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: OZONA 1 SSW, TX **COOP ID: 416734**

Climate Division: TX 6 **NWS Call Sign:** **Elevation: 2,340 Feet** **Lat: 30˚41N** **Lon: 101˚12W**

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	58.9	27.7	43.3	87	1969	9	48.8	1998	-4	1949	31	36.2	1979	673	0	.0	.0	24.5	.9	20.0	@
Feb	63.9	32.0	48.0	93	1986	21	54.3	1976	-8	1951	2	40.9	1978	478	0	.0	.1	24.9	.5	13.0	.0
Mar	71.9	39.8	55.9	97+	1951	9	61.5	1974	8	1980	2	50.0	1987	291	6	.0	.5	29.9	@	6.3	.0
Apr	79.3	48.5	63.9	102+	1987	19	69.5	1978	19	1973	9	58.2	1973	103	69	.2	3.3	29.9	.0	1.3	.0
May	85.9	58.7	72.3	107	1953	22	79.5	2000	35+	1979	12	66.9	1976	26	252	.9	10.0	31.0	.0	.0	.0
Jun	90.3	65.7	78.0	108	1960	17	83.6	1990	45	1979	12	74.2	1995	0	391	1.4	17.4	30.0	.0	.0	.0
Jul	93.0	68.0	80.5	108	1954	27	86.3	1998	50	1985	1	74.4	1976	0	479	2.5	24.2	31.0	.0	.0	.0
Aug	92.3	66.9	79.6	109+	1969	18	84.1	1977	51+	1989	9	71.8	1971	0	453	1.9	23.5	31.0	.0	.0	.0
Sep	86.7	60.8	73.8	107+	2000	5	81.4	1977	34	1989	25	66.0	1974	14	278	.6	11.9	30.0	.0	.0	.0
Oct	78.0	50.0	64.0	98+	1977	1	67.4	1979	20+	1993	31	56.9	1976	98	68	.0	1.6	30.7	.0	1.0	.0
Nov	67.0	38.3	52.7	89	1950	19	57.3	1985	8	1950	11	46.9	1976	374	4	.0	.0	28.4	@	8.1	.0
Dec	59.7	29.3	44.5	90	1954	4	49.4	1977	-2	1983	25	35.8	1983	635	0	.0	.0	26.0	.6	18.1	@
Ann	77.2	48.8	63.0	109+	Aug 1969	18	86.3	Jul 1998	-8	Feb 1951	2	35.8	Dec 1983	2692	2000	7.5	92.5	347.3	2.0	67.8	.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: 1948-2001

(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	.70	.47	1.72	1961	7	2.67	1991	.00+	1999
Feb	.78	.34	2.10	1997	20	2.90	1989	.00+	1994
Mar	1.06	1.04	2.35	1999	27	3.67	1999	.00+	1991
Apr	1.36	.89	4.04	1971	16	5.74	1981	.00	1998
May	2.44	2.16	3.10	1987	30	5.57	1992	.30	1998
Jun	1.94	1.67	4.26	1954	28	5.90	2000	.00	1990
Jul	1.57	.65	2.82	1988	11	9.07	1976	.00+	1999
Aug	2.27	1.31	3.65	1971	15	10.43	1971	.00+	2000
Sep	2.92	1.97	4.72	1988	19	11.39	1974	.00+	1999
Oct	2.25	2.00	5.80	1959	4	7.41	1986	.00+	1992
Nov	.99	.72	4.55	1975	2	4.55	1975	.00+	1999
Dec	.67	.41	1.51	1991	20	3.52	1991	.00+	1996
Ann	18.95	17.47	5.80	Oct 1959	4	11.39	Sep 1974	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.6	1.7	.6	.2
Feb	2.6	1.6	.6	.2
Mar	3.2	2.1	.6	.3
Apr	2.9	2.3	.9	.3
May	4.9	3.7	1.6	.7
Jun	4.1	3.3	1.1	.6
Jul	3.4	2.6	1.0	.4
Aug	3.9	3.3	1.7	.7
Sep	4.2	3.4	1.9	.9
Oct	4.2	3.2	1.4	.8
Nov	2.4	1.9	.7	.2
Dec	2.5	1.6	.5	.1
Ann	40.9	30.7	12.6	5.4

