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: RISING STAR 1 S, TX **COOP ID: 417633**

Climate Division: TX 5 **NWS Call Sign:** **Elevation: 1,633 Feet** **Lat: 32˚05N** **Lon: 98˚58W**

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	55.1	29.7	42.4	89	1969	9	48.4	1990	0	1973	12	33.3	1979	701	0	.0	.0	20.6	2.0	19.0	@
Feb	60.3	34.3	47.3	97	1996	23	54.7	1976	-2	1985	2	37.5	1978	497	1	.0	.1	21.8	1.1	12.0	@
Mar	68.7	41.5	55.1	96	1946	29	60.9	1974	8	1980	2	50.3	1996	315	8	.0	.5	29.0	.2	5.4	.0
Apr	76.9	49.5	63.2	98+	1972	14	68.2	1986	25	1973	10	57.5	1997	116	63	.0	2.1	29.7	.0	.9	.0
May	83.8	59.2	71.5	105	1943	27	77.5	1996	35	1954	3	67.4	1979	22	222	.3	6.3	31.0	.0	.0	.0
Jun	89.8	66.6	78.2	108	1948	18	82.4	1990	46	1947	1	74.2	1983	0	396	1.0	16.1	30.0	.0	.0	.0
Jul	94.1	69.7	81.9	109	1954	27	86.4	1978	54	1990	14	77.7	1976	0	524	4.3	25.5	31.0	.0	.0	.0
Aug	93.7	68.8	81.3	109+	1984	21	85.9	1999	49+	1992	29	75.2	1971	0	504	4.0	24.6	31.0	.0	.0	.0
Sep	87.1	62.4	74.8	108+	2000	5	80.4	1998	39	1984	30	65.8	1974	9	301	1.0	13.1	30.0	.0	.0	.0
Oct	78.1	51.9	65.0	102	1951	5	68.9	1979	21	1993	31	57.0	1976	82	82	.1	2.4	30.7	.0	.5	.0
Nov	66.0	40.7	53.4	92+	1980	9	58.3	1999	15+	1979	30	45.8	1976	360	10	.0	@	26.9	.2	6.5	.0
Dec	57.4	32.2	44.8	88	1955	24	50.3	1984	-8+	1989	24	33.4	1983	627	0	.0	.0	23.1	1.3	16.6	.1
Ann	75.9	50.5	63.2	109+	Aug 1984	21	86.4	Jul 1978	-8+	Dec 1989	24	33.3	Jan 1979	2729	2111	10.7	90.7	334.8	4.8	60.9	.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: 1942-2001

(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	1.30	.99	3.00	1944	13	3.62	1973	.00+	1997
Feb	1.88	1.33	2.62	1989	17	6.90	1997	.00+	1999
Mar	2.20	1.85	4.40	1977	27	5.20	1981	.01	1971
Apr	2.46	1.94	6.50	1990	26	10.54	1990	.43	1998
May	4.38	3.64	4.47	1987	29	14.31	1994	.87	1973
Jun	4.32	3.62	4.77	1984	6	13.02	1986	.75	1990
Jul	1.85	1.54	5.19	1998	5	5.36	1990	.00+	2000
Aug	2.30	1.24	5.59	1995	1	9.18	1996	.00+	2000
Sep	2.95	2.76	5.80	1962	8	9.46	1974	.00	1979
Oct	3.30	2.46	4.00	1994	18	7.74	1984	.12	1978
Nov	1.82	1.40	2.13	2000	6	5.79	2000	.00	1999
Dec	1.53	1.12	3.00	1991	20	8.80	1991	.00+	2000
Ann	30.29	29.40	6.50	Apr 1990	26	14.31	May 1994	.00+	Dec 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.9	3.0	.9	.2
Feb	5.3	3.6	1.4	.4
Mar	5.5	3.7	1.6	.5
Apr	5.3	3.8	1.5	.7
May	7.1	5.2	2.9	1.5
Jun	6.3	4.7	2.5	1.3
Jul	4.2	3.3	1.1	.4
Aug	4.8	3.5	1.4	.5
Sep	5.5	4.1	1.7	.8
Oct	5.3	4.1	2.0	1.1
Nov	4.4	2.8	1.3	.7
Dec	4.8	2.9	1.0	.3
Ann	63.4	44.7	19.3	8.4

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	.14	.37	.58	.79	1.02	1.29	1.62	2.06	2.79	3.50
Feb	.00	.23	.58	.88	1.18	1.51	1.89	2.34	2.96	3.97	4.94
Mar	.14	.28	.55	.85	1.19	1.58	2.06	2.67	3.51	4.94	6.37
Apr	.37	.58	.93	1.27	1.63	2.01	2.46	3.00	3.73	4.92	6.06
May	1.04	1.45	2.09	2.66	3.23	3.83	4.50	5.30	6.36	8.02	9.59
Jun	.70	1.08	1.71	2.30	2.91	3.58	4.35	5.28	6.52	8.54	10.48
Jul	.00	.00	.34	.78	1.15	1.52	1.94	2.42	3.06	4.04	5.07
Aug	.00	.10	.40	.73	1.12	1.56	2.11	2.81	3.79	5.46	7.13
Sep	.13	.39	.83	1.26	1.73	2.25	2.87	3.63	4.68	6.43	8.13
Oct	.20	.40	.81	1.25	1.76	2.35	3.07	3.99	5.27	7.44	9.61
Nov	.09	.25	.53	.80	1.08	1.40	1.77	2.24	2.87	3.92	4.94
Dec	.00	.02	.15	.34	.57	.87	1.26	1.78	2.55	3.90	5.29
Ann	19.45	21.46	24.09	26.12	27.93	29.71	31.56	33.62	36.14	39.84	43.08

