

# Climatography of the United States

No. 20

1971-2000

Station: WILLIAMS, AZ

COOP ID: 029359

Climate Division: AZ 2

NWS Call Sign:

Elevation: 6,750 Feet Lat: 35° 14N

Lon: 112° 11W

## 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	46.0	20.7	33.4	74	1976	31	40.4	1986	-25	1937	22	25.8	1979	981	0	.0	.0	11.2	2.2	28.3	.3
Feb	48.6	23.0	35.8	74	1976	28	41.7	1995	-18	1899	6	30.2	1998	818	0	.0	.0	13.0	1.3	24.5	.3
Mar	52.7	26.0	39.4	76+	1911	31	46.1	1989	-6	1932	4	30.7	1973	796	0	.0	.0	20.1	.5	24.3	@
Apr	60.5	31.0	45.8	87	1910	25	53.5	1989	2	1912	1	38.9	1973	578	0	.0	.0	26.1	.1	15.3	.0
May	69.1	38.7	53.9	92+	1934	11	61.5	1984	8	1933	11	48.1	1980	357	13	.0	.0	30.8	.0	4.9	.0
Jun	80.0	47.5	63.8	100	1970	26	68.7	1994	22+	1932	7	60.2	1995	103	65	.0	2.1	30.0	.0	.2	.0
Jul	83.1	53.4	68.3	102	1909	1	71.0	2000	32+	1927	1	65.1	1987	10	110	.0	3.1	31.0	.0	.0	.0
Aug	80.5	52.4	66.5	101	1902	2	69.5	1995	32+	1979	25	63.2	1979	33	77	.0	1.0	31.0	.0	@	.0
Sep	75.2	46.7	61.0	93+	1948	3	64.6	2000	11	1934	26	56.4	1986	144	21	.0	.0	29.9	.0	.4	.0
Oct	65.1	36.2	50.7	85+	1934	6	56.1	1988	7	1929	31	43.9	1971	446	2	.0	.0	29.2	.1	7.4	.0
Nov	53.6	26.4	40.0	80	1903	28	47.6	1999	-7+	1931	24	34.0	1972	749	0	.0	.0	20.2	.6	20.8	.0
Dec	47.1	21.3	34.2	74	1980	27	42.5	1980	-17	1931	13	27.6	1971	955	0	.0	.0	13.0	1.7	28.1	.2
Ann	63.5	35.3	49.4	102	Jul 1909	1	71.0	Jul 2000	-25	Jan 1937	22	25.8	Jan 1979	5970	288	.0	6.2	285.5	6.5	154.2	.8

+ 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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1897-2001

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

# 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: WILLIAMS, AZ**

**COOP ID: 029359**

**Climate Division: AZ 2**

**NWS Call Sign:**

**Elevation: 6,750 Feet Lat: 35°14N**

**Lon: 112°11W**

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med- ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	2.08	1.72	2.60	1930	11	7.50	1993	.00	1972	7.0	4.5	1.3	.4	.08	.24	.54	.84	1.18	1.55	2.00	2.56	3.33	4.62	5.88
Feb	2.37	1.58	3.51	1993	20	9.58	1993	.07	1972	6.8	4.3	1.5	.5	.23	.40	.72	1.05	1.41	1.81	2.29	2.89	3.71	5.07	6.40
Mar	2.32	2.19	2.47	1918	8	6.42	1991	.00+	1988	7.4	5.5	1.6	.2	.00	.08	.35	.67	1.05	1.51	2.07	2.80	3.83	5.61	7.39
Apr	1.00	.80	2.00	1946	2	2.46	1999	.00+	1996	4.2	2.9	.7	.1	.00	.00	.24	.41	.58	.77	.99	1.26	1.61	2.20	2.77
May	.80	.48	1.30	1908	3	5.03	1992	.00+	2000	4.0	2.5	.4	.0	.00	.00	.03	.14	.28	.46	.68	.96	1.37	2.07	2.80
Jun	.48	.27	2.50	1955	13	2.12	1972	.00+	1998	2.4	1.2	.3	.1	.00	.00	.00	.04	.13	.25	.39	.57	.84	1.31	1.78
Jul	2.54	2.06	2.26	1980	1	7.25	1990	.00	1993	10.4	6.1	1.3	.5	.29	.61	1.03	1.40	1.77	2.16	2.60	3.13	3.83	4.96	6.03
Aug	3.01	2.73	2.47	1951	29	7.17	1971	.28	1980	11.7	7.3	2.1	.5	.57	.84	1.28	1.69	2.10	2.54	3.05	3.66	4.47	5.77	7.01
Sep	1.73	1.46	2.71	1965	18	6.99	1983	.00+	1988	6.8	3.8	1.2	.3	.00	.05	.25	.49	.77	1.11	1.54	2.08	2.86	4.20	5.56
Oct	1.77	1.11	2.28	1993	6	10.51	1972	.00+	1999	5.0	3.6	1.0	.5	.00	.09	.34	.61	.90	1.24	1.65	2.16	2.89	4.10	5.31
Nov	1.75	1.29	10.35	1928	25	6.05	1985	.00+	1999	4.7	3.3	1.0	.4	.00	.00	.35	.65	.95	1.29	1.70	2.20	2.87	4.00	5.10
Dec	1.52	.92	2.97	1951	30	5.67	1984	.05	1985	5.6	3.8	.9	.3	.07	.15	.32	.52	.76	1.03	1.38	1.82	2.45	3.54	4.62
Ann	21.37	19.91	10.35	Nov 1928	25	10.51	Oct 1972	.00+	May 2000	76.0	48.8	13.3	3.8	13.57	15.01	16.90	18.35	19.65	20.93	22.26	23.74	25.56	28.22	30.56

