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: TUCSON INTL AP, AZ **COOP ID: 028820**

Climate Division: AZ 7 **NWS Call Sign: TUS** **Elevation: 2,549 Feet** **Lat: 32˚08N** **Lon: 110˚57W**

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	64.5	38.9	51.7	87+	1999	24	57.6	1986	16	1949	4	47.3	1979	401	0	.0	.0	29.9	.0	5.0	.0
Feb	68.4	41.6	55.0	92	1957	14	60.7	1995	20+	1955	22	50.8	1998	275	3	.0	.0	27.7	.0	2.1	.0
Mar	73.3	45.1	59.2	99	1988	26	65.5	1972	20	1965	4	52.0	1973	194	25	.0	.8	30.9	.0	.5	.0
Apr	81.5	50.5	66.0	104+	1989	21	72.8	1989	33	1976	17	58.7	1975	76	107	.2	5.4	30.0	.0	.0	.0
May	90.4	58.6	74.5	108	2000	29	80.3	1984	38	1950	5	70.3	1971	7	300	3.0	18.3	31.0	.0	.0	.0
Jun	100.2	68.0	84.1	117	1990	26	88.0	1974	47	1955	2	80.2	1991	0	577	17.6	28.5	30.0	.0	.0	.0
Jul	99.6	73.4	86.5	114+	1995	28	89.1	1994	59	1992	2	83.6	1976	0	672	17.4	29.2	31.0	.0	.0	.0
Aug	97.4	72.4	84.9	112	1993	1	87.8	1994	61	1956	29	81.3	1990	0	625	11.8	29.0	31.0	.0	.0	.0
Sep	94.0	67.7	80.9	107+	2000	14	84.8	2000	44	1965	30	77.3	1976	0	477	5.1	24.3	30.0	.0	.0	.0
Oct	84.0	57.0	70.5	102	1993	3	74.7	1999	26	1971	30	65.5	1971	33	211	.4	9.4	31.0	.0	@	.0
Nov	72.3	45.1	58.7	93	1999	6	65.4	1999	24+	1979	22	52.8	2000	195	20	.0	.2	29.9	.0	1.5	.0
Dec	64.6	39.2	51.9	84	1954	3	57.2	1980	16	1974	24	47.5	1974	397	0	.0	.0	30.0	.0	4.8	.0
Ann	82.5	54.8	68.7	117	Jun 1990	26	89.1	Jul 1994	16+	Dec 1974	24	47.3	Jan 1979	1578	3017	55.5	145.1	362.4	.0	13.9	.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: 1948-2001

(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	.99	.93	1.32	1993	18	4.81	1993	.00	1972
Feb	.88	.71	1.26	1966	7	3.20	1998	.00+	1999
Mar	.81	.69	1.19	1952	9	2.20	1973	.00+	1999
Apr	.28	.12	1.17	1999	1	1.34	1999	.00+	2000
May	.24	.10	.50	1967	24	1.11	1992	.00+	2000
Jun	.24	.12	1.27	1954	24	1.56	2000	.00+	1998
Jul	2.07	1.80	3.93	1958	29	6.17	1981	.04	1995
Aug	2.30	2.25	2.48	1961	22	4.93	1993	.23	1976
Sep	1.45	1.42	2.85	1964	10	4.28	1983	.00	1973
Oct	1.21	.66	2.96	1983	1	4.98+	2000	.00+	1999
Nov	.67	.55	1.57	1968	14	1.83	1994	.00+	1999
Dec	1.03	.50	2.10	1994	5	3.71	1994	.00+	2000
Ann	12.17	12.05	3.93	Jul 1958	29	6.17	Jul 1981	.00+	Dec 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.9	2.5	.6	.1
Feb	4.1	2.4	.4	@
Mar	4.4	2.5	.5	.0
Apr	2.0	.8	.1	@
May	2.1	.9	.0	.0
Jun	2.3	.8	.1	.0
Jul	9.8	4.9	1.1	.4
Aug	9.7	5.2	1.4	.4
Sep	5.2	2.9	1.0	.4
Oct	3.7	2.1	.8	.3
Nov	3.2	1.9	.4	@
Dec	4.5	2.8	.6	.1
Ann	55.9	29.7	7.0	1.7

