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: CHISOS BASIN, TX **COOP ID: 411715**

Climate Division: TX 5 **NWS Call Sign:** **Elevation: 5,300 Feet** **Lat: 29˚16N** **Lon: 103˚18W**

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	57.6	36.1	46.9	82	1949	15	51.9	2000	-3	1949	30	40.4	1985	562	0	.0	.0	25.4	.6	9.9	.0
Feb	61.5	39.1	50.3	84	1972	22	55.7	2000	6	1951	1	45.8	1973	412	0	.0	.0	25.2	.2	5.9	.0
Mar	68.3	44.0	56.2	96	1990	13	62.2	1974	12	1955	26	50.2	1987	284	9	.0	@	30.1	@	2.6	.0
Apr	74.8	50.3	62.6	96	1963	15	68.0	1972	25	1996	6	56.1	1997	137	65	.0	.4	29.5	.0	.8	.0
May	82.0	58.5	70.3	99	1953	22	76.8	1996	37+	1976	2	64.3	1992	36	199	.0	3.5	31.0	.0	.0	.0
Jun	85.4	63.0	74.2	103	1972	28	79.3	1980	45+	1979	12	70.3	1986	3	279	.1	7.6	30.0	.0	.0	.0
Jul	84.2	63.9	74.1	102	1958	13	78.7	1980	53	1948	1	69.8	1976	0	279	@	4.2	31.0	.0	.0	.0
Aug	82.5	62.6	72.6	99	1972	1	76.9	1977	52	1971	3	68.4	1971	2	236	.0	1.2	31.0	.0	.0	.0
Sep	78.8	58.8	68.8	97	1954	9	75.1	1977	34	1970	28	64.0	1991	29	142	.0	.7	30.0	.0	.0	.0
Oct	72.8	51.7	62.3	94	1977	1	67.2	1979	19	1993	30	55.2	1976	132	47	.0	.1	30.7	@	.5	.0
Nov	64.8	43.4	54.1	89	1959	2	60.7	1973	13	1976	29	46.4	1976	340	12	.0	.0	28.2	.2	3.8	.0
Dec	58.8	37.7	48.3	87	1977	7	54.8	1984	4	1989	23	43.1	1989	518	0	.0	.0	25.9	.4	8.8	.0
Ann	72.6	50.8	61.7	103	Jun 1972	28	79.3	Jun 1980	-3	Jan 1949	30	40.4	Jan 1985	2455	1268	.1	17.7	348.0	1.4	32.3	.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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

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

(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	.55	.34	1.23	1958	23	1.63	1986	.00+	2000
Feb	.69	.51	2.21	1992	4	3.96	1992	.00+	1976
Mar	.36	.19	1.38	1967	23	1.74	1997	.00+	1996
Apr	.61	.22	1.36	1968	12	3.84	1981	.00+	1998
May	1.60	1.59	3.50	1988	19	5.30	1988	.00	2000
Jun	2.42	1.92	2.85	1996	16	8.08	1986	.08	1974
Jul	3.55	2.60	3.26	1959	18	10.69	1991	.39	1995
Aug	3.72	2.91	4.02	1974	26	10.71	1980	.42	1977
Sep	2.71	2.29	3.54	1995	18	7.65	1978	.15	2000
Oct	1.72	.84	4.29	1966	5	7.49	1971	.00+	1979
Nov	.66	.52	1.38	1959	3	2.71	1978	.00+	1999
Dec	.58	.30	1.14	1986	22	3.00	1991	.00+	1999
Ann	19.17	17.88	4.29	Oct 1966	5	10.71	Aug 1980	.00+	May 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.4	1.5	.3	.1
Feb	3.0	1.5	.4	.1
Mar	1.9	.9	.3	@
Apr	3.0	1.5	.4	.1
May	5.4	3.0	1.1	.2
Jun	8.1	4.7	1.6	.5
Jul	9.5	5.8	2.3	1.0
Aug	9.2	5.7	2.4	1.0
Sep	7.5	4.5	1.7	.7
Oct	5.2	3.1	1.2	.4
Nov	3.2	1.5	.5	.1
Dec	3.0	1.3	.3	.1
Ann	62.4	35.0	12.5	4.3

