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: WATER VALLEY, TX **COOP ID: 419499**

Climate Division: TX 6 **NWS Call Sign:** **Elevation: 2,120 Feet** **Lat: 31˚40N** **Lon: 100˚44W**

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	58.1	27.8	43.0	88	2000	20	48.5	1990	3+	1982	12	33.7	1979	684	0	.0	.0	23.0	1.6	22.2	.0
Feb	63.6	31.3	47.5	97	1996	23	54.1	2000	5+	1996	5	39.8	1978	491	0	.0	.2	23.8	1.0	14.6	.0
Mar	71.9	39.2	55.6	97	1971	27	61.7	1974	5	1980	2	49.8	1987	302	9	.0	.8	29.5	.1	6.6	.0
Apr	79.6	47.1	63.4	101	1972	14	69.1	1972	19	1973	9	56.5	1997	126	75	.1	4.7	29.8	.0	1.7	.0
May	86.4	57.2	71.8	112	2000	25	80.5	2000	35+	1979	12	66.3	1976	35	245	1.3	11.6	31.0	.0	.0	.0
Jun	91.0	65.1	78.1	112	1994	28	84.1	1990	46+	1970	4	74.5	1987	1	392	2.7	19.3	30.0	.0	.0	.0
Jul	94.6	68.4	81.5	109+	1994	8	86.7	1998	54	1988	22	74.4	1976	0	511	5.1	26.6	31.0	.0	.0	.0
Aug	93.4	66.9	80.2	106	1986	21	84.7	2000	51+	1992	28	72.7	1971	0	469	4.0	25.1	31.0	.0	.0	.0
Sep	87.2	60.1	73.7	108	2000	6	80.7	1977	33+	2000	27	64.8	1974	16	275	1.0	13.4	30.0	.0	.0	.0
Oct	78.9	49.2	64.1	103	2000	3	68.8	1979	23	1993	31	55.6	1976	102	72	.1	3.6	30.6	.0	1.2	.0
Nov	67.5	36.7	52.1	90	1980	9	57.5	1973	10	1979	30	44.8	1976	395	7	.0	@	27.3	.1	9.5	.0
Dec	59.4	29.2	44.3	85	1995	14	48.2	1991	-4	1989	23	33.6	1983	643	0	.0	.0	24.7	1.3	19.8	@
Ann	77.6	48.2	62.9	112+	May 2000	25	86.7	Jul 1998	-4	Dec 1989	23	33.6	Dec 1983	2795	2055	14.3	105.3	341.7	4.1	75.6	@

\+ 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: 1898-2001

(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	.72	.48	1.65	1984	8	2.33+	1994	.00+	1976
Feb	1.10	.64	3.13	1997	20	4.86	1987	.00+	1999
Mar	1.00	1.00	2.02	1977	27	2.41	1998	.00	1971
Apr	1.54	1.09	3.55	1971	16	4.38	1981	.00+	1998
May	3.16	2.59	2.42	1978	29	7.37	1982	.25	1971
Jun	2.90	2.87	3.06	1989	11	7.58	1982	.44	1994
Jul	1.53	1.02	9.64	1948	5	7.38	1976	.00+	1980
Aug	2.82	2.49	5.35	1986	27	9.30	1986	.00	2000
Sep	3.16	2.44	5.32	1988	19	9.63	1980	.00	2000
Oct	2.72	1.87	4.43	1981	7	9.29	1981	.00	1988
Nov	1.01	.77	2.60	2001	15	2.68	1994	.00+	1999
Dec	1.03	.60	2.15	1987	19	5.36	1991	.00+	1996
Ann	22.69	20.27	9.64	Jul 1948	5	9.63	Sep 1980	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.2	2.0	.5	.1
Feb	3.3	2.1	.6	.2
Mar	3.8	2.3	.6	.1
Apr	3.7	2.5	1.1	.5
May	6.5	5.0	2.5	1.1
Jun	5.3	4.2	2.0	.9
Jul	4.0	3.0	1.0	.4
Aug	4.7	3.6	1.9	.9
Sep	5.1	3.9	2.0	1.1
Oct	4.7	3.2	1.7	.9
Nov	3.3	2.2	.8	.1
Dec	3.3	2.3	.5	.2
Ann	50.9	36.3	15.2	6.5

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	.09	.19	.31	.46	.64	.88	1.21	1.78	2.36
Feb	.00	.00	.14	.31	.50	.72	.99	1.35	1.84	2.69	3.54
Mar	.04	.12	.27	.41	.57	.75	.96	1.23	1.59	2.19	2.79
Apr	.00	.06	.25	.47	.73	1.03	1.40	1.87	2.55	3.70	4.85
May	.61	.90	1.36	1.79	2.22	2.68	3.21	3.85	4.69	6.04	7.32
Jun	.42	.66	1.08	1.48	1.90	2.37	2.90	3.55	4.43	5.85	7.23
Jul	.00	.11	.36	.60	.85	1.14	1.48	1.89	2.47	3.43	4.37
Aug	.08	.27	.65	1.05	1.50	2.02	2.65	3.44	4.55	6.41	8.26
Sep	.09	.32	.75	1.20	1.70	2.28	2.98	3.86	5.08	7.14	9.17
Oct	.07	.24	.60	.98	1.42	1.92	2.54	3.32	4.40	6.25	8.08
Nov	.00	.06	.22	.37	.54	.73	.96	1.24	1.64	2.30	2.95
Dec	.00	.00	.10	.23	.40	.61	.88	1.23	1.73	2.61	3.51
Ann	13.83	15.45	17.57	19.22	20.71	22.17	23.70	25.41	27.51	30.61	33.33

