	2.27	2.90	3.70	4.80	6.65	8.47
Aug	.85	1.12	1.54	1.90	2.25	2.62	3.03	3.51	4.13	5.10	6.00
Sep	.34	.58	1.02	1.47	1.96	2.50	3.14	3.94	5.03	6.84	8.60
Oct	.00	.10	.34	.58	.85	1.15	1.50	1.94	2.56	3.59	4.61
Nov	.00	.00	.00	.13	.23	.33	.44	.58	.76	1.06	1.34
Dec	.00	.03	.09	.17	.27	.40	.57	.79	1.11	1.68	2.26
Ann	10.40	11.63	13.26	14.52	15.66	16.78	17.95	19.26	20.88	23.26	25.36

\+ 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: 1900-2001
(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	.1	.0	#	0
Feb	.0	.0	0	0
Mar	#	.0	0	0
Apr	#	.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
Nov	.1	.0	#	0
Dec	.3	.0	#	0
Ann	.5	.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	1.0	1997	8	1.0	1997	2	1996	2	#+	1999
Feb	.3	1971	21	.3	1971	0	0	0	0	0
Mar	#	1993	13	#+	1993	0	0	0	0	0
Apr	#	1997	12	#	1997	#	1997	12	#	1997
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	#	1980	28	#	1980	0	0	0	0	0
Nov	1.5	2000	8	2.0	2000	3	1992	4	#+	1992
Dec	3.5	1998	11	3.5	1998	3	1998	11	#+	1998
Ann	3.5	Dec 1998	11	3.5	Dec 1998	3+	Dec 1998	11	#+	Jan 1999

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.2	.1	.0	.0	.0
Feb	.1	.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	.1	.1	.0	.0	.0
Dec	.1	.1	.1	.0	.0
Ann	.5	.3	.1	.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
Ann	@	@	.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	5/04	4/30	4/27	4/24	4/21	4/19	4/16	4/12	4/08
32	4/23	4/18	4/14	4/11	4/08	4/05	4/01	3/29	3/23
28	4/13	4/07	4/02	3/29	3/25	3/21	3/17	3/12	3/06
24	4/05	3/28	3/22	3/16	3/11	3/07	3/01	2/23	2/15
20	3/25	3/14	3/06	2/28	2/21	2/15	2/08	2/01	1/21
16	3/09	2/24	2/15	2/07	1/30	1/23	1/15	1/05	12/23

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	10/02	10/09	10/13	10/17	10/21	10/24	10/28	11/02	11/08
32	10/12	10/19	10/24	10/28	11/01	11/05	11/10	11/15	11/22
28	10/25	11/01	11/05	11/10	11/14	11/18	11/22	11/27	12/04
24	11/01	11/08	11/14	11/18	11/22	11/27	12/01	12/06	12/14
20	11/14	11/21	11/26	11/30	12/04	12/07	12/12	12/16	12/23
16	11/21	11/30	12/07	12/13	12/19	12/24	12/30	1/07	1/18

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	204	196	191	186	182	177	173	167	160
32	232	223	217	212	207	202	197	191	182
28	260	251	244	238	233	228	222	215	206
24	292	280	270	262	255	248	240	231	218
20	324	310	301	292	285	277	269	259	245
16	>365	352	338	327	318	309	300	290	275

***** 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	583	420	296	139	48	3	0	2	29	115	360	554	2549
60	431	288	167	61	16	0	0	0	6	42	234	400	1645
57	344	215	108	30	7	0	0	0	2	19	172	311	1208
55	288	172	77	18	4	0	0	0	0	10	137	256	962
50	167	89	24	3	0	0	0	0	0	2	67	135	487
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	440	504	735	907	1180	1318	1368	1316	1146	955	641	469	10979
55	15	32	98	235	471	628	655	603	456	252	87	12	3544
57	9	20	68	188	412	568	593	541	397	199	63	6	3064
60	3	9	34	128	328	478	500	448	312	129	35	2	2406
65	0	0	8	56	205	331	345	295	184	47	11	0	1482
70	0	0	0	18	113	196	204	156	91	10	2	0	790

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	247	322	504	687	958	1097	1139	1081	921	712	422	262	247	569	1073	1760	2718	3815	4954	6035	6956	7668	8090	8352
45	134	202	356	539	803	947	984	926	771	560	286	147	134	336	692	1231	2034	2981	3965	4891	5662	6222	6508	6655
50	57	109	225	394	648	797	829	771	621	412	172	69	57	166	391	785	1433	2230	3059	3830	4451	4863	5035	5104
55	18	45	117	259	494	647	674	616	472	269	81	24	18	63	180	439	933	1580	2254	2870	3342	3611	3692	3716
60	0	12	45	145	343	497	519	461	327	146	25	1	0	12	57	202	545	1042	1561	2022	2349	2495	2520	2521
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	198	253	360	468	624	713	762	730	606	471	295	210	198	451	811	1279	1903	2616	3378	4108	4714	5185	5480	5690

(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