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: BRECKENRIDGE, TX **COOP ID: 411042**

Climate Division: TX 3 **NWS Call Sign:** **Elevation: 1,170 Feet** **Lat: 32˚45N** **Lon: 98˚54W**

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	55.8	30.9	43.4	90	1943	22	50.5	1990	-6	1973	12	33.9	1979	672	0	.0	.0	21.2	1.8	18.9	@
Feb	61.1	35.2	48.2	97	1996	22	56.6	1976	-6	1985	2	37.3	1978	479	8	.0	.1	21.9	1.1	12.3	@
Mar	69.8	43.5	56.7	96+	1946	31	61.7+	1986	7+	1962	1	51.9	1996	272	12	.0	.7	29.6	.1	5.0	.0
Apr	78.4	50.8	64.6	101	1948	30	70.0	1978	28+	1997	13	58.5	1997	98	86	.0	2.5	29.9	.0	.8	.0
May	85.5	60.3	72.9	107	2000	24	79.2	1996	36	1979	12	69.2+	1997	20	266	.7	9.6	31.0	.0	.0	.0
Jun	92.4	68.3	80.4	111	1980	29	85.7	1990	47	1964	1	76.0	1983	0	460	3.0	21.4	30.0	.0	.0	.0
Jul	96.8	72.2	84.5	112	1936	20	90.2	1978	56+	1971	31	80.6	1976	0	605	10.2	28.3	31.0	.0	.0	.0
Aug	95.9	70.9	83.4	114	1936	12	88.8	2000	51	1962	26	77.5	1971	0	572	9.7	26.8	31.0	.0	.0	.0
Sep	88.8	63.6	76.2	111	2000	5	83.5	1977	38	2000	26	68.8	1974	7	343	2.0	15.9	30.0	.0	.0	.0
Oct	79.3	52.8	66.1	105	1977	1	70.1	1979	20	1993	31	58.3	1976	70	102	.2	3.7	30.8	.0	.3	.0
Nov	66.8	40.8	53.8	93	1980	9	60.1	1999	14	1950	11	46.0	1972	351	14	.0	.1	27.2	.1	6.5	.0
Dec	57.6	32.3	45.0	89	1954	5	49.7	1980	-7	1989	22	32.4	1983	623	1	.0	.0	23.1	1.2	16.8	.1
Ann	77.4	51.8	64.6	114	Aug 1936	12	90.2	Jul 1978	-7	Dec 1989	22	32.4	Dec 1983	2592	2469	25.8	109.1	336.7	4.3	60.6	.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: 1898-2001

(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	1.10	2.77	1961	7	3.54+	1999	.00+	1988
Feb	1.39	.91	3.03	2001	15	5.25	1997	.00+	1999
Mar	2.05	1.70	3.44	1977	27	4.93	1998	.19	1971
Apr	2.17	1.87	4.20	1978	10	8.09	1990	.21	1982
May	3.53	3.48	4.25	1982	13	11.27	1982	.39	1998
Jun	3.12	2.76	4.15	1991	2	8.06	1982	.00	1990
Jul	1.86	1.61	5.85	1958	6	5.80	1995	.00+	1993
Aug	2.06	1.47	3.12	1990	23	5.30	1990	.35	2000
Sep	2.93	2.38	4.69	1996	15	9.81	1996	.12	1979
Oct	3.44	2.65	15.70	1981	13	25.18	1981	.43	1987
Nov	1.56	1.34	2.13	1998	1	4.69	2000	.00+	1999
Dec	1.63	1.14	2.80	1926	6	7.21	1991	.00+	1996
Ann	27.04	26.77	15.70	Oct 1981	13	25.18	Oct 1981	.00+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.1	2.4	.7	.3
Feb	4.2	2.9	1.0	.4
Mar	5.6	3.5	1.4	.5
Apr	5.2	3.6	1.2	.5
May	7.2	5.4	2.4	1.1
Jun	6.4	4.5	2.1	1.1
Jul	5.1	3.3	.9	.5
Aug	5.9	3.6	1.0	.5
Sep	6.3	4.3	1.7	.8
Oct	6.7	4.9	2.1	1.2
Nov	5.0	3.3	1.0	.3
Dec	4.6	3.1	1.2	.3
Ann	67.3	44.8	16.7	7.5

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	.28	.54	.78	1.03	1.32	1.67	2.14	2.87	3.60
Feb	.00	.09	.30	.51	.74	1.00	1.32	1.71	2.26	3.17	4.08
Mar	.28	.45	.75	1.03	1.33	1.66	2.04	2.50	3.13	4.16	5.15
Apr	.36	.55	.86	1.16	1.47	1.80	2.18	2.64	3.26	4.26	5.22
May	.85	1.18	1.69	2.15	2.61	3.09	3.63	4.27	5.11	6.45	7.71
Jun	.45	.86	1.39	1.83	2.27	2.72	3.24	3.84	4.64	5.91	7.10
Jul	.00	.17	.49	.79	1.10	1.44	1.84	2.32	2.98	4.08	5.15
Aug	.36	.54	.84	1.12	1.41	1.72	2.08	2.52	3.10	4.03	4.93
Sep	.17	.33	.69	1.08	1.53	2.06	2.71	3.53	4.69	6.66	8.63
Oct	.29	.52	.97	1.45	1.97	2.57	3.29	4.19	5.44	7.52	9.57
Nov	.00	.00	.47	.75	1.01	1.29	1.60	1.99	2.47	3.27	4.03
Dec	.00	.07	.29	.53	.80	1.11	1.50	1.99	2.68	3.85	5.03
Ann	17.15	18.98	21.37	23.22	24.88	26.50	28.19	30.08	32.39	35.79	38.76

