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: CARTA VALLEY 4 W, TX **COOP ID: 411492**

Climate Division: TX 6 **NWS Call Sign:** **Elevation: 1,780 Feet** **Lat: 29˚48N** **Lon: 100˚44W**

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	61.3	32.9	47.1	86	1967	30	52.1	2000	9	1970	7	41.0	1979	554	0	.0	.0	27.5	.1	12.6	.0
Feb	65.7	36.6	51.2	94	1996	23	57.6	1999	12+	1974	9	44.4	1978	389	1	.0	.2	26.6	.1	7.5	.0
Mar	72.8	44.4	58.6	99	1971	28	64.2	1974	16	1980	2	53.3	1987	220	21	.0	.9	30.6	.0	2.3	.0
Apr	80.3	53.1	66.7	102	1996	26	70.8	1986	25	1987	3	61.0	1997	52	104	.1	5.3	30.0	.0	.3	.0
May	86.1	62.6	74.4	106	1984	6	79.5	1998	33	1970	3	69.4	1976	9	299	.8	12.2	31.0	.0	.0	.0
Jun	90.9	68.3	79.6	110	1988	9	84.5	1990	44	1970	3	75.6	1973	0	439	2.5	20.8	30.0	.0	.0	.0
Jul	93.8	71.0	82.4	107+	1980	2	87.2+	1998	60	1985	4	74.9	1976	0	539	5.5	26.5	31.0	.0	.0	.0
Aug	93.6	70.2	81.9	107	1986	21	85.4	1977	59+	1973	23	75.0	1971	0	524	3.2	26.1	31.0	.0	.0	.0
Sep	88.9	65.4	77.2	106+	2000	6	82.6	1977	41	1989	24	70.6	1974	2	366	1.1	17.7	30.0	.0	.0	.0
Oct	79.5	54.9	67.2	101	1979	3	72.2	1979	25	1980	31	59.0	1976	53	121	.2	2.7	30.9	.0	.5	.0
Nov	69.2	43.4	56.3	93+	1988	6	60.6+	1985	15	1976	30	50.4	1976	272	10	.0	.2	29.5	.0	4.0	.0
Dec	61.8	34.3	48.1	87	1977	4	54.1	1991	4	1989	23	40.8	1989	525	0	.0	.0	28.2	.2	10.9	.0
Ann	78.7	53.1	65.9	110	Jun 1988	9	87.2+	Jul 1998	4	Dec 1989	23	40.8	Dec 1989	2076	2424	13.4	112.6	356.3	.4	38.1	.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

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1963-2000

(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	.82	.55	2.25	1998	31	4.95	1992	.00+	1996
Feb	1.15	.79	2.09	1997	20	4.04	1982	.00+	1999
Mar	1.34	1.22	2.63	1977	27	4.01	1999	.00+	1996
Apr	1.91	1.14	4.45	1978	10	5.48	1977	.00	1998
May	2.86	2.65	2.71	1975	11	6.73	1975	.43	1996
Jun	2.48	2.37	5.20	1965	21	7.07	1981	.00	1990
Jul	2.55	1.04	5.80	1990	23	18.25	1976	.00+	1998
Aug	2.87	2.02	10.75	1998	24	20.47	1998	.00+	1985
Sep	2.30	1.81	4.30	1964	20	8.19	1990	.00+	1992
Oct	2.38	1.54	5.91	1983	20	9.22	1981	.06	1979
Nov	1.29	.88	2.70	2000	4	4.22	2000	.00+	1999
Dec	.80	.67	1.80	1991	19	5.05	1991	.00+	1999
Ann	22.75	21.92	10.75	Aug 1998	24	20.47	Aug 1998	.00+	Dec 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.9	2.0	.5	.2
Feb	3.1	1.9	.8	.2
Mar	3.1	2.3	.9	.4
Apr	3.7	2.8	1.1	.6
May	4.8	3.8	1.9	.8
Jun	4.2	3.2	1.7	.8
Jul	3.7	3.1	1.4	1.0
Aug	4.0	3.1	1.6	.9
Sep	5.1	3.7	1.6	.7
Oct	4.8	3.7	1.3	.5
Nov	3.1	2.1	.9	.3
Dec	3.0	2.0	.6	.3
Ann	45.5	33.7	14.3	6.7

