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: CRANE 2 E, TX **COOP ID: 412082**

Climate Division: TX 5 **NWS Call Sign:** **Elevation: 2,630 Feet** **Lat: 31˚24N** **Lon: 102˚19W**

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	60.1	30.6	45.4	88	1974	22	49.9	2000	-1+	1930	23	40.6	1985	609	0	.0	.0	26.0	.4	16.5	.0
Feb	65.6	35.2	50.4	91+	1986	20	57.4	1976	-6	1985	2	45.3	1989	410	1	.0	.1	25.8	.3	9.5	@
Mar	73.4	43.0	58.2	96	1963	30	66.8	1974	12	1980	2	51.2	1987	236	25	.0	1.3	30.6	@	3.4	.0
Apr	81.4	52.2	66.8	102	1972	13	72.6	1978	25+	1973	9	60.7	1997	64	117	.1	7.2	29.9	.0	.6	.0
May	88.6	61.5	75.1	110	2000	25	81.7	1996	31	1929	2	70.5	1976	12	324	2.6	16.6	31.0	.0	.0	.0
Jun	94.0	69.1	81.6	115	1994	27	87.3	1980	46+	1970	3	77.6	1987	0	497	6.9	24.7	30.0	.0	.0	.0
Jul	95.3	71.9	83.6	111	1989	2	87.7	1980	57	1975	14	78.5	1976	0	577	7.7	27.6	31.0	.0	.0	.0
Aug	94.1	70.4	82.3	110+	1969	18	87.0	1977	53	1930	30	76.3	1971	0	535	4.4	26.0	31.0	.0	.0	.0
Sep	87.9	63.5	75.7	109	1930	12	83.7	1977	37	1989	27	69.3	1974	6	327	1.3	16.1	30.0	.0	.0	.0
Oct	79.4	53.2	66.3	103	1977	1	70.7	1979	26	1993	30	60.7	1976	61	100	.1	3.8	30.7	.0	.4	.0
Nov	68.4	40.4	54.4	91	1988	4	58.5	1999	8	2001	28	48.8	1976	329	10	.0	@	28.3	@	5.5	.0
Dec	60.6	31.6	46.1	86	1973	31	52.3	1977	3	1989	23	40.4	1983	585	0	.0	.0	26.9	.4	14.6	.0
Ann	79.1	51.9	65.5	115	Jun 1994	27	87.7	Jul 1980	-6	Feb 1985	2	40.4	Dec 1983	2312	2513	23.1	123.4	351.2	1.1	50.5	@

\+ 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: 1928-2001

(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	.57	.48	.97	1991	18	2.15	1991	.00+	1996
Feb	.59	.32	2.00	1997	19	2.60	1997	.00+	2000
Mar	.34	.19	1.25	1973	10	1.41	1999	.00+	1991
Apr	.84	.52	2.50	1969	12	3.63	1981	.00+	1998
May	1.86	1.94	3.03	1999	24	4.95	1992	.00	1996
Jun	1.71	1.50	2.51	1997	8	5.93	1986	.00+	1998
Jul	1.48	.91	4.33	1973	18	5.88	1976	.00+	1995
Aug	2.02	1.03	5.55	1986	11	10.00	1986	.00	1973
Sep	2.95	1.96	5.31	1980	10	16.10	1980	.05	1983
Oct	1.64	.99	4.10	1986	4	7.63	1986	.00	1997
Nov	.68	.36	2.82	2001	15	5.30	1996	.00+	1999
Dec	.70	.56	1.71	1991	23	3.69	1991	.00+	1996
Ann	15.38	15.27	5.55	Aug 1986	11	16.10	Sep 1980	.00+	Feb 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.2	1.5	.3	.0
Feb	2.5	1.8	.3	.1
Mar	2.1	.9	.2	@
Apr	2.4	1.6	.5	.3
May	4.7	3.4	1.2	.5
Jun	3.9	2.8	1.1	.5
Jul	3.3	2.3	.9	.4
Aug	4.0	3.2	1.2	.4
Sep	4.9	3.8	1.7	.9
Oct	3.7	3.0	1.2	.4
Nov	2.3	1.4	.4	.1
Dec	2.7	1.7	.4	.1
Ann	39.7	27.4	9.4	3.7

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	.10	.20	.30	.41	.54	.71	.93	1.32	1.69
Feb	.00	.00	.07	.17	.28	.40	.55	.74	1.00	1.43	1.86
Mar	.00	.00	.00	.06	.13	.20	.30	.42	.59	.89	1.18
Apr	.00	.00	.13	.26	.40	.57	.77	1.03	1.39	2.00	2.60
May	.05	.17	.42	.68	.98	1.32	1.74	2.26	3.00	4.24	5.48
Jun	.00	.15	.44	.70	.99	1.30	1.68	2.12	2.75	3.78	4.78
Jul	.00	.00	.13	.32	.55	.85	1.24	1.75	2.48	3.78	5.09
Aug	.02	.11	.33	.59	.91	1.30	1.78	2.41	3.32	4.88	6.47
Sep	.18	.35	.71	1.11	1.57	2.10	2.74	3.57	4.72	6.68	8.64
Oct	.01	.07	.22	.43	.68	1.00	1.40	1.93	2.71	4.07	5.46
Nov	.00	.00	.00	.07	.20	.36	.56	.82	1.19	1.84	2.49
Dec	.00	.00	.02	.11	.23	.38	.57	.83	1.20	1.85	2.52
Ann	6.81	8.19	10.09	11.65	13.10	14.56	16.13	17.92	20.19	23.62	26.73

