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: MINERAL WELLS AP, TX **COOP ID: 415958**

Climate Division: TX 3 **NWS Call Sign: MWL** **Elevation: 930 Feet** **Lat: 32˚47N** **Lon: 98˚04W**

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	58.2	33.4	45.8	91	1969	8	53.2	1990	4+	1966	23	35.7	1978	602	5	.0	.0	22.0	1.2	15.6	.0
Feb	63.7	38.0	50.9	97	1996	21	60.1	2000	3	1951	2	38.4	1978	412	16	.0	.2	23.0	.6	9.0	.0
Mar	72.5	46.1	59.3	96+	1995	22	64.7	2000	12	1980	2	54.4	1983	206	29	.0	.6	29.7	@	3.5	.0
Apr	79.6	53.1	66.4	100+	1972	12	71.5	1981	28	2000	4	59.3	1983	71	111	@	2.3	30.0	.0	.5	.0
May	86.1	62.0	74.1	106+	2000	24	80.7	1996	39	1954	3	68.4	1983	13	294	.3	8.4	31.0	.0	.0	.0
Jun	92.8	68.7	80.8	114+	1980	28	85.7	1980	51	1983	1	75.1	1983	0	473	2.4	20.9	30.0	.0	.0	.0
Jul	97.3	72.2	84.8	112	1954	25	89.7	1998	58	1971	31	80.0	1976	0	612	9.0	28.3	31.0	.0	.0	.0
Aug	96.6	71.7	84.2	110	1964	6	89.8	1999	47	1967	12	80.0	1971	0	593	9.9	27.4	31.0	.0	.0	.0
Sep	89.7	65.3	77.5	111	2000	4	84.1	1998	40+	1989	25	69.1	1974	6	381	2.0	17.7	30.0	.0	.0	.0
Oct	80.5	55.3	67.9	104	1951	3	71.1	1979	23	1993	31	59.3	1976	47	136	.1	3.7	30.8	.0	.2	.0
Nov	67.8	44.3	56.1	93	1980	9	63.6	1999	12	1950	11	48.5	1976	293	25	.0	.1	28.0	.0	4.6	.0
Dec	59.6	35.6	47.6	90	1955	24	53.0	1984	-8	1989	23	35.9	1983	543	2	.0	.0	24.4	.9	13.1	.1
Ann	78.7	53.8	66.3	114+	Jun 1980	28	89.8	Aug 1999	-8	Dec 1989	23	35.7	Jan 1978	2193	2677	23.7	109.6	340.9	2.7	46.5	.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: 1948-2000

(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	1.42	1.29	2.46	1968	18	3.88	1973	.03	1976
Feb	1.99	1.53	2.48	1997	20	8.53	1997	.25	1996
Mar	2.69	2.35	4.18	1977	27	7.87	1977	.43	1971
Apr	2.75	2.51	5.15	1978	10	12.30	1990	.23	1983
May	4.59	3.97	4.09+	1983	23	12.68	1982	1.03	1988
Jun	3.25	2.08	5.23	2000	4	10.30	2000	.10	1980
Jul	2.25	1.95	6.24	1962	27	8.07	1973	.01	1993
Aug	2.34	2.33	3.42	1991	12	6.95	1996	.00	2000
Sep	2.80	2.49	3.48	1993	14	8.57	1980	.03	1983
Oct	3.81	3.04	6.65	1981	12	20.00	1981	.16	1975
Nov	2.16	1.60	2.84+	1996	24	5.92	1994	.00	1999
Dec	1.74	1.47	3.25	1991	20	8.50	1991	.04	1973
Ann	31.79	30.72	6.65	Oct 1981	12	20.00	Oct 1981	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.8	3.2	.8	.2
Feb	6.4	3.7	1.3	.3
Mar	7.5	4.4	1.6	.6
Apr	7.0	4.1	1.4	.8
May	8.7	6.2	3.3	1.4
Jun	6.9	4.6	2.2	1.1
Jul	5.3	2.9	1.3	.7
Aug	5.7	3.5	1.3	.5
Sep	5.1	3.2	1.4	.8
Oct	7.3	4.5	2.4	1.1
Nov	6.4	3.7	1.4	.5
Dec	7.2	3.6	1.2	.4
Ann	80.3	47.6	19.6	8.4

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	.13	.23	.43	.62	.84	1.08	1.37	1.73	2.22	3.05	3.85
Feb	.26	.42	.70	.98	1.27	1.59	1.97	2.43	3.05	4.08	5.07
Mar	.57	.82	1.21	1.57	1.93	2.32	2.75	3.27	3.96	5.05	6.09
Apr	.46	.70	1.10	1.48	1.87	2.29	2.77	3.36	4.15	5.42	6.64
May	1.45	1.89	2.53	3.09	3.62	4.17	4.78	5.49	6.41	7.84	9.16
Jun	.41	.67	1.13	1.58	2.06	2.59	3.21	3.97	5.00	6.70	8.34
Jul	.09	.20	.44	.74	1.08	1.50	2.01	2.68	3.64	5.29	6.96
Aug	.15	.38	.75	1.09	1.45	1.85	2.32	2.89	3.67	4.94	6.17
Sep	.13	.28	.60	.97	1.40	1.91	2.54	3.36	4.51	6.49	8.47
Oct	.39	.67	1.20	1.73	2.30	2.94	3.70	4.64	5.93	8.07	10.16
Nov	.18	.41	.76	1.08	1.41	1.76	2.17	2.67	3.34	4.43	5.47
Dec	.07	.16	.35	.58	.85	1.17	1.57	2.08	2.82	4.09	5.36
Ann	20.40	22.52	25.28	27.41	29.32	31.18	33.13	35.29	37.94	41.83	45.23

