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: ALTOONA 3 W, PA **COOP ID: 360140**

Climate Division: PA 8 **NWS Call Sign:** **Elevation: 1,320 Feet** **Lat: 40˚30N** **Lon: 78˚28W**

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	34.8	18.2	26.5	65	1997	5	36.3	1990	-20+	1994	19	13.4	1977	1193	0	.0	.0	2.3	14.9	28.8	2.2
Feb	38.2	19.9	29.1	71	1997	28	36.0	1998	-12+	1979	14	17.0	1979	1006	0	.0	.0	3.7	10.7	24.9	1.8
Mar	47.5	27.5	37.5	83	1998	31	43.8	1973	-3	1993	15	30.8	1984	852	0	.0	.0	10.2	4.0	22.2	.3
Apr	60.2	37.6	48.9	90	1976	19	54.1	1985	11	1982	8	42.4	1975	484	0	.0	@	22.3	.4	9.7	.0
May	70.6	47.4	59.0	90	1996	20	66.1	1991	25+	1974	8	53.9	1997	220	34	.0	@	30.1	.0	1.2	.0
Jun	78.5	55.9	67.2	95	1971	29	70.8	1994	34+	1972	11	62.6	1972	43	108	.0	.3	30.0	.0	.0	.0
Jul	81.9	60.3	71.1	99	1988	17	75.3	1988	43	1978	12	67.8	1984	7	196	.0	2.2	31.0	.0	.0	.0
Aug	80.7	58.8	69.8	98	1999	13	73.6	1995	34+	1971	12	66.3	1982	15	163	.0	1.4	31.0	.0	.0	.0
Sep	74.0	52.5	63.3	94	1973	2	66.8	1971	26	1974	24	59.3	1975	95	41	.0	.2	30.0	.0	.2	.0
Oct	62.9	40.9	51.9	85	1986	1	57.9	1971	16	1969	24	47.0	1976	409	4	.0	.0	27.0	.0	5.6	.0
Nov	51.0	33.1	42.1	78	1982	3	47.7	1999	6	1976	30	35.4	1976	690	0	.0	.0	14.1	1.4	16.2	.0
Dec	39.3	23.6	31.5	72	2001	6	39.0	1984	-11	1983	25	19.0	1989	1041	0	.0	.0	3.9	9.2	27.0	.6
Ann	60.0	39.6	49.8	99	Jul 1988	17	75.3	Jul 1988	-20+	Jan 1994	19	13.4	Jan 1977	6055	546	.0	4.1	235.6	40.6	135.8	4.9

\+ 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: 1967-2001

(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	2.79	2.63	1.95	1982	23	6.16	1978	.36	1981
Feb	2.61	2.58	1.58	1984	13	4.82	1981	.41	1987
Mar	3.64	3.59	2.46	1994	3	6.56	1994	1.34	1995
Apr	3.67	2.85	1.61+	1977	3	9.12	1993	.74	1971
May	4.41	4.55	2.78	1982	29	6.90	1978	1.13	1991
Jun	4.28	4.12	3.47	1972	23	12.35	1972	1.48	1994
Jul	4.03	3.96	3.00	1982	28	8.58	1977	.64	1983
Aug	3.25	2.87	3.10	1970	31	6.72	1984	1.03	1995
Sep	4.04	3.86	3.25	1996	7	8.84	1996	.50	1985
Oct	3.38	3.41	2.58	1995	21	7.72	1976	.66	1992
Nov	3.66	3.25	4.49	1997	8	10.20	1985	.76+	1981
Dec	2.93	2.89	2.04	1992	11	6.00	1990	.87	1998
Ann	42.69	42.11	4.49	Nov 1997	8	12.35	Jun 1972	.36	Jan 1981

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.5	7.0	1.8	.3
Feb	10.6	6.1	1.7	.4
Mar	12.2	8.0	2.5	.6
Apr	12.8	8.2	2.6	.7
May	13.7	9.2	3.1	.7
Jun	11.6	8.2	2.9	1.0
Jul	11.2	7.6	2.4	1.1
Aug	10.0	6.0	2.2	.8
Sep	11.2	7.4	2.7	.9
Oct	10.9	6.2	2.3	.8
Nov	12.4	7.5	2.3	.8
Dec	13.2	6.6	2.0	.5
Ann	141.3	88.0	28.5	8.6

