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: CASA GRANDE, AZ **COOP ID: 021306**

Climate Division: AZ 6 **NWS Call Sign:** **Elevation: 1,403 Feet** **Lat: 32˚53N** **Lon: 111˚43W**

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	67.4	37.3	52.4	88	1940	30	56.4	1986	17+	1950	3	47.8	1979	391	0	.0	.0	30.7	.0	7.5	.0
Feb	72.2	40.3	56.3	97	1986	25	62.7	1996	17	1955	20	51.2	1975	254	9	.0	.1	27.8	.1	3.9	.0
Mar	77.3	44.7	61.0	101+	1972	9	68.7	1972	24	1977	15	54.4	1991	188	64	.1	2.1	31.0	.0	1.0	.0
Apr	86.1	50.1	68.1	110	1910	27	75.2	1989	28	1906	2	60.8	1975	70	163	.9	12.1	30.0	.0	.1	.0
May	94.6	58.8	76.7	120+	1910	31	85.2	1997	36+	1975	8	69.7	1977	11	373	8.3	24.6	31.0	.0	.0	.0
Jun	104.0	67.5	85.8	119+	1979	27	90.0	1994	36	1909	2	80.8	1982	0	622	24.8	29.7	30.0	.0	.0	.0
Jul	105.1	75.6	90.4	122	1905	6	93.6	1996	52	1912	24	85.6	1984	0	787	28.4	30.9	31.0	.0	.0	.0
Aug	102.7	74.3	88.5	120	1907	4	93.1	1995	57+	1979	21	84.3	1979	0	729	26.5	30.7	31.0	.0	.0	.0
Sep	98.3	67.7	83.0	116	1950	2	88.1	1997	40	1908	30	77.1	1986	0	539	15.4	28.7	30.0	.0	.0	.0
Oct	88.0	55.1	71.6	108	1980	1	76.9	1988	25	1906	13	65.7	1982	35	239	2.7	15.5	31.0	.0	.1	.0
Nov	75.2	42.3	58.8	96	1967	11	66.1	1995	22+	1979	24	52.2	2000	215	28	.0	.9	30.0	.0	2.4	.0
Dec	66.7	37.0	51.9	91	1907	6	56.7	1980	15+	1974	24	46.6	1974	408	1	.0	.0	30.5	.0	8.2	.0
Ann	86.5	54.2	70.4	122	Jul 1905	6	93.6	Jul 1996	15+	Dec 1974	24	46.6	Dec 1974	1572	3554	107.1	175.3	364.0	.1	23.2	.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: 1898-2001

(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	.77	.66	1.75	1905	10	3.01	1979	.00+	2000
Feb	.83	.63	1.50	1998	19	3.81	1998	.00+	1999
Mar	.99	.81	2.00	1912	31	3.06	1983	.00+	1984
Apr	.28	.14	1.25	1912	12	1.44	1984	.00+	1996
May	.19	.03	.77	1944	10	1.49	1992	.00+	2000
Jun	.10	.03	1.12	1958	22	.68	1972	.00+	1998
Jul	.80	.65	4.50	1936	25	3.29	1984	.09	1999
Aug	1.97	1.35	3.42	1964	12	6.22	1971	.15	1973
Sep	.82	.71	2.92	1946	18	2.16	1993	.00+	1988
Oct	.77	.30	1.84	1972	19	3.70	1972	.00+	1999
Nov	.74	.52	2.00	1905	26	2.71	1993	.00+	1999
Dec	.96	.55	1.65	1967	15	3.96	1984	.00+	1999
Ann	9.22	8.23	4.50	Jul 1936	25	6.22	Aug 1971	.00+	May 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.0	2.1	.4	.1
Feb	3.7	2.1	.5	.1
Mar	4.0	2.5	.5	.1
Apr	1.4	.8	.1	.0
May	1.3	.5	.1	.0
Jun	.9	.4	.0	.0
Jul	3.5	1.7	.5	.2
Aug	4.9	2.9	1.0	.7
Sep	3.3	1.5	.5	.2
Oct	2.9	1.8	.4	.2
Nov	2.5	1.6	.6	.1
Dec	3.5	2.0	.7	.1
Ann	35.9	19.9	5.3	1.8

