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 INTL AP, TX **COOP ID: 415890**

Climate Division: TX 1 **NWS Call Sign: MAF** **Elevation: 2,862 Feet** **Lat: 31˚57N** **Lon: 102˚11W**

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	56.8	29.6	43.2	84+	1974	21	48.1	1998	-8	1962	11	35.9	1979	680	0	.0	.0	22.6	1.6	19.3	@
Feb	63.0	34.1	48.6	90	1986	19	56.2	1976	-11	1985	2	43.3	1989	472	2	.0	@	23.8	.7	12.0	.1
Mar	70.9	40.8	55.9	95+	1989	12	62.7	1974	9	1980	2	49.5	1987	302	15	.0	.5	29.8	.1	4.9	.0
Apr	78.8	48.6	63.7	101+	1996	27	69.7	1972	20	1973	9	57.1	1973	120	77	.1	3.8	29.5	.0	.9	.0
May	86.8	58.8	72.8	108+	2000	24	81.1	1996	34	1970	1	68.0	1992	18	254	1.8	12.5	31.0	.0	.0	.0
Jun	92.7	66.4	79.6	116	1994	27	86.5	1990	47	1983	1	75.7	1987	0	438	4.8	21.3	30.0	.0	.0	.0
Jul	94.3	69.1	81.7	112	1989	2	86.9	1998	53	1978	23	75.8	1976	0	512	4.6	25.8	31.0	.0	.0	.0
Aug	92.8	67.9	80.4	107	1964	6	85.4	1977	54	1989	8	74.4	1971	0	473	3.3	23.1	31.0	.0	.0	.0
Sep	86.1	61.6	73.9	107	1953	20	82.1	1977	36	1989	24	67.8	1974	19	281	.9	11.9	30.0	.0	.0	.0
Oct	77.4	51.3	64.4	101	2000	2	69.0	1998	24	1993	30	58.4	1976	103	83	.1	2.4	30.6	.0	.3	.0
Nov	65.8	38.8	52.3	90	1996	20	57.0	1981	11	2001	29	46.4	1972	380	4	.0	@	27.0	.1	6.9	.0
Dec	58.4	31.2	44.8	85	1954	4	49.4	1977	-1	1989	23	37.5	1983	622	0	.0	.0	24.2	.9	17.8	@
Ann	77.0	49.9	63.4	116	Jun 1994	27	86.9	Jul 1998	-11	Feb 1985	2	35.9	Jan 1979	2716	2139	15.6	101.3	340.5	3.4	62.1	.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: 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	.53	.42	1.12	1949	10	1.80	1991	.00	1971
Feb	.58	.32	1.22	1965	17	2.55	1992	.00+	2000
Mar	.42	.26	2.16	1970	6	1.73	1973	.00+	1994
Apr	.73	.55	1.62	1979	17	2.15	1981	.00	1998
May	1.79	1.17	4.75	1968	9	7.63	1992	.02	1998
Jun	1.71	1.65	3.07	1993	9	3.50	1991	.01	1990
Jul	1.89	.90	4.10	1961	21	8.50	1991	.00+	1983
Aug	1.77	1.62	2.41	1965	15	4.43	1974	.05	1999
Sep	2.31	1.56	3.29	1986	4	9.70	1980	.00	2000
Oct	1.77	1.06	3.59	1985	17	7.45	1986	.00	1988
Nov	.65	.43	1.77	1978	4	2.31	1984	.00+	1999
Dec	.65	.34	1.24	1979	11	3.30	1986	.00+	1999
Ann	14.80	14.41	4.75	May 1968	9	9.70	Sep 1980	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.9	1.4	.2	.0
Feb	3.4	1.4	.4	@
Mar	2.6	1.2	.2	@
Apr	3.2	1.7	.5	.1
May	6.2	3.2	1.2	.4
Jun	4.9	3.0	1.2	.5
Jul	5.0	2.9	1.3	.5
Aug	5.8	3.4	1.2	.4
Sep	6.0	3.6	1.6	.6
Oct	4.7	2.9	1.1	.5
Nov	3.1	1.4	.3	.2
Dec	3.6	1.6	.4	.1
Ann	52.4	27.7	9.6	3.3

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	.02	.06	.13	.20	.29	.38	.50	.65	.85	1.19	1.52
Feb	.00	.00	.07	.15	.25	.37	.52	.70	.97	1.43	1.88
Mar	.00	.00	.00	.05	.13	.23	.35	.51	.73	1.12	1.50
Apr	.00	.02	.08	.16	.27	.41	.59	.84	1.21	1.88	2.57
May	.12	.24	.46	.71	.98	1.30	1.68	2.17	2.84	3.98	5.10
Jun	.17	.29	.53	.77	1.02	1.32	1.66	2.09	2.68	3.66	4.62
Jul	.00	.06	.29	.55	.86	1.23	1.69	2.28	3.12	4.56	6.01
Aug	.13	.24	.47	.72	.99	1.30	1.67	2.15	2.81	3.92	5.01
Sep	.03	.14	.40	.71	1.08	1.52	2.07	2.78	3.79	5.53	7.29
Oct	.02	.09	.27	.49	.77	1.11	1.54	2.11	2.92	4.34	5.77
Nov	.00	.00	.00	.07	.18	.32	.50	.75	1.12	1.77	2.43
Dec	.00	.00	.08	.17	.28	.41	.57	.78	1.08	1.59	2.11
Ann	6.52	7.84	9.68	11.18	12.58	13.99	15.51	17.24	19.44	22.76	25.77

