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: BOYS RANCH, TX **COOP ID: 411000**

Climate Division: TX 1 **NWS Call Sign:** **Elevation: 3,191 Feet** **Lat: 35˚32N** **Lon: 102˚15W**

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	51.3	20.5	35.9	80+	1999	15	42.9	1986	-8+	1988	8	25.9	1979	903	0	.0	.0	17.0	4.0	30.0	.7
Feb	56.4	25.2	40.8	82+	1996	22	49.2	1991	-7	1986	12	28.4	1978	678	0	.0	.0	19.7	2.2	23.3	.2
Mar	65.1	32.1	48.6	95	1989	12	53.7	1986	3	1982	6	44.3	1998	508	0	.0	.1	26.4	.3	19.1	.0
Apr	73.0	40.1	56.6	99	1965	22	61.3	1990	19+	1997	12	50.0	1997	274	20	.0	.8	28.6	@	4.6	.0
May	80.4	50.8	65.6	103	1996	16	72.6	1996	29	1991	1	61.9	1976	78	97	.3	4.3	30.8	.0	@	.0
Jun	89.1	61.1	75.1	109	1990	24	81.9	1990	44+	1993	8	69.7	1989	7	309	2.8	14.8	30.0	.0	.0	.0
Jul	92.3	65.3	78.8	110	1982	27	83.7	1980	51+	1990	13	75.3	1975	0	427	2.6	22.8	31.0	.0	.0	.0
Aug	89.7	63.4	76.6	106	1964	7	81.1	2000	51+	1988	29	72.9+	1974	1	359	1.2	19.2	31.0	.0	.0	.0
Sep	83.1	55.3	69.2	104	1995	5	74.7	1998	28	1984	30	62.9	1974	38	165	.5	8.0	29.8	.0	.2	.0
Oct	73.4	42.1	57.8	96	2000	3	60.8	1979	13	1993	30	51.4	1976	235	9	.0	.6	30.4	@	4.0	.0
Nov	60.4	28.9	44.7	89	1980	11	51.1	1999	-2	1980	26	37.6	1972	611	0	.0	.0	24.1	.6	21.6	.1
Dec	51.9	21.6	36.8	80+	1996	9	41.8	1994	-11	1983	29	25.6	1983	876	0	.0	.0	19.8	2.4	29.0	.6
Ann	72.2	42.2	57.2	110	Jul 1982	27	83.7	Jul 1980	-11	Dec 1983	29	25.6	Dec 1983	4209	1386	7.4	70.6	318.6	9.5	131.8	1.6

\+ 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: 1964-2001

(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	.49	.39	1.61	1999	29	1.71	1999	.00+	1986
Feb	.28	.19	.67	1990	20	1.09	1983	.00+	1999
Mar	.89	.75	1.44	2000	23	4.10	2000	.00+	1997
Apr	1.13	.60	2.10	1999	13	6.39	1999	.00+	1996
May	2.47	2.47	4.20	1988	31	6.13	1988	.14	1998
Jun	2.18	2.02	2.78	1989	13	4.55	1992	.15	1998
Jul	2.96	2.93	3.00	1982	30	6.72	1994	.02	1989
Aug	3.20	2.98	3.13	1987	9	10.11	1981	.12	1983
Sep	1.94	1.49	4.50	1990	28	7.95	1990	.00	2000
Oct	1.48	.99	2.99	2000	23	6.87	2000	.00+	1992
Nov	.66	.58	1.29	1986	4	1.83	1986	.00+	1999
Dec	.50	.41	1.06	2000	26	2.72	1991	.00+	1996
Ann	18.18	17.30	4.50	Sep 1990	28	10.11	Aug 1981	.00+	Sep 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.4	1.1	.2	@
Feb	3.2	1.2	@	.0
Mar	4.7	2.5	.7	.1
Apr	4.7	2.6	.8	.3
May	6.8	4.9	1.9	.6
Jun	6.9	4.3	1.4	.5
Jul	6.8	4.8	1.8	.7
Aug	8.7	5.5	1.9	.9
Sep	5.6	3.2	1.2	.5
Oct	3.7	2.0	.8	.4
Nov	3.3	1.8	.4	.1
Dec	3.2	1.6	.2	@
Ann	61.0	35.5	11.3	4.1

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	.04	.11	.19	.27	.36	.47	.60	.78	1.09	1.39
Feb	.00	.00	.02	.07	.12	.18	.25	.35	.48	.70	.92
Mar	.00	.06	.19	.33	.48	.65	.85	1.10	1.45	2.04	2.62
Apr	.00	.04	.17	.32	.51	.73	1.01	1.36	1.87	2.74	3.62
May	.44	.65	1.01	1.35	1.70	2.07	2.50	3.01	3.70	4.81	5.87
Jun	.45	.65	.97	1.27	1.56	1.87	2.23	2.66	3.22	4.12	4.97
Jul	.39	.63	1.05	1.47	1.90	2.38	2.93	3.61	4.53	6.04	7.50
Aug	.38	.63	1.08	1.53	2.00	2.53	3.14	3.90	4.94	6.64	8.29
Sep	.04	.14	.38	.65	.96	1.32	1.77	2.35	3.16	4.55	5.94
Oct	.00	.10	.34	.56	.81	1.09	1.42	1.83	2.40	3.36	4.29
Nov	.00	.05	.16	.27	.38	.50	.64	.82	1.06	1.46	1.85
Dec	.00	.00	.04	.12	.21	.31	.44	.60	.84	1.23	1.63
Ann	11.79	12.98	14.53	15.73	16.80	17.84	18.93	20.14	21.61	23.78	25.67

