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: WELLINGTON, TX **COOP ID: 419565**

Climate Division: TX 2 **NWS Call Sign:** **Elevation: 2,040 Feet** **Lat: 34˚50N** **Lon: 100˚13W**

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	54.2	27.0	40.6	85	1986	20	48.9	1986	-4+	1966	23	29.1	1979	756	0	.0	.0	19.3	3.3	24.5	@
Feb	59.6	31.2	45.4	93	1996	22	53.9	1976	0+	1989	4	33.1	1978	556	8	.0	@	20.5	2.0	16.6	.1
Mar	69.4	38.6	54.0	100	1971	27	60.9	1986	4	1960	4	47.3	1998	352	12	@	.5	28.2	.2	8.3	.0
Apr	78.3	46.4	62.4	102+	1989	23	67.5	1981	23	1997	12	56.0	1983	143	64	.1	2.6	29.5	.0	1.4	.0
May	85.3	56.7	71.0	107+	2000	23	78.2	1996	31	2001	25	66.7	1976	24	210	1.0	7.7	30.9	.0	.0	.0
Jun	93.0	65.1	79.1	113	1994	25	84.5	1994	36	2001	15	74.2	1982	2	425	3.7	18.6	30.0	.0	.0	.0
Jul	97.9	69.6	83.8	112+	2001	16	89.4	1980	50	2001	3	80.2	1976	0	580	9.3	27.0	31.0	.0	.0	.0
Aug	96.0	68.1	82.1	110+	1969	14	87.7	1983	53	1966	25	77.2	1971	0	529	7.7	24.8	31.0	.0	.0	.0
Sep	88.7	60.6	74.7	108	1998	5	82.5	1998	35	1985	30	67.9	1974	11	301	2.2	14.1	30.0	.0	@	.0
Oct	78.4	49.7	64.1	104	2000	3	68.1	1979	20	1993	31	58.1	1976	91	61	.1	2.4	30.6	.0	.7	.0
Nov	64.6	37.6	51.1	90	2001	1	58.2	1999	10	2001	30	44.1	1972	422	4	.0	.0	25.5	.2	10.5	.0
Dec	55.4	29.5	42.5	84	1970	8	47.7	1980	-6	1989	23	30.8	1983	700	0	.0	.0	20.6	1.8	21.6	.1
Ann	76.7	48.3	62.6	113	Jun 1994	25	89.4	Jul 1980	-6	Dec 1989	23	29.1	Jan 1979	3057	2194	24.1	97.7	327.1	7.5	83.6	.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: 1912-2001

(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	.62	.64	1.53	1949	27	1.88	1999	.00+	1996
Feb	.73	.59	1.70	1997	19	2.64	1997	.00+	1991
Mar	1.47	.84	3.17	2000	23	5.57	1973	.00+	1997
Apr	2.07	1.41	3.44	1997	24	8.67	1997	.00+	1996
May	3.88	3.87	5.60	1980	15	10.44	1980	.00	1984
Jun	3.47	3.09	5.75	1968	1	9.29	1992	.33	1999
Jul	2.25	2.02	6.90	1985	24	8.31	1985	.00+	1999
Aug	1.85	1.28	3.16	1991	13	6.56	1995	.00+	2000
Sep	2.58	2.56	4.31	1989	13	5.87	1996	.00+	2000
Oct	2.37	1.79	9.50	1986	3	14.14	1986	.00+	1992
Nov	.89	.54	2.95	1992	23	3.97	1992	.00+	1999
Dec	.62	.30	2.52	1997	22	3.48	1987	.00+	1998
Ann	22.80	21.63	9.50	Oct 1986	3	14.14	Oct 1986	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.5	1.5	.4	@
Feb	2.4	1.6	.6	@
Mar	3.1	2.2	1.0	.5
Apr	3.4	2.7	1.2	.6
May	6.7	5.0	2.5	1.3
Jun	5.3	4.2	2.5	1.1
Jul	3.5	2.8	1.4	.5
Aug	3.9	3.0	1.2	.4
Sep	4.3	3.3	1.6	.9
Oct	4.1	3.1	1.3	.6
Nov	2.8	1.9	.4	.2
Dec	2.4	1.5	.4	.2
Ann	44.4	32.8	14.5	6.3

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	.00	.00	.08	.21	.34	.47	.62	.80	1.04	1.43	1.83
Feb	.00	.00	.04	.17	.30	.46	.66	.90	1.25	1.82	2.42
Mar	.00	.00	.09	.29	.54	.85	1.24	1.76	2.51	3.79	5.11
Apr	.00	.00	.36	.70	1.06	1.47	1.96	2.58	3.42	4.85	6.26
May	.49	.97	1.63	2.18	2.74	3.33	3.99	4.78	5.83	7.50	9.08
Jun	.56	.86	1.37	1.85	2.34	2.87	3.49	4.24	5.24	6.86	8.42
Jul	.00	.00	.33	.68	1.07	1.52	2.07	2.77	3.74	5.39	7.03
Aug	.00	.06	.28	.54	.85	1.21	1.66	2.24	3.06	4.47	5.90
Sep	.00	.00	.28	.82	1.33	1.89	2.52	3.30	4.36	6.05	7.79
Oct	.00	.00	.29	.81	1.28	1.78	2.36	3.05	3.98	5.47	7.00
Nov	.00	.00	.00	.11	.26	.46	.71	1.05	1.54	2.40	3.27
Dec	.00	.00	.00	.00	.12	.27	.47	.73	1.10	1.75	2.40
Ann	12.51	14.31	16.72	18.62	20.35	22.06	23.87	25.92	28.45	32.22	35.57

