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: ALLENTOWN LEHIGH VLY AP, PA **COOP ID: 360106**

Climate Division: PA 2 **NWS Call Sign: ABE** **Elevation: 390 Feet** **Lat: 40˚39N** **Lon: 75˚27W**

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	35.0	19.1	27.1	72	1950	26	36.5	1998	-15	1994	21	17.2	1977	1159	0	.0	.0	2.8	11.9	27.5	1.0
Feb	38.7	21.0	29.9	76	1985	24	38.6	1998	-8	1996	6	19.1	1979	967	0	.0	.0	4.8	7.7	23.3	.4
Mar	48.7	28.9	38.8	87	1998	30	44.3	2000	-1	1967	19	32.3	1984	797	1	.0	.0	14.2	1.4	18.4	.0
Apr	60.1	37.8	49.0	93	1976	18	53.5	1994	16	1982	7	43.9	1975	470	6	.0	.2	25.7	@	5.8	.0
May	70.9	48.3	59.6	97	1962	19	65.9	1991	29	1996	14	54.6	1973	197	45	.0	.7	30.9	.0	.2	.0
Jun	79.3	57.7	68.5	100	1966	27	72.6	1994	39	1972	11	64.3	1982	34	153	.0	2.6	30.0	.0	.0	.0
Jul	83.9	62.6	73.3	105	1966	3	78.0	1999	46	2001	3	70.2	2000	15	288	.2	6.5	31.0	.0	.0	.0
Aug	81.7	60.7	71.2	100+	1955	2	76.8	1980	41	1986	30	66.9	1982	8	216	.0	3.6	31.0	.0	.0	.0
Sep	74.0	52.7	63.4	99+	1953	2	68.8	1980	31	1963	24	59.7	1975	106	73	.0	.8	30.0	.0	.1	.0
Oct	62.9	41.1	52.0	90	1951	5	57.9	1984	21	1988	31	46.6	1972	392	5	.0	.0	29.6	.0	3.5	.0
Nov	51.2	32.7	42.0	81	1950	1	47.2	1975	11+	1955	29	35.9	1995	675	0	.0	.0	17.4	.3	13.6	.0
Dec	40.0	24.0	32.0	72+	1984	29	37.8	1998	-8	1950	28	20.4	1989	1010	0	.0	.0	5.2	6.0	24.5	.2
Ann	60.5	40.6	50.6	105	Jul 1966	3	78.0	Jul 1999	-15	Jan 1994	21	17.2	Jan 1977	5830	787	.2	14.4	252.6	27.3	116.9	1.6

\+ 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: 1948-2001

(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	3.50	3.40	2.37	1949	5	8.42	1979	.67	1981
Feb	2.75	2.64	2.05	1966	13	5.44	1971	1.01	1980
Mar	3.56	3.43	2.99	1952	11	6.59	1993	.97	1981
Apr	3.49	3.44	2.52	1968	24	7.87	1983	.61	1985
May	4.47	4.23	3.23	1972	31	10.62	1984	1.43	1993
Jun	3.99	4.26	3.50	1967	18	8.58	1972	.97	1999
Jul	4.27	4.21	4.15	1952	9	9.26	1984	.33	1999
Aug	4.35	3.95	4.19	1982	8	9.42	1974	.76	1995
Sep	4.37	3.48	6.37	1999	16	11.57	1999	1.10	1984
Oct	3.33	2.96	3.67	1996	19	7.49	1995	1.10	2000
Nov	3.70	3.30	3.35	1972	8	9.69	1972	.68	1976
Dec	3.39	3.08	2.68	1953	6	7.89	1973	.62	1998
Ann	45.17	45.50	6.37	Sep 1999	16	11.57	Sep 1999	.33	Jul 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.2	6.4	2.7	.9
Feb	10.2	5.7	1.7	.4
Mar	11.1	6.7	2.4	.9
Apr	11.3	6.6	2.7	.9
May	12.4	8.3	2.8	1.2
Jun	11.2	7.2	2.7	1.1
Jul	10.5	6.8	3.1	1.2
Aug	9.4	6.3	2.8	1.3
Sep	9.9	6.3	2.8	1.1
Oct	8.7	5.6	2.2	1.0
Nov	10.0	6.6	2.4	.9
Dec	11.0	6.5	2.5	.8
Ann	126.9	79.0	30.8	11.7

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	.87	1.20	1.71	2.16	2.61	3.08	3.60	4.23	5.04	6.33	7.54
Feb	1.09	1.35	1.71	2.00	2.28	2.57	2.88	3.23	3.69	4.38	5.01
Mar	1.44	1.77	2.23	2.61	2.97	3.34	3.73	4.18	4.76	5.64	6.44
Apr	.99	1.32	1.82	2.25	2.68	3.13	3.62	4.20	4.95	6.13	7.23
May	1.61	2.03	2.64	3.15	3.63	4.13	4.68	5.31	6.11	7.36	8.50
Jun	1.30	1.68	2.24	2.71	3.17	3.64	4.16	4.76	5.54	6.75	7.87
Jul	1.04	1.44	2.06	2.62	3.17	3.74	4.39	5.16	6.17	7.77	9.27
Aug	1.02	1.42	2.06	2.63	3.20	3.80	4.47	5.28	6.33	8.01	9.59
Sep	1.10	1.51	2.15	2.71	3.27	3.85	4.51	5.29	6.30	7.91	9.42
Oct	1.14	1.45	1.91	2.30	2.67	3.06	3.48	3.96	4.59	5.56	6.45
Nov	1.02	1.37	1.90	2.37	2.83	3.30	3.83	4.46	5.27	6.55	7.74
Dec	.77	1.08	1.58	2.03	2.47	2.95	3.48	4.11	4.95	6.28	7.53
Ann	34.20	36.37	39.13	41.21	43.04	44.80	46.60	48.59	50.98	54.43	57.39

