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: SEMINOLE, TX **COOP ID: 418201**

Climate Division: TX 1 **NWS Call Sign:** **Elevation: 3,340 Feet** **Lat: 32˚43N** **Lon: 102˚33W**

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	55.0	26.7	40.9	83	1974	17	46.1	1999	-9	1962	11	34.6	1979	749	0	.0	.0	20.9	2.1	25.0	.1
Feb	60.9	30.4	45.7	88	1962	12	52.4+	2000	-7	1951	1	39.1	1978	541	0	.0	.0	22.8	1.3	18.3	@
Mar	69.1	36.3	52.7	95	1971	28	59.5	1974	8+	1980	2	48.1	1987	382	2	.0	.3	28.7	.2	9.2	.0
Apr	77.6	44.6	61.1	99+	1996	28	67.0	1978	20	1973	9	55.8	1997	162	45	.0	3.2	29.2	.0	1.8	.0
May	85.6	54.9	70.3	109	2000	25	77.4	1996	28	1929	2	66.2	1976	34	196	1.4	10.8	31.0	.0	.0	.0
Jun	92.3	63.6	78.0	114	1994	28	84.0	1990	44+	1975	1	74.1	1986	1	391	5.3	20.5	30.0	.0	.0	.0
Jul	94.1	67.0	80.6	113	1958	13	85.6	1980	50	1923	12	76.6	1990	0	482	5.2	24.7	31.0	.0	.0	.0
Aug	92.1	65.5	78.8	109	1936	13	83.2	1977	51	1974	4	74.3	1971	0	427	2.6	22.3	31.0	.0	.0	.0
Sep	85.8	58.9	72.4	106	1948	6	79.2	1977	34	1924	28	65.8	1974	19	239	.9	12.4	29.9	.0	.0	.0
Oct	77.3	47.4	62.4	102	1977	1	65.9	1979	20+	1993	31	55.9	1976	127	45	.1	2.8	30.3	@	1.2	.0
Nov	65.0	35.3	50.2	89	1952	1	55.5	1999	5	1976	14	43.6	2000	450	3	.0	.0	26.5	.3	11.7	.0
Dec	56.6	28.0	42.3	83	1939	10	46.8	1994	-1+	1989	24	33.4	1983	704	0	.0	.0	22.6	1.5	23.3	.1
Ann	76.0	46.6	61.3	114	Jun 1994	28	85.6	Jul 1980	-9	Jan 1962	11	33.4	Dec 1983	3169	1830	15.5	97.0	333.9	5.4	90.5	.2

\+ 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: 1922-2001

(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	.64	.44	1.38	1961	24	2.32	1973	.00	1998
Feb	.72	.50	1.38	1989	17	2.46	1992	.00	1999
Mar	.61	.37	2.56	2000	22	2.69	2000	.00+	1984
Apr	.91	.47	2.81	1959	8	3.61	1976	.00+	1998
May	2.39	1.93	5.40	1999	1	7.57	1999	.00	1991
Jun	2.45	2.33	2.73	1986	23	10.16	1986	.05	1990
Jul	2.44	1.43	5.20	1928	22	9.77	1988	.04	1980
Aug	2.31	1.90	4.46	1968	1	7.50	1971	.04	1994
Sep	2.73	2.13	3.60	1969	9	9.21	1995	.00	2000
Oct	1.39	1.01	3.97	1960	17	5.39	1974	.00+	1989
Nov	.90	.46	2.52	1978	4	3.45	1978	.00+	1999
Dec	.71	.42	1.56	1932	23	3.64	1986	.00+	1996
Ann	18.20	18.17	5.40	May 1999	1	10.16	Jun 1986	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.4	1.8	.3	@
Feb	4.0	2.2	.4	@
Mar	3.0	1.5	.2	.1
Apr	3.8	2.3	.6	.1
May	5.7	3.7	1.6	.6
Jun	5.8	4.3	1.5	.8
Jul	5.7	3.6	1.3	.7
Aug	6.6	4.1	1.3	.8
Sep	6.6	4.3	1.9	.9
Oct	4.7	2.7	1.0	.3
Nov	3.8	1.9	.4	.2
Dec	3.7	1.8	.4	.1
Ann	57.8	34.2	10.9	4.6

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	.01	.06	.14	.23	.33	.45	.59	.78	1.04	1.48	1.91
Feb	.01	.04	.12	.22	.33	.47	.64	.87	1.19	1.74	2.30
Mar	.00	.01	.07	.14	.24	.36	.51	.71	1.01	1.53	2.06
Apr	.00	.03	.13	.25	.40	.58	.81	1.10	1.51	2.23	2.96
May	.12	.33	.69	1.05	1.42	1.84	2.33	2.94	3.77	5.15	6.50
Jun	.18	.34	.66	1.00	1.37	1.80	2.32	2.98	3.89	5.42	6.94
Jul	.11	.24	.52	.84	1.22	1.67	2.22	2.93	3.94	5.68	7.41
Aug	.11	.23	.50	.81	1.17	1.59	2.11	2.78	3.73	5.35	6.98
Sep	.08	.26	.63	1.02	1.46	1.96	2.56	3.33	4.40	6.20	7.99
Oct	.00	.03	.16	.34	.56	.84	1.19	1.65	2.32	3.49	4.68
Nov	.00	.02	.11	.23	.37	.55	.77	1.06	1.49	2.23	2.98
Dec	.00	.00	.06	.17	.30	.45	.63	.87	1.21	1.78	2.35
Ann	10.45	11.83	13.66	15.10	16.41	17.70	19.05	20.57	22.46	25.25	27.72