+ 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: 1897-2001

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

Complete documentation available from:

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**Station: WILLIAMS, AZ**

**COOP ID: 029359**

**Climate Division: AZ 2**

**NWS Call Sign:**

**Elevation: 6,750 Feet**

**Lat: 35° 14N**

**Lon: 112° 11W**

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	17.5	9.8	3	1	24.0	1990	3	60.0	1990	31	1997	15	11	1997	4.0	3.9	2.2	1.1	.5	8.3	6.3	4.5	1.9
Feb	13.4	11.0	2	#	32.0	1987	24	59.8	1990	24	1979	3	11	1979	3.2	2.8	1.7	1.0	.3	6.4	4.5	2.6	.3
Mar	14.2	11.0	1	#	18.5	2000	6	48.0	1973	24	1973	29	10	1973	4.0	3.7	2.3	1.6	.3	4.7	3.3	2.3	1.1
Apr	5.0	2.0	1	0	18.0	1997	3	18.0	1994	18	1997	3	4	1973	1.8	1.6	.9	.6	.1	2.2	1.5	1.1	.5
May	.3	.0	#	0	8.0	1978	1	8.0	1978	5	1978	1	#+	1999	.1	.1	@	@	.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	.8	.0	#	0	5.0	1974	29	7.0	2000	6	1991	30	#+	1996	.3	.3	.1	.1	.0	.1	@	.0	.0
Nov	7.3	4.5	#	0	12.0	1973	19	26.0	1985	17	1975	29	3	1983	1.9	1.7	1.1	.6	.1	2.0	1.4	1.1	.4
Dec	8.1	5.0	1	#	12.0	1992	4	32.5	1992	18	1992	9	6	1992	2.6	2.3	1.1	.5	.1	2.4	1.8	.8	.3
Ann	66.6	43.3	N/A	N/A	32.0	Feb 1987	24	60.0	Jan 1990	31	Jan 1997	15	11+	Jan 1997	17.9	16.4	9.4	5.5	1.4	26.1	18.8	12.4	4.5

+ 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

Complete documentation available from:

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**Elevation: 6,750 Feet**

**Lat: 35° 14N**

**Lon: 112° 11W**

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	6/20	6/15	6/11	6/08	6/05	6/02	5/30	5/26	5/21
32	6/06	5/31	5/26	5/23	5/19	5/16	5/12	5/08	5/01
28	5/29	5/22	5/17	5/13	5/09	5/04	4/30	4/25	4/18
24	5/16	5/07	5/01	4/26	4/22	4/17	4/12	4/06	3/29
20	4/27	4/19	4/13	4/07	4/03	3/29	3/24	3/18	3/09
16	4/14	4/05	3/29	3/23	3/18	3/12	3/07	2/28	2/18
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	9/13	9/19	9/23	9/27	9/30	10/04	10/07	10/12	10/18
32	9/18	9/24	9/29	10/03	10/07	10/11	10/15	10/20	10/27
28	10/01	10/08	10/12	10/16	10/19	10/23	10/27	10/31	11/06
24	10/10	10/16	10/21	10/25	10/29	11/02	11/06	11/11	11/18
20	10/22	10/27	11/01	11/04	11/08	11/11	11/15	11/19	11/25
16	10/31	11/08	11/13	11/17	11/21	11/25	11/30	12/05	12/12
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	141	133	127	121	117	112	107	101	92
32	170	160	152	146	140	135	128	121	111
28	191	181	175	169	163	158	152	145	135
24	222	211	203	196	190	183	177	169	158
20	245	236	229	224	218	213	207	201	191
16	281	269	261	254	248	241	234	226	214

\* 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

Complete documentation available from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

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**Elevation: 6,750 Feet    Lat: 35°14N    Lon: 112°11W**

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	981	818	796	578	357	103	10	33	144	446	749	955	5970
60	826	678	641	434	230	40	0	3	56	302	599	800	4609
57	733	594	549	352	168	19	0	0	26	226	510	707	3884
55	671	538	489	300	132	11	0	0	14	181	451	645	3432
50	516	399	347	187	64	2	0	0	2	92	313	494	2416
32	86	42	32	7	0	0	0	0	0	1	23	87	278

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	127	148	260	420	679	952	1123	1067	867	579	265	154	6641
55	0	0	4	22	98	273	410	354	191	47	2	0	1401
57	0	0	1	14	72	221	348	293	143	30	1	0	1123
60	0	0	0	6	41	152	255	202	83	13	0	0	752
65	0	0	0	0	13	65	110	77	21	2	0	0	288
70	0	0	0	0	2	17	21	12	2	0	0	0	54

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	32	46	95	227	459	737	899	837	649	372	112	37	32	78	173	400	859	1596	2495	3332	3981	4353	4465	4502
45	0	11	33	119	315	587	744	682	499	237	49	3	0	11	44	163	478	1065	1809	2491	2990	3227	3276	3279
50	0	0	1	42	176	440	589	527	350	121	11	0	0	0	1	43	219	659	1248	1775	2125	2246	2257	2257
55	0	0	0	7	78	293	434	372	207	43	0	0	0	0	0	7	85	378	812	1184	1391	1434	1434	1434
60	0	0	0	0	23	162	281	219	85	8	0	0	0	0	0	0	23	185	466	685	770	778	778	778
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	31	49	88	179	305	482	578	534	401	248	94	41	31	80	168	347	652	1134	1712	2246	2647	2895	2989	3030

(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:  
[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

## 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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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 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.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
|---|---|

## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)