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: MIDLAND 4 ENE, TX **COOP ID: 415891**

Climate Division: TX 4 **NWS Call Sign:** **Elevation: 2,740 Feet** **Lat: 32˚01N** **Lon: 102˚02W**

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	59.5	29.5	44.5	88	1953	14	50.1	2000	-12	1962	11	36.9	1979	635	0	.0	.0	24.4	.9	19.5	.0
Feb	66.0	33.6	49.8	89+	1986	26	57.4	1999	1+	1951	2	42.3	1978	427	1	.0	.0	25.5	.5	13.2	.0
Mar	73.6	40.9	57.3	97	1963	29	63.6	1974	10+	1989	5	51.7	1987	255	14	.0	.6	30.2	.1	5.2	.0
Apr	81.9	48.3	65.1	100+	1996	27	69.7	1978	22	1973	9	58.3	1973	89	91	@	4.7	29.8	.0	1.0	.0
May	89.0	58.2	73.6	108+	2000	24	81.9	1996	28	1979	4	69.2	1976	23	290	1.8	14.1	31.0	.0	@	.0
Jun	94.4	65.2	79.8	116	1994	28	86.4	1998	45	1964	1	75.9	1979	0	445	5.9	23.7	30.0	.0	.0	.0
Jul	95.6	68.0	81.8	110	1989	2	87.1	1998	54	1948	7	74.6	1976	0	521	6.3	27.4	31.0	.0	.0	.0
Aug	93.9	67.0	80.5	107	1969	17	85.5	1999	52+	1979	20	74.5	1971	0	479	3.4	25.3	31.0	.0	.0	.0
Sep	88.2	60.7	74.5	106	1952	1	80.4	1977	37	1989	24	66.0	1974	12	295	1.0	14.3	30.0	.0	.0	.0
Oct	80.1	50.7	65.4	101+	2000	4	69.6	1998	24	1993	30	57.5	1976	82	95	.1	3.0	30.8	.0	.6	.0
Nov	67.9	38.5	53.2	90	1996	20	58.5	1999	11	1976	14	45.6	1976	365	10	.0	@	27.8	.1	7.2	.0
Dec	61.0	30.8	45.9	86	1954	4	51.1	1981	-2	1989	23	38.2	1983	591	0	.0	.0	26.1	.6	17.7	@
Ann	79.3	49.3	64.3	116	Jun 1994	28	87.1	Jul 1998	-12	Jan 1962	11	36.9	Jan 1979	2479	2241	18.5	113.1	347.6	2.2	64.4	@

+ 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: 1947-2001

(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	.60	.50	1.30	1983	1	2.56	1991	.00+	1996
Feb	.49	.27	1.95	1997	20	2.35	1992	.00+	2000
Mar	.42	.28	2.86	1970	6	1.67	1999	.00+	1996
Apr	.77	.58	1.73	1996	5	3.05	1990	.00+	1998
May	1.92	1.30	7.20	1968	9	7.44	1992	.08	1998
Jun	1.44	1.31	2.67	1961	15	4.39	1999	.00+	1994
Jul	1.50	.99	5.00	1961	22	7.64	1991	.00+	1987
Aug	2.17	1.44	4.00	1993	25	6.37	1972	.13+	2000
Sep	2.83	2.29	5.81	1970	1	13.59	1980	.00+	2000
Oct	1.40	.79	3.90	1983	19	6.42	1986	.00+	1992
Nov	.74	.61	1.95	1996	28	2.65	1996	.00+	1999
Dec	.56	.24	1.78	1986	22	3.02	1986	.00+	1999
Ann	14.84	14.06	7.20	May 1968	9	13.59	Sep 1980	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.7	1.5	.5	.1
Feb	2.2	1.3	.2	.1
Mar	1.5	1.0	.3	.1
Apr	2.2	1.6	.6	.2
May	3.4	2.7	1.3	.7
Jun	2.9	2.3	1.1	.5
Jul	3.5	2.6	1.0	.4
Aug	4.5	3.5	1.6	.5
Sep	4.3	3.5	1.8	.9
Oct	2.9	2.2	.9	.5
Nov	1.8	1.3	.5	.2
Dec	2.5	1.4	.4	.1
Ann	34.4	24.9	10.2	4.3

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	.03	.12	.23	.36	.53	.74	1.03	1.53	2.05
Feb	.00	.00	.00	.05	.14	.25	.40	.58	.85	1.31	1.78
Mar	.00	.00	.00	.05	.15	.26	.38	.54	.74	1.09	1.42
Apr	.00	.00	.05	.15	.28	.44	.65	.91	1.30	1.97	2.64
May	.10	.21	.44	.69	.99	1.34	1.76	2.31	3.08	4.39	5.70
Jun	.00	.00	.32	.56	.81	1.09	1.41	1.81	2.33	3.22	4.08
Jul	.00	.00	.15	.36	.60	.91	1.29	1.80	2.52	3.78	5.05
Aug	.17	.31	.59	.89	1.23	1.61	2.06	2.64	3.44	4.77	6.10
Sep	.00	.00	.61	1.16	1.69	2.25	2.87	3.63	4.66	6.26	7.84
Oct	.00	.00	.11	.31	.55	.84	1.21	1.69	2.38	3.55	4.74
Nov	.00	.00	.00	.00	.26	.49	.73	1.00	1.35	1.92	2.44
Dec	.00	.00	.00	.04	.13	.25	.42	.64	.97	1.56	2.16
Ann	7.39	8.64	10.34	11.70	12.96	14.21	15.54	17.06	18.95	21.79	24.34

