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: LIVINGSTON 2 NNE, TX **COOP ID: 415271**

Climate Division: TX 4 **NWS Call Sign:** **Elevation: 178 Feet** **Lat: 30˚44N** **Lon: 94˚56W**

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	59.3	35.8	47.6	86	1952	18	53.4	1998	5	1962	12	38.6	1978	550	0	.0	.0	24.0	.4	13.5	.0
Feb	63.9	38.4	51.2	92	1948	29	58.6	1999	4	1951	2	40.5	1978	395	6	.0	.1	24.2	.3	9.4	.0
Mar	71.3	45.5	58.4	95	1946	30	64.2	1974	18+	1980	3	52.7	1996	228	24	.0	.0	30.1	@	3.8	.0
Apr	77.6	52.2	64.9	95	1950	2	70.2	1981	25	1987	1	60.1	1983	86	82	.0	.2	30.0	.0	.5	.0
May	84.3	61.3	72.8	100	1996	30	78.9	1996	38	1965	1	67.9	1976	10	251	@	5.1	31.0	.0	.0	.0
Jun	90.4	67.8	79.1	104	1980	28	84.8	1998	47	1984	1	75.7	1976	0	422	.6	19.1	30.0	.0	.0	.0
Jul	94.1	70.5	82.3	111	1980	18	86.9	1998	51	1967	16	79.1	1972	0	536	2.9	27.6	31.0	.0	.0	.0
Aug	94.2	69.4	81.8	111	1951	6	85.1	1993	50	1967	14	78.2	1992	0	521	2.9	27.2	31.0	.0	.0	.0
Sep	88.7	64.4	76.6	111	2000	5	81.0	1980	36	1967	30	71.9	1974	1	347	.5	15.5	30.0	.0	.0	.0
Oct	80.2	53.7	67.0	100	1953	1	70.9	1984	25	1993	31	58.0	1976	62	122	.0	2.3	31.0	.0	.3	.0
Nov	69.6	45.0	57.3	91	1947	1	64.0	1973	17+	1976	30	49.0	1976	268	36	.0	.0	28.8	.0	4.9	.0
Dec	61.8	37.4	49.6	88	1964	31	59.8	1984	3+	1989	24	40.5	1989	486	9	.0	.0	26.1	.3	12.2	.0
Ann	78.0	53.5	65.7	111+	Sep 2000	5	86.9	Jul 1998	3+	Dec 1989	24	38.6	Jan 1978	2086	2356	6.9	97.1	347.2	1.0	44.6	.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: 1937-2001

(3) Derived from 1971-2000 serially complete daily data

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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	4.64	4.35	4.06	1998	7	13.09	1974	.57	1971
Feb	3.47	2.55	4.25	1945	5	7.30	1992	.92	1999
Mar	3.89	3.79	5.57	1990	29	11.43	1990	.51	1978
Apr	3.92	3.54	6.58	1953	29	10.27	1991	.24	1987
May	5.54	5.30	5.94	1983	21	13.54	1983	.23	1998
Jun	5.20	4.17	6.35	1981	7	16.12	1981	.29	1971
Jul	3.55	3.27	6.40	1954	30	9.87	1979	.25	1993
Aug	3.41	2.52	9.80	1957	10	11.16	1983	.45	1999
Sep	4.73	4.92	7.62	1996	27	9.91	1996	.47	1995
Oct	3.82	2.97	10.47	1994	17	16.76	1994	.19	1987
Nov	4.76	4.65	10.20	1940	24	12.71	1998	.75	1988
Dec	4.92	4.68	5.46	1995	18	9.19	1995	.97	1980
Ann	51.85	52.66	10.47	Oct 1994	17	16.76	Oct 1994	.19	Oct 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.8	6.8	3.3	1.5
Feb	7.4	5.1	2.4	1.2
Mar	8.1	6.1	2.6	1.0
Apr	6.3	4.7	2.8	1.3
May	8.5	6.3	3.6	1.9
Jun	7.9	6.2	3.1	1.9
Jul	7.8	5.7	2.4	1.0
Aug	6.9	4.9	2.3	1.1
Sep	7.0	5.5	2.6	1.6
Oct	6.6	5.1	2.4	1.2
Nov	7.5	6.1	2.8	1.6
Dec	8.7	6.5	3.3	1.6
Ann	92.5	69.0	33.6	16.9