+ 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: 1964-2001
(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	3.0	3.0	#	0
Feb	1.3	.0	#	0
Mar	.7	.0	#	0
Apr	.1	.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
Nov	1.9	.0	#	0
Dec	2.5	.0	#	0
Ann	9.5	3.0	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	15.5	1999	29	15.5	1999	5	1999	29	#+	2000
Feb	6.0	1983	1	14.0	1983	2	1996	2	#+	1998
Mar	3.0	1999	18	3.5+	1999	5	1994	8	#+	1999
Apr	1.5	1983	7	1.5	1983	#+	1997	13	#+	1997
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	3	1991	31	#	1991
Nov	12.0	2000	7	13.5	1980	8	2000	7	#+	2000
Dec	12.0	2000	26	14.8	1997	14	2000	27	2+	2000
Ann	15.5	Jan 1999	29	15.5	Jan 1999	14	Dec 2000	27	2+	Dec 2000

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.0	.8	.4	.2	.1
Feb	.7	.3	.2	.1	.0
Mar	.3	.2	.1	.0	.0
Apr	.1	.1	.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	.3	.2	.2	.2	.1
Dec	.6	.5	.2	.2	.1
Ann	3.0	2.1	1.1	.7	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	-9.9	-9.9	-9.9	-9.9
May	-9.9	-9.9	-9.9	-9.9
Jun	-9.9	-9.9	-9.9	-9.9
Jul	-9.9	-9.9	-9.9	-9.9
Aug	-9.9	-9.9	-9.9	-9.9
Sep	-9.9	-9.9	-9.9	-9.9
Oct	-9.9	-9.9	-9.9	-9.9
Nov	-9.9	-9.9	-9.9	-9.9
Dec	-9.9	-9.9	-9.9	-9.9
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	5/12	5/07	5/04	5/02	4/29	4/26	4/24	4/20	4/16
32	4/28	4/23	4/19	4/16	4/13	4/10	4/07	4/04	3/30
28	4/21	4/16	4/12	4/09	4/07	4/04	4/01	3/28	3/23
24	4/12	4/06	4/02	3/29	3/26	3/22	3/18	3/14	3/08
20	4/07	3/30	3/25	3/20	3/16	3/12	3/07	3/02	2/22
16	3/30	3/21	3/15	3/10	3/05	2/28	2/22	2/16	2/07

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	9/27	9/30	10/03	10/05	10/07	10/09	10/11	10/14	10/17
32	10/02	10/07	10/10	10/14	10/16	10/19	10/22	10/26	10/31
28	10/14	10/18	10/22	10/24	10/27	10/30	11/02	11/05	11/10
24	10/23	10/27	10/31	11/03	11/06	11/09	11/12	11/15	11/20
20	11/01	11/06	11/09	11/12	11/15	11/17	11/20	11/24	11/28
16	11/07	11/14	11/18	11/22	11/26	11/30	12/04	12/08	12/15

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	177	172	167	164	160	157	153	149	143
32	204	198	193	189	186	182	178	173	167
28	222	215	210	207	203	199	195	190	184
24	250	241	235	230	225	220	214	208	199
20	269	260	254	248	243	238	233	226	218
16	292	283	276	271	266	261	255	249	240

***** 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	903	678	508	274	78	7	0	1	38	235	611	876	4209
60	748	542	355	162	27	0	0	0	9	114	464	721	3142
57	656	464	269	110	11	0	0	0	3	64	381	628	2586
55	595	412	215	81	6	0	0	0	0	42	328	566	2245
50	448	292	107	30	1	0	0	0	0	11	210	416	1515
32	73	38	1	0	0	0	0	0	0	0	12	45	169

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	193	284	516	736	1042	1293	1450	1381	1117	797	392	192	9393
55	2	13	17	127	335	603	737	668	427	126	17	0	3072
57	1	9	9	96	278	543	675	606	370	86	10	0	2683
60	0	4	2	58	201	453	582	513	286	43	4	0	2146
65	0	0	0	20	97	309	427	359	165	9	0	0	1386
70	0	0	0	5	34	183	274	212	79	1	0	0	788

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	45	131	261	501	805	1059	1212	1153	886	546	202	66	45	176	437	938	1743	2802	4014	5167	6053	6599	6801	6867
45	14	63	156	363	650	909	1057	998	737	396	107	27	14	77	233	596	1246	2155	3212	4210	4947	5343	5450	5477
50	0	24	72	235	497	759	902	843	590	251	45	2	0	24	96	331	828	1587	2489	3332	3922	4173	4218	4220
55	0	4	28	132	347	610	747	688	442	133	14	0	0	4	32	164	511	1121	1868	2556	2998	3131	3145	3145
60	0	0	8	60	213	460	592	533	308	53	1	0	0	0	8	68	281	741	1333	1866	2174	2227	2228	2228
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	83	142	234	345	509	685	798	761	570	383	194	104	83	225	459	804	1313	1998	2796	3557	4127	4510	4704	4808

(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