+ 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: 1912-2001
(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	2.7	.0	#	0
Feb	.4	.0	#	0
Mar	#	.0	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	0
Nov	.9	.0	#	0
Dec	1.5	.0	#	0
Ann	5.5	.0	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	8.0	1987	18	12.0	1987	12	1987	18	1+	1988
Feb	4.5	1975	16	4.5	1975	5	1975	16	1	1975
Mar	#	1980	1	#+	1980	0	0	0	0	0
Apr	.0	0	0	.0	0	0	0	0	0	0
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	.0	0	0	.0	0	0	0	0	0	0
Nov	4.5	1972	18	14.0	1972	3	1972	19	1	1972
Dec	8.0	1971	1	9.0+	1987	8	1971	1	1+	1987
Ann	8.0+	Jan 1987	18	14.0	Nov 1972	12	Jan 1987	18	1+	Jan 1988

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.9	.8	.4	.1	.0
Feb	.4	.3	.1	.0	.0
Mar	.0	.0	.0	.0	.0
Apr	.0	.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	.0	.0	.0	.0	.0
Nov	.3	.3	.1	.0	.0
Dec	.7	.6	.2	.1	.0
Ann	2.3	2.0	.8	.2	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.8	.6	.1	.1
Feb	.4	.1	.1	.0
Mar	.0	.0	.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	.0
Nov	.3	.1	.0	.0
Dec	.7	.3	.2	.0
Ann	2.2	1.1	.4	.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	4/22	4/17	4/14	4/11	4/09	4/06	4/04	4/01	3/27
32	4/13	4/09	4/06	4/04	4/01	3/30	3/28	3/25	3/21
28	4/08	4/01	3/28	3/23	3/19	3/16	3/11	3/06	2/28
24	4/02	3/24	3/18	3/12	3/07	3/02	2/24	2/17	2/08
20	3/16	3/08	3/02	2/24	2/20	2/15	2/09	2/03	1/26
16	3/06	2/25	2/18	2/12	2/07	2/01	1/26	1/19	1/07

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	10/09	10/15	10/19	10/23	10/26	10/30	11/02	11/06	11/12
32	10/18	10/24	10/28	10/31	11/04	11/07	11/11	11/15	11/21
28	10/27	11/02	11/07	11/11	11/15	11/18	11/22	11/27	12/04
24	11/06	11/13	11/17	11/21	11/25	11/29	12/03	12/08	12/14
20	11/15	11/22	11/27	12/02	12/06	12/10	12/14	12/19	12/27
16	11/22	11/30	12/06	12/11	12/16	12/21	12/26	1/01	1/11

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	220	213	208	204	200	196	191	186	179
32	234	228	223	219	216	212	208	204	197
28	266	257	251	245	240	234	229	222	213
24	298	286	277	270	262	255	248	239	227
20	321	310	302	295	288	282	275	267	255
16	>365	340	328	319	311	304	296	287	275

***** 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	756	556	352	143	24	2	0	0	11	91	422	700	3057
60	605	428	224	67	4	0	0	0	1	30	287	548	2194
57	518	356	162	37	1	0	0	0	0	12	216	461	1763
55	460	311	127	23	0	0	0	0	0	6	175	404	1506
50	326	216	61	6	0	0	0	0	0	1	95	274	979
32	39	24	1	0	0	0	0	0	0	0	2	23	89

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	306	400	683	911	1209	1413	1603	1552	1280	993	574	347	11271
55	14	43	97	245	496	723	890	839	590	286	57	15	4295
57	10	31	70	198	435	663	828	777	530	230	38	10	3820
60	3	19	38	139	345	573	735	684	442	155	19	3	3155
65	0	8	12	64	210	425	580	529	301	61	4	0	2194
70	0	0	1	21	105	285	425	376	181	16	0	0	1410

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	121	216	400	645	932	1155	1334	1287	1021	718	330	142	121	337	737	1382	2314	3469	4803	6090	7111	7829	8159	8301
45	57	131	275	498	777	1005	1179	1132	872	565	212	71	57	188	463	961	1738	2743	3922	5054	5926	6491	6703	6774
50	22	65	166	358	622	855	1024	977	722	417	118	29	22	87	253	611	1233	2088	3112	4089	4811	5228	5346	5375
55	0	28	82	232	469	705	869	822	574	279	54	1	0	28	110	342	811	1516	2385	3207	3781	4060	4114	4115
60	0	7	35	121	322	555	714	667	429	158	20	0	0	7	42	163	485	1040	1754	2421	2850	3008	3028	3028
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	119	174	284	413	597	756	867	832	661	457	225	128	119	293	577	990	1587	2343	3210	4042	4703	5160	5385	5513

(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