

Climatology of the United States

No. 20

1971-2000

Station: FREER, TX

COOP ID: 413341

Climate Division: TX 9

NWS Call Sign:

Elevation: 510 Feet

Lat: 27° 54N

Lon: 98° 37W

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	67.4	42.5	55.0	95	1971	4	61.9	1998	12	1963	24	47.2	1979	340	28	.0	.1	28.0	.1	4.7	.0
Feb	71.3	45.8	58.6	101+	1996	23	67.6	1999	18	1981	11	51.0	1978	223	41	.1	.8	26.6	.1	2.6	.0
Mar	78.7	53.2	66.0	103	1991	7	72.3	2000	25	1989	6	59.9	1987	82	112	.1	2.7	30.9	.0	.5	.0
Apr	85.1	59.6	72.4	107	1963	10	79.3	1984	35+	1975	3	66.4	1997	20	240	.7	8.9	30.0	.0	.0	.0
May	90.2	66.9	78.6	111	1995	13	84.9	1996	46	1970	5	72.6	1982	6	426	2.2	17.5	31.0	.0	.0	.0
Jun	94.8	71.5	83.2	116	1998	15	89.9	1998	54	1992	3	79.0	1972	0	545	5.9	24.9	30.0	.0	.0	.0
Jul	97.3	72.9	85.1	110	2000	15	90.1	1998	60+	1982	25	80.2	1976	0	624	11.5	28.9	31.0	.0	.0	.0
Aug	97.5	72.6	85.1	109	1969	18	88.0	1999	58	1995	10	80.2	1971	0	621	11.1	29.7	31.0	.0	.0	.0
Sep	92.4	68.9	80.7	112	2000	5	84.7	1977	45	1974	30	74.0	1974	0	470	2.9	21.9	30.0	.0	.0	.0
Oct	85.4	61.3	73.4	102	1991	13	76.9	1981	36	1997	27	65.0	1976	9	268	.1	9.0	31.0	.0	.0	.0
Nov	76.4	51.0	63.7	97	1992	4	68.7	1973	20	1979	23	55.7	1976	129	89	.0	.9	29.4	.0	1.0	.0
Dec	68.2	44.4	56.3	90	1977	5	65.6	1984	18	1966	12	46.7	1989	308	37	.0	@	28.9	.1	3.5	.0
Ann	83.7	59.2	71.5	116	Jun 1998	15	90.1	Jul 1998	12	Jan 1963	24	46.7	Dec 1989	1117	3501	34.6	145.3	357.8	.3	12.3	.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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1947-2001

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Precipitation (inches)

		Precipitation Totals								Mean Number of Days (3)				Precipitation Probabilities (1)										
														Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
Means/Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels											
													These values were determined from the incomplete gamma distribution											
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	1.15	1.27	2.25	1958	4	2.28	1984	.00+	1999	4.2	2.9	.7	.2	.00	.00	.25	.47	.69	.92	1.17	1.48	1.90	2.54	3.18
Feb	1.31	.87	2.75	1993	4	3.82	1998	.00+	1999	4.1	2.9	.6	.2	.00	.00	.32	.58	.82	1.07	1.35	1.68	2.13	2.82	3.49
Mar	1.58	.62	5.25	2000	14	6.67	1974	.00+	1986	2.8	2.1	1.1	.5	.00	.00	.07	.25	.50	.82	1.25	1.83	2.68	4.19	5.75
Apr	1.69	1.15	4.32	1957	26	6.04	1985	.00+	1999	3.3	2.5	1.4	.5	.00	.00	.28	.55	.84	1.18	1.58	2.10	2.80	3.99	5.17
May	3.63	3.68	5.85	1951	15	7.55	1981	.00	1998	4.6	3.7	2.2	1.4	.22	.57	1.14	1.67	2.23	2.86	3.58	4.47	5.68	7.67	9.60
Jun	3.68	3.50	4.67	1985	16	10.15	1981	.00+	1990	4.7	4.2	2.3	1.5	.00	.24	.80	1.36	1.98	2.68	3.51	4.54	5.98	8.39	10.77
Jul	1.54	.97	5.50	1990	16	9.52	1990	.00+	2000	3.0	2.4	1.1	.4	.00	.00	.14	.34	.59	.90	1.30	1.83	2.58	3.90	5.25
Aug	2.25	1.92	4.20	1964	24	6.90	1974	.00	1986	4.1	3.1	1.4	.7	.03	.14	.39	.70	1.05	1.48	2.01	2.70	3.68	5.37	7.07
Sep	3.06	2.19	7.85	1971	12	14.00	1973	.11	1986	4.7	4.0	1.8	1.0	.14	.29	.64	1.04	1.52	2.08	2.77	3.66	4.94	7.12	9.31
Oct	2.92	2.58	5.50	1972	29	8.83	1971	.00+	1992	4.1	3.3	1.8	.9	.00	.34	.88	1.35	1.82	2.34	2.93	3.64	4.61	6.19	7.72
Nov	1.54	.89	6.30	2001	15	7.70	1995	.00+	1994	3.3	2.6	1.1	.4	.00	.00	.00	.12	.39	.74	1.19	1.80	2.69	4.26	5.85
Dec	1.05	.62	6.04	1991	21	7.42	1991	.00+	1998	3.6	2.5	.4	.2	.00	.00	.16	.32	.50	.71	.97	1.29	1.74	2.51	3.27
Ann	25.40	25.97	7.85	Sep 1971	12	14.00	Sep 1973	.00+	Jul 2000	46.5	36.2	15.9	7.9	13.90	15.91	18.59	20.71	22.65	24.56	26.58	28.86	31.69	35.91	39.65

