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: HILLSBORO, TX **COOP ID: 414182**

Climate Division: TX 5 **NWS Call Sign:** **Elevation: 550 Feet** **Lat: 32˚01N** **Lon: 97˚07W**

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	57.4	35.2	46.3	89	1943	23	53.6	1990	-1	1930	18	36.5	1978	586	3	.0	.0	22.3	.9	13.7	.0
Feb	62.9	39.8	51.4	97+	1996	21	58.7	2000	2	1951	2	39.1	1978	394	11	.0	.1	23.3	.7	7.8	.0
Mar	70.9	47.2	59.1	100+	1913	31	65.9	1974	12+	1948	12	54.5	1983	212	27	.0	.2	29.8	@	2.8	.0
Apr	77.5	54.2	65.9	101	1963	11	71.3	1981	26+	1987	3	61.8+	1997	65	90	.0	.9	30.0	.0	.3	.0
May	83.9	62.9	73.4	104	1928	27	79.8	1996	37	1909	1	68.7	1976	10	271	.0	4.5	31.0	.0	.0	.0
Jun	90.6	69.7	80.2	109	1936	21	85.0	1998	49	1919	3	76.9	1973	0	455	.6	18.4	30.0	.0	.0	.0
Jul	95.2	72.9	84.1	113	1917	10	89.0	1998	55+	1947	13	79.9	1976	0	591	5.0	28.1	31.0	.0	.0	.0
Aug	95.3	72.6	84.0	112+	1936	11	88.1	1999	53+	1992	28	79.5	1992	0	588	5.7	27.2	31.0	.0	.0	.0
Sep	89.2	66.5	77.9	110+	1939	2	82.7	1977	38	1942	27	70.9	1974	2	386	.6	16.7	30.0	.0	.0	.0
Oct	80.0	56.5	68.3	103	1938	1	71.1	1971	21+	1993	31	59.2	1976	44	144	.0	3.2	30.8	.0	.2	.0
Nov	68.0	45.8	56.9	91	1948	5	62.6	1999	14	1976	30	49.1	1976	271	27	.0	.1	28.2	.1	3.8	.0
Dec	59.6	37.6	48.6	90	1955	24	54.9	1984	-6	1989	23	38.2	1983	511	3	.0	.0	24.8	.6	10.8	@
Ann	77.5	55.1	66.3	113	Jul 1917	10	89.0	Jul 1998	-6	Dec 1989	23	36.5	Jan 1978	2095	2596	11.9	99.4	342.2	2.3	39.4	@

\+ 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: 1903-2001

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

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Climate Division: TX 5 **NWS Call Sign:** **Elevation: 550 Feet** **Lat: 32˚01N** **Lon: 97˚07W**

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	2.19	2.12	4.35	1926	17	5.52	1998	.02	1976
Feb	2.67	2.48	3.12	1938	18	7.98	1997	.05	1999
Mar	3.21	3.25	4.38	1945	31	7.94	1977	.26	1971
Apr	3.24	2.61	5.25	1922	4	9.39	1995	.26	1983
May	4.65	4.72	5.55	1944	2	8.84	1979	.75	1998
Jun	4.07	3.07	7.90	1935	15	14.28	1981	.24	1978
Jul	2.08	1.48	6.51	1976	4	10.22	1976	.00+	2000
Aug	2.19	1.20	7.00	1915	18	8.54	1974	.00	1976
Sep	2.92	2.48	11.30	1936	27	7.49	1996	.00	1997
Oct	4.15	4.07	5.84	1993	20	11.94	1993	.00	1980
Nov	2.70	2.23	4.80	1918	8	6.96	2000	.32	1979
Dec	3.08	2.69	5.91	1997	21	9.69	1997	.15	1981
Ann	37.15	38.43	11.30	Sep 1936	27	14.28	Jun 1981	.00+	Jul 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.7	4.5	1.5	.6
Feb	6.0	4.3	2.0	.8
Mar	7.5	4.9	2.3	1.0
Apr	6.0	4.4	2.2	1.1
May	8.5	6.4	3.4	1.4
Jun	6.8	5.1	2.5	1.2
Jul	4.3	3.1	1.1	.7
Aug	4.6	3.1	1.2	.5
Sep	5.7	4.2	2.2	.9
Oct	6.6	5.1	2.4	1.4
Nov	6.7	4.7	2.0	.6
Dec	6.2	4.5	2.0	.7
Ann	75.6	54.3	24.8	10.9

