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: JOHNSON CITY, TX **COOP ID: 414605**

Climate Division: TX 6 **NWS Call Sign:** **Elevation: 1,232 Feet** **Lat: 30˚17N** **Lon: 98˚25W**

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	61.3	32.7	47.0	89	2000	20	53.1	1998	7+	1982	12	38.6	1979	560	3	.0	.0	23.5	.4	14.2	.0
Feb	65.5	37.1	51.3	100+	1996	23	58.4	2000	3	1985	2	40.9	1978	391	8	.1	.4	24.2	.6	9.1	.0
Mar	73.0	44.4	58.7	102	1971	29	64.5	1974	13	1996	9	53.6	1987	221	26	@	.6	29.8	.0	3.3	.0
Apr	80.0	51.4	65.7	101	1984	20	70.6	1972	27	1987	3	61.4	1997	70	90	@	2.3	30.0	.0	.5	.0
May	86.0	60.4	73.2	102+	1998	8	78.7	1996	36	1981	11	68.1	1976	11	265	.1	7.6	31.0	.0	.0	.0
Jun	91.9	67.2	79.6	110	1980	28	84.4	1998	50	1970	3	76.1	1983	0	437	1.4	20.2	30.0	.0	.0	.0
Jul	96.0	70.0	83.0	108	1980	3	86.5	1998	56	1968	5	78.7	1976	0	558	5.3	27.2	31.0	.0	.0	.0
Aug	96.0	69.5	82.8	107	1965	9	85.7	1999	53	1967	13	78.6	1992	0	550	4.0	27.4	31.0	.0	.0	.0
Sep	90.6	64.4	77.5	110	2000	6	81.8	1977	37	1983	22	71.1	1974	1	375	1.0	16.5	30.0	.0	.0	.0
Oct	81.7	54.3	68.0	98	1989	2	71.3	1979	22	1993	31	59.1	1976	44	137	@	3.7	30.8	.0	.4	.0
Nov	70.6	44.1	57.4	93	1988	8	63.0	1973	17	1993	27	49.8	1976	259	29	.0	.1	28.3	.0	4.5	.0
Dec	62.9	35.7	49.3	89	1995	6	58.1	1984	1	1989	23	40.0	1989	490	4	.0	.0	26.1	.4	12.0	.0
Ann	79.6	52.6	66.1	110+	Sep 2000	6	86.5	Jul 1998	1	Dec 1989	23	38.6	Jan 1979	2047	2482	11.9	106.0	345.7	1.4	44.0	.0

+ 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: 1964-2001

(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	1.77	1.59	3.37	1968	19	4.94	1992	.00	1971
Feb	2.06	1.80	3.30	1992	4	6.98	1992	.00	1974
Mar	2.17	1.56	2.90	1968	11	5.29	1981	.20	1986
Apr	2.61	2.09	3.67	1997	4	9.65	1997	.05	1983
May	4.52	4.49	3.41	1986	10	9.06	1975	1.18	1998
Jun	3.88	3.38	9.14	1995	29	13.80	1997	.05	1980
Jul	1.79	1.14	5.95	1987	17	7.70	1973	.00+	1993
Aug	2.38	1.94	3.20	1975	3	8.65	1974	.00+	1999
Sep	3.24	2.71	4.19	1986	6	9.42	1978	.04	1999
Oct	4.02	3.61	4.85	1983	9	10.23	1998	.02	1992
Nov	2.66	2.13	4.47	2000	3	9.12	2000	.08	1999
Dec	2.07	1.60	4.57	1991	21	11.53	1991	.16	1989
Ann	33.17	33.12	9.14	Jun 1995	29	13.80	Jun 1997	.00+	Aug 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.9	3.7	1.1	.3
Feb	6.7	3.8	1.5	.6
Mar	7.3	4.3	1.4	.5
Apr	6.5	3.9	1.8	.5
May	8.1	5.9	3.3	1.4
Jun	6.5	5.1	2.5	1.3
Jul	4.5	3.1	1.0	.4
Aug	4.9	3.2	1.5	.7
Sep	6.7	4.8	2.1	.7
Oct	6.8	4.7	2.3	1.3
Nov	6.8	4.0	1.9	.7
Dec	6.3	3.5	1.2	.5
Ann	78.0	50.0	21.6	8.9

