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: WAHWEAP, AZ **COOP ID: 029114**

Climate Division: AZ 2 **NWS Call Sign:** **Elevation: 3,730 Feet** **Lat: 37˚00N** **Lon: 111˚29W**

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	47.5	27.5	37.5	69	2000	24	42.5+	1986	-2	1989	10	30.4	1973	852	0	.0	.0	12.5	.9	25.1	.1
Feb	53.6	31.9	42.8	75	1989	27	48.4	1995	4	1989	6	35.8	1979	623	0	.0	.0	20.5	.3	16.4	.0
Mar	63.0	38.0	50.5	85+	1998	25	58.2	1972	21+	1977	13	46.5	1991	452	3	.0	.0	29.7	.0	5.7	.0
Apr	72.6	44.6	58.6	94	1992	29	64.7	1992	16+	1977	1	50.7	1975	226	34	.0	.5	29.9	.0	1.3	.0
May	82.9	54.1	68.5	106	2000	30	73.7	2000	29	1967	2	64.2	1995	52	162	.2	6.4	31.0	.0	.1	.0
Jun	94.5	63.5	79.0	115	1961	24	84.3	1974	40+	1988	2	74.5	1998	1	422	6.5	22.5	30.0	.0	.0	.0
Jul	98.9	70.0	84.5	120	1997	16	88.0	1996	48	1974	11	81.8	1987	0	603	13.2	28.4	31.0	.0	.0	.0
Aug	96.1	68.6	82.4	115	1995	7	85.8	1994	51	1983	28	80.1	1987	0	538	6.4	26.9	31.0	.0	.0	.0
Sep	88.1	60.4	74.3	105	1978	2	77.4	1984	36	1965	29	69.5	1986	5	282	.5	12.1	30.0	.0	@	.0
Oct	74.0	48.6	61.3	96	1963	4	66.4	1988	24	1971	30	56.2	1984	165	51	.0	.6	30.8	.0	.5	.0
Nov	58.7	36.1	47.4	80	1988	3	51.6	1995	15	1976	28	41.8	2000	529	0	.0	.0	25.7	.0	9.0	.0
Dec	48.6	27.9	38.3	73	1988	15	46.2	1977	3+	1961	13	31.0	1978	829	0	.0	.0	14.3	.5	25.0	.0
Ann	73.2	47.6	60.4	120	Jul 1997	16	88.0	Jul 1996	-2	Jan 1989	10	30.4	Jan 1973	3734	2095	26.8	97.4	316.4	1.7	83.1	.1

\+ 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: 1961-2001

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

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COOP ID: 029114

Climate Division: AZ 2 **NWS Call Sign:** **Elevation: 3,730 Feet** **Lat: 37°00N** **Lon: 111°29W**

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	.60	.34	.70+	1993	30	2.75	1993	.00+	1999
Feb	.44	.40	4.00	1982	4	2.27	1980	.00+	1989
Mar	.66	.67	1.00	1985	19	1.87	1983	.00+	1999
Apr	.42	.36	.82	1995	21	1.78	1988	.00+	1992
May	.44	.34	1.25	1965	13	1.63	1992	.00+	1991
Jun	.23	.14	1.94	1972	22	2.85	1972	.00+	1993
Jul	.64	.39	1.40	1983	26	4.07	1983	.00+	1998
Aug	.74	.53	1.46	1983	26	4.13	1983	.00	1976
Sep	.64	.36	1.07	1961	8	2.95	1997	.00+	2000
Oct	.91	.65	1.80	1998	23	4.19	2000	.00+	1999
Nov	.68	.42	1.31	1983	21	2.59	1978	.00+	1999
Dec	.38	.20	.92	1978	2	1.94	1991	.00+	1999
Ann	6.78	6.68	4.00	Feb 1982	4	4.19	Oct 2000	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.5	1.8	.1	.0
Feb	4.3	1.6	.1	@
Mar	4.9	2.0	.2	@
Apr	2.6	1.2	.2	.0
May	2.7	1.5	.3	.0
Jun	1.5	.6	@	@
Jul	3.0	1.6	.3	.1
Aug	4.3	2.0	.2	.1
Sep	3.8	1.6	.3	.0
Oct	4.6	2.6	.6	.1
Nov	3.2	1.7	.4	.1
Dec	3.4	.9	.2	.0
Ann	42.8	19.1	2.9	.4

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	.05	.14	.25	.37	.53	.73	1.02	1.51	2.01
Feb	.00	.00	.07	.14	.21	.30	.41	.55	.74	1.06	1.38
Mar	.00	.00	.08	.20	.32	.46	.62	.83	1.12	1.59	2.06
Apr	.00	.00	.02	.08	.16	.25	.36	.51	.72	1.08	1.45
May	.00	.00	.06	.15	.24	.33	.44	.57	.74	1.01	1.30
Jun	.00	.00	.00	.02	.07	.12	.19	.28	.41	.63	.86
Jul	.00	.00	.07	.17	.29	.42	.58	.79	1.08	1.57	2.06
Aug	.02	.07	.16	.27	.38	.52	.69	.90	1.19	1.69	2.18
Sep	.00	.00	.06	.15	.25	.38	.55	.76	1.07	1.60	2.14
Oct	.00	.03	.14	.27	.42	.59	.81	1.10	1.50	2.19	2.89
Nov	.00	.00	.09	.20	.31	.45	.62	.84	1.14	1.66	2.18
Dec	.00	.00	.01	.05	.11	.18	.29	.44	.65	1.04	1.44
Ann	2.85	3.46	4.33	5.04	5.71	6.38	7.11	7.95	9.01	10.62	12.09