\+ 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: 1922-2001
(3) Derived from 1971-2000 serially complete daily data

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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	2.5	1.8	#	#
Feb	2.3	.5	#	#
Mar	.4	.0	#	0
Apr	.4	.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	.1	.0	#	0
Nov	1.3	.0	#	0
Dec	1.5	.0	#	#
Ann	8.5	2.3	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	9.5	1983	1	13.5	1983	10	1983	1	2	1983
Feb	4.9	1988	5	15.0	1973	8	1988	6	1	1988
Mar	3.0	1983	20	4.0	1989	3+	1998	8	#+	1998
Apr	4.0	1983	7	8.0	1983	1	1983	5	#+	1996
May	.0	0	0	.0	0	0	0	0	0	0
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	3.0	1976	29	3.5	1976	3	1976	29	#+	1993
Nov	9.5	1976	13	14.1	1980	10	1976	14	1	1980
Dec	5.0	1982	27	9.0	1986	5	1992	14	1+	2000
Ann	9.5+	Jan 1983	1	15.0	Feb 1973	10+	Jan 1983	1	2	Jan 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.3	.8	.3	.1	.0
Feb	1.1	.7	.2	.0	.0
Mar	.3	.2	@	.0	.0
Apr	.2	.1	.1	.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
Nov	.5	.3	.2	.1	.0
Dec	1.0	.6	.4	.1	.0
Ann	4.5	2.7	1.2	.3	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	1.6	.7	.2	@
Feb	1.0	.5	.3	.0
Mar	.2	.1	.0	.0
Apr	.1	.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	.1	@	.0	.0
Nov	.6	.3	.3	.1
Dec	1.5	.4	.1	.0
Ann	5.1	2.0	.9	.1

+ 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	4/27	4/22	4/19	4/17	4/14	4/12	4/09	4/06	4/01
32	4/16	4/11	4/08	4/04	4/02	3/30	3/27	3/23	3/18
28	4/09	4/03	3/30	3/27	3/23	3/20	3/17	3/12	3/07
24	4/02	3/24	3/17	3/11	3/06	3/01	2/23	2/16	2/07
20	3/20	3/11	3/05	2/27	2/22	2/17	2/12	2/05	1/27
16	3/05	2/23	2/16	2/10	2/04	1/29	1/23	1/15	1/03

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	10/07	10/12	10/16	10/20	10/23	10/26	10/29	11/02	11/08
32	10/18	10/23	10/27	10/31	11/03	11/06	11/10	11/14	11/19
28	10/30	11/04	11/08	11/11	11/14	11/17	11/21	11/25	11/30
24	11/07	11/12	11/16	11/19	11/22	11/25	11/28	12/02	12/07
20	11/11	11/22	11/29	12/05	12/11	12/17	12/23	12/31	1/10
16	11/22	12/02	12/10	12/17	12/23	12/29	1/06	1/15	2/01

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	209	203	198	194	191	188	184	180	174
32	237	229	224	219	215	210	206	200	193
28	257	249	244	240	235	231	226	221	214
24	292	281	273	266	260	254	247	239	228
20	324	311	303	296	289	283	276	268	257
16	>365	362	340	329	319	310	302	292	278

***** 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	749	541	382	162	34	1	0	0	19	127	450	704	3169
60	594	403	240	77	8	0	0	0	4	49	312	549	2236
57	501	324	167	42	3	0	0	0	0	24	239	458	1758
55	440	274	126	26	1	0	0	0	0	13	195	398	1473
50	298	164	51	6	0	0	0	0	0	2	108	260	889
32	15	4	0	0	0	0	0	0	0	0	2	10	31

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	289	387	642	874	1185	1380	1505	1450	1210	941	545	329	10737
55	2	13	55	209	473	690	792	737	520	241	48	5	3785
57	0	8	34	166	413	630	730	675	460	189	32	2	3339
60	0	2	15	110	326	540	637	582	374	122	16	0	2724
65	0	0	2	45	196	391	482	427	239	45	3	0	1830
70	0	0	0	13	98	251	328	276	132	10	0	0	1108

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	136	228	417	638	935	1132	1249	1193	962	693	330	158	136	364	781	1419	2354	3486	4735	5928	6890	7583	7913	8071
45	65	130	283	493	780	982	1094	1038	812	542	211	75	65	195	478	971	1751	2733	3827	4865	5677	6219	6430	6505
50	20	64	166	355	626	832	939	883	665	396	118	29	20	84	250	605	1231	2063	3002	3885	4550	4946	5064	5093
55	0	23	78	229	472	682	784	728	518	256	48	2	0	23	101	330	802	1484	2268	2996	3514	3770	3818	3820
60	0	2	25	122	324	532	629	573	380	139	12	0	0	2	27	149	473	1005	1634	2207	2587	2726	2738	2738
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	139	201	310	425	592	728	806	781	620	447	246	156	139	340	650	1075	1667	2395	3201	3982	4602	5049	5295	5451

(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