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: BRADFORD 4 SW RES 5, PA **COOP ID: 360868**

Climate Division: PA10 **NWS Call Sign:** **Elevation: 1,692 Feet** **Lat: 41˚54N** **Lon: 78˚43W**

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	29.3	11.2	20.3	69	1950	25	30.3	1990	-36	1977	13	6.3	1977	1388	0	.0	.0	1.3	17.9	29.8	6.5
Feb	32.2	12.5	22.4	66	1997	22	32.4	1998	-29	1979	18	12.2	1979	1195	0	.0	.0	2.4	14.8	27.2	5.3
Mar	42.1	21.8	32.0	83	1986	30	39.6	2000	-22	1980	2	21.7	1984	1025	0	.0	.0	8.9	6.4	27.0	1.5
Apr	54.2	32.2	43.2	87+	1976	18	49.4	1985	6+	1958	9	36.5	1975	655	0	.0	.0	19.6	.6	17.9	.0
May	67.0	41.9	54.5	93	1979	9	60.8	1991	18	1956	25	47.0	1997	347	19	.0	.1	29.4	.0	6.5	.0
Jun	75.0	50.6	62.8	95	1978	18	65.8	1973	27+	1949	8	59.4	1992	97	31	.0	.1	30.0	.0	.6	.0
Jul	78.9	54.8	66.9	98	1986	7	69.7	1988	32	1963	9	63.0	2000	38	94	.0	.6	31.0	.0	.0	.0
Aug	77.0	53.6	65.3	93+	1948	27	68.7	1995	28+	1982	28	61.6	1982	60	69	.0	.3	31.0	.0	.2	.0
Sep	69.5	47.0	58.3	95+	1953	2	64.1	1971	18	1957	27	55.2	1976	207	6	.0	.0	29.8	.0	2.3	.0
Oct	58.9	36.4	47.7	85+	1949	10	55.3	1984	12+	1952	21	41.8	1988	537	0	.0	.0	24.5	.0	12.8	.0
Nov	45.6	28.8	37.2	79	1950	1	43.0	1975	-4	1951	21	30.6	1976	835	0	.0	.0	10.9	3.4	22.1	.1
Dec	34.2	18.4	26.3	68	1982	3	35.1	1984	-22+	1980	25	12.0	1989	1200	0	.0	.0	2.5	13.5	29.2	2.9
Ann	55.3	34.1	44.7	98	Jul 1986	7	69.7	Jul 1988	-36	Jan 1977	13	6.3	Jan 1977	7584	219	.0	1.1	221.3	56.6	175.6	16.3

\+ 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

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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	2.98	2.56	1.92	1959	21	5.96	1999	.87	1981
Feb	2.49	2.33	1.78	1997	27	5.24	1990	.35	1987
Mar	3.36	3.64	2.00	1987	30	6.34	1985	.83	1978
Apr	3.57	3.72	1.63	1981	29	5.85	1996	1.39	1978
May	4.02	3.83	2.15	1953	26	8.11	1984	1.73	1971
Jun	5.46	4.98	3.20	1984	16	10.82	1972	1.67	1991
Jul	4.52	4.43	2.70	1979	24	12.03	1992	2.32	1983
Aug	4.20	3.81	4.18	1994	14	8.93	1994	1.86	1976
Sep	4.76	4.29	3.95	1967	28	10.77	1977	1.58	1985
Oct	3.79	3.57	2.90	1959	24	7.35	1981	1.45	1994
Nov	3.85	3.73	2.54	1950	25	7.34	1985	.59	1976
Dec	3.75	3.12	2.47	1978	25	7.59	1990	1.83	1998
Ann	46.75	46.02	4.18	Aug 1994	14	12.03	Jul 1992	.35	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	17.0	8.9	1.3	.3
Feb	13.3	7.3	1.2	.2
Mar	13.6	8.6	1.9	.3
Apr	13.2	9.0	2.3	.5
May	13.1	9.0	2.8	.5
Jun	13.0	9.3	3.8	1.6
Jul	11.6	8.7	3.2	1.0
Aug	11.5	7.9	2.5	1.0
Sep	12.5	9.1	3.2	.9
Oct	13.1	8.5	2.4	.7
Nov	15.5	10.0	2.2	.5
Dec	17.4	10.7	1.8	.4
Ann	164.8	107.0	28.6	7.9

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	1.13	1.41	1.81	2.14	2.45	2.77	3.12	3.52	4.03	4.81	5.53
Feb	.81	1.05	1.40	1.69	1.98	2.28	2.60	2.98	3.46	4.22	4.92
Mar	1.34	1.65	2.09	2.45	2.80	3.15	3.52	3.96	4.51	5.36	6.14
Apr	1.55	1.87	2.32	2.69	3.03	3.37	3.74	4.17	4.70	5.52	6.25
May	1.69	2.06	2.57	2.99	3.39	3.79	4.22	4.71	5.34	6.30	7.16
Jun	1.97	2.48	3.22	3.85	4.44	5.05	5.71	6.48	7.46	8.98	10.37
Jul	2.32	2.69	3.20	3.60	3.97	4.34	4.73	5.18	5.73	6.56	7.30
Aug	1.70	2.09	2.64	3.09	3.51	3.94	4.40	4.94	5.62	6.65	7.60
Sep	1.97	2.40	3.01	3.52	3.99	4.47	4.98	5.58	6.33	7.48	8.52
Oct	1.74	2.07	2.54	2.91	3.26	3.61	3.98	4.41	4.94	5.76	6.49
Nov	1.57	1.92	2.42	2.83	3.22	3.61	4.03	4.52	5.14	6.09	6.95
Dec	1.82	2.14	2.58	2.93	3.26	3.58	3.93	4.33	4.83	5.57	6.25
Ann	36.95	38.93	41.42	43.28	44.91	46.47	48.07	49.83	51.93	54.94	57.51