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	.00	.12	.26	.44	.65	.94	1.34	2.03	2.72
Feb	.00	.00	.06	.21	.37	.55	.77	1.04	1.41	2.03	2.67
Mar	.00	.00	.14	.28	.45	.65	.90	1.21	1.64	2.38	3.13
Apr	.00	.00	.00	.00	.05	.12	.21	.33	.50	.79	1.09
May	.00	.00	.00	.00	.00	.03	.09	.18	.32	.58	.84
Jun	.00	.00	.00	.00	.00	.02	.06	.11	.18	.31	.44
Jul	.07	.12	.23	.34	.46	.60	.77	.97	1.26	1.74	2.21
Aug	.15	.27	.53	.80	1.10	1.45	1.86	2.39	3.12	4.35	5.57
Sep	.00	.00	.05	.16	.30	.47	.69	.98	1.40	2.12	2.86
Oct	.00	.00	.00	.06	.20	.37	.60	.90	1.34	2.11	2.89
Nov	.00	.00	.04	.15	.29	.45	.65	.90	1.26	1.87	2.50
Dec	.00	.00	.03	.16	.32	.53	.79	1.14	1.65	2.53	3.44
Ann	4.28	5.08	6.19	7.09	7.93	8.76	9.66	10.68	11.96	13.90	15.65

\+ 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: 1898-2001
(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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Mar	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	#	.0	0	0	#	1990	22	#+	1990	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	#	.0	N/A	N/A	#	Dec 1990	22	#+	Dec 1990	0	0	0	0	0	.0	.0	.0	.0	.0	.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	4/19	4/08	3/30	3/23	3/16	3/10	3/02	2/22	2/10
32	3/31	3/18	3/09	3/01	2/22	2/15	2/07	1/28	1/16
28	2/26	2/16	2/08	2/02	1/26	1/20	1/13	1/04	12/18
24	2/07	1/24	1/13	1/02	12/20	11/28	0/00	0/00	0/00
20	12/20	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	10/26	11/02	11/06	11/10	11/14	11/18	11/22	11/27	12/04
32	11/07	11/13	11/18	11/22	11/25	11/29	12/03	12/07	12/14
28	11/19	11/27	12/04	12/09	12/14	12/19	12/25	1/01	1/15
24	12/07	12/18	12/28	1/06	1/18	0/00	0/00	0/00	0/00
20	0/00	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	284	270	260	251	242	234	225	215	200
32	319	304	293	284	276	267	258	247	232
28	>365	>365	337	326	318	311	304	296	285
24	>365	>365	>365	>365	>365	>365	>365	343	318
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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	391	254	188	70	11	0	0	0	0	35	215	408	1572
60	244	141	103	26	2	0	0	0	0	10	113	263	902
57	164	91	63	14	0	0	0	0	0	4	69	185	590
55	120	63	43	8	0	0	0	0	0	2	47	140	423
50	41	18	15	1	0	0	0	0	0	0	13	59	147
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	632	679	899	1083	1386	1612	1810	1752	1529	1226	804	616	14028
55	38	98	229	401	673	922	1097	1039	839	515	161	43	6055
57	20	70	187	347	611	862	1035	977	779	455	123	25	5491
60	7	37	134	270	520	772	942	884	689	368	77	11	4711
65	0	9	64	163	373	622	787	729	539	239	28	1	3554
70	0	1	24	85	243	472	632	574	391	135	7	0	2564

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	390	483	661	855	1157	1392	1583	1534	1313	995	585	376	390	873	1534	2389	3546	4938	6521	8055	9368	10363	10948	11324
45	244	338	506	705	1002	1242	1428	1379	1163	840	435	232	244	582	1088	1793	2795	4037	5465	6844	8007	8847	9282	9514
50	117	203	355	555	847	1092	1273	1224	1013	685	292	110	117	320	675	1230	2077	3169	4442	5666	6679	7364	7656	7766
55	37	95	213	408	692	942	1118	1069	863	531	167	32	37	132	345	753	1445	2387	3505	4574	5437	5968	6135	6167
60	4	30	104	270	537	792	963	914	713	382	75	1	4	34	138	408	945	1737	2700	3614	4327	4709	4784	4785
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	277	335	434	547	701	809	966	943	812	631	397	272	277	612	1046	1593	2294	3103	4069	5012	5824	6455	6852	7124

(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