\+ 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: 1947-2001
(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	1.3	.0	#	0	7.0	1974	23	7.0	1974	2	1987	16	1	1985	.6	.4	.1	.1	.0	.1	.0	.0	.0
Feb	.2	.0	#	0	1.0	1972	1	3.0	1973	1	1975	22	#	1975	.2	.2	.0	.0	.0	.1	.0	.0	.0
Mar	.0	.0	#	0	.5	1983	20	.5	1983	3	1989	4	#	1989	@	.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	.5	1993	30	.5	1993	0	0	0	0	0	@	.0	.0	.0	.0	.0	.0	.0	.0
Nov	#	.0	0	0	#	1986	13	#+	1986	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.7	.0	#	0	7.6	1998	11	7.6	1998	8	1998	12	#+	2000	.2	.2	.1	@	.0	.0	.0	.0	.0
Ann	2.2	.0	N/A	N/A	7.6	Dec 1998	11	7.6	Dec 1998	8	Dec 1998	12	1	Jan 1985	1.0	.8	.2	.1	.0	.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	4/24	4/20	4/16	4/13	4/10	4/07	4/04	4/01	3/27
32	4/17	4/11	4/07	4/03	3/31	3/27	3/24	3/20	3/14
28	4/10	4/03	3/28	3/23	3/19	3/14	3/10	3/04	2/24
24	3/25	3/17	3/10	3/05	2/28	2/23	2/17	2/11	2/02
20	3/17	3/05	2/25	2/18	2/12	2/05	1/29	1/20	1/06
16	2/26	2/16	2/09	2/02	1/27	1/21	1/13	1/04	12/19

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	10/12	10/18	10/22	10/26	10/29	11/01	11/05	11/09	11/15
32	10/22	10/28	11/02	11/05	11/09	11/12	11/16	11/20	11/26
28	11/01	11/07	11/11	11/15	11/18	11/21	11/25	11/29	12/05
24	11/04	11/12	11/18	11/23	11/28	12/03	12/08	12/14	12/23
20	11/25	12/02	12/06	12/11	12/15	12/19	12/23	12/28	1/05
16	11/29	12/12	12/21	12/29	1/06	1/14	1/23	2/05	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	219	213	208	205	201	198	194	189	183
32	245	237	232	227	222	218	213	207	199
28	273	263	256	249	243	238	231	224	214
24	309	297	288	280	273	266	258	249	236
20	>365	337	323	313	305	297	288	278	265
16	>365	>365	>365	363	344	331	319	307	291

***** 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	635	427	255	89	23	0	0	0	12	82	365	591	2479
60	484	298	139	31	6	0	0	0	2	29	238	438	1665
57	398	226	87	13	2	0	0	0	0	13	175	351	1265
55	342	184	60	7	0	0	0	0	0	7	139	294	1033
50	218	101	19	0	0	0	0	0	0	1	69	171	579
32	11	1	0	0	0	0	0	0	0	0	0	2	14

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	399	499	783	992	1291	1434	1544	1502	1273	1036	635	434	11822
55	17	39	130	309	578	744	831	789	583	330	84	13	4447
57	11	25	95	256	517	684	769	727	523	274	60	8	3949
60	4	12	54	183	429	594	676	634	435	197	34	2	3254
65	0	1	14	91	290	445	521	479	295	95	10	0	2241
70	0	0	2	34	176	302	369	327	175	34	1	0	1420

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	203	312	542	753	1048	1205	1310	1273	1046	797	417	232	203	515	1057	1810	2858	4063	5373	6646	7692	8489	8906	9138
45	104	197	396	605	893	1055	1155	1118	896	643	284	124	104	301	697	1302	2195	3250	4405	5523	6419	7062	7346	7470
50	46	106	260	457	738	905	1000	963	746	490	169	52	46	152	412	869	1607	2512	3512	4475	5221	5711	5880	5932
55	13	45	146	318	583	755	845	808	598	344	85	16	13	58	204	522	1105	1860	2705	3513	4111	4455	4540	4556
60	0	14	63	195	433	605	690	653	450	207	30	1	0	14	77	272	705	1310	2000	2653	3103	3310	3340	3341
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	177	245	376	496	680	779	855	833	689	516	282	190	177	422	798	1294	1974	2753	3608	4441	5130	5646	5928	6118

(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