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: FORT THOMAS 2 SW, AZ **COOP ID: 023150**

Climate Division: AZ 7 **NWS Call Sign:** **Elevation: 2,800 Feet** **Lat: 33˚01N** **Lon: 110˚00W**

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	59.4	28.0	43.7	81	1971	18	48.1	1993	3	1987	17	39.0	1992	660	0	.0	.0	28.9	.0	22.0	.0
Feb	65.1	32.3	48.7	84+	1989	26	54.6	1996	7	1972	3	44.8	1974	457	0	.0	.0	27.5	.2	14.7	.0
Mar	71.2	36.2	53.7	93	1989	10	58.6	1989	15	1971	3	47.9	1973	356	6	.0	.2	30.9	.0	8.8	.0
Apr	79.6	41.7	60.7	100	1989	21	67.7	1989	23	1973	6	54.5	1983	182	51	@	3.6	30.0	.0	3.3	.0
May	87.4	51.1	69.3	105+	2000	29	75.9	2000	29	1967	1	65.5	1980	39	170	1.0	15.2	31.0	.0	.2	.0
Jun	96.3	60.3	78.3	113+	1990	26	82.5	1994	40	1998	9	73.6	1991	1	400	11.8	28.0	30.0	.0	.0	.0
Jul	96.8	68.3	82.6	112	1995	28	85.1	1996	35+	1969	28	80.2	1992	0	544	13.9	29.3	31.0	.0	.0	.0
Aug	94.6	66.8	80.7	109	1972	1	84.2	1994	50	1979	23	76.6	1979	0	488	6.8	28.7	31.0	.0	.0	.0
Sep	90.9	59.7	75.3	105	1974	9	80.2	1997	26	1975	29	72.0	1987	2	310	2.0	20.9	30.0	.0	@	.0
Oct	80.8	47.1	64.0	99+	1988	6	68.4	1988	24	1991	29	60.0	1976	96	65	.0	5.2	31.0	.0	1.1	.0
Nov	67.9	34.3	51.1	93	1988	5	56.3	1995	7	1992	27	46.2	2000	417	1	.0	@	29.8	.0	12.4	.0
Dec	59.1	28.0	43.6	80	1970	7	47.3	1977	8+	1978	10	40.0	1974	665	0	.0	.0	28.5	@	23.5	.0
Ann	79.1	46.2	62.6	113+	Jun 1990	26	85.1	Jul 1996	3	Jan 1987	17	39.0	Jan 1992	2875	2035	35.5	131.1	359.6	.2	86.0	.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: 1966-2001

(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	1.06	.64	1.34	1993	10	5.27	1993	.00+	1999
Feb	1.03	1.01	1.47	1996	1	3.31	1998	.00+	1999
Mar	.82	.64	1.35	1994	26	2.67	1983	.00+	1997
Apr	.25	.13	1.29	2001	6	1.71	1988	.00+	2000
May	.34	.15	1.03	1982	4	2.78	1992	.00+	2000
Jun	.25	.08	.87	1972	21	1.79	1972	.00+	1995
Jul	1.30	1.03	2.14	1966	18	2.91	1998	.12	1989
Aug	1.31	1.02	2.10	1994	31	3.84	2000	.07	1981
Sep	1.08	1.04	1.53	1988	12	3.30	1999	.00	1998
Oct	1.12	.70	2.80	1983	1	4.40	1983	.00+	1999
Nov	.67	.56	1.50	1994	11	2.01	1978	.00+	1999
Dec	1.07	.69	1.50	1990	21	3.53	1984	.00+	1999
Ann	10.30	9.58	2.80	Oct 1983	1	5.27	Jan 1993	.00+	May 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.5	3.1	.5	.1
Feb	4.0	2.7	.5	.1
Mar	3.2	2.3	.4	.1
Apr	1.6	.9	.1	.0
May	1.8	1.1	.2	@
Jun	1.7	.7	.1	.0
Jul	5.4	3.2	.7	.2
Aug	5.1	3.2	.7	.2
Sep	3.8	2.6	.8	.1
Oct	3.1	2.3	.7	.2
Nov	2.8	2.1	.2	.1
Dec	3.5	2.5	.7	.2
Ann	40.5	26.7	5.6	1.3

