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: HOLBROOK, AZ **COOP ID: 024089**

Climate Division: AZ 2 **NWS Call Sign:** **Elevation: 5,085 Feet** **Lat: 34˚55N** **Lon: 110˚09W**

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	50.6	20.9	35.8	74+	1994	5	41.8	1993	-20+	1937	23	27.9	1977	906	0	.0	.0	16.2	2.0	29.2	1.1
Feb	57.9	25.2	41.6	99	1903	8	48.6	1995	-19	1964	14	36.3	1984	656	0	.0	.0	21.4	.5	25.2	.1
Mar	65.1	30.3	47.7	89+	1921	17	53.5	1989	2	1966	4	42.2	1977	538	1	.0	.0	28.5	.0	22.1	.0
Apr	73.3	35.9	54.6	93	1989	21	62.5	1989	10	1967	30	47.9	1975	323	16	.0	.4	29.3	.0	11.1	.0
May	81.9	43.3	62.6	101+	1996	13	68.8	1996	13	1967	1	57.8	1980	142	68	@	3.5	30.9	.0	2.4	.0
Jun	92.2	51.4	71.8	108	1918	28	76.5	1994	30	1965	16	67.3	1983	15	219	3.2	18.0	30.0	.0	.1	.0
Jul	95.4	59.8	77.6	106+	1998	17	81.6	1996	41	1987	2	74.1	1987	0	391	5.9	24.2	31.0	.0	.0	.0
Aug	92.2	59.0	75.6	109	1955	29	80.3	1994	36+	1968	27	72.9	1976	1	329	1.4	19.6	31.0	.0	.0	.0
Sep	86.3	50.9	68.6	106	1955	10	73.5	1997	18	1970	18	63.6	1985	36	143	.1	7.5	30.0	.0	.3	.0
Oct	74.7	38.2	56.5	95+	1996	10	62.7	1988	15+	1975	26	49.7	1971	285	19	.0	.4	30.5	.0	8.1	.0
Nov	61.6	27.6	44.6	89	1924	4	51.0	1995	-10+	1976	28	38.4	2000	613	0	.0	.0	25.5	.2	24.5	.1
Dec	51.5	20.9	36.2	78	1995	2	41.8	1995	-21	1898	14	29.8	1971	893	0	.0	.0	17.0	1.4	29.4	.6
Ann	73.6	38.6	56.1	109	Aug 1955	29	81.6	Jul 1996	-21	Dec 1898	14	27.9	Jan 1977	4408	1186	10.6	73.6	321.3	4.1	152.4	1.9

\+ 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: 1893-2001

(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	.71	.54	1.04	1941	11	2.69	1993	.00+	1999
Feb	.66	.44	2.50	1987	23	3.77	1987	.00+	1984
Mar	.72	.62	1.20	1984	27	2.26	2000	.00+	1997
Apr	.37	.22	1.05	1964	29	1.40	1973	.00+	1991
May	.38	.20	.98	1931	16	1.59	1992	.00+	1998
Jun	.20	.08	2.80	1925	21	1.22	2000	.00+	1998
Jul	1.17	.89	2.87	1914	8	3.67	1976	.00+	1979
Aug	1.51	1.24	1.81	1963	31	4.15	1984	.20	1972
Sep	1.18	1.08	1.72	1923	17	3.93	1984	.00	1972
Oct	1.07	.90	1.48	1917	2	5.01	1972	.00+	1999
Nov	.66	.66	2.15	1895	23	2.02	1986	.00+	1999
Dec	.57	.42	1.60	1983	27	2.00	1991	.00+	1999
Ann	9.20	8.91	2.87	Jul 1914	8	5.01	Oct 1972	.00+	Dec 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.0	2.1	.3	.0
Feb	3.5	1.8	.3	.1
Mar	4.6	2.4	.2	@
Apr	2.7	1.3	@	.0
May	3.3	1.3	.2	.0
Jun	1.6	.5	.1	.0
Jul	6.0	3.2	.6	.2
Aug	8.0	3.7	.7	.1
Sep	5.4	2.8	.8	.1
Oct	4.1	2.6	.6	.1
Nov	3.0	1.8	.3	@
Dec	3.6	1.9	.3	.1
Ann	49.8	25.4	4.4	.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	.03	.14	.26	.42	.61	.86	1.21	1.82	2.44
Feb	.00	.02	.09	.17	.28	.41	.57	.79	1.09	1.63	2.17
Mar	.00	.00	.14	.28	.42	.56	.72	.93	1.20	1.62	2.04
Apr	.00	.00	.00	.05	.13	.22	.32	.46	.64	.95	1.26
May	.00	.00	.00	.03	.09	.17	.27	.42	.65	1.05	1.47
Jun	.00	.00	.00	.01	.04	.08	.14	.23	.36	.58	.81
Jul	.00	.00	.25	.45	.65	.88	1.14	1.47	1.90	2.63	3.34
Aug	.16	.28	.49	.70	.92	1.18	1.48	1.85	2.35	3.19	4.01
Sep	.03	.11	.27	.43	.62	.84	1.10	1.44	1.91	2.70	3.48
Oct	.00	.00	.14	.38	.59	.82	1.07	1.38	1.80	2.46	3.14
Nov	.00	.00	.14	.27	.39	.52	.67	.85	1.09	1.47	1.84
Dec	.00	.00	.10	.23	.34	.46	.59	.74	.94	1.25	1.58
Ann	5.22	5.93	6.86	7.60	8.27	8.93	9.62	10.40	11.37	12.80	14.07

