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: GRUVER, TX **COOP ID: 413787**

Climate Division: TX 1 **NWS Call Sign:** **Elevation: 3,170 Feet** **Lat: 36˚15N** **Lon: 101˚24W**

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	46.4	18.2	32.3	82	1970	24	41.1	1986	-14+	1963	13	20.9	1979	1014	0	.0	.0	16.2	4.7	28.9	1.1
Feb	52.2	22.1	37.2	89	1963	1	44.8	1999	-13	1982	6	24.8	1978	779	0	.0	.0	18.7	2.9	23.3	.6
Mar	60.7	29.9	45.3	93+	1989	10	51.6	1986	0	1996	7	39.6	1998	611	0	.0	.2	26.0	.9	16.6	@
Apr	69.5	39.6	54.6	100	1989	22	59.5	1989	12	1979	4	47.2	1997	327	13	@	1.0	28.4	.1	5.8	.0
May	77.5	50.0	63.8	104	1974	28	69.5	1974	27+	1970	1	58.8	1995	117	78	.3	4.9	30.8	.0	.3	.0
Jun	87.7	60.0	73.9	110	1981	9	79.5	1990	42+	1975	11	69.4	1992	10	275	2.9	15.6	30.0	.0	.0	.0
Jul	92.2	64.4	78.3	108+	1978	19	82.2	1980	48	1990	14	75.8	1972	0	412	5.7	24.3	31.0	.0	.0	.0
Aug	90.1	63.0	76.6	110	1964	6	81.4	2000	49	1979	12	71.6	1992	2	360	3.1	21.6	31.0	.0	.0	.0
Sep	82.6	54.7	68.7	104	1995	6	75.1	1998	27	1985	30	63.0	1974	41	151	.6	10.4	29.8	.0	.3	.0
Oct	72.2	41.5	56.9	99+	1963	2	59.9	1998	10	1993	30	51.6	1976	259	7	.0	1.5	30.1	.1	3.4	.0
Nov	57.2	28.8	43.0	88	1980	8	51.1	1999	-4	1976	28	34.9	1972	660	0	.0	.0	22.5	.8	18.4	@
Dec	47.4	20.3	33.9	79	1970	8	39.6	1994	-12	1983	29	21.7	1983	966	0	.0	.0	16.4	3.8	28.3	1.0
Ann	69.6	41.0	55.4	110+	Jun 1981	9	82.2	Jul 1980	-14+	Jan 1963	13	20.9	Jan 1979	4786	1296	12.6	79.5	310.9	13.3	125.3	2.7

\+ 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: 1941-2001

(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	.53	.41	1.26	1990	19	1.82	1980	.00+	1998
Feb	.57	.40	2.24	1985	21	3.14	1985	.00+	1991
Mar	1.45	.97	2.36	1987	17	5.70	1973	.00+	1997
Apr	1.60	1.21	3.80	1942	19	5.52	1997	.00	1996
May	3.12	2.60	3.11	1991	22	8.99	1978	.43	1974
Jun	2.81	2.50	3.87	1970	15	7.91	1989	.02	1998
Jul	2.83	2.99	3.70	1979	24	7.59	1982	.00	1980
Aug	2.22	1.87	2.87	1958	1	6.39	1992	.00	2000
Sep	1.76	1.93	3.77	1960	23	5.77	1985	.02+	2000
Oct	1.48	.99	4.42	1946	5	8.68	1998	.00	1975
Nov	.86	.68	2.35	1948	1	3.03	1971	.00+	1999
Dec	.71	.63	1.41	1995	18	2.76	1991	.00+	1985
Ann	19.94	20.86	4.42	Oct 1946	5	8.99	May 1978	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.7	1.7	.2	@
Feb	2.9	1.6	.2	@
Mar	4.7	3.0	.9	.4
Apr	4.8	3.3	1.0	.3
May	7.7	5.3	2.1	.9
Jun	7.2	5.1	2.1	.7
Jul	6.0	4.5	1.8	.9
Aug	7.1	4.2	1.3	.4
Sep	5.6	3.4	1.3	.4
Oct	4.1	2.5	1.0	.3
Nov	3.5	2.1	.5	.1
Dec	2.9	1.8	.5	@
Ann	59.2	38.5	12.9	4.4

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	.09	.17	.26	.37	.49	.65	.87	1.24	1.61
Feb	.00	.00	.04	.10	.19	.30	.45	.66	.96	1.51	2.07
Mar	.00	.00	.25	.48	.73	1.02	1.36	1.80	2.39	3.39	4.39
Apr	.10	.25	.50	.74	.98	1.26	1.58	1.97	2.50	3.38	4.22
May	.61	.89	1.35	1.77	2.19	2.65	3.17	3.79	4.62	5.95	7.21
Jun	.31	.53	.92	1.31	1.73	2.20	2.75	3.43	4.37	5.91	7.41
Jul	.33	.67	1.15	1.55	1.96	2.40	2.90	3.49	4.27	5.53	6.73
Aug	.33	.63	1.00	1.31	1.62	1.94	2.30	2.72	3.28	4.16	4.99
Sep	.06	.14	.33	.55	.82	1.15	1.56	2.10	2.87	4.20	5.55
Oct	.02	.08	.24	.44	.67	.96	1.31	1.77	2.43	3.57	4.73
Nov	.00	.03	.14	.26	.40	.57	.78	1.04	1.42	2.08	2.73
Dec	.00	.06	.17	.28	.40	.53	.69	.88	1.14	1.58	2.01
Ann	13.71	14.89	16.43	17.60	18.64	19.65	20.70	21.86	23.27	25.32	27.11

