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: NAVARRO MILLS DAM, TX **COOP ID: 416210**

Climate Division: TX 3 **NWS Call Sign:** **Elevation: 454 Feet** **Lat: 31˚57N** **Lon: 96˚42W**

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	56.6	31.7	44.2	84	1971	31	51.8	1990	5	1982	14	34.7	1978	647	1	.0	.0	21.0	1.4	16.7	.0
Feb	62.1	36.3	49.2	95+	1996	23	58.2	2000	6+	1996	5	38.0	1978	452	9	.0	.1	22.4	1.0	9.7	.0
Mar	69.9	44.3	57.1	93	1971	29	61.9	2000	15+	1996	9	50.8	1996	261	17	.0	.1	29.4	.1	3.3	.0
Apr	77.4	51.7	64.6	100	1963	10	69.6	1981	26+	1997	13	59.5	1997	87	74	.0	.8	29.9	.0	.3	.0
May	84.6	60.8	72.7	101	1998	31	77.9	1998	40	1997	13	68.5+	1979	10	247	.1	4.7	31.0	.0	.0	.0
Jun	91.7	67.8	79.8	107	1980	28	85.3	1998	51	1997	1	75.9	1983	0	443	1.1	18.4	30.0	.0	.0	.0
Jul	96.6	71.0	83.8	109	1998	31	89.9	1998	56	1967	15	80.1	1976	0	584	4.9	27.8	31.0	.0	.0	.0
Aug	96.9	70.3	83.6	110	2000	18	87.8	1999	52	1992	28	78.0	1992	0	577	6.5	26.9	31.0	.0	.0	.0
Sep	90.7	63.6	77.2	112	2000	5	81.7	1998	39	1996	28	69.5	1974	3	368	1.2	17.0	30.0	.0	.0	.0
Oct	81.0	52.7	66.9	98+	1997	1	70.5	2000	25	1993	31	59.3	1976	55	112	.0	3.7	30.9	.0	.2	.0
Nov	68.1	42.8	55.5	92	1992	1	61.2	1973	18+	1997	17	48.0	1976	307	20	.0	@	27.7	@	3.9	.0
Dec	59.2	34.1	46.7	82+	1996	12	54.6	1984	-5	1989	23	36.0	1983	572	2	.0	.0	23.9	.7	12.6	.1
Ann	77.9	52.3	65.1	112	Sep 2000	5	89.9	Jul 1998	-5	Dec 1989	23	34.7	Jan 1978	2394	2454	13.8	99.5	338.2	3.2	46.7	.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: 1963-2001

(3) Derived from 1971-2000 serially complete daily data

Issue Date: February 2004

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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	2.21	1.94	5.08	1998	6	7.61	1998	.01	1986
Feb	2.79	2.45	3.25	1994	23	7.83	1994	.19	1982
Mar	3.19	3.37	3.50	1990	7	9.72	1990	.35	1971
Apr	3.30	3.25	4.05	1963	29	7.94	1980	.02	1983
May	5.11	4.26	5.75	1979	11	12.30	1979	.16	1998
Jun	3.72	3.24	3.86	1967	12	12.05	2000	.13	1978
Jul	1.78	1.23	2.37	1979	18	5.17	1971	.00	1993
Aug	2.38	1.48	5.14	1991	14	8.30	1974	.00	1987
Sep	3.00	2.65	4.30	1970	17	8.02	1988	.06	1982
Oct	4.53	3.92	8.95	1974	31	12.08	1985	.17	1995
Nov	3.19	3.26	4.55	1992	20	8.10	1998	.87	1989
Dec	3.23	2.54	4.70	2001	16	10.02	1991	.35	1981
Ann	38.43	36.73	8.95	Oct 1974	31	12.30	May 1979	.00+	Jul 1993

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.6	4.3	1.4	.3
Feb	7.1	4.4	1.9	.9
Mar	8.2	5.3	2.2	.9
Apr	7.0	4.6	2.3	1.1
May	8.7	6.1	3.4	1.7
Jun	7.1	5.2	2.5	1.2
Jul	4.6	3.0	1.2	.5
Aug	4.5	2.9	1.3	.7
Sep	6.5	3.8	1.6	.9
Oct	7.0	4.9	2.6	1.5
Nov	7.1	4.9	2.0	.9
Dec	7.5	4.6	1.8	.9
Ann	82.9	54.0	24.2	11.5