+ 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: 1947-2001

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Snow (inches)																								
Snow Totals															Mean Number of Days (1)									
Means/Medians (1)					Extremes (2)										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	.1	.0	0	0	2.0	1981	18	2.0	1981	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0	.0
Feb	.1	.0	0	0	3.0	1973	9	3.0	1973	0	0	0	0	0	@	@	@	.0	.0	.0	.0	.0	.0	.0
Mar	.0	.0	0	0	.0	0	0	.0	0	0	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	.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	.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	.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	.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	.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	.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	.0
Nov	#	.0	0	0	#	1976	29	#	1976	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	.2	.0	N/A	N/A	3.0	Feb 1973	9	3.0	Feb 1973	0	0	0	0	0	@	@	@	.0	.0	.0	.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	4/08	3/28	3/20	3/13	3/07	2/28	2/21	2/13	2/02
32	3/15	3/04	2/25	2/19	2/13	2/07	2/01	1/25	1/15
28	2/23	2/12	2/05	1/29	1/22	1/15	1/06	12/25	0/00
24	2/07	1/27	1/19	1/12	1/04	12/27	12/14	0/00	0/00
20	2/01	1/14	12/27	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	11/04	11/11	11/16	11/20	11/24	11/28	12/02	12/07	12/14
32	11/10	11/20	11/26	12/02	12/08	12/13	12/19	12/26	1/04
28	11/25	12/05	12/12	12/18	12/24	12/30	1/07	1/18	0/00
24	12/08	12/18	12/26	1/03	1/11	1/20	2/06	0/00	0/00
20	12/21	1/06	1/24	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	296	284	276	268	262	255	248	239	227
32	344	328	316	306	297	287	277	266	250
28	>365	>365	>365	349	336	326	317	307	294
24	>365	>365	>365	>365	>365	357	339	327	314
20	>365	>365	>365	>365	>365	>365	>365	>365	328
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	340	223	82	20	6	0	0	0	0	9	129	308	1117
60	224	136	30	5	0	0	0	0	0	1	63	201	660
57	170	94	14	0	0	0	0	0	0	0	36	150	464
55	137	71	8	0	0	0	0	0	0	0	24	119	359
50	69	29	1	0	0	0	0	0	0	0	7	57	163
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	711	743	1053	1210	1443	1535	1647	1644	1460	1281	950	752	14429
55	135	169	348	520	730	845	934	931	770	568	284	158	6392
57	106	137	292	460	668	785	872	869	710	507	236	127	5769
60	67	95	215	374	575	695	779	776	620	415	173	85	4869
65	28	41	112	240	426	545	624	621	470	268	89	37	3501
70	11	15	44	135	287	395	469	466	324	143	34	14	2337

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	472	565	797	980	1206	1298	1403	1406	1233	1037	718	522	472	1037	1834	2814	4020	5318	6721	8127	9360	10397	11115	11637
45	339	425	645	830	1051	1148	1248	1251	1083	882	571	377	339	764	1409	2239	3290	4438	5686	6937	8020	8902	9473	9850
50	217	298	493	680	896	998	1093	1096	933	727	427	253	217	515	1008	1688	2584	3582	4675	5771	6704	7431	7858	8111
55	120	188	351	531	741	848	938	941	783	572	295	147	120	308	659	1190	1931	2779	3717	4658	5441	6013	6308	6455
60	52	106	220	387	586	698	783	786	633	421	181	77	52	158	378	765	1351	2049	2832	3618	4251	4672	4853	4930
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	300	356	511	649	812	863	913	917	824	691	464	330	300	656	1167	1816	2628	3491	4404	5321	6145	6836	7300	7630

(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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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