+ 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: 1948-2000
(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	.6	.0	#	0	4.0	1977	30	5.0	1977	2+	1997	8	#	1997	.5	.4	@	.0	.0	.3	.0	.0	.0
Feb	.8	.0	#	0	4.0	1978	15	8.5	1978	3+	1980	10	#	1996	.5	.3	.1	.0	.0	.4	.1	.0	.0
Mar	.1	.0	#	0	2.0	1971	2	2.0	1971	2	1971	3	#	1971	.0	.0	.0	.0	.0	@	.0	.0	.0
Apr	#	.0	0	0	#	1996	12	#+	1996	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	#	2000	.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	#	1993	30	#	1993	#	1991	26	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.1	.0	#	0	1.6	1995	28	1.6	1995	1+	1996	25	#	1996	.2	.0	.0	.0	.0	.1	.0	.0	.0
Dec	.2	#	#	0	4.0	1975	25	4.0	1975	1+	1982	31	#	1982	.1	.1	.1	.0	.0	.1	.0	.0	.0
Ann	1.8	#	N/A	N/A	4.0+	Feb 1978	15	8.5	Feb 1978	3+	Feb 1980	10	#+	May 2000	1.3	.8	.2	.0	.0	.9	.1	.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	4/18	4/12	4/09	4/05	4/02	3/30	3/27	3/23	3/18
32	4/13	4/06	4/01	3/27	3/23	3/19	3/15	3/10	3/03
28	3/29	3/21	3/15	3/10	3/06	3/01	2/24	2/18	2/10
24	3/12	3/04	2/27	2/22	2/17	2/13	2/08	2/02	1/25
20	3/02	2/20	2/12	2/05	1/30	1/23	1/15	1/04	0/00
16	2/18	2/08	1/31	1/25	1/18	1/09	12/28	0/00	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	10/26	10/30	11/02	11/05	11/08	11/10	11/13	11/16	11/20
32	10/28	11/02	11/06	11/09	11/13	11/16	11/19	11/23	11/29
28	11/04	11/10	11/15	11/19	11/23	11/27	12/01	12/06	12/13
24	11/13	11/20	11/26	11/30	12/05	12/09	12/14	12/19	12/26
20	11/27	12/05	12/11	12/16	12/21	12/26	1/01	1/09	0/00
16	12/11	12/21	12/29	1/05	1/12	1/21	2/06	0/00	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	239	232	227	222	218	214	210	205	198
32	258	250	243	238	233	229	223	217	209
28	293	283	275	268	262	256	249	241	230
24	314	306	300	295	290	285	280	274	265
20	>365	>365	>365	338	326	316	307	297	285
16	>365	>365	>365	>365	>365	349	337	326	313

***** 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	602	412	206	71	13	0	0	0	6	47	293	543	2193
60	459	294	108	22	2	0	0	0	0	12	184	399	1480
57	379	233	66	9	0	0	0	0	0	5	132	318	1142
55	329	198	45	4	0	0	0	0	0	2	103	269	950
50	223	124	14	0	0	0	0	0	0	0	49	167	577
32	20	7	0	0	0	0	0	0	0	0	0	6	33

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	448	535	845	1029	1304	1463	1635	1616	1365	1112	722	489	12563
55	44	82	178	344	591	773	922	903	675	401	135	38	5086
57	32	62	137	289	529	713	860	841	615	341	104	26	4549
60	19	38	86	212	438	623	767	748	525	256	66	14	3792
65	5	16	29	111	294	473	612	593	381	136	25	2	2677
70	0	5	7	44	171	326	457	439	248	54	7	0	1758

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	222	339	565	775	1038	1220	1386	1374	1128	852	479	262	222	561	1126	1901	2939	4159	5545	6919	8047	8899	9378	9640
45	123	226	418	626	883	1070	1231	1219	978	697	340	156	123	349	767	1393	2276	3346	4577	5796	6774	7471	7811	7967
50	60	135	282	479	728	920	1076	1064	828	542	226	79	60	195	477	956	1684	2604	3680	4744	5572	6114	6340	6419
55	24	72	169	336	574	770	921	909	678	395	129	39	24	96	265	601	1175	1945	2866	3775	4453	4848	4977	5016
60	3	29	85	211	421	620	766	754	530	259	63	11	3	32	117	328	749	1369	2135	2889	3419	3678	3741	3752
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	154	225	361	505	698	821	905	898	748	554	300	177	154	379	740	1245	1943	2764	3669	4567	5315	5869	6169	6346

(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