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: MARATHON, TX **COOP ID: 415579**

Climate Division: TX 5 **NWS Call Sign:** **Elevation: 4,055 Feet** **Lat: 30˚13N** **Lon: 103˚14W**

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	62.3	27.4	44.9	88+	1944	26	49.8	1999	-6+	1962	12	39.5	1985	624	0	.0	.0	27.4	.3	20.7	.1
Feb	65.9	30.3	48.1	90	1943	10	55.3	2000	-3	1951	2	42.1	1978	473	0	.0	.0	26.4	.3	15.6	.0
Mar	72.4	37.3	54.9	94	1942	16	60.3	1974	9	1965	4	49.8	1987	318	4	.0	.2	30.8	.0	7.4	.0
Apr	79.4	44.4	61.9	98	1961	22	67.1	1972	19	1987	3	56.1	1973	139	45	.0	2.6	29.8	.0	2.0	.0
May	86.1	53.6	69.9	105	1989	24	76.5	1996	32	1970	3	65.7	1976	35	184	.5	11.3	31.0	.0	.0	.0
Jun	91.0	60.0	75.5	108	1994	28	80.4	1980	40+	1945	2	72.2	1987	1	316	2.3	17.5	30.0	.0	.0	.0
Jul	90.8	62.4	76.6	105	1989	2	81.3	1980	49+	1897	14	73.3	1976	0	360	1.3	19.2	31.0	.0	.0	.0
Aug	89.8	61.7	75.8	110	1943	30	79.6	1977	43	1915	31	70.8	1971	0	333	.4	15.7	31.0	.0	.0	.0
Sep	85.0	56.6	70.8	102+	1977	26	77.0	1977	35	1975	23	66.0	1974	18	191	.2	7.4	30.0	.0	.0	.0
Oct	79.1	46.6	62.9	101	1942	9	70.3	1998	17+	1993	31	54.3	1976	130	63	@	1.9	30.7	.0	1.3	.0
Nov	70.3	35.7	53.0	97	1942	20	60.8	1998	0	1976	29	45.1	1976	370	10	.0	.0	28.7	.1	10.3	@
Dec	64.2	28.6	46.4	94	1942	27	51.4	1984	-3	1953	24	41.0	1976	577	0	.0	.0	27.9	.1	18.5	@
Ann	78.0	45.4	61.7	110	Aug 1943	30	81.3	Jul 1980	-6+	Jan 1962	12	39.5	Jan 1985	2685	1506	4.7	75.8	354.7	.8	75.8	.1

\+ 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: 1897-2001

(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	.37	.23	1.40	1960	5	1.61	1981	.00+	2000
Feb	.36	.11	1.83	1957	16	1.59	1989	.00+	2000
Mar	.24	.10	1.70	1945	31	1.30	1997	.00+	1998
Apr	.61	.43	2.02	1949	23	3.06	1987	.00+	1996
May	1.61	1.31	4.50	1914	17	4.54	1972	.00	1998
Jun	1.91	1.74	2.50	1913	21	5.45	1999	.00	1974
Jul	2.33	2.15	2.75	1955	19	7.74	1991	.00	2000
Aug	2.09	1.45	2.60	1987	23	5.61	1990	.00	2000
Sep	2.46	2.01	3.07	1970	1	9.02	1974	.00	2000
Oct	1.60	1.09	2.96	1986	5	6.00	1981	.00+	1998
Nov	.40	.27	1.25	1914	2	1.46	2000	.00+	1999
Dec	.53	.22	1.57	1986	22	2.48	1986	.00+	2000
Ann	14.51	13.31	4.50	May 1914	17	9.02	Sep 1974	.00+	Dec 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.3	.9	.2	@
Feb	2.7	1.0	.1	.1
Mar	1.6	.8	.1	@
Apr	2.9	1.4	.3	.1
May	4.7	2.9	1.1	.3
Jun	5.9	3.9	1.3	.4
Jul	5.9	3.8	1.5	.7
Aug	6.4	3.8	1.3	.7
Sep	6.6	4.6	1.7	.8
Oct	4.6	2.9	1.0	.4
Nov	2.0	1.2	.2	.1
Dec	2.3	1.2	.3	.1
Ann	47.9	28.4	9.1	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	.00	.07	.15	.24	.35	.48	.65	.95	1.23
Feb	.00	.00	.01	.04	.09	.17	.26	.40	.61	.97	1.35
Mar	.00	.00	.00	.00	.04	.10	.18	.29	.43	.68	.93
Apr	.00	.00	.01	.08	.18	.31	.48	.71	1.05	1.63	2.24
May	.23	.45	.72	.95	1.17	1.41	1.67	1.98	2.39	3.05	3.66
Jun	.23	.47	.79	1.06	1.34	1.63	1.96	2.35	2.87	3.70	4.48
Jul	.12	.34	.69	1.04	1.40	1.81	2.28	2.87	3.68	5.00	6.29
Aug	.07	.23	.53	.83	1.16	1.54	1.99	2.56	3.34	4.66	5.95
Sep	.09	.28	.62	.98	1.37	1.81	2.34	3.01	3.93	5.47	6.99
Oct	.00	.00	.17	.39	.66	.99	1.40	1.93	2.69	4.01	5.34
Nov	.00	.00	.00	.00	.09	.21	.34	.50	.72	1.09	1.44
Dec	.00	.00	.00	.00	.11	.24	.42	.64	.95	1.50	2.05
Ann	5.51	6.86	8.79	10.40	11.93	13.49	15.18	17.14	19.63	23.46	26.96