\+ 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: 1941-2001
(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	3.9	4.8	#	0
Feb	3.5	.8	#	0
Mar	2.8	.0	#	0
Apr	.7	.0	#	0
May	.2	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.2	.0	#	0
Nov	2.0	.5	#	0
Dec	4.5	3.5	#	0
Ann	17.8	9.6	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	6.1	1990	19	12.0	1987	5+	1993	20	4	1979
Feb	12.0	1971	21	18.0	1971	7	1978	17	3	1978
Mar	10.0	1987	17	19.0	1987	8	1998	19	1	1998
Apr	8.0	1979	3	8.0	1979	5	1979	3	#+	1988
May	5.5	1978	3	5.5	1978	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	3.3	1991	31	3.3	1991	2	1972	31	#	1972
Nov	7.0	1972	21	18.5	1972	6	1972	21	1	1972
Dec	12.0	1997	24	20.5	1997	7	1971	2	1	1972
Ann	12.0+	Dec 1997	24	20.5	Dec 1997	8	Mar 1998	19	4	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.6	1.2	.4	.1	.0
Feb	1.2	.9	.4	.1	@
Mar	.8	.6	.4	.2	@
Apr	.2	.2	.1	.1	.0
May	@	@	@	@	.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	.1	.1	@	.0	.0
Nov	.9	.7	.2	.1	.0
Dec	1.4	1.1	.4	.2	@
Ann	6.2	4.8	1.9	.8	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	2.9	1.3	.1	.0
Feb	1.4	.9	.7	.0
Mar	.0	.0	.0	.0
Apr	.1	.1	.1	.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	.1	.0	.0	.0
Nov	.6	.2	.1	.0
Dec	.9	.4	.2	.0
Ann	6.0	2.9	1.2	.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	5/13	5/08	5/05	5/02	4/29	4/26	4/23	4/20	4/15
32	5/04	4/29	4/26	4/23	4/20	4/17	4/14	4/11	4/06
28	4/21	4/17	4/13	4/11	4/08	4/05	4/03	3/30	3/26
24	4/09	4/05	4/02	3/30	3/28	3/26	3/23	3/20	3/16
20	4/08	4/01	3/27	3/23	3/19	3/15	3/11	3/06	2/27
16	4/01	3/24	3/18	3/12	3/08	3/03	2/25	2/19	2/11

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	9/23	9/28	10/01	10/04	10/07	10/10	10/12	10/16	10/20
32	10/02	10/07	10/11	10/14	10/17	10/20	10/23	10/27	11/01
28	10/11	10/16	10/20	10/24	10/27	10/30	11/03	11/06	11/12
24	10/25	10/30	11/03	11/07	11/10	11/13	11/16	11/20	11/25
20	11/03	11/08	11/12	11/15	11/18	11/21	11/24	11/27	12/02
16	11/07	11/13	11/18	11/22	11/26	11/30	12/04	12/09	12/16

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	179	172	168	164	160	156	152	148	141
32	196	190	186	182	179	176	173	168	163
28	221	214	209	205	201	197	193	188	181
24	247	240	235	230	226	222	217	212	205
20	265	258	252	247	243	239	234	229	221
16	291	281	274	268	263	258	252	245	235

***** 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	1014	779	611	327	117	10	0	2	41	259	660	966	4786
60	859	639	458	206	50	1	0	0	10	134	511	811	3679
57	766	560	369	147	26	0	0	0	3	79	425	718	3093
55	705	507	313	114	15	0	0	0	1	53	370	656	2734
50	555	379	187	50	3	0	0	0	0	16	245	504	1939
32	135	72	5	0	0	0	0	0	0	0	18	91	321

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	144	217	417	676	984	1255	1435	1382	1100	771	348	148	8877
55	0	8	11	100	286	565	722	669	410	111	11	0	2893
57	0	4	5	73	235	505	660	607	352	75	6	0	2522
60	0	0	1	42	166	416	567	514	269	37	1	0	2013
65	0	0	0	13	78	275	412	360	151	7	0	0	1296
70	0	0	0	3	27	154	259	216	69	1	0	0	729

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	59	124	283	498	787	1052	1226	1170	894	578	204	68	59	183	466	964	1751	2803	4029	5199	6093	6671	6875	6943
45	20	57	173	362	632	902	1071	1015	746	431	118	25	20	77	250	612	1244	2146	3217	4232	4978	5409	5527	5552
50	1	17	91	236	483	752	916	860	598	291	49	5	1	18	109	345	828	1580	2496	3356	3954	4245	4294	4299
55	0	0	37	135	335	602	761	705	457	173	18	0	0	0	37	172	507	1109	1870	2575	3032	3205	3223	3223
60	0	0	9	61	204	452	606	550	321	85	3	0	0	0	9	70	274	726	1332	1882	2203	2288	2291	2291
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	79	135	235	347	497	674	785	758	575	390	177	86	79	214	449	796	1293	1967	2752	3510	4085	4475	4652	4738

(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