\+ 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: 1898-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	1.1	.0	#	0	6.0	1973	10	6.1	1973	6	1973	10	#+	1988	.3	.2	.1	.1	.0	.2	.1	.1	.0
Feb	.8	.0	#	0	4.5	1987	19	4.5	1987	3	1985	1	#+	1997	.2	.2	.1	.0	.0	.1	.1	.0	.0
Mar	.6	.0	#	0	8.0	1989	5	9.0	1989	8	1989	5	#	1989	.1	.1	.1	.1	.0	.1	.1	.1	.0
Apr	.4	.0	#	0	6.0	1996	5	6.0	1996	6	1996	5	#	1996	.1	.1	.1	.1	.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
Jun	.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
Aug	.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
Oct	#	.0	#	0	#	1993	29	#	1993	#	1993	29	#	1993	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	0	0	3.0	1980	17	3.0	1980	0	0	0	0	0	.1	.1	.1	.0	.0	.0	.0	.0	.0
Dec	.2	.0	#	0	2.5	1997	25	2.5	1997	1	2000	27	#	2000	.1	.1	.0	.0	.0	.1	.0	.0	.0
Ann	3.4	.0	N/A	N/A	8.0	Mar 1989	5	9.0	Mar 1989	8	Mar 1989	5	#+	Dec 2000	.9	.8	.5	.3	.0	.5	.3	.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	4/24	4/19	4/15	4/12	4/09	4/06	4/02	3/29	3/24
32	4/14	4/08	4/04	4/01	3/29	3/25	3/22	3/18	3/13
28	4/03	3/27	3/21	3/16	3/11	3/07	3/02	2/24	2/16
24	3/15	3/07	3/01	2/24	2/20	2/15	2/10	2/04	1/27
20	3/12	2/28	2/20	2/12	2/05	1/29	1/22	1/13	1/01
16	2/24	2/14	2/07	1/31	1/25	1/18	1/10	12/29	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	10/19	10/23	10/27	10/30	11/01	11/04	11/07	11/10	11/15
32	10/27	11/01	11/04	11/07	11/10	11/13	11/16	11/19	11/24
28	11/05	11/10	11/14	11/17	11/21	11/24	11/27	12/01	12/06
24	11/09	11/15	11/20	11/24	11/27	12/01	12/05	12/10	12/16
20	11/14	11/25	12/03	12/09	12/15	12/22	12/28	1/05	1/16
16	12/07	12/14	12/19	12/23	12/27	1/01	1/06	1/14	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	228	220	215	210	206	201	197	191	184
32	246	239	234	230	226	222	217	212	205
28	282	272	265	259	253	248	242	235	225
24	308	299	292	286	280	274	268	261	252
20	>365	337	323	314	306	299	291	283	271
16	>365	>365	>365	359	343	332	321	311	297

***** 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	672	479	272	98	20	0	0	0	7	70	351	623	2592
60	523	352	152	37	5	0	0	0	0	23	229	476	1797
57	437	283	98	17	1	0	0	0	0	9	170	391	1406
55	381	241	70	9	0	0	0	0	0	5	135	337	1178
50	256	155	25	0	0	0	0	0	0	1	70	219	726
32	20	10	0	0	0	0	0	0	0	0	1	14	45

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	371	462	763	978	1269	1450	1628	1595	1326	1055	653	414	11964
55	20	49	120	297	556	760	915	882	636	346	98	25	4704
57	13	35	86	244	495	700	853	820	576	289	72	17	4200
60	6	20	47	174	405	610	760	727	486	210	42	9	3496
65	0	8	12	86	266	460	605	572	343	102	14	1	2469
70	0	0	1	32	152	315	450	418	215	37	2	0	1622

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	187	285	518	745	1026	1220	1387	1359	1092	813	424	214	187	472	990	1735	2761	3981	5368	6727	7819	8632	9056	9270
45	105	181	377	596	871	1070	1232	1204	942	660	294	117	105	286	663	1259	2130	3200	4432	5636	6578	7238	7532	7649
50	47	104	253	450	716	920	1077	1049	792	508	185	55	47	151	404	854	1570	2490	3567	4616	5408	5916	6101	6156
55	17	53	147	311	561	770	922	894	643	362	104	20	17	70	217	528	1089	1859	2781	3675	4318	4680	4784	4804
60	1	22	73	191	410	620	767	739	496	228	45	4	1	23	96	287	697	1317	2084	2823	3319	3547	3592	3596
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	149	201	337	482	679	817	907	890	721	527	280	163	149	350	687	1169	1848	2665	3572	4462	5183	5710	5990	6153

(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

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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