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: PORTAL 4 SW, AZ **COOP ID: 026716**

Climate Division: AZ 7 **NWS Call Sign:** **Elevation: 5,390 Feet** **Lat: 31˚53N** **Lon: 109˚12W**

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	52.9	23.4	38.2	76	1971	18	42.2	2000	-1	1971	6	33.1	1992	832	0	.0	.0	21.9	.3	27.1	@
Feb	57.5	25.3	41.4	76+	1986	26	47.3	1996	2	1980	10	37.9+	1975	661	0	.0	.0	23.9	.3	24.1	.0
Mar	63.1	29.4	46.3	84	1971	26	51.7	1972	8+	1971	3	41.1	1973	581	0	.0	.0	29.6	.0	22.2	.0
Apr	70.4	33.8	52.1	88+	2000	27	56.1	2000	16	1973	6	46.0	1973	388	0	.0	.0	29.5	.0	14.5	.0
May	78.1	40.8	59.5	96	2000	29	65.1	2000	20	1967	2	56.2	1975	190	17	.0	1.0	31.0	.0	2.9	.0
Jun	86.6	48.6	67.6	101+	1994	27	73.2	1994	32+	1971	4	63.5	1991	41	119	.3	10.9	30.0	.0	@	.0
Jul	85.2	55.6	70.4	101	1990	1	73.6	1994	44+	1987	7	67.5	1986	3	169	@	9.0	31.0	.0	.0	.0
Aug	82.0	54.4	68.2	95+	1996	16	72.5	1994	41	1966	26	65.6	1990	17	116	.0	2.0	31.0	.0	.0	.0
Sep	78.5	48.3	63.4	93	1983	3	67.2	2000	29	1965	30	61.2	1976	86	39	.0	.4	30.0	.0	.1	.0
Oct	70.7	38.3	54.5	89+	1979	6	58.5	1987	16+	1993	31	49.7	1976	327	1	.0	.0	30.8	.0	6.9	.0
Nov	60.4	28.4	44.4	80	1973	9	48.5	1999	10+	1992	25	39.7	1992	618	0	.0	.0	27.0	@	22.6	.0
Dec	53.0	23.6	38.3	73	1987	11	42.8	1977	-5+	1978	9	35.0	1988	828	0	.0	.0	22.0	.3	27.0	.1
Ann	69.9	37.5	53.7	101+	Jun 1994	27	73.6	Jul 1994	-5+	Dec 1978	9	33.1	Jan 1992	4572	461	.3	23.3	337.7	.9	147.4	.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: 1965-2001

(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	1.44	1.41	1.54	1991	17	4.79	1993	.00+	2000
Feb	1.24	1.44	1.57	1997	28	3.66	1980	.00+	1999
Mar	.96	.71	1.04	1982	13	3.21	1983	.00+	1984
Apr	.54	.39	2.93	1987	27	3.78	1987	.00+	2000
May	.53	.16	1.60	1992	5	4.99	1992	.00+	2000
Jun	1.07	.41	4.20	1996	30	6.37	1996	.00	1993
Jul	4.38	4.55	4.06	1986	15	8.75	1976	1.24	2000
Aug	3.70	3.29	2.88	1988	5	8.82	1988	.97	1975
Sep	2.35	1.77	2.55	1975	5	5.77	1983	.18	1984
Oct	2.02	1.62	2.50	2000	11	7.81	2000	.00+	1982
Nov	1.44	1.10	2.80	1994	12	6.28	1994	.00+	1999
Dec	1.89	1.14	2.79	1967	15	5.71	1994	.00+	1996
Ann	21.56	22.17	4.20	Jun 1996	30	8.82	Aug 1988	.00+	May 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.6	3.7	.8	.2
Feb	5.1	3.4	.7	.1
Mar	5.0	2.7	.6	@
Apr	2.7	1.3	.3	.1
May	3.0	1.4	.3	.1
Jun	4.4	2.3	.6	.1
Jul	13.7	8.7	3.2	.8
Aug	13.1	7.6	2.5	.7
Sep	8.0	4.8	1.7	.5
Oct	6.0	4.0	1.4	.4
Nov	4.0	2.7	1.0	.4
Dec	5.3	3.7	1.5	.3
Ann	76.9	46.3	14.6	3.7

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	.00	.25	.48	.73	1.02	1.36	1.79	2.37	3.36	4.34
Feb	.00	.05	.20	.38	.58	.82	1.12	1.50	2.04	2.97	3.89
Mar	.00	.04	.17	.31	.47	.66	.88	1.17	1.58	2.27	2.95
Apr	.00	.00	.05	.13	.23	.34	.48	.66	.91	1.33	1.76
May	.00	.00	.00	.03	.09	.19	.34	.55	.89	1.53	2.22
Jun	.00	.02	.09	.20	.35	.55	.82	1.20	1.77	2.80	3.88
Jul	1.81	2.21	2.78	3.24	3.67	4.12	4.59	5.14	5.84	6.90	7.86
Aug	1.20	1.55	2.07	2.51	2.93	3.37	3.85	4.42	5.14	6.27	7.31
Sep	.28	.47	.80	1.12	1.47	1.86	2.31	2.86	3.62	4.87	6.08
Oct	.00	.06	.28	.56	.89	1.28	1.78	2.42	3.34	4.93	6.54
Nov	.00	.16	.42	.65	.89	1.15	1.44	1.79	2.28	3.07	3.84
Dec	.00	.00	.24	.52	.85	1.23	1.70	2.31	3.15	4.61	6.07
Ann	14.95	16.21	17.84	19.08	20.18	21.25	22.36	23.58	25.07	27.24	29.12

