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: HAWLEY 1 E, PA **COOP ID: 363758**

Climate Division: PA 1 **NWS Call Sign:** **Elevation: 890 Feet** **Lat: 41˚29N** **Lon: 75˚10W**

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	33.5	12.8	23.2	72	1950	27	31.9	1990	-31	1994	21	13.2	1977	1298	0	.0	.0	2.4	14.1	30.0	5.1
Feb	36.3	13.7	25.0	70+	1985	24	32.4	1984	-25+	1934	28	15.4	1979	1119	0	.0	.0	3.2	10.4	26.9	4.4
Mar	45.3	23.1	34.2	85	1986	31	39.5	1973	-14	1948	6	28.4	1984	956	0	.0	.0	10.2	3.7	26.3	.5
Apr	56.9	32.9	44.9	91+	1941	20	48.2	1985	11	1969	1	39.5	1975	603	0	.0	.1	21.8	.2	14.7	.0
May	68.3	43.0	55.7	94+	1996	20	62.0	1991	22+	1931	1	50.9	1997	299	9	.0	.1	30.2	.0	3.1	.0
Jun	75.5	52.1	63.8	98	1943	25	69.1	1994	31	1929	3	60.0	1985	95	58	.0	.6	30.0	.0	@	.0
Jul	80.0	56.7	68.4	100+	1926	22	73.0	1994	39+	1927	5	64.7	1976	26	129	.0	2.0	31.0	.0	.0	.0
Aug	78.4	55.3	66.9	100	1948	26	70.4	1996	32	1940	25	63.5	1982	39	96	.0	.8	31.0	.0	.0	.0
Sep	71.0	47.7	59.4	97	1932	1	62.8	1971	22	1947	28	55.7	1975	178	8	.0	.2	30.0	.0	1.1	.0
Oct	61.2	35.9	48.6	91	1927	2	54.6	1971	12	1936	28	44.4+	1988	511	0	.0	.0	27.5	.0	12.1	.0
Nov	49.2	28.7	39.0	82	1982	3	44.1	1975	-6	1938	26	34.0	1976	782	0	.0	.0	13.4	1.0	21.8	.0
Dec	37.6	19.3	28.5	69	1998	8	35.1	1984	-19	1989	24	14.3	1989	1133	0	.0	.0	3.7	8.8	28.4	1.6
Ann	57.8	35.1	46.5	100+	Aug 1948	26	73.0	Jul 1994	-31	Jan 1994	21	13.2	Jan 1977	7039	300	.0	3.8	234.4	38.2	164.4	11.6

\+ 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: 1926-2001

(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	3.18	3.12	2.17	1978	9	8.76	1996	.33	1980
Feb	2.62	2.54	2.40	1926	4	6.11	1981	.41	1987
Mar	3.09	2.90	2.60	1940	31	5.84	1977	.27	1981
Apr	3.73	3.70	2.17	1983	16	7.66	1983	1.33	1978
May	4.03	3.85	2.85	1984	29	9.20	1984	1.10	1980
Jun	4.24	3.56	3.96	1973	29	10.77	1973	.78	1988
Jul	3.61	3.64	6.00	1952	10	7.25	1996	1.55+	1999
Aug	3.47	2.98	4.06	1933	24	8.21	1994	.81	1995
Sep	3.82	3.51	5.05	1999	17	8.37	1987	1.20	1980
Oct	3.14	2.84	3.86	1932	6	7.90	1995	.86	1982
Nov	3.60	3.51	3.17	1950	26	8.37	1972	1.24	1976
Dec	3.09	3.10	2.90	1952	11	7.36	1973	.94	1989
Ann	41.62	41.89	6.00	Jul 1952	10	10.77	Jun 1973	.27	Mar 1981

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.5	6.5	2.2	.6
Feb	9.3	5.8	2.0	.3
Mar	10.3	6.3	1.9	.8
Apr	11.8	7.2	2.8	.8
May	12.6	7.8	2.4	1.0
Jun	12.1	8.1	2.9	.8
Jul	10.4	6.7	2.5	.9
Aug	9.9	6.2	2.5	.7
Sep	10.4	6.6	2.2	.9
Oct	9.6	5.9	2.0	.8
Nov	10.7	6.1	2.2	1.0
Dec	11.3	6.1	2.3	.6
Ann	129.9	79.3	27.9	9.2

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	.60	.89	1.35	1.78	2.22	2.70	3.23	3.88	4.74	6.12	7.44
Feb	.95	1.19	1.55	1.85	2.13	2.42	2.74	3.10	3.57	4.30	4.96
Mar	1.17	1.46	1.87	2.21	2.54	2.87	3.23	3.65	4.18	5.00	5.74
Apr	1.29	1.64	2.15	2.58	3.00	3.43	3.89	4.43	5.13	6.20	7.19
May	1.44	1.82	2.37	2.83	3.27	3.72	4.21	4.78	5.51	6.64	7.67
Jun	.99	1.39	2.01	2.56	3.12	3.70	4.36	5.14	6.17	7.80	9.33
Jul	1.36	1.70	2.18	2.58	2.97	3.36	3.78	4.27	4.90	5.86	6.74
Aug	.94	1.27	1.77	2.21	2.64	3.09	3.59	4.18	4.96	6.17	7.30
Sep	1.03	1.39	1.95	2.43	2.91	3.40	3.96	4.61	5.47	6.80	8.05
Oct	1.00	1.30	1.74	2.12	2.48	2.86	3.27	3.76	4.38	5.35	6.25
Nov	1.44	1.78	2.25	2.63	3.00	3.37	3.77	4.24	4.83	5.73	6.54
Dec	.86	1.15	1.59	1.98	2.36	2.76	3.20	3.72	4.39	5.45	6.44
Ann	30.62	32.78	35.53	37.61	39.44	41.21	43.04	45.05	47.47	50.98	54.01