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	.03	.10	.21	.36	.55	.79	1.13	1.64	2.54	3.47
Feb	.00	.00	.12	.27	.44	.62	.83	1.10	1.47	2.08	2.68
Mar	.00	.00	.15	.28	.42	.59	.78	1.01	1.34	1.88	2.42
Apr	.00	.00	.00	.01	.06	.12	.21	.32	.49	.78	1.07
May	.00	.00	.00	.00	.04	.10	.18	.28	.42	.66	.91
Jun	.00	.00	.00	.02	.06	.12	.18	.27	.41	.65	.89
Jul	.20	.35	.63	.91	1.23	1.58	2.00	2.53	3.25	4.44	5.62
Aug	.41	.62	.95	1.27	1.59	1.93	2.33	2.81	3.44	4.47	5.45
Sep	.03	.13	.31	.52	.75	1.02	1.34	1.76	2.35	3.34	4.32
Oct	.00	.00	.08	.25	.45	.71	1.03	1.45	2.05	3.09	4.14
Nov	.00	.00	.16	.28	.40	.52	.67	.85	1.09	1.48	1.86
Dec	.00	.00	.04	.18	.36	.59	.87	1.24	1.76	2.66	3.60
Ann	7.09	8.00	9.20	10.14	10.99	11.83	12.71	13.70	14.92	16.72	18.32

\+ 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: 1948-2001
(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	.3	.0	#	0	4.3	1987	16	4.7	1987	1+	1987	17	#	1987	.2	.1	@	.0	.0	.1	.0	.0	.0
Feb	.2	.0	0	0	1.2	1990	2	2.3	1990	#	1990	15	0	0	.2	.1	.0	.0	.0	.0	.0	.0	.0
Mar	.2	.0	#	0	3.8	1976	3	3.8	1976	3	1976	4	#	1976	.1	.0	@	.0	.0	@	@	.0	.0
Apr	.1	.0	0	0	2.0	1976	16	2.0	1976	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	#	1990	.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	#	.0	0	0	#	1994	19	#+	1994	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.4	.0	#	0	6.8	1971	8	6.8	1971	5	1971	8	#	1987	.1	.1	@	@	.0	.1	.1	@	.0
Ann	1.2	.0	N/A	N/A	6.8	Dec 1971	8	6.8	Dec 1971	5	Dec 1971	8	#+	May 1990	.6	.3	@	@	.0	.2	.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	4/13	4/03	3/27	3/21	3/16	3/10	3/04	2/25	2/15
32	3/18	3/08	2/28	2/22	2/16	2/10	2/04	1/27	1/17
28	2/22	2/09	1/31	1/23	1/16	1/08	12/30	12/20	11/29
24	2/01	1/13	12/27	11/30	0/00	0/00	0/00	0/00	0/00
20	12/26	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	0/00	0/00	0/00	0/00	0/00	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	11/04	11/10	11/14	11/17	11/20	11/23	11/26	11/30	12/05
32	11/09	11/16	11/21	11/25	11/29	12/03	12/07	12/12	12/19
28	11/23	12/02	12/09	12/14	12/20	12/26	1/01	1/11	0/00
24	12/17	1/04	1/22	0/00	0/00	0/00	0/00	0/00	0/00
20	1/07	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	0/00	0/00	0/00	0/00	0/00	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	282	270	262	255	249	242	235	227	215
32	318	307	299	292	285	279	272	264	252
28	>365	>365	>365	349	334	323	312	301	286
24	>365	>365	>365	>365	>365	>365	>365	>365	336
20	>365	>365	>365	>365	>365	>365	>365	>365	>365
16	>365	>365	>365	>365	>365	>365	>365	>365	>365

***** 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	401	275	194	76	7	0	0	0	0	33	195	397	1578
60	263	162	117	35	2	0	0	0	0	7	108	260	954
57	180	105	72	17	0	0	0	0	0	2	64	180	620
55	132	74	48	10	0	0	0	0	0	1	42	135	442
50	48	21	15	2	0	0	0	0	0	0	11	52	149
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	626	656	854	1025	1321	1568	1696	1648	1471	1198	809	628	13500
55	38	80	177	345	608	878	983	935	781	488	163	42	5518
57	21	53	134	291	546	818	921	873	721	429	123	22	4952
60	8	23	81	216	454	728	828	780	631	342	73	6	4170
65	0	3	25	107	300	577	672	625	477	211	20	0	3017
70	0	0	4	40	172	428	518	470	331	101	2	0	2066

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	391	460	617	794	1083	1336	1454	1411	1241	958	579	392	391	851	1468	2262	3345	4681	6135	7546	8787	9745	10324	10716
45	246	320	462	644	928	1186	1299	1256	1091	803	431	252	246	566	1028	1672	2600	3786	5085	6341	7432	8235	8666	8918
50	120	193	312	496	773	1036	1144	1101	941	648	292	130	120	313	625	1121	1894	2930	4074	5175	6116	6764	7056	7186
55	38	93	181	352	618	886	989	946	791	495	171	47	38	131	312	664	1282	2168	3157	4103	4894	5389	5560	5607
60	3	27	87	221	463	736	834	791	641	350	80	6	3	30	117	338	801	1537	2371	3162	3803	4153	4233	4239
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	248	291	385	507	688	821	931	912	811	621	361	244	248	539	924	1431	2119	2940	3871	4783	5594	6215	6576	6820

(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