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	.07	.21	.35	.50	.68	.89	1.18	1.65	2.13
Feb	.00	.00	.03	.11	.23	.39	.60	.89	1.32	2.08	2.87
Mar	.00	.00	.07	.27	.47	.70	.98	1.32	1.80	2.59	3.41
Apr	.02	.09	.25	.44	.65	.91	1.23	1.64	2.22	3.22	4.22
May	.49	.72	1.07	1.40	1.73	2.09	2.49	2.97	3.61	4.63	5.59
Jun	.10	.27	.56	.85	1.15	1.49	1.89	2.39	3.07	4.19	5.29
Jul	.00	.00	.00	.15	.39	.73	1.18	1.79	2.70	4.33	6.00
Aug	.00	.06	.29	.59	.96	1.41	1.97	2.71	3.77	5.62	7.49
Sep	.00	.10	.44	.85	1.33	1.91	2.62	3.53	4.83	7.06	9.31
Oct	.00	.11	.41	.74	1.11	1.55	2.08	2.74	3.68	5.28	6.87
Nov	.00	.00	.00	.15	.43	.68	.97	1.30	1.75	2.49	3.18
Dec	.00	.00	.00	.00	.13	.33	.55	.83	1.21	1.86	2.49
Ann	11.01	12.43	14.30	15.77	17.11	18.42	19.80	21.35	23.26	26.09	28.59

\+ 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: 1948-2001
(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	.0	0	0	1.0	1972	4	1.0	1972	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Feb	.1	.0	#	0	1.0	1972	1	1.0	1972	1	1972	1	#	1972	.1	.1	.0	.0	.0	@	.0	.0	.0
Mar	#	.0	0	0	#	1987	30	#	1987	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	.1	.0	0	0	2.0	1993	30	2.0	1993	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	0	0	4.0	1980	16	4.0	1980	0	0	0	0	0	.1	.1	.1	.0	.0	.0	.0	.0	.0
Dec	#	.0	0	0	#	1989	22	#+	1989	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	.6	.0	N/A	N/A	4.0	Nov 1980	16	4.0	Nov 1980	1	Feb 1972	1	#	Feb 1972	.4	.4	.1	.0	.0	@	.0	.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	4/29	4/23	4/19	4/15	4/11	4/08	4/04	3/31	3/25
32	4/15	4/10	4/07	4/04	4/01	3/29	3/26	3/22	3/17
28	4/09	4/03	3/29	3/26	3/22	3/19	3/15	3/11	3/05
24	3/30	3/21	3/15	3/10	3/05	2/28	2/23	2/17	2/09
20	3/24	3/13	3/05	2/26	2/20	2/13	2/07	1/30	1/18
16	2/28	2/15	2/06	1/29	1/21	1/13	1/03	12/19	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	10/07	10/13	10/17	10/21	10/25	10/28	11/01	11/05	11/11
32	10/16	10/22	10/26	10/30	11/02	11/06	11/09	11/14	11/19
28	10/27	11/02	11/06	11/09	11/12	11/16	11/19	11/23	11/29
24	11/01	11/08	11/12	11/16	11/20	11/24	11/28	12/02	12/09
20	11/07	11/18	11/25	12/02	12/08	12/14	12/21	12/28	1/08
16	11/19	12/02	12/11	12/19	12/28	1/06	1/17	2/06	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	218	211	205	200	196	191	186	180	173
32	236	229	224	219	215	211	206	201	194
28	258	250	244	239	234	230	225	219	210
24	292	281	272	265	259	252	245	237	226
20	338	322	310	300	290	281	271	259	243
16	>365	>365	>365	>365	343	328	317	306	292

***** 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	673	478	291	103	26	0	0	0	14	98	374	635	2692
60	520	344	162	37	7	0	0	0	2	34	241	481	1828
57	434	268	103	16	2	0	0	0	0	14	173	393	1403
55	376	221	72	8	0	0	0	0	0	7	134	336	1154
50	246	126	23	0	0	0	0	0	0	1	62	206	664
32	14	2	0	0	0	0	0	0	0	0	0	5	21

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	364	448	738	956	1249	1381	1502	1475	1254	992	620	393	11372
55	13	24	97	275	536	691	789	762	564	286	64	10	4111
57	8	14	66	222	476	631	727	700	504	231	43	6	3628
60	2	7	32	153	388	541	634	607	416	158	21	1	2960
65	0	0	6	69	252	391	479	453	278	68	4	0	2000
70	0	0	0	23	144	249	330	305	162	20	0	0	1233

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	198	292	538	741	1026	1157	1273	1247	1033	774	419	227	198	490	1028	1769	2795	3952	5225	6472	7505	8279	8698	8925
45	101	180	392	592	871	1007	1118	1092	883	621	287	120	101	281	673	1265	2136	3143	4261	5353	6236	6857	7144	7264
50	42	93	260	446	716	857	963	937	733	469	175	48	42	135	395	841	1557	2414	3377	4314	5047	5516	5691	5739
55	6	36	149	307	561	707	808	782	588	323	90	15	6	42	191	498	1059	1766	2574	3356	3944	4267	4357	4372
60	0	8	69	186	410	557	653	627	440	196	35	0	0	8	77	263	673	1230	1883	2510	2950	3146	3181	3181
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	175	227	367	490	679	783	847	830	691	510	287	185	175	402	769	1259	1938	2721	3568	4398	5089	5599	5886	6071

(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