\+ 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: 1965-2001
(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	2.4	.4	#	#	10.5	1997	7	11.0	1975	9	1991	17	4	1988	.8	.5	.2	.1	@	.6	.2	.1	.0
Feb	.6	.0	1	0	5.0	1973	22	6.3	1973	15	1980	9	15	1980	.3	.2	.1	@	.0	.2	.1	.1	.0
Mar	1.0	.0	#	0	4.0	1975	27	11.8	1975	2+	2000	22	#+	2000	.5	.4	.1	.0	.0	.2	.0	.0	.0
Apr	.2	.0	#	0	2.0	1975	7	2.8	1975	#	1999	24	#	1999	.2	.1	.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	.7	.0	#	0	5.8	1976	13	5.8	1976	2	1993	15	#+	1996	.3	.2	.1	@	.0	.0	.0	.0	.0
Dec	.8	.0	#	0	8.0	1982	1	8.0	1982	11+	1988	9	1	1988	.4	.3	.1	.1	.0	.3	.2	.1	.0
Ann	5.7	.4	N/A	N/A	10.5	Jan 1997	7	11.8	Mar 1975	15	Feb 1980	9	15	Feb 1980	2.5	1.7	.6	.2	@	1.3	.5	.3	.0

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	6/08	6/04	6/01	5/30	5/27	5/25	5/22	5/19	5/15
32	5/26	5/20	5/17	5/13	5/10	5/07	5/04	4/30	4/25
28	5/13	5/07	5/03	4/30	4/26	4/23	4/20	4/16	4/10
24	4/25	4/19	4/15	4/11	4/08	4/04	3/31	3/27	3/21
20	4/08	4/01	3/27	3/23	3/19	3/15	3/11	3/06	2/27
16	3/23	3/13	3/06	2/28	2/22	2/17	2/10	2/03	1/24

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	9/26	9/30	10/02	10/05	10/07	10/09	10/12	10/15	10/19
32	10/05	10/10	10/13	10/15	10/18	10/20	10/23	10/26	10/30
28	10/10	10/15	10/19	10/22	10/25	10/27	10/31	11/03	11/08
24	10/25	10/29	11/01	11/04	11/06	11/09	11/11	11/14	11/18
20	10/31	11/05	11/09	11/12	11/15	11/18	11/21	11/24	11/29
16	11/12	11/18	11/22	11/26	11/29	12/02	12/06	12/10	12/16

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	151	144	140	136	132	129	125	120	114
32	179	173	168	164	160	156	152	147	140
28	201	194	189	185	180	176	172	167	160
24	231	224	219	215	212	208	204	199	193
20	262	254	249	244	240	236	231	226	218
16	313	301	293	286	279	272	265	256	245

***** 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	832	661	581	388	190	41	3	17	86	327	618	828	4572
60	677	521	426	245	84	9	0	1	21	184	468	673	3309
57	584	437	334	169	42	2	0	0	6	114	379	580	2647
55	522	381	275	125	24	1	0	0	2	77	320	518	2245
50	367	245	144	47	3	0	0	0	0	21	185	364	1376
32	11	3	0	0	0	0	0	0	0	0	1	12	27

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	203	266	442	602	850	1068	1189	1123	943	697	373	207	7963
55	0	0	4	37	161	378	476	410	255	61	2	0	1784
57	0	0	1	21	118	320	414	348	199	37	0	0	1458
60	0	0	0	7	66	236	321	256	124	13	0	0	1023
65	0	0	0	0	17	119	169	116	39	1	0	0	461
70	0	0	0	0	2	42	51	28	5	0	0	0	128

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	53	105	224	384	624	853	965	901	730	473	180	61	53	158	382	766	1390	2243	3208	4109	4839	5312	5492	5553
45	11	35	104	243	469	703	810	746	580	321	75	13	11	46	150	393	862	1565	2375	3121	3701	4022	4097	4110
50	0	2	31	123	316	553	655	591	430	184	18	0	0	2	33	156	472	1025	1680	2271	2701	2885	2903	2903
55	0	0	1	40	174	403	500	436	281	76	1	0	0	0	1	41	215	618	1118	1554	1835	1911	1912	1912
60	0	0	0	5	64	253	345	281	142	16	0	0	0	0	0	5	69	322	667	948	1090	1106	1106	1106
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	91	140	228	330	454	553	622	587	471	350	184	91	91	231	459	789	1243	1796	2418	3005	3476	3826	4010	4101

(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