\+ 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: 1926-2001
(3) Derived from 1971-2000 serially complete daily data

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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	10.4	9.6	4	3
Feb	10.1	10.0	5	3
Mar	7.8	6.4	2	1
Apr	2.7	.7	#	#
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.1	.0	#	0
Nov	3.0	.7	#	#
Dec	8.5	7.8	2	1
Ann	42.6	35.2	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	22.0	1996	8	29.3	1994	29	1996	8	12	1996
Feb	19.0	1978	7	26.2	1978	33	1978	7	19	1978
Mar	10.5	1996	8	22.8	1984	24	1994	4	14	1994
Apr	13.0	1986	23	21.4	1986	18	1986	24	1	1997
May	.4	1977	10	.4	1977	#	1977	9	#	1977
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	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	2.0	1972	19	2.0	1972	1	1972	19	#+	1974
Nov	15.5	1971	25	27.2	1971	26	1971	26	4	1971
Dec	10.0	2000	31	19.3	1995	12+	2000	31	6	1981
Ann	22.0	Jan 1996	8	29.3	Jan 1994	33	Feb 1978	7	19	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.6	3.5	1.3	.6	.1
Feb	5.3	3.0	1.1	.4	.1
Mar	3.5	2.2	1.2	.6	@
Apr	1.1	.5	.3	.2	.1
May	@	.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	@	@	.0	.0	.0
Nov	1.5	.8	.2	.1	.1
Dec	4.6	2.5	1.1	.5	@
Ann	22.6	12.5	5.2	2.4	.4

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	20.9	13.9	8.8	2.7
Feb	18.3	14.0	10.4	4.7
Mar	9.6	6.6	4.9	2.1
Apr	1.0	.5	.4	.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	1.8	.7	.4	.2
Dec	12.4	7.6	3.6	.4
Ann	64.0	43.3	28.5	10.2

+ 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	6/10	6/04	5/31	5/28	5/24	5/21	5/18	5/14	5/08
32	5/24	5/19	5/16	5/13	5/11	5/08	5/05	5/02	4/27
28	5/10	5/05	5/02	4/29	4/26	4/24	4/21	4/18	4/13
24	4/24	4/20	4/18	4/16	4/14	4/12	4/10	4/07	4/04
20	4/13	4/09	4/06	4/03	4/01	3/29	3/27	3/23	3/19
16	3/30	3/27	3/25	3/24	3/22	3/21	3/19	3/17	3/15

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	9/08	9/12	9/15	9/17	9/20	9/22	9/24	9/27	10/01
32	9/20	9/24	9/27	9/30	10/02	10/04	10/07	10/10	10/14
28	9/29	10/04	10/08	10/11	10/14	10/17	10/20	10/23	10/28
24	10/14	10/18	10/21	10/23	10/26	10/28	10/31	11/02	11/06
20	10/29	11/03	11/07	11/10	11/13	11/16	11/20	11/23	11/29
16	11/10	11/16	11/20	11/24	11/27	11/30	12/04	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	135	129	125	121	118	114	110	106	100
32	159	154	150	147	144	141	138	134	129
28	189	182	177	173	170	166	162	157	151
24	212	206	201	198	194	191	187	183	177
20	246	239	234	230	226	222	218	212	206
16	267	261	257	253	249	245	241	237	231

***** 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	1298	1119	956	603	299	95	26	39	178	511	782	1133	7039
60	1143	979	801	453	172	31	4	6	71	361	632	978	5631
57	1050	895	708	365	112	13	0	0	34	278	542	885	4882
55	988	839	646	307	80	6	0	0	19	227	482	823	4417
50	833	699	491	177	26	0	0	0	3	123	339	669	3360
32	327	241	82	1	0	0	0	0	0	1	28	213	893

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	52	46	149	388	734	954	1126	1080	820	513	236	103	6201
55	0	0	0	4	100	270	413	367	149	27	0	0	1330
57	0	0	0	2	71	216	351	305	104	15	0	0	1064
60	0	0	0	0	38	145	262	217	50	6	0	0	718
65	0	0	0	0	9	58	129	96	8	0	0	0	300
70	0	0	0	0	1	14	44	26	0	0	0	0	85

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	2	8	52	199	497	722	886	841	586	286	93	16	2	10	62	261	758	1480	2366	3207	3793	4079	4172	4188
45	0	0	24	109	351	572	731	686	437	166	43	3	0	0	24	133	484	1056	1787	2473	2910	3076	3119	3122
50	0	0	8	53	212	423	576	531	295	83	17	0	0	0	8	61	273	696	1272	1803	2098	2181	2198	2198
55	0	0	2	21	117	282	421	377	175	33	4	0	0	0	2	23	140	422	843	1220	1395	1428	1432	1432
60	0	0	0	7	47	157	273	231	89	7	0	0	0	0	0	7	54	211	484	715	804	811	811	811
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	10	51	141	310	453	574	540	364	194	65	6	2	12	63	204	514	967	1541	2081	2445	2639	2704	2710

(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