\+ 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: 1897-2001
(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	.6	.0	#	0
Feb	#	.0	0	0
Mar	#	.0	0	0
Apr	.0	.0	0	0
May	.0	.0	0	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	#	.0	0	0
Nov	.4	.0	#	0
Dec	#	.0	0	0
Ann	1.0	.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	5.0	1981	18	8.0	1981	1	1978	21	#	1978
Feb	#	1987	21	#+	1987	0	0	0	0	0
Mar	#	1987	30	#	1987	0	0	0	0	0
Apr	.0	0	0	.0	0	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	#	2000	22	#	2000
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	#	1980	28	#	1980	0	0	0	0	0
Nov	7.0	1980	16	7.0	1980	1	1976	28	#	1976
Dec	#	1983	28	#+	1983	0	0	0	0	0
Ann	7.0	Nov 1980	16	8.0	Jan 1981	1+	Jan 1978	21	#+	Jun 2000

Mean Number of Days (1)

Snow Fall >= Thresholds

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

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.1	.0	.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	.1	.0	.0	.0
Dec	.0	.0	.0	.0
Ann	.2	.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	5/05	4/28	4/24	4/20	4/16	4/12	4/08	4/04	3/28
32	4/30	4/20	4/12	4/06	3/30	3/24	3/18	3/10	2/28
28	4/15	4/08	4/03	3/30	3/26	3/22	3/17	3/11	3/03
24	4/02	3/25	3/20	3/15	3/10	3/06	3/01	2/23	2/13
20	3/24	3/15	3/08	3/03	2/26	2/21	2/15	2/08	1/28
16	3/08	2/25	2/17	2/10	2/03	1/27	1/20	1/10	12/23

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	10/10	10/16	10/20	10/25	10/29	11/03	11/08	11/16
32	10/12	10/20	10/25	10/30	11/03	11/08	11/12	11/18	11/25
28	10/20	10/27	11/01	11/06	11/10	11/14	11/19	11/25	12/04
24	10/27	11/03	11/09	11/14	11/18	11/23	11/28	12/04	12/13
20	11/08	11/16	11/22	11/28	12/02	12/07	12/13	12/19	12/29
16	11/13	11/24	12/02	12/09	12/16	12/23	12/30	1/09	1/27

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	222	211	204	197	191	185	178	170	160
32	258	244	234	225	217	209	200	190	176
28	269	252	242	235	229	222	216	208	197
24	300	279	268	259	251	243	235	226	213
20	331	309	297	287	279	271	262	252	239
16	>365	>365	330	318	310	302	295	286	275

***** 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	624	473	318	139	35	1	0	0	18	130	370	577	2685
60	469	336	184	59	9	0	0	0	3	57	243	424	1784
57	379	259	120	28	3	0	0	0	0	30	179	334	1332
55	321	210	85	16	1	0	0	0	0	18	143	278	1072
50	188	112	28	2	0	0	0	0	0	4	70	152	556
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	399	451	709	896	1173	1306	1383	1356	1163	957	630	446	10869
55	7	17	81	222	461	616	670	643	473	262	83	10	3545
57	3	10	54	174	401	556	608	581	413	212	59	5	3076
60	0	3	25	115	313	466	515	488	326	145	33	1	2430
65	0	0	4	45	184	316	360	333	191	63	10	0	1506
70	0	0	0	12	89	176	212	188	89	19	2	0	787

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	213	295	497	677	942	1072	1135	1106	931	704	406	258	213	508	1005	1682	2624	3696	4831	5937	6868	7572	7978	8236
45	109	175	348	532	787	922	980	951	781	552	271	140	109	284	632	1164	1951	2873	3853	4804	5585	6137	6408	6548
50	39	85	210	385	632	772	825	796	631	402	159	62	39	124	334	719	1351	2123	2948	3744	4375	4777	4936	4998
55	2	28	102	252	477	622	670	641	483	256	71	14	2	30	132	384	861	1483	2153	2794	3277	3533	3604	3618
60	0	4	35	128	326	472	515	486	338	131	16	0	0	4	39	167	493	965	1480	1966	2304	2435	2451	2451
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	206	260	377	465	600	689	746	733	611	464	308	224	206	466	843	1308	1908	2597	3343	4076	4687	5151	5459	5683

(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