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	.77	1.03	1.43	1.78	2.13	2.49	2.89	3.36	3.97	4.93	5.82
Feb	.84	1.08	1.45	1.76	2.06	2.37	2.71	3.11	3.63	4.43	5.17
Mar	1.54	1.87	2.33	2.71	3.06	3.42	3.81	4.26	4.82	5.68	6.46
Apr	1.09	1.44	1.96	2.41	2.85	3.31	3.81	4.41	5.18	6.38	7.50
May	1.88	2.28	2.84	3.30	3.73	4.16	4.62	5.16	5.84	6.87	7.80
Jun	1.83	2.22	2.76	3.20	3.62	4.03	4.48	5.00	5.66	6.65	7.55
Jul	1.31	1.69	2.26	2.74	3.20	3.67	4.20	4.81	5.59	6.82	7.94
Aug	1.17	1.47	1.91	2.28	2.64	3.00	3.39	3.85	4.44	5.34	6.17
Sep	1.08	1.46	2.04	2.56	3.06	3.59	4.18	4.87	5.78	7.20	8.54
Oct	.99	1.31	1.79	2.21	2.62	3.04	3.51	4.07	4.78	5.90	6.95
Nov	.91	1.26	1.79	2.26	2.73	3.22	3.78	4.43	5.29	6.64	7.91
Dec	1.09	1.36	1.75	2.08	2.40	2.72	3.06	3.47	3.98	4.78	5.50
Ann	33.09	35.01	37.43	39.25	40.85	42.38	43.95	45.67	47.74	50.72	53.26

\+ 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: 1967-2001
(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	11.3	7.8	3	1	18.5	1996	8	43.1	1978	27	1978	22	14	1978	5.1	4.3	1.7	.6	.1	13.8	8.0	4.9	1.5
Feb	10.5	9.3	4	3	14.5	1972	19	38.0	1972	26	1972	21	18	1978	3.9	2.8	1.1	.5	.1	13.5	10.9	8.3	3.9
Mar	6.7	4.8	2	1	18.0	1994	3	20.0	1993	30	1994	4	12	1978	2.7	2.2	1.0	.3	@	6.8	5.1	3.9	1.7
Apr	.8	.0	#	#	5.0	1985	9	7.5	1985	6	1982	9	1	1982	.4	.4	.1	@	.0	.5	.3	.1	.0
May	#	.0	0	0	#	1977	9	#+	1977	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	#	1989	21	#+	1989	#+	1989	21	#+	1989	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.2	.0	#	#	12.0	1971	25	12.1	1971	14	1995	15	3	1995	.7	.4	.2	.1	.1	.6	.3	.2	@
Dec	4.6	3.0	1	1	11.0	1992	11	14.0	1973	13	1992	11	4+	1992	3.0	1.7	.6	.2	.1	5.6	2.8	1.5	.1
Ann	35.1	24.9	N/A	N/A	18.5	Jan 1996	8	43.1	Jan 1978	30	Mar 1994	4	18	Feb 1978	15.8	11.8	4.7	1.7	.4	40.8	27.4	18.9	7.2

+ 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	6/05	5/29	5/25	5/20	5/17	5/13	5/09	5/04	4/27
32	5/17	5/12	5/08	5/05	5/02	4/29	4/26	4/22	4/17
28	4/27	4/23	4/20	4/18	4/15	4/13	4/10	4/07	4/03
24	4/17	4/13	4/11	4/08	4/06	4/04	4/02	3/30	3/26
20	4/11	4/06	4/02	3/30	3/27	3/25	3/21	3/18	3/13
16	3/28	3/24	3/22	3/20	3/18	3/16	3/13	3/11	3/07

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	162	152	144	138	132	126	120	113	103
32	184	177	171	167	163	159	154	149	142
28	214	207	201	197	192	188	183	178	170
24	238	230	224	220	215	211	206	201	193
20	268	257	249	243	236	230	224	216	205
16	278	271	266	262	258	254	250	245	238

***** 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	1193	1006	852	484	220	43	7	15	95	409	690	1041	6055
60	1038	866	697	337	120	10	0	1	30	270	540	886	4795
57	945	782	604	255	76	3	0	0	12	198	453	793	4121
55	883	726	544	206	52	1	0	0	6	157	396	731	3702
50	730	586	400	103	16	0	0	0	1	78	265	584	2763
32	264	174	60	0	0	0	0	0	0	0	18	162	678

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	94	92	231	507	837	1055	1212	1171	937	618	318	144	7216
55	0	0	2	22	176	367	499	458	253	62	6	0	1845
57	0	0	0	12	138	308	437	396	199	41	3	0	1534
60	0	0	0	4	89	225	344	304	127	20	0	0	1113
65	0	0	0	0	34	108	196	163	41	4	0	0	546
70	0	0	0	0	9	34	80	63	6	0	0	0	192

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	14	17	81	262	555	789	943	896	659	335	125	24	14	31	112	374	929	1718	2661	3557	4216	4551	4676	4700
45	4	5	40	156	403	639	788	741	509	207	63	7	4	9	49	205	608	1247	2035	2776	3285	3492	3555	3562
50	0	0	18	85	267	491	633	586	363	112	23	3	0	0	18	103	370	861	1494	2080	2443	2555	2578	2581
55	0	0	6	43	153	344	478	431	229	49	8	0	0	0	6	49	202	546	1024	1455	1684	1733	1741	1741
60	0	0	2	13	77	204	326	282	123	14	0	0	0	0	2	15	92	296	622	904	1027	1041	1041	1041
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	4	10	51	154	325	500	625	586	401	191	67	14	4	14	65	219	544	1044	1669	2255	2656	2847	2914	2928

(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