\+ 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: 1961-2001
(3) Derived from 1971-2000 serially complete daily data

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Climate Division: AZ 2 **NWS Call Sign:** **Elevation: 3,730 Feet** **Lat: 37˚00N** **Lon: 111˚29W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	.3	.0	#	0
Feb	.1	.0	#	0
Mar	#	.0	0	0
Apr	#	.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	.1	.0	0	0
Nov	#	.0	#	0
Dec	.0	.0	#	0
Ann	.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	3.0	1973	9	4.0	1973	8	1974	5	1	1974
Feb	1.8	1992	10	1.8+	1992	#	1983	4	#	1983
Mar	#	1983	21	#	1983	0	0	0	0	0
Apr	#	1997	2	#	1997	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	1.2	1971	29	1.2	1971	0	0	0	0	0
Nov	#	2000	9	#+	2000	#	2000	1	#	2000
Dec	.2	1998	21	.3	1998	3	1971	14	#+	1998
Ann	3.0	Jan 1973	9	4.0	Jan 1973	8	Jan 1974	5	1	Jan 1974

Mean Number of Days (1)

Snow Fall >= Thresholds

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

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.1	@	.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	.0	.0
Dec	.0	.0	.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	5/03	4/28	4/23	4/20	4/17	4/13	4/10	4/06	3/31
32	4/26	4/16	4/08	4/02	3/27	3/21	3/15	3/07	2/25
28	4/09	3/29	3/21	3/14	3/08	3/01	2/23	2/15	2/04
24	3/30	3/17	3/07	2/27	2/20	2/12	2/04	1/26	1/13
20	3/08	2/23	2/14	2/06	1/29	1/21	1/12	1/01	12/11
16	2/27	2/10	1/27	1/14	12/31	12/10	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	10/14	10/20	10/24	10/27	10/31	11/03	11/06	11/10	11/16
32	10/21	10/27	10/31	11/04	11/07	11/11	11/14	11/19	11/25
28	11/07	11/12	11/16	11/20	11/23	11/26	11/30	12/04	12/09
24	11/12	11/19	11/23	11/27	12/01	12/05	12/09	12/13	12/20
20	11/25	12/04	12/11	12/17	12/23	12/28	1/04	1/12	1/28
16	12/07	12/16	12/23	12/30	1/07	1/21	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	222	213	207	201	196	191	186	179	170
32	258	247	238	231	225	218	211	202	191
28	299	285	276	267	259	252	243	233	220
24	329	311	300	291	282	274	265	254	240
20	>365	>365	353	337	326	317	308	298	285
16	>365	>365	>365	>365	>365	>365	353	331	311

***** 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	852	623	452	226	52	1	0	0	5	165	529	829	3734
60	697	483	308	129	16	0	0	0	0	79	380	674	2766
57	604	399	230	85	7	0	0	0	0	45	294	581	2245
55	542	345	184	61	3	0	0	0	0	29	241	519	1924
50	395	218	93	21	0	0	0	0	0	7	127	375	1236
32	40	5	0	0	0	0	0	0	0	0	1	39	85

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	210	307	573	798	1133	1410	1626	1561	1268	909	462	233	10490
55	0	2	45	168	423	720	913	848	578	225	12	0	3934
57	0	1	29	133	364	660	851	786	518	179	6	0	3527
60	0	0	13	87	281	570	758	693	428	120	2	0	2952
65	0	0	3	34	162	422	603	538	282	51	0	0	2095
70	0	0	0	10	75	280	448	383	152	15	0	0	1363

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	36	127	343	565	874	1157	1371	1304	1020	658	230	44	36	163	506	1071	1945	3102	4473	5777	6797	7455	7685	7729
45	4	44	203	416	719	1007	1216	1149	870	506	121	8	4	48	251	667	1386	2393	3609	4758	5628	6134	6255	6263
50	0	12	95	275	565	857	1061	994	720	357	42	0	0	12	107	382	947	1804	2865	3859	4579	4936	4978	4978
55	0	1	31	159	415	707	906	839	571	224	9	0	0	1	32	191	606	1313	2219	3058	3629	3853	3862	3862
60	0	0	6	74	275	557	751	684	422	113	0	0	0	0	6	80	355	912	1663	2347	2769	2882	2882	2882
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	31	82	216	359	564	736	867	847	672	398	136	33	31	113	329	688	1252	1988	2855	3702	4374	4772	4908	4941

(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