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: WELLSBORO 4 SW, PA **COOP ID: 369408**

Climate Division: PA 6 **NWS Call Sign:** **Elevation: 1,818 Feet** **Lat: 41˚42N** **Lon: 77˚23W**

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	29.7	12.9	21.3	68	1932	14	31.8	1990	-25	1948	31	10.6	1977	1355	0	.0	.0	1.1	19.4	29.9	4.8
Feb	32.4	14.8	23.6	68	1954	17	30.4	1984	-30	1934	28	12.8	1979	1159	0	.0	.0	1.8	15.1	26.6	3.8
Mar	41.4	22.7	32.1	81+	1945	29	39.7	1973	-18	1934	12	23.0	1984	1021	0	.0	.0	6.5	7.3	26.7	1.1
Apr	53.8	32.9	43.4	89	1941	20	46.9	1981	5	1982	8	36.5	1975	650	0	.0	.0	17.4	.7	16.4	.0
May	65.3	43.3	54.3	94	1934	20	61.3	1991	19	1976	13	49.1	1997	341	9	.0	.0	29.2	.0	3.5	.0
Jun	72.8	51.8	62.3	99	1933	29	66.6	1994	29+	1926	4	58.2	1985	116	36	.0	.1	29.9	.0	.2	.0
Jul	77.0	56.0	66.5	104+	1935	5	70.2	1988	36	1929	20	63.0	2000	43	90	.0	.5	31.0	.0	.0	.0
Aug	75.8	54.5	65.2	100	1932	31	68.5	1980	31	1940	25	61.6	1982	60	66	.0	.1	31.0	.0	@	.0
Sep	68.4	47.8	58.1	103	1932	1	62.3	1971	20	1943	27	54.7	1975	211	4	.0	.0	29.9	.0	1.0	.0
Oct	57.8	37.7	47.8	91	1927	2	54.7	1971	11	1933	26	42.3	1976	534	0	.0	.0	23.4	@	10.5	.0
Nov	45.3	29.5	37.4	75+	1931	23	44.6	1975	-4	1938	26	31.4	1976	829	0	.0	.0	9.8	2.5	21.1	@
Dec	34.3	19.2	26.8	66	1932	25	33.4	1984	-21+	1944	22	13.9	1989	1186	0	.0	.0	2.3	12.7	28.7	1.8
Ann	54.5	35.3	44.9	104+	Jul 1935	5	70.2	Jul 1988	-30	Feb 1934	28	10.6	Jan 1977	7505	205	.0	.7	213.3	57.7	164.6	11.5

+ 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

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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	1.88	1.54	1.81	1979	25	7.86	1978	.44	1985
Feb	1.72	1.37	2.15	1984	15	4.16	1971	.47	1987
Mar	2.40	2.53	2.20	1951	31	5.02	1993	.75	1981
Apr	2.52	2.08	2.64	1960	27	8.57	1993	.54	1975
May	3.05	2.36	3.89	1946	28	7.88	1989	1.06	1994
Jun	4.56	4.27	5.97	1972	23	12.18	1972	.66	1991
Jul	3.66	3.53	3.03	1942	18	8.50	1992	1.38	1989
Aug	2.92	2.48	6.50	1937	27	7.96	1994	.50	1981
Sep	3.23	2.89	4.00	1975	26	10.22	1975	1.06	1988
Oct	2.60	2.35	2.35	1979	6	6.22	1990	.64	1994
Nov	2.77	2.62	2.50	1937	13	6.04	1972	.87	1998
Dec	2.12	1.95	1.87	1942	30	6.19	1977	.38	1989
Ann	33.43	32.74	6.50	Aug 1937	27	12.18	Jun 1972	.38	Dec 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.4	5.2	1.2	.3
Feb	10.4	4.8	.8	.1
Mar	11.8	5.5	1.2	.5
Apr	12.5	6.3	1.7	.4
May	13.9	7.5	1.9	.5
Jun	11.8	7.2	2.7	1.1
Jul	10.7	6.5	2.1	.5
Aug	10.2	5.6	1.8	.6
Sep	10.8	5.6	1.7	.8
Oct	10.1	4.6	1.3	.5
Nov	12.0	5.7	2.1	.4
Dec	12.2	5.4	1.3	.4
Ann	138.8	69.9	19.8	6.1

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	.35	.51	.79	1.04	1.31	1.59	1.91	2.30	2.81	3.64	4.43
Feb	.57	.73	.97	1.17	1.37	1.57	1.79	2.05	2.38	2.89	3.37
Mar	.95	1.17	1.48	1.74	1.99	2.24	2.51	2.82	3.22	3.83	4.38
Apr	.62	.86	1.22	1.55	1.87	2.22	2.60	3.05	3.64	4.58	5.46
May	1.01	1.30	1.72	2.08	2.43	2.79	3.18	3.63	4.22	5.13	5.97
Jun	1.36	1.79	2.44	3.00	3.55	4.11	4.73	5.47	6.42	7.90	9.27
Jul	1.63	1.96	2.41	2.78	3.12	3.47	3.84	4.26	4.80	5.61	6.34
Aug	.89	1.17	1.58	1.94	2.28	2.64	3.03	3.49	4.09	5.02	5.88
Sep	.93	1.23	1.70	2.10	2.49	2.90	3.35	3.88	4.57	5.65	6.65
Oct	.76	1.01	1.38	1.70	2.01	2.34	2.70	3.12	3.67	4.53	5.32
Nov	.89	1.16	1.54	1.87	2.19	2.52	2.88	3.30	3.85	4.69	5.47
Dec	.54	.74	1.05	1.32	1.59	1.87	2.18	2.56	3.04	3.81	4.53
Ann	23.28	25.22	27.72	29.63	31.32	32.96	34.66	36.54	38.82	42.14	45.02