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	.77	1.17	1.85	2.48	3.14	3.85	4.67	5.67	6.99	9.15	11.21
Feb	.90	1.23	1.73	2.18	2.61	3.07	3.59	4.20	4.99	6.24	7.41
Mar	.99	1.36	1.93	2.43	2.92	3.44	4.02	4.70	5.60	7.01	8.33
Apr	.45	.75	1.30	1.85	2.43	3.08	3.84	4.79	6.07	8.18	10.24
May	1.09	1.59	2.40	3.15	3.91	4.72	5.64	6.75	8.21	10.57	12.80
Jun	.66	1.08	1.82	2.54	3.31	4.15	5.14	6.35	8.00	10.69	13.30
Jul	.76	1.09	1.61	2.08	2.55	3.06	3.63	4.31	5.21	6.64	8.00
Aug	.64	.94	1.44	1.90	2.37	2.88	3.46	4.15	5.07	6.56	7.97
Sep	.95	1.38	2.07	2.71	3.35	4.04	4.82	5.75	6.99	8.97	10.86
Oct	.27	.51	1.00	1.52	2.11	2.79	3.60	4.64	6.08	8.51	10.92
Nov	1.20	1.65	2.34	2.96	3.56	4.20	4.91	5.76	6.86	8.61	10.25
Dec	1.95	2.40	3.05	3.58	4.08	4.60	5.15	5.79	6.61	7.85	8.99
Ann	33.83	37.20	41.59	44.96	47.98	50.93	53.99	57.40	61.57	67.68	73.00

\+ 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: 1937-2001
(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	.6	.0	#	0	2.5	1973	11	4.0+	1982	3	1973	11	#+	1992	.3	.3	.0	.0	.0	.1	@	.0	.0
Feb	.3	.0	#	0	2.0	1988	6	2.5	1988	2	1980	2	#+	1980	.2	.1	.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
Apr	.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
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	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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	#	.0	#	0	#	1983	27	#	1983	#	1990	24	#	1990	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	.9	.0	N/A	N/A	2.5	Jan 1973	11	4.0+	Jan 1982	3	Jan 1973	11	#+	Jan 1992	.5	.4	.0	.0	.0	.1	@	.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	4/18	4/12	4/08	4/04	4/01	3/29	3/25	3/21	3/15
32	4/05	3/29	3/25	3/21	3/17	3/13	3/09	3/04	2/26
28	3/22	3/14	3/08	3/03	2/27	2/22	2/17	2/12	2/04
24	3/08	2/25	2/18	2/11	2/05	1/30	1/23	1/15	1/03
20	2/21	2/09	2/01	1/24	1/16	1/06	12/19	0/00	0/00
16	1/22	1/11	12/30	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	10/13	10/20	10/26	10/30	11/03	11/07	11/11	11/16	11/23
32	10/27	11/02	11/06	11/10	11/13	11/17	11/20	11/24	11/30
28	11/06	11/14	11/20	11/25	11/30	12/04	12/09	12/15	12/23
24	11/22	12/01	12/08	12/14	12/19	12/25	12/31	1/07	1/18
20	12/10	12/20	12/28	1/05	1/13	1/24	0/00	0/00	0/00
16	12/29	1/09	1/22	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	243	233	226	221	215	210	204	197	187
32	265	257	251	246	241	236	231	225	216
28	308	297	289	282	275	269	262	254	243
24	>365	346	333	324	315	307	299	289	276
20	>365	>365	>365	>365	>365	340	328	318	306
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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	550	395	228	86	10	0	0	0	1	62	268	486	2086
60	409	269	123	29	1	0	0	0	0	20	168	346	1365
57	331	203	77	12	0	0	0	0	0	9	120	271	1023
55	284	166	52	6	0	0	0	0	0	5	93	227	833
50	188	90	16	0	0	0	0	0	0	1	42	138	475
32	13	1	0	0	0	0	0	0	0	0	0	4	18

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	495	536	819	986	1264	1412	1559	1544	1336	1084	758	549	12342
55	53	57	158	302	551	722	846	831	646	376	161	60	4763
57	38	38	120	248	489	662	784	769	586	318	128	42	4222
60	23	20	74	175	397	572	691	676	496	236	86	24	3470
65	0	6	24	82	251	422	536	521	347	122	36	9	2356
70	0	0	5	26	129	273	381	366	208	46	13	0	1447

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	293	366	591	762	1037	1190	1330	1313	1111	851	534	337	293	659	1250	2012	3049	4239	5569	6882	7993	8844	9378	9715
45	191	251	442	612	882	1040	1175	1158	961	696	398	221	191	442	884	1496	2378	3418	4593	5751	6712	7408	7806	8027
50	108	151	306	465	727	890	1020	1003	811	542	274	132	108	259	565	1030	1757	2647	3667	4670	5481	6023	6297	6429
55	57	84	188	322	572	740	865	848	661	392	172	74	57	141	329	651	1223	1963	2828	3676	4337	4729	4901	4975
60	27	42	100	199	418	590	710	693	511	256	97	38	27	69	169	368	786	1376	2086	2779	3290	3546	3643	3681
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	196	243	390	510	708	816	897	872	752	569	353	227	196	439	829	1339	2047	2863	3760	4632	5384	5953	6306	6533

(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.
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