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	.22	.38	.68	.99	1.32	1.70	2.15	2.70	3.46	4.72	5.96
Feb	.48	.72	1.13	1.51	1.90	2.33	2.82	3.41	4.19	5.47	6.69
Mar	.75	1.04	1.51	1.93	2.34	2.78	3.27	3.86	4.63	5.85	7.00
Apr	.45	.72	1.19	1.65	2.13	2.66	3.28	4.03	5.05	6.71	8.32
May	.79	1.22	1.96	2.67	3.40	4.20	5.11	6.24	7.74	10.19	12.53
Jun	.44	.73	1.25	1.77	2.32	2.94	3.66	4.55	5.75	7.74	9.68
Jul	.05	.18	.43	.68	.97	1.29	1.69	2.18	2.87	4.03	5.17
Aug	.03	.14	.41	.72	1.10	1.55	2.11	2.85	3.89	5.70	7.53
Sep	.34	.57	.99	1.40	1.85	2.35	2.93	3.66	4.65	6.28	7.87
Oct	.34	.63	1.22	1.84	2.54	3.33	4.29	5.50	7.19	10.01	12.81
Nov	.78	1.08	1.54	1.96	2.37	2.80	3.28	3.86	4.62	5.81	6.94
Dec	.62	.90	1.38	1.82	2.26	2.74	3.28	3.94	4.80	6.20	7.53
Ann	24.90	27.42	30.71	33.24	35.51	37.72	40.02	42.59	45.73	50.33	54.34

\+ 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: 1963-2001
(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	1.5	.0	0	0	12.0	1982	14	12.0	1982	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Feb	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Mar	.0	.0	#	0	.0	0	0	.0	0	#	1989	6	#	1989	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Apr	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Oct	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Nov	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Dec	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Ann	1.5	.0	N/A	N/A	12.0	Jan 1982	14	12.0	Jan 1982	#	Mar 1989	6	#	Mar 1989	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.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	4/15	4/09	4/05	4/01	3/28	3/24	3/20	3/16	3/09
32	4/03	3/28	3/23	3/20	3/16	3/12	3/08	3/04	2/26
28	3/26	3/18	3/12	3/07	3/02	2/25	2/20	2/14	2/06
24	3/09	2/28	2/22	2/17	2/12	2/07	2/02	1/26	1/18
20	3/03	2/19	2/10	2/02	1/25	1/16	1/07	12/22	0/00
16	2/18	2/07	1/30	1/22	1/14	1/04	0/00	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	10/23	10/29	11/02	11/05	11/08	11/11	11/15	11/19	11/24
32	10/28	11/04	11/09	11/14	11/18	11/22	11/27	12/02	12/09
28	11/10	11/17	11/22	11/26	11/30	12/04	12/09	12/14	12/21
24	11/16	11/24	11/30	12/05	12/10	12/15	12/20	12/26	1/03
20	11/22	12/01	12/08	12/14	12/20	12/27	1/03	1/14	0/00
16	12/12	12/24	1/02	1/11	1/20	2/03	0/00	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	250	241	235	230	225	220	214	208	200
32	278	267	259	253	246	240	233	225	214
28	307	295	287	279	272	266	258	250	238
24	332	321	313	307	301	294	288	280	269
20	>365	>365	>365	344	330	319	309	298	284
16	>365	>365	>365	>365	>365	>365	347	332	316

***** 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	647	452	261	87	10	0	0	0	3	55	307	572	2394
60	502	326	148	28	1	0	0	0	0	16	194	427	1642
57	417	258	97	11	0	0	0	0	0	6	140	344	1273
55	364	219	70	6	0	0	0	0	0	3	110	292	1064
50	246	137	25	0	0	0	0	0	0	0	53	184	645
32	22	7	0	0	0	0	0	0	0	0	0	8	37

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	400	488	778	977	1261	1433	1607	1600	1355	1081	703	461	12144
55	28	56	135	292	548	743	894	887	665	370	123	32	4773
57	20	39	100	238	486	683	832	825	605	311	94	22	4255
60	12	23	58	165	394	593	739	732	515	228	57	12	3528
65	1	9	17	74	247	443	584	577	368	112	20	2	2454
70	0	0	2	22	127	296	429	423	234	39	5	0	1577

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	211	310	540	734	1014	1196	1359	1347	1114	834	477	261	211	521	1061	1795	2809	4005	5364	6711	7825	8659	9136	9397
45	123	206	398	584	859	1046	1204	1192	964	679	344	153	123	329	727	1311	2170	3216	4420	5612	6576	7255	7599	7752
50	63	117	263	437	704	896	1049	1037	814	526	225	82	63	180	443	880	1584	2480	3529	4566	5380	5906	6131	6213
55	25	58	156	298	549	746	894	882	664	377	135	38	25	83	239	537	1086	1832	2726	3608	4272	4649	4784	4822
60	8	25	78	178	395	596	739	727	516	242	66	13	8	33	111	289	684	1280	2019	2746	3262	3504	3570	3583
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	152	204	334	469	682	819	904	891	744	542	293	173	152	356	690	1159	1841	2660	3564	4455	5199	5741	6034	6207

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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