\+ 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)

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	10.7	9.3	4	3	14.0	1978	14	22.0	1987	34	1978	21	13	1978	6.9	4.5	1.1	.5	.1	17.9	11.9	6.2	.6
Feb	13.1	9.0	6	5	12.0	1978	7	34.5	1972	27	1978	8	19	1978	6.5	4.6	1.9	.8	@	15.8	12.5	7.7	3.6
Mar	12.9	8.3	3	1	36.0	1993	14	62.5	1993	40	1993	14	19	1993	4.2	2.8	1.4	.8	.3	8.6	5.5	4.0	2.3
Apr	4.0	2.8	#	#	7.0	1982	7	18.0	1983	12+	1984	1	2	1982	1.6	1.2	.6	.2	.0	1.9	1.2	.6	.1
May	.1	.0	#	0	3.0	1977	9	3.0	1977	3	1977	9	#+	1989	.1	@	@	.0	.0	.1	@	.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	.7	.0	#	0	7.5	1977	17	7.5	1977	4	1972	19	#+	2000	.1	.1	.1	.1	.0	.1	@	.0	.0
Nov	4.2	2.2	#	#	9.0	1971	25	10.5	1971	12	1993	2	2	1993	2.2	1.4	.4	.2	.0	2.6	1.1	.4	.0
Dec	12.4	11.2	2	2	12.0	1978	25	30.3	1977	19	1977	10	7	1977	4.7	2.8	1.2	.6	.1	13.3	7.4	3.8	.7
Ann	58.1	42.8	N/A	N/A	36.0	Mar 1993	14	62.5	Mar 1993	40	Mar 1993	14	19+	Mar 1993	26.3	17.4	6.7	3.2	.5	60.3	39.6	22.7	7.3

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

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	9/04	9/09	9/13	9/16	9/20	9/23	9/26	9/30	10/05
32	9/16	9/21	9/25	9/28	10/01	10/04	10/07	10/11	10/16
28	9/28	10/03	10/06	10/09	10/11	10/14	10/17	10/20	10/25
24	10/10	10/17	10/22	10/26	10/31	11/04	11/08	11/13	11/20
20	10/24	10/31	11/05	11/09	11/13	11/17	11/21	11/26	12/03
16	11/01	11/08	11/14	11/19	11/23	11/27	12/02	12/08	12/15

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	139	130	124	119	115	110	105	99	91
32	159	152	148	143	140	136	132	127	120
28	180	173	168	164	160	157	153	148	141
24	223	213	206	200	194	189	183	176	166
20	247	237	230	225	219	213	208	201	191
16	266	257	250	244	239	234	228	221	212

***** 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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1355	1159	1021	650	341	116	43	60	211	534	829	1186	7505
60	1200	1019	866	501	211	41	7	10	94	387	679	1031	6046
57	1107	935	773	412	148	17	0	2	49	304	589	938	5274
55	1045	879	711	354	112	8	0	0	30	254	529	876	4798
50	890	739	559	223	47	1	0	0	6	148	385	721	3719
32	373	275	134	7	0	0	0	0	0	4	45	248	1086

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	41	40	136	346	691	910	1070	1029	783	493	207	86	5832
55	0	0	0	4	90	229	357	316	123	29	1	0	1149
57	0	0	0	2	63	177	295	256	82	18	0	0	893
60	0	0	0	0	34	111	208	171	37	8	0	0	569
65	0	0	0	0	9	36	90	66	4	0	0	0	205
70	0	0	0	0	1	6	22	13	0	0	0	0	42

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	1	4	46	164	439	661	821	774	532	251	78	9	1	5	51	215	654	1315	2136	2910	3442	3693	3771	3780
45	0	0	22	88	295	512	666	619	386	148	36	2	0	0	22	110	405	917	1583	2202	2588	2736	2772	2774
50	0	0	7	46	175	365	511	464	247	70	13	1	0	0	7	53	228	593	1104	1568	1815	1885	1898	1899
55	0	0	1	22	88	226	357	312	135	27	4	0	0	0	1	23	111	337	694	1006	1141	1168	1172	1172
60	0	0	0	7	35	111	214	172	56	4	0	0	0	0	0	7	42	153	367	539	595	599	599	599
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	2	32	105	259	398	518	481	311	145	43	4	0	2	34	139	398	796	1314	1795	2106	2251	2294	2298

(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