\+ 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: 1948-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	11.1	8.8	2	1
Feb	9.4	7.2	2	2
Mar	5.5	2.1	1	1
Apr	.8	#	#	0
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	#	0
Sep	.0	.0	0	0
Oct	.1	.0	#	0
Nov	1.4	#	#	0
Dec	3.8	2.6	#	0
Ann	32.1	20.7	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	16.3	1996	7	35.5	1996	26	1996	9	8+	1996
Feb	24.0	1983	11	29.5	1983	28	1983	12	13	1994
Mar	16.7	1993	13	21.6	1993	18+	1994	4	6	1994
Apr	11.4	1982	6	13.4	1982	11+	1982	8	1	1982
May	#	1977	9	#	1977	0	0	0	#	1995
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	#	1997
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	1.2	1972	19	1.4	1972	1	1972	19	#	1972
Nov	5.9	1977	30	8.4	1977	6	1971	25	#	1995
Dec	8.6	1995	19	15.7	1995	11	1995	20	4	1995
Ann	24.0	Feb 1983	11	35.5	Jan 1996	28	Feb 1983	12	13	Feb 1994

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.7	2.8	1.0	.6	.2
Feb	4.9	2.2	1.0	.5	.1
Mar	2.8	1.2	.6	.3	.1
Apr	.4	.2	.1	@	@
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	.8	.4	.2	@	.0
Dec	3.3	1.4	.3	.1	.0
Ann	18.0	8.3	3.2	1.5	.4

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	12.3	7.3	3.9	1.3
Feb	10.7	6.9	4.4	1.8
Mar	4.0	2.7	1.8	.6
Apr	.4	.3	.2	.1
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
Nov	.6	.2	@	.0
Dec	4.6	2.1	.9	.1
Ann	32.6	19.5	11.2	3.9

+ 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	5/14	5/10	5/07	5/04	5/02	4/29	4/27	4/24	4/20
32	5/04	4/29	4/26	4/23	4/20	4/18	4/15	4/11	4/07
28	4/17	4/14	4/11	4/09	4/07	4/05	4/02	3/31	3/27
24	4/05	4/02	3/30	3/28	3/26	3/24	3/22	3/20	3/16
20	3/28	3/24	3/21	3/19	3/17	3/14	3/12	3/09	3/06
16	3/23	3/17	3/13	3/09	3/05	3/02	2/26	2/22	2/15

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	9/24	9/29	10/02	10/05	10/08	10/10	10/13	10/17	10/21
32	10/02	10/08	10/12	10/15	10/18	10/21	10/25	10/29	11/03
28	10/19	10/24	10/28	10/31	11/04	11/07	11/10	11/14	11/19
24	10/28	11/03	11/08	11/11	11/15	11/18	11/22	11/26	12/02
20	11/14	11/19	11/23	11/26	11/29	12/02	12/06	12/09	12/15
16	11/25	12/02	12/06	12/10	12/14	12/17	12/21	12/26	1/01

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	178	171	166	162	158	154	150	146	139
32	206	197	191	185	180	175	170	163	154
28	229	222	218	214	210	206	202	198	191
24	254	247	241	237	232	228	224	218	211
20	276	269	265	261	257	253	249	245	238
16	309	300	293	288	283	277	272	265	256

***** 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	1159	967	797	470	197	34	15	8	106	392	675	1010	5830
60	1021	844	656	334	105	4	0	0	29	269	542	869	4673
57	928	760	563	250	63	1	0	0	12	197	454	776	4004
55	866	704	502	198	42	0	0	0	6	156	396	714	3584
50	712	564	358	92	11	0	0	0	1	76	260	566	2640
32	250	157	39	0	0	0	0	0	0	0	12	143	601

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	70	95	273	545	892	1127	1309	1248	975	655	338	124	7651
55	0	0	10	42	205	438	596	535	294	70	12	1	2203
57	0	0	7	30	161	379	534	473	241	48	8	1	1882
60	0	0	4	17	106	292	441	381	170	25	4	0	1440
65	0	0	1	6	45	153	288	216	73	5	0	0	787
70	0	0	0	2	14	69	152	110	30	1	0	0	378

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	18	26	115	322	652	897	1069	1014	742	418	159	37	18	44	159	481	1133	2030	3099	4113	4855	5273	5432	5469
45	3	6	59	194	497	747	914	859	592	275	81	12	3	9	68	262	759	1506	2420	3279	3871	4146	4227	4239
50	1	0	27	102	349	597	759	704	442	160	36	3	1	1	28	130	479	1076	1835	2539	2981	3141	3177	3180
55	0	0	8	46	212	447	604	549	300	74	11	0	0	0	8	54	266	713	1317	1866	2166	2240	2251	2251
60	0	0	3	18	110	300	449	395	178	27	2	0	0	0	3	21	131	431	880	1275	1453	1480	1482	1482
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	8	15	74	186	386	590	731	684	466	239	82	14	8	23	97	283	669	1259	1990	2674	3140	3379	3461	3475

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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