\+ 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

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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	16.7	16.5	7	6
Feb	14.4	13.5	8	7
Mar	11.7	11.0	4	2
Apr	2.6	2.0	#	#
May	.1	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.2	.0	#	0
Nov	8.2	4.4	1	#
Dec	21.6	19.5	5	4
Ann	75.5	66.9	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	12.0	1978	20	29.4	1999	27	1978	21	16	1976
Feb	9.0	1972	4	28.3	1971	31	1979	19	24	1979
Mar	12.0	1971	4	37.4	1971	25+	1993	15	15	1994
Apr	8.0	1975	4	14.5	1975	10	1975	4	1	1987
May	2.0	1976	4	2.0	1976	1	1989	7	#+	1990
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	1976	22	2.0	1976	2	1993	31	#+	2000
Nov	14.0	1973	6	29.7	1995	20	1995	16	6	1995
Dec	18.0	1978	25	52.7	1978	35	1992	12	13	1991
Ann	18.0	Dec 1978	25	52.7	Dec 1978	35	Dec 1992	12	24	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	11.3	7.4	1.8	.6	.1
Feb	8.5	5.9	1.8	.7	.0
Mar	5.9	3.8	1.4	.5	.1
Apr	1.4	1.1	.3	.1	.0
May	.1	.1	.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	.3	.1	.0	.0	.0
Nov	4.2	2.8	.8	.3	.1
Dec	9.6	6.7	2.2	.8	.2
Ann	41.3	27.9	8.3	3.0	.5

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	22.9	18.1	11.7	3.1
Feb	22.2	17.2	14.1	6.2
Mar	13.2	8.7	5.4	2.2
Apr	1.6	.6	.2	@
May	.1	.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	.0
Nov	5.1	2.4	1.2	.4
Dec	16.0	10.7	6.8	2.7
Ann	81.2	57.7	39.4	14.6

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

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	8/23	8/29	9/02	9/06	9/10	9/14	9/17	9/22	9/28
32	9/07	9/12	9/16	9/19	9/22	9/25	9/28	10/01	10/07
28	9/14	9/22	9/27	10/02	10/06	10/10	10/15	10/20	10/28
24	10/08	10/13	10/17	10/20	10/23	10/26	10/29	11/02	11/07
20	10/21	10/26	10/30	11/02	11/05	11/08	11/11	11/14	11/20
16	10/27	11/03	11/07	11/11	11/15	11/18	11/22	11/26	12/03

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	121	111	104	97	92	86	80	73	63
32	138	131	125	121	117	113	108	103	95
28	172	163	157	151	146	140	135	128	119
24	199	192	187	183	179	175	171	166	159
20	228	221	216	212	208	204	200	195	188
16	256	247	240	235	230	225	219	213	204

***** 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	1388	1195	1025	655	347	97	38	60	207	537	835	1200	7584
60	1233	1055	870	506	226	29	5	11	92	389	685	1045	6146
57	1140	971	777	418	167	11	0	2	48	306	595	952	5387
55	1078	915	715	360	132	6	0	0	29	255	535	890	4915
50	923	775	567	229	66	1	0	0	6	149	391	737	3844
32	410	306	148	7	0	0	0	0	0	4	49	271	1195

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	45	35	146	342	695	924	1079	1032	789	489	204	94	5874
55	0	0	0	5	114	240	366	319	128	28	1	0	1201
57	0	0	0	3	87	185	304	259	87	17	0	0	942
60	0	0	0	1	53	113	217	175	41	7	0	0	607
65	0	0	0	0	19	31	94	69	6	0	0	0	219
70	0	0	0	0	5	4	24	15	0	0	0	0	48

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	4	5	53	175	449	676	815	769	537	246	79	11	4	9	62	237	686	1362	2177	2946	3483	3729	3808	3819
45	0	0	26	99	309	526	660	614	390	137	34	3	0	0	26	125	434	960	1620	2234	2624	2761	2795	2798
50	0	0	6	50	189	380	505	460	254	66	12	1	0	0	6	56	245	625	1130	1590	1844	1910	1922	1923
55	0	0	2	21	100	244	352	307	143	21	1	0	0	0	2	23	123	367	719	1026	1169	1190	1191	1191
60	0	0	0	7	42	129	207	171	65	0	0	0	0	0	0	7	49	178	385	556	621	621	621	621
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	6	45	124	291	425	525	483	330	163	51	5	0	6	51	175	466	891	1416	1899	2229	2392	2443	2448

(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