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	.09	.25	.52	.78	1.06	1.37	1.73	2.18	2.79	3.80	4.79
Feb	.08	.24	.53	.83	1.16	1.53	1.98	2.53	3.30	4.58	5.84
Mar	.39	.58	.89	1.19	1.49	1.82	2.19	2.64	3.24	4.21	5.13
Apr	.23	.41	.76	1.13	1.52	1.97	2.51	3.18	4.10	5.64	7.15
May	1.45	1.88	2.52	3.06	3.58	4.12	4.71	5.41	6.30	7.69	8.97
Jun	.35	.63	1.15	1.69	2.28	2.94	3.74	4.73	6.10	8.37	10.61
Jul	.00	.08	.31	.57	.87	1.22	1.64	2.18	2.95	4.25	5.55
Aug	.00	.22	.63	1.01	1.40	1.83	2.34	2.96	3.80	5.20	6.56
Sep	.37	.62	1.07	1.52	2.00	2.54	3.17	3.96	5.03	6.79	8.50
Oct	.26	.50	1.00	1.55	2.17	2.89	3.76	4.87	6.42	9.05	11.66
Nov	.26	.45	.82	1.19	1.59	2.04	2.57	3.24	4.16	5.68	7.17
Dec	.13	.25	.51	.79	1.11	1.48	1.93	2.51	3.31	4.68	6.04
Ann	20.14	22.51	25.63	28.06	30.25	32.40	34.65	37.17	40.27	44.84	48.85

\+ 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: 1964-2001
(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	.8	.0	#	0	9.0	1985	13	9.0	1985	9	1985	13	7	1985	.1	.1	.1	.1	.0	.0	.0	.0	.0
Feb	.5	.0	#	0	2.5	1973	9	5.5	1973	1	1988	7	#	1988	.3	.2	.0	.0	.0	@	.0	.0	.0
Mar	.0	.0	0	0	.1	1978	4	.1	1978	0	0	0	0	0	.1	.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	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.1	.0	#	0	.8	1996	25	.8	1996	1	1996	25	#	1996	.1	.0	.0	.0	.0	@	.0	.0	.0
Dec	.0	.0	#	0	.1	1996	16	.1	1996	1	1996	16	#+	1997	.1	.0	.0	.0	.0	@	.0	.0	.0
Ann	1.4	.0	N/A	N/A	9.0	Jan 1985	13	9.0	Jan 1985	9	Jan 1985	13	7	Jan 1985	.7	.3	.1	.1	.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	4/24	4/17	4/13	4/09	4/05	4/02	3/29	3/24	3/18
32	4/11	4/04	3/29	3/24	3/20	3/16	3/11	3/05	2/26
28	3/23	3/16	3/10	3/06	3/02	2/25	2/21	2/16	2/08
24	3/12	3/04	2/26	2/20	2/16	2/11	2/05	1/30	1/22
20	3/06	2/22	2/13	2/06	1/29	1/21	1/12	12/28	0/00
16	2/17	2/05	1/28	1/20	1/11	1/01	12/14	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	10/15	10/22	10/26	10/30	11/03	11/07	11/11	11/16	11/22
32	10/23	10/30	11/04	11/08	11/12	11/16	11/20	11/25	12/02
28	10/31	11/07	11/13	11/17	11/21	11/25	11/30	12/05	12/12
24	11/18	11/26	12/01	12/06	12/10	12/15	12/19	12/25	1/01
20	11/28	12/07	12/14	12/20	12/26	1/01	1/08	1/20	0/00
16	12/15	12/26	1/03	1/11	1/19	1/29	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	235	227	221	216	211	206	201	195	187
32	265	256	248	242	236	231	225	217	207
28	296	285	277	270	264	258	251	243	231
24	329	318	310	303	297	291	284	276	265
20	>365	>365	>365	344	333	324	316	308	297
16	>365	>365	>365	>365	>365	>365	354	335	317

***** 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	560	391	221	70	11	0	0	0	1	44	259	490	2047
60	417	267	119	20	1	0	0	0	0	12	156	348	1340
57	335	203	74	7	0	0	0	0	0	4	108	270	1001
55	285	167	51	3	0	0	0	0	0	2	81	224	813
50	182	93	16	0	0	0	0	0	0	0	34	131	456
32	9	1	0	0	0	0	0	0	0	0	0	2	12

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	475	542	828	1011	1277	1427	1581	1573	1364	1116	760	538	12492
55	37	64	165	324	564	737	868	860	674	405	151	47	4896
57	26	45	127	268	502	677	806	798	614	346	117	32	4358
60	14	24	78	190	411	587	713	705	524	260	75	17	3598
65	3	8	26	90	265	437	558	550	375	137	29	4	2482
70	0	0	6	30	144	289	403	395	234	53	8	0	1562

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	271	363	605	787	1046	1200	1335	1322	1117	865	526	320	271	634	1239	2026	3072	4272	5607	6929	8046	8911	9437	9757
45	168	248	461	637	891	1050	1180	1167	967	711	386	201	168	416	877	1514	2405	3455	4635	5802	6769	7480	7866	8067
50	91	151	321	489	736	900	1025	1012	817	562	266	110	91	242	563	1052	1788	2688	3713	4725	5542	6104	6370	6480
55	38	80	201	348	581	750	870	857	668	412	164	51	38	118	319	667	1248	1998	2868	3725	4393	4805	4969	5020
60	14	36	107	219	426	600	715	702	519	269	83	19	14	50	157	376	802	1402	2117	2819	3338	3607	3690	3709
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	199	248	393	517	710	816	886	873	750	577	343	218	199	447	840	1357	2067	2883	3769	4642	5392	5969	6312	6530

(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