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	.16	.30	.45	.61	.79	1.03	1.35	1.88	2.40
Feb	.00	.00	.22	.44	.65	.88	1.14	1.47	1.91	2.60	3.29
Mar	.00	.00	.21	.42	.65	.92	1.25	1.66	2.22	3.18	4.13
Apr	.08	.23	.51	.79	1.09	1.44	1.84	2.35	3.05	4.21	5.35
May	.64	.90	1.32	1.70	2.08	2.48	2.93	3.47	4.18	5.31	6.38
Jun	.10	.30	.66	1.03	1.42	1.86	2.39	3.05	3.95	5.45	6.93
Jul	.00	.00	.17	.46	.86	1.37	2.04	2.96	4.29	6.68	9.15
Aug	.00	.05	.31	.67	1.12	1.69	2.41	3.38	4.78	7.25	9.78
Sep	.00	.32	.76	1.13	1.50	1.89	2.34	2.87	3.59	4.76	5.88
Oct	.06	.16	.39	.68	1.04	1.49	2.05	2.81	3.90	5.80	7.75
Nov	.00	.00	.30	.56	.79	1.05	1.32	1.66	2.12	2.82	3.51
Dec	.00	.00	.00	.10	.24	.42	.64	.95	1.38	2.15	2.93
Ann	13.00	14.73	17.04	18.85	20.49	22.11	23.81	25.73	28.10	31.62	34.73

\+ 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: 1963-2000
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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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	0
Feb	#	.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
Dec	.0	.0	0	0
Ann	.1	.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	2.5	1982	12	2.5	1982	0	0	0	0	0
Feb	#	1989	5	#	1989	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	#	1976	28	#	1976	0	0	0	0	0
Dec	.0	0	0	.0	0	0	0	0	0	0
Ann	2.5	Jan 1982	12	2.5	Jan 1982	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
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

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	4/17	4/11	4/07	4/04	4/01	3/29	3/25	3/21	3/16
32	4/08	3/31	3/25	3/20	3/15	3/11	3/06	2/28	2/20
28	4/04	3/25	3/18	3/13	3/07	3/02	2/23	2/16	2/05
24	3/15	3/05	2/26	2/20	2/14	2/08	2/02	1/25	1/14
20	2/24	2/12	2/03	1/26	1/19	1/11	1/01	12/18	0/00
16	2/10	1/30	1/22	1/14	1/05	12/23	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	10/16	10/22	10/27	10/31	11/03	11/07	11/11	11/15	11/21
32	10/09	10/20	10/29	11/05	11/12	11/19	11/26	12/04	12/16
28	11/01	11/09	11/14	11/19	11/23	11/28	12/03	12/09	12/18
24	11/13	11/21	11/27	12/02	12/07	12/11	12/17	12/23	1/02
20	11/27	12/06	12/13	12/19	12/25	12/31	1/07	1/18	0/00
16	12/13	12/25	1/04	1/13	1/24	2/12	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	238	230	225	220	216	211	206	201	193
32	283	268	258	249	241	232	223	213	198
28	311	289	278	269	261	253	244	235	221
24	>365	323	311	301	293	285	277	267	254
20	>365	>365	>365	348	333	325	317	310	301
16	>365	>365	>365	>365	>365	>365	354	340	327

***** 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	554	389	220	52	9	0	0	0	2	53	272	525	2076
60	407	259	114	12	0	0	0	0	0	14	154	378	1338
57	322	189	69	3	0	0	0	0	0	5	100	294	982
55	269	149	46	1	0	0	0	0	0	2	71	243	781
50	160	72	12	0	0	0	0	0	0	0	25	139	408
32	3	0	0	0	0	0	0	0	0	0	0	2	5

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	472	536	824	1042	1313	1429	1562	1547	1354	1091	729	500	12399
55	25	41	157	354	600	739	849	834	664	380	110	28	4781
57	16	25	118	296	538	679	787	772	604	321	78	18	4252
60	8	11	70	215	445	589	694	679	514	237	43	8	3513
65	0	1	21	104	299	439	539	524	366	121	10	0	2424
70	0	0	4	36	172	293	385	369	228	47	1	0	1535

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	311	412	664	857	1112	1229	1352	1336	1152	887	547	332	311	723	1387	2244	3356	4585	5937	7273	8425	9312	9859	10191
45	187	280	510	707	957	1079	1197	1181	1002	733	403	205	187	467	977	1684	2641	3720	4917	6098	7100	7833	8236	8441
50	96	167	364	557	802	929	1042	1026	852	580	275	109	96	263	627	1184	1986	2915	3957	4983	5835	6415	6690	6799
55	38	88	233	410	647	779	887	871	702	429	163	45	38	126	359	769	1416	2195	3082	3953	4655	5084	5247	5292
60	6	35	126	276	493	629	732	716	552	287	79	12	6	41	167	443	936	1565	2297	3013	3565	3852	3931	3943
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	225	282	435	565	752	840	901	890	781	589	357	236	225	507	942	1507	2259	3099	4000	4890	5671	6260	6617	6853

(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