+ 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: 1898-2001
(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	1.5	.0	#	0
Feb	.1	.0	#	0
Mar	#	.0	0	0
Apr	.1	.0	#	0
May	.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	.7	.0	#	0
Dec	.1	.0	#	0
Ann	2.5	.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	7.0	1973	25	10.0	1973	7	1973	25	#+	1997
Feb	2.0	1988	6	2.0+	1988	#	1996	2	#	1996
Mar	#	1978	4	#	1978	0	0	0	0	0
Apr	2.5	1996	6	2.5	1996	3	1996	6	#	1996
May	.0	0	0	.0	0	#	1998	15	#	1998
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	8.0	1980	16	8.5	1980	2	1996	25	#	1996
Dec	1.0	1997	26	1.0	1997	1	1997	26	#+	1997
Ann	8.0	Nov 1980	16	10.0	Jan 1973	7	Jan 1973	25	#+	May 1998

Mean Number of Days (1)

Snow Fall >= Thresholds

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

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.2	.1	@	.0
Feb	.0	.0	.0	.0
Mar	.0	.0	.0	.0
Apr	@	@	.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	@	.0	.0	.0
Ann	.2	.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	4/26	4/22	4/19	4/16	4/13	4/11	4/08	4/05	4/01
32	4/19	4/14	4/11	4/08	4/05	4/03	3/31	3/27	3/23
28	4/11	4/04	3/30	3/26	3/22	3/18	3/14	3/09	3/02
24	3/31	3/22	3/16	3/10	3/05	2/28	2/23	2/16	2/08
20	3/19	3/11	3/05	2/27	2/23	2/18	2/13	2/06	1/29
16	3/05	2/21	2/13	2/06	1/30	1/23	1/15	1/05	12/17

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	10/02	10/09	10/14	10/18	10/21	10/25	10/29	11/03	11/10
32	10/18	10/23	10/27	10/30	11/02	11/05	11/08	11/12	11/17
28	10/27	11/02	11/06	11/09	11/13	11/16	11/20	11/24	11/30
24	11/01	11/07	11/12	11/17	11/21	11/24	11/29	12/04	12/10
20	11/10	11/18	11/24	11/29	12/04	12/09	12/14	12/20	12/30
16	11/22	12/01	12/08	12/14	12/19	12/25	1/01	1/10	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	212	205	199	195	190	186	181	176	169
32	229	222	218	214	210	206	202	198	191
28	258	250	245	240	235	231	226	220	212
24	291	280	272	266	259	253	247	239	228
20	319	306	297	290	283	277	270	262	251
16	>365	>365	349	333	322	313	304	294	280

***** 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	684	491	302	126	35	1	0	0	16	102	395	643	2795
60	533	358	175	55	11	0	0	0	3	39	265	489	1928
57	446	282	116	28	5	0	0	0	0	18	198	402	1495
55	389	235	84	17	2	0	0	0	0	10	159	344	1240
50	260	139	29	3	0	0	0	0	0	2	83	215	731
32	19	3	0	0	0	0	0	0	0	0	0	7	29

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	357	436	730	940	1233	1381	1534	1492	1250	993	602	387	11335
55	15	24	100	266	522	691	821	779	560	290	71	11	4150
57	10	15	70	217	462	631	759	717	500	236	50	7	3674
60	3	7	37	154	376	541	666	624	413	164	27	1	3013
65	0	0	9	75	245	392	511	469	275	72	7	0	2055
70	0	0	1	28	143	252	359	320	161	23	0	0	1287

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	184	286	514	726	1016	1172	1314	1271	1039	771	407	212	184	470	984	1710	2726	3898	5212	6483	7522	8293	8700	8912
45	98	178	373	581	861	1022	1159	1116	889	619	278	115	98	276	649	1230	2091	3113	4272	5388	6277	6896	7174	7289
50	44	98	245	436	706	872	1004	961	739	468	171	52	44	142	387	823	1529	2401	3405	4366	5105	5573	5744	5796
55	18	41	136	299	551	722	849	806	593	326	90	17	18	59	195	494	1045	1767	2616	3422	4015	4341	4431	4448
60	0	12	63	181	400	572	694	651	447	197	37	0	0	12	75	256	656	1228	1922	2573	3020	3217	3254	3254
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	174	231	356	477	660	775	860	833	686	501	291	184	174	405	761	1238	1898	2673	3533	4366	5052	5553	5844	6028

(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