+ 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: 1928-2001
(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	1.4	.0	#	0
Feb	#	.0	0	0
Mar	.1	.0	0	0
Apr	#	.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
Nov	.7	.0	0	0
Dec	.9	.0	#	0
Ann	3.1	.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	6.5	1986	7	6.5	1986	6	1978	21	#	1978
Feb	#	1977	26	#+	1977	0	0	0	0	0
Mar	2.8	1989	5	2.8	1989	0	0	0	0	0
Apr	#	1983	7	#	1983	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	#	1991	31	#+	1991	0	0	0	0	0
Nov	11.5	1980	16	13.5	1980	0	0	0	0	0
Dec	6.0	1998	11	6.0	1998	6	1998	11	#+	1998
Ann	11.5	Nov 1980	16	13.5	Nov 1980	6+	Dec 1998	11	#+	Dec 1998

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.4	.3	.1	.1	.0
Feb	.0	.0	.0	.0	.0
Mar	.1	.1	.0	.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	.1	.1	.1	.1	.1
Dec	.2	.2	.1	.1	.0
Ann	.8	.7	.3	.3	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	@	@	.0	.0
Feb	.0	.0	.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
Ann	.1	@	@	.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	4/20	4/14	4/10	4/06	4/02	3/30	3/26	3/22	3/16
32	4/13	4/06	4/01	3/27	3/23	3/18	3/14	3/08	3/01
28	4/02	3/24	3/18	3/12	3/08	3/03	2/25	2/19	2/10
24	3/17	3/09	3/02	2/25	2/20	2/15	2/10	2/04	1/26
20	3/09	2/25	2/17	2/10	2/03	1/27	1/19	1/10	12/27
16	2/22	2/11	2/03	1/26	1/19	1/12	1/03	12/21	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	10/15	10/21	10/26	10/29	11/02	11/06	11/09	11/14	11/20
32	10/24	10/30	11/03	11/07	11/11	11/14	11/18	11/22	11/29
28	11/05	11/10	11/15	11/18	11/21	11/24	11/28	12/02	12/07
24	11/15	11/22	11/28	12/02	12/07	12/11	12/16	12/21	12/29
20	11/25	12/04	12/11	12/17	12/23	12/28	1/04	1/12	1/28
16	12/01	12/14	12/23	12/31	1/08	1/16	1/27	2/16	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	237	229	223	218	213	208	203	197	189
32	261	251	244	238	232	227	221	214	204
28	289	278	271	264	258	252	245	238	227
24	320	309	301	295	289	283	276	269	258
20	>365	>365	344	331	320	311	302	292	279
16	>365	>365	>365	>365	349	336	325	316	304

***** 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	609	410	236	64	12	0	0	0	6	61	329	585	2312
60	454	278	130	20	2	0	0	0	0	17	206	433	1540
57	365	207	83	8	0	0	0	0	0	6	146	346	1161
55	308	164	58	3	0	0	0	0	0	3	113	290	939
50	179	82	19	0	0	0	0	0	0	0	51	169	500
32	1	0	0	0	0	0	0	0	0	0	0	1	2

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	415	516	812	1043	1335	1487	1600	1558	1311	1063	672	439	12251
55	9	36	157	357	622	797	887	845	621	352	94	15	4792
57	4	22	120	301	560	737	825	783	561	294	68	9	4284
60	0	10	74	223	469	647	732	690	471	211	37	2	3566
65	0	1	25	117	324	497	577	535	327	100	10	0	2513
70	0	0	6	48	199	349	422	381	199	34	1	0	1639

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	263	378	613	825	1103	1261	1358	1317	1093	852	485	287	263	641	1254	2079	3182	4443	5801	7118	8211	9063	9548	9835
45	155	251	466	676	948	1111	1203	1162	943	697	349	169	155	406	872	1548	2496	3607	4810	5972	6915	7612	7961	8130
50	70	147	321	530	793	961	1048	1007	793	543	227	82	70	217	538	1068	1861	2822	3870	4877	5670	6213	6440	6522
55	25	70	195	385	638	811	893	852	644	396	129	29	25	95	290	675	1313	2124	3017	3869	4513	4909	5038	5067
60	2	25	99	254	483	661	738	697	498	258	55	3	2	27	126	380	863	1524	2262	2959	3457	3715	3770	3773
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	210	275	414	543	714	822	893	863	724	556	324	221	210	485	899	1442	2156	2978	3871	4734	5458	6014	6338	6559

(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