\+ 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

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	2.1	.8	#	0
Feb	.7	.0	#	0
Mar	.2	.0	#	0
Apr	.1	.0	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
Nov	.5	.0	#	0
Dec	1.4	.3	#	0
Ann	5.0	1.1	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	4.6	1974	23	9.0	1985	7	1974	24	1	1983
Feb	2.3	1988	18	3.9	1973	5	1985	2	#	1994
Mar	3.0	1989	21	5.5	1989	3	1989	5	#	1989
Apr	2.0	1996	5	2.0	1996	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	#	1999
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	.6	1993	30	.6	1993	1	1993	30	#	1993
Nov	5.7	1980	16	7.2	1980	6	1980	17	1	1980
Dec	9.8	1998	11	9.8	1998	5	1998	11	#	1998
Ann	9.8	Dec 1998	11	9.8	Dec 1998	7	Jan 1974	24	1+	Jan 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.6	.8	.2	.0	.0
Feb	.7	.3	.0	.0	.0
Mar	.2	.1	@	.0	.0
Apr	.1	.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	.1	.0	.0	.0	.0
Nov	.3	.2	.1	@	.0
Dec	.9	.5	.2	@	.0
Ann	3.9	1.9	.5	@	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	1.4	.5	.2	.0
Feb	.4	.1	@	.0
Mar	.1	@	.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
Nov	.3	.1	.1	.0
Dec	.4	.2	@	.0
Ann	2.6	.9	.3	.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	4/18	4/15	4/12	4/10	4/08	4/07	4/05	4/02	3/30
32	4/15	4/09	4/05	4/02	3/30	3/26	3/23	3/19	3/13
28	4/08	4/01	3/28	3/24	3/20	3/17	3/13	3/08	3/02
24	3/22	3/13	3/07	3/01	2/24	2/19	2/14	2/08	1/30
20	3/19	3/08	3/01	2/22	2/16	2/10	2/03	1/27	1/16
16	2/25	2/14	2/06	1/29	1/22	1/15	1/06	12/23	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	10/12	10/18	10/22	10/26	10/30	11/02	11/06	11/11	11/17
32	10/26	11/01	11/05	11/08	11/12	11/15	11/18	11/22	11/28
28	11/02	11/08	11/13	11/16	11/20	11/23	11/27	12/01	12/07
24	11/08	11/16	11/22	11/27	12/01	12/06	12/11	12/16	12/24
20	11/13	11/23	12/01	12/07	12/13	12/19	12/25	1/01	1/11
16	11/29	12/11	12/20	12/28	1/05	1/14	1/24	2/13	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	222	215	211	207	204	200	196	192	186
32	249	241	236	231	226	222	217	211	204
28	269	260	254	249	244	239	234	228	219
24	312	301	293	286	279	272	265	257	246
20	339	324	313	305	297	290	281	272	259
16	>365	>365	>365	>365	362	338	323	309	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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	680	472	302	120	18	0	0	0	19	103	380	622	2716
60	521	328	167	49	9	0	0	0	3	35	258	473	1843
57	432	254	109	24	4	0	0	0	0	16	191	383	1413
55	374	208	78	14	2	0	0	0	0	8	153	326	1163
50	240	117	26	2	0	0	0	0	0	1	78	195	659
32	10	1	0	0	0	0	0	0	0	0	0	2	13

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	370	474	741	950	1265	1426	1539	1499	1256	1004	610	412	11546
55	9	35	123	286	553	736	826	786	568	310	71	14	4317
57	5	22	91	237	492	676	764	724	509	256	49	7	3832
60	1	10	53	169	402	586	671	631	423	181	24	2	3153
65	0	2	15	77	254	438	512	473	281	83	4	0	2139
70	0	0	2	27	141	290	362	322	162	27	0	0	1333

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	182	294	511	720	1027	1194	1299	1261	1026	766	387	209	182	476	987	1707	2734	3928	5227	6488	7514	8280	8667	8876
45	97	182	364	572	872	1044	1144	1106	876	612	267	111	97	279	643	1215	2087	3131	4275	5381	6257	6869	7136	7247
50	38	94	233	428	717	894	989	951	726	461	154	51	38	132	365	793	1510	2404	3393	4344	5070	5531	5685	5736
55	8	40	131	296	562	744	834	796	577	319	76	15	8	48	179	475	1037	1781	2615	3411	3988	4307	4383	4398
60	0	10	58	177	411	594	679	641	433	189	28	0	0	10	68	245	656	1250	1929	2570	3003	3192	3220	3220
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	157	221	342	466	663	785	857	836	679	484	261	169	157	378	720	1186	1849	2634	3491	4327	5006	5490	5751	5920

(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