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	.12	.29	.49	.71	.97	1.32	1.79	2.58	3.38
Feb	.00	.00	.24	.44	.63	.83	1.05	1.32	1.68	2.24	2.80
Mar	.00	.00	.00	.21	.38	.57	.78	1.05	1.41	2.02	2.60
Apr	.00	.00	.00	.00	.05	.12	.20	.30	.44	.69	.93
May	.00	.00	.00	.00	.02	.09	.20	.36	.59	1.01	1.43
Jun	.00	.00	.00	.00	.00	.07	.16	.28	.45	.74	1.04
Jul	.24	.35	.54	.72	.90	1.09	1.31	1.58	1.93	2.50	3.04
Aug	.11	.20	.38	.56	.76	.99	1.26	1.60	2.07	2.85	3.62
Sep	.02	.08	.21	.36	.53	.73	.98	1.30	1.75	2.53	3.30
Oct	.00	.00	.13	.31	.52	.75	1.03	1.39	1.89	2.71	3.54
Nov	.00	.00	.14	.27	.39	.53	.67	.86	1.10	1.48	1.86
Dec	.00	.00	.06	.25	.45	.69	.97	1.33	1.84	2.67	3.54
Ann	5.35	6.20	7.34	8.24	9.07	9.90	10.78	11.77	13.00	14.85	16.50

\+ 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: 1966-2001
(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	#	2000	2	#+	2000	#	2000	2	#	2000	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	#	.0	0	0	#	1971	20	#	1971	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	#	1994	19	#	1994	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.2	.0	#	0	4.0	1987	25	4.0	1987	1	1971	8	#	1971	.1	.1	@	.0	.0	@	.0	.0	.0
Ann	.2	.0	N/A	N/A	4.0	Dec 1987	25	4.0	Dec 1987	1	Dec 1971	8	#+	Jan 2000	.1	.1	@	.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	5/17	5/10	5/05	4/30	4/26	4/22	4/18	4/13	4/06
32	5/07	4/29	4/23	4/18	4/13	4/08	4/03	3/28	3/20
28	4/16	4/07	4/01	3/27	3/22	3/17	3/11	3/05	2/24
24	4/02	3/22	3/14	3/07	3/01	2/22	2/15	2/07	1/27
20	2/25	2/13	2/05	1/29	1/22	1/15	1/07	12/29	12/15
16	2/07	1/26	1/16	1/08	12/30	12/20	11/30	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	10/10	10/16	10/19	10/22	10/25	10/28	11/01	11/04	11/09
32	10/18	10/23	10/27	10/30	11/02	11/05	11/08	11/11	11/16
28	10/22	10/28	11/02	11/06	11/10	11/14	11/18	11/23	11/29
24	11/08	11/13	11/17	11/20	11/23	11/26	11/30	12/04	12/09
20	11/21	11/29	12/04	12/09	12/14	12/19	12/24	12/30	1/09
16	12/02	12/11	12/19	12/25	1/02	1/11	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	207	199	192	187	181	176	171	164	155
32	233	223	215	208	202	196	189	181	171
28	266	255	246	239	233	226	219	211	199
24	306	293	283	275	267	259	251	241	228
20	>365	362	342	331	323	315	307	298	285
16	>365	>365	>365	>365	>365	362	341	327	312

***** 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	660	457	356	182	39	1	0	0	2	96	417	665	2875
60	505	319	220	97	10	0	0	0	0	33	274	510	1968
57	412	240	153	59	4	0	0	0	0	14	198	417	1497
55	351	190	115	40	2	0	0	0	0	7	152	356	1213
50	208	91	45	13	0	0	0	0	0	1	66	209	633
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	364	467	673	859	1154	1389	1567	1511	1299	991	573	358	11205
55	1	13	75	209	443	699	854	798	609	285	36	0	4022
57	0	7	50	168	383	639	792	736	549	230	21	0	3575
60	0	1	25	116	296	549	699	643	459	156	8	0	2952
65	0	0	6	51	170	400	544	488	310	65	1	0	2035
70	0	0	1	17	78	258	389	333	175	17	0	0	1268

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	168	288	458	649	933	1178	1354	1295	1079	760	362	156	168	456	914	1563	2496	3674	5028	6323	7402	8162	8524	8680
45	66	156	306	500	778	1028	1199	1140	929	605	220	54	66	222	528	1028	1806	2834	4033	5173	6102	6707	6927	6981
50	11	62	172	352	623	878	1044	985	779	452	109	8	11	73	245	597	1220	2098	3142	4127	4906	5358	5467	5475
55	0	13	68	218	468	728	889	830	629	309	32	0	0	13	81	299	767	1495	2384	3214	3843	4152	4184	4184
60	0	0	17	109	317	578	734	675	479	173	5	0	0	0	17	126	443	1021	1755	2430	2909	3082	3087	3087
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	170	242	356	464	590	703	850	828	690	502	291	164	170	412	768	1232	1822	2525	3375	4203	4893	5395	5686	5850

(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