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	.04	.12	.21	.33	.47	.66	.93	1.39	1.86
Feb	.00	.00	.06	.14	.26	.39	.57	.81	1.15	1.76	2.38
Mar	.00	.00	.00	.02	.09	.18	.29	.43	.63	.98	1.33
Apr	.00	.00	.02	.08	.16	.28	.44	.67	1.02	1.67	2.35
May	.06	.18	.41	.64	.90	1.19	1.53	1.96	2.56	3.55	4.53
Jun	.21	.37	.69	1.03	1.40	1.82	2.32	2.95	3.82	5.27	6.70
Jul	.54	.84	1.36	1.85	2.36	2.91	3.55	4.34	5.39	7.09	8.73
Aug	.56	.87	1.41	1.93	2.46	3.05	3.72	4.55	5.66	7.46	9.19
Sep	.21	.39	.75	1.12	1.53	2.01	2.58	3.29	4.29	5.95	7.59
Oct	.00	.03	.18	.39	.66	1.00	1.43	2.02	2.87	4.37	5.90
Nov	.00	.00	.06	.20	.33	.47	.63	.84	1.12	1.57	2.03
Dec	.00	.00	.00	.07	.16	.29	.46	.68	1.00	1.57	2.15
Ann	10.50	12.02	14.04	15.64	17.10	18.54	20.07	21.78	23.92	27.09	29.92

\+ 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
(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	1.1	.0	#	0
Feb	.2	.0	#	0
Mar	#	.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	.3	.0	#	0
Dec	.3	.0	#	0
Ann	1.9	.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	12.0	1986	8	13.0	1986	5	1981	18	#+	1997
Feb	4.0	1973	9	4.0	1973	3	1988	20	#+	1988
Mar	#	1989	5	#	1989	0	0	0	0	0
Apr	.3	1980	13	.3	1980	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	4.5	1980	17	7.0	1980	6	1980	17	1	1980
Dec	3.1	1975	29	4.0	1982	2	1982	27	#+	1996
Ann	12.0	Jan 1986	8	13.0	Jan 1986	6	Nov 1980	17	1	Nov 1980

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.3	.3	@	@	@
Feb	.1	.1	@	.0	.0
Mar	.0	.0	.0	.0	.0
Apr	@	.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	.1	.1	@	.0	.0
Dec	.3	.1	@	.0	.0
Ann	.8	.6	@	@	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.1	@	@	.0
Feb	@	@	.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	.1	.0	.0	.0
Ann	.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	4/18	4/12	4/07	4/03	3/30	3/26	3/22	3/17	3/11
32	4/10	4/01	3/26	3/21	3/16	3/10	3/05	2/27	2/18
28	4/04	3/23	3/14	3/07	2/28	2/21	2/14	2/06	1/25
24	3/14	3/03	2/23	2/16	2/10	2/03	1/27	1/18	1/05
20	3/07	2/21	2/10	2/01	1/23	1/12	12/29	0/00	0/00
16	1/31	1/17	1/04	12/18	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	10/11	10/19	10/25	10/29	11/03	11/07	11/12	11/17	11/25
32	10/25	11/02	11/08	11/13	11/17	11/22	11/26	12/02	12/10
28	10/31	11/09	11/16	11/22	11/28	12/04	12/10	12/17	12/26
24	11/15	11/26	12/04	12/10	12/17	12/23	12/30	1/08	1/21
20	11/27	12/12	12/23	1/02	1/12	1/23	2/10	0/00	0/00
16	12/14	12/28	1/10	1/30	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	244	235	228	222	217	212	206	199	190
32	277	266	259	252	246	240	233	225	215
28	313	299	289	280	272	264	255	245	231
24	>365	348	330	318	308	298	288	277	262
20	>365	>365	>365	>365	364	334	316	300	280
16	>365	>365	>365	>365	>365	>365	>365	349	325

***** 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	562	412	284	137	36	3	0	2	29	132	340	518	2455
60	408	279	158	62	10	0	0	0	5	54	216	368	1560
57	322	205	101	32	4	0	0	0	1	27	156	284	1132
55	266	161	70	20	2	0	0	0	0	15	123	231	888
50	149	78	20	4	0	0	0	0	0	3	57	124	435
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	461	512	748	918	1185	1266	1302	1257	1104	938	663	505	10859
55	15	29	105	247	474	576	589	544	414	240	96	23	3352
57	9	17	74	200	414	516	527	482	355	190	69	14	2867
60	2	7	38	140	328	426	434	389	269	124	39	5	2201
65	0	0	9	65	199	279	279	236	142	47	12	0	1268
70	0	0	1	22	103	149	142	105	57	11	2	0	592

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	259	322	512	690	944	1036	1066	1017	876	705	440	291	259	581	1093	1783	2727	3763	4829	5846	6722	7427	7867	8158
45	146	200	361	544	789	886	911	862	726	551	307	174	146	346	707	1251	2040	2926	3837	4699	5425	5976	6283	6457
50	63	107	232	398	634	736	756	707	576	398	185	79	63	170	402	800	1434	2170	2926	3633	4209	4607	4792	4871
55	15	44	123	267	480	586	601	552	428	261	91	26	15	59	182	449	929	1515	2116	2668	3096	3357	3448	3474
60	0	11	46	145	329	437	446	397	281	129	32	1	0	11	57	202	531	968	1414	1811	2092	2221	2253	2254
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	150	192	310	434	625	703	732	700	574	422	251	165	150	342	652	1086	1711	2414	3146	3846	4420	4842	5093	5258

(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