\+ 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: 1893-2001
(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	1.5	.0	#	0	5.5	1974	2	10.0	1987	3+	1997	7	1	1992	.8	.7	.3	@	.0	.9	.3	.0	.0
Feb	1.3	.0	#	0	5.0	1977	24	6.0	1986	4	1990	3	#+	1998	.7	.6	.3	.1	.0	.7	.2	.0	.0
Mar	.7	.0	#	0	4.5	2000	7	4.5	2000	2	1991	2	#+	1998	.6	.4	@	.0	.0	.2	.0	.0	.0
Apr	.8	.0	#	0	7.5	1999	2	7.5	1999	#+	1999	2	#+	1999	.1	.1	.1	.1	.0	.0	.0	.0	.0
May	.0	.0	#	0	.9	1995	7	.9	1995	#	1995	7	#	1995	@	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	#	2000	18	#	2000	.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	#	1991	31	#+	1991	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.1	.0	#	0	4.0	1976	27	5.4	1994	4+	1994	20	#+	1996	.6	.5	.1	.0	.0	.6	.2	.0	.0
Dec	.9	.0	#	0	3.0	1992	5	6.3	1992	3	1992	5	#+	1997	.6	.5	@	.0	.0	.6	.1	.0	.0
Ann	6.3	.0	N/A	N/A	7.5	Apr 1999	2	10.0	Jan 1987	4+	Nov 1994	20	1	Jan 1992	3.4	2.8	.8	.2	.0	3.0	.8	.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	6/15	6/07	6/02	5/28	5/24	5/19	5/14	5/09	5/01
32	5/28	5/22	5/17	5/12	5/08	5/04	4/30	4/25	4/18
28	5/19	5/11	5/05	4/30	4/26	4/21	4/16	4/11	4/03
24	5/03	4/24	4/17	4/12	4/07	4/02	3/27	3/21	3/12
20	4/19	4/08	3/31	3/24	3/18	3/11	3/04	2/25	2/14
16	4/01	3/20	3/11	3/03	2/24	2/17	2/10	2/01	1/19

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	159	149	143	137	132	127	121	115	105
32	186	176	169	163	157	151	145	138	128
28	213	202	194	187	180	173	166	158	146
24	237	227	220	214	208	202	196	189	179
20	277	263	254	246	238	230	222	213	200
16	314	300	290	281	273	265	257	246	232

***** 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	906	656	538	323	142	15	0	1	36	285	613	893	4408
60	751	516	388	204	67	3	0	0	8	169	464	738	3308
57	658	432	304	148	37	1	0	0	3	114	376	645	2718
55	596	377	251	115	24	0	0	0	1	84	319	583	2350
50	451	248	141	52	6	0	0	0	0	33	192	435	1558
32	77	10	0	0	0	0	0	0	0	0	3	62	152

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	194	278	486	683	949	1194	1414	1352	1097	757	381	192	8977
55	0	1	24	108	259	504	701	639	408	128	6	0	2778
57	0	0	15	81	211	444	639	577	350	95	3	0	2415
60	0	0	6	47	148	356	546	484	266	58	1	0	1912
65	0	0	1	16	68	219	391	329	143	19	0	0	1186
70	0	0	0	4	22	109	238	185	56	4	0	0	618

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	29	85	218	412	665	942	1147	1064	843	484	156	35	29	114	332	744	1409	2351	3498	4562	5405	5889	6045	6080
45	3	29	106	271	511	792	992	909	693	341	65	3	3	32	138	409	920	1712	2704	3613	4306	4647	4712	4715
50	0	3	44	153	361	642	837	754	543	208	15	0	0	3	47	200	561	1203	2040	2794	3337	3545	3560	3560
55	0	0	9	69	220	492	682	599	393	100	0	0	0	0	9	78	298	790	1472	2071	2464	2564	2564	2564
60	0	0	0	20	108	343	527	444	245	31	0	0	0	0	0	20	128	471	998	1442	1687	1718	1718	1718
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	61	123	222	328	464	586	711	672	546	368	173	65	61	184	406	734	1198	1784	2495	3167	3713	4081	4254	4319

(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