\+ 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: 1942-2001
(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	2.0	.0	#	0
Feb	1.7	.0	#	0
Mar	.4	.0	#	0
Apr	.0	.0	0	0
May	.0	.0	#	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	0	0
Nov	.5	.0	#	0
Dec	.6	.0	#	0
Ann	5.2	.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	6.0	1973	11	8.5	1983	6	1973	11	#+	1994
Feb	4.0	1972	1	12.0	1978	5	1985	2	#+	1994
Mar	3.0	1978	4	4.0	1989	3	1989	6	#+	1998
Apr	.0	0	0	.0	0	0	0	0	0	0
May	.0	0	0	.0	0	#	1971	10	#	1971
Jun	.0	0	0	.0	0	#	1994	9	#	1994
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	5.0	1976	13	8.0	1976	5	1976	13	#+	1997
Dec	4.5	1983	16	6.0+	1986	5	1983	16	#+	1998
Ann	6.0	Jan 1973	11	12.0	Feb 1978	6	Jan 1973	11	#+	Dec 1998

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.9	.6	.2	.1	.0
Feb	.9	.7	.2	.0	.0
Mar	.3	.2	.1	.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	.2	.2	.1	@	.0
Dec	.4	.2	.1	.0	.0
Ann	2.7	1.9	.7	.1	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.6	.1	@	.0
Feb	.4	.1	@	.0
Mar	.1	.1	.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	.2	@	@	.0
Ann	1.3	.3	@	.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	4/14	4/11	4/09	4/06	4/04	4/02	3/30	3/26
32	4/12	4/06	4/03	3/30	3/27	3/24	3/21	3/17	3/12
28	4/05	3/29	3/23	3/19	3/15	3/11	3/06	3/01	2/22
24	3/18	3/10	3/04	2/27	2/22	2/18	2/13	2/07	1/30
20	3/10	2/26	2/18	2/11	2/04	1/28	1/21	1/13	1/01
16	2/26	2/15	2/06	1/30	1/22	1/13	12/31	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	10/17	10/22	10/26	10/29	11/01	11/04	11/07	11/11	11/16
32	10/24	10/30	11/03	11/07	11/10	11/13	11/17	11/21	11/27
28	10/31	11/07	11/12	11/16	11/20	11/24	11/28	12/03	12/10
24	11/08	11/16	11/21	11/26	12/01	12/05	12/10	12/15	12/23
20	11/11	11/23	12/01	12/09	12/16	12/23	12/30	1/08	1/19
16	12/07	12/16	12/23	12/30	1/06	1/14	1/29	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	226	220	215	211	208	204	200	196	190
32	249	242	236	231	227	223	218	212	205
28	279	268	261	255	249	243	237	230	220
24	312	301	293	287	281	274	268	260	249
20	>365	335	320	311	304	298	292	285	275
16	>365	>365	>365	>365	>365	343	325	309	291

***** 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	701	497	315	116	22	0	0	0	9	82	360	627	2729
60	548	367	186	46	5	0	0	0	1	28	234	476	1891
57	462	293	126	21	1	0	0	0	0	11	172	391	1477
55	405	247	93	12	0	0	0	0	0	6	136	336	1235
50	274	153	36	1	0	0	0	0	0	1	68	214	747
32	22	6	0	0	0	0	0	0	0	0	0	10	38

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	344	434	716	936	1223	1386	1547	1527	1282	1023	641	406	11465
55	14	31	96	258	510	696	834	814	592	315	87	19	4266
57	9	21	67	208	449	636	772	752	532	259	62	12	3779
60	2	11	34	142	360	546	679	659	442	182	34	4	3095
65	0	1	8	63	222	396	524	504	301	82	10	0	2111
70	0	0	0	19	115	250	369	353	179	26	1	0	1312

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	180	278	489	699	974	1147	1302	1286	1050	783	419	224	180	458	947	1646	2620	3767	5069	6355	7405	8188	8607	8831
45	99	177	350	553	819	997	1147	1131	900	630	292	126	99	276	626	1179	1998	2995	4142	5273	6173	6803	7095	7221
50	47	97	227	411	664	847	992	976	750	479	185	60	47	144	371	782	1446	2293	3285	4261	5011	5490	5675	5735
55	16	47	128	277	512	697	837	821	601	337	101	19	16	63	191	468	980	1677	2514	3335	3936	4273	4374	4393
60	0	13	57	162	362	547	682	666	456	207	45	1	0	13	70	232	594	1141	1823	2489	2945	3152	3197	3198
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	143	199	316	453	646	782	869	850	697	508	273	166	143	342	658	1111	1757	2539	3408	4258	4955	5463	5736	5902

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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