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	.14	.27	.54	.84	1.18	1.57	2.04	2.65	3.50	4.93	6.35
Feb	.30	.51	.88	1.26	1.65	2.10	2.62	3.27	4.14	5.59	7.00
Mar	.61	.90	1.37	1.80	2.25	2.72	3.26	3.91	4.78	6.16	7.49
Apr	.57	.86	1.33	1.77	2.22	2.71	3.27	3.95	4.85	6.30	7.69
May	1.17	1.60	2.28	2.88	3.48	4.10	4.80	5.63	6.71	8.42	10.03
Jun	.37	.65	1.20	1.77	2.38	3.08	3.91	4.96	6.39	8.78	11.13
Jul	.00	.13	.45	.77	1.11	1.51	1.98	2.57	3.38	4.75	6.10
Aug	.03	.13	.38	.68	1.02	1.44	1.96	2.63	3.59	5.24	6.91
Sep	.42	.80	1.30	1.71	2.11	2.54	3.02	3.59	4.34	5.52	6.64
Oct	.22	.61	1.24	1.85	2.50	3.23	4.07	5.12	6.54	8.90	11.18
Nov	.46	.70	1.09	1.46	1.84	2.25	2.72	3.29	4.06	5.29	6.47
Dec	.35	.58	1.01	1.44	1.90	2.41	3.01	3.76	4.78	6.46	8.09
Ann	25.53	27.75	30.61	32.80	34.74	36.63	38.58	40.75	43.39	47.22	50.56

\+ 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: 1903-2001
(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	.9	.0	#	0
Feb	.3	.0	#	0
Mar	.1	.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	.0	#	0
Dec	.3	.0	#	0
Ann	1.9	.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	7.0	1982	14	7.0	1982	7	1982	14	1	1982
Feb	3.3	1975	23	3.3	1975	3	1988	7	#	1988
Mar	1.5	1989	5	1.5	1989	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	3.0	1976	13	3.0	1976	3	1976	13	#	1976
Dec	3.5	2000	28	3.5	2000	4	2000	28	#	2000
Ann	7.0	Jan 1982	14	7.0	Jan 1982	7	Jan 1982	14	1	Jan 1982

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.3	.3	.1	.1	.0
Feb	.1	.1	.1	.0	.0
Mar	.1	.1	.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	.1	.1	.1	.0	.0
Dec	.1	.1	.1	.0	.0
Ann	.7	.7	.4	.1	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	@	.0	.0	.0
Feb	.0	.0	.0	.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	@	@	.0	.0
Dec	.1	@	.0	.0
Ann	.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	4/17	4/12	4/08	4/05	4/02	3/30	3/27	3/23	3/18
32	4/06	3/31	3/26	3/22	3/19	3/15	3/11	3/07	2/28
28	3/25	3/17	3/11	3/07	3/02	2/26	2/21	2/15	2/08
24	3/10	3/02	2/25	2/20	2/16	2/11	2/06	2/01	1/24
20	2/24	2/14	2/07	1/31	1/25	1/19	1/12	1/03	12/17
16	2/15	2/06	1/30	1/24	1/17	1/08	12/25	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	10/21	10/27	10/31	11/03	11/06	11/09	11/12	11/16	11/22
32	10/28	11/03	11/07	11/11	11/14	11/18	11/21	11/26	12/02
28	11/05	11/12	11/18	11/23	11/28	12/02	12/07	12/13	12/21
24	11/18	11/26	12/02	12/06	12/11	12/16	12/21	12/27	1/04
20	12/02	12/11	12/17	12/22	12/27	1/02	1/08	1/17	0/00
16	12/12	12/22	12/30	1/07	1/15	1/25	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	238	231	226	221	217	213	208	203	196
32	265	256	250	245	240	235	230	224	215
28	294	286	280	274	270	265	260	254	245
24	324	315	309	303	298	293	287	281	272
20	>365	>365	>365	347	334	325	316	306	293
16	>365	>365	>365	>365	>365	354	340	328	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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	586	394	212	65	10	0	0	0	2	44	271	511	2095
60	443	273	113	17	1	0	0	0	0	12	166	370	1395
57	363	212	70	6	0	0	0	0	0	4	116	290	1061
55	314	176	48	2	0	0	0	0	0	2	89	243	874
50	211	102	15	0	0	0	0	0	0	0	39	147	514
32	17	3	0	0	0	0	0	0	0	0	0	4	24

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	462	544	838	1015	1283	1445	1614	1611	1375	1123	746	518	12574
55	46	73	172	327	570	755	901	898	685	412	145	44	5028
57	33	52	132	271	508	695	839	836	625	352	112	30	4485
60	20	30	83	192	416	605	746	743	535	266	72	16	3724
65	3	11	27	90	271	455	591	588	386	144	27	3	2596
70	0	0	7	29	148	306	436	433	248	58	8	0	1673

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	254	358	580	774	1037	1208	1373	1369	1138	878	512	296	254	612	1192	1966	3003	4211	5584	6953	8091	8969	9481	9777
45	157	242	433	624	882	1058	1218	1214	988	723	373	191	157	399	832	1456	2338	3396	4614	5828	6816	7539	7912	8103
50	83	149	299	474	727	908	1063	1059	838	572	252	103	83	232	531	1005	1732	2640	3703	4762	5600	6172	6424	6527
55	35	79	179	337	572	758	908	904	688	422	152	52	35	114	293	630	1202	1960	2868	3772	4460	4882	5034	5086
60	12	35	92	208	419	608	753	749	540	282	78	18	12	47	139	347	766	1374	2127	2876	3416	3698	3776	3794
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	164	229	368	506	715	835	923	915	768	580	317	189	164	393	761	1267	1982	2817	3740	4655	5423	6003	6320	6509

(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