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: SLIPPERY ROCK 1 SSW, PA **COOP ID: 368184**

Climate Division: PA 9 **NWS Call Sign:** **Elevation: 1,250 Feet** **Lat: 41˚03N** **Lon: 80˚04W**

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	33.8	14.4	24.1	72	1950	26	34.0	1998	-28+	1994	19	9.5	1977	1267	0	.0	.0	3.0	14.4	29.1	5.3
Feb	37.4	15.9	26.7	73	2000	27	38.0	1998	-21+	1979	11	14.0	1978	1075	0	.0	.0	4.4	9.6	25.2	3.9
Mar	47.5	23.5	35.5	82+	1998	30	44.1	1973	-10+	1986	7	26.3	1984	915	0	.0	.0	13.1	3.8	25.0	.8
Apr	59.0	31.3	45.2	88+	1963	3	49.6	1999	9	1987	1	36.9	1975	595	0	.0	.0	22.7	.2	16.4	.0
May	70.2	41.0	55.6	92+	1962	18	62.7	1998	22+	1970	7	49.4	1994	319	27	.0	.1	30.4	.0	5.1	.0
Jun	78.1	50.2	64.2	99	1952	17	68.5	1999	30+	1972	11	59.5	1980	103	78	.0	1.2	30.0	.0	.3	.0
Jul	82.0	54.5	68.3	102	1988	16	73.8	1999	37	1979	6	64.7	1976	32	132	.1	3.3	31.0	.0	.0	.0
Aug	80.7	53.0	66.9	99	1953	30	73.7	1995	28	1982	28	61.7	1982	57	116	.0	2.0	31.0	.0	.1	.0
Sep	74.1	46.6	60.4	99	1953	2	66.6	1998	27+	1979	20	54.9	1975	170	30	.0	.4	30.0	.0	1.2	.0
Oct	62.5	36.2	49.4	88+	1951	6	56.9	1971	12	1975	31	43.6	1988	491	5	.0	.0	27.4	.0	11.2	.0
Nov	49.9	28.8	39.4	81	1961	3	45.4	1999	-1	1958	30	31.9	1976	769	0	.0	.0	14.8	1.5	20.3	.0
Dec	38.6	20.5	29.6	74	1982	3	36.0	1998	-20+	1989	23	15.7	1989	1099	0	.0	.0	4.9	8.6	27.3	1.7
Ann	59.5	34.7	47.1	102	Jul 1988	16	73.8	Jul 1999	-28+	Jan 1994	19	9.5	Jan 1977	6892	388	.1	7.0	242.7	38.1	161.2	11.7

\+ 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: 1949-2001

(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	2.71	2.30	1.61	1974	19	5.51	1999	.91	1981
Feb	2.31	2.28	1.42+	1950	14	4.32	1971	.43	1987
Mar	3.39	3.57	2.55	1985	28	6.57	1985	1.15	1990
Apr	3.46	3.34	2.01	1993	26	6.68	1998	1.16	1975
May	3.90	3.84	1.96	1985	27	7.33	1989	1.18	1977
Jun	4.70	4.72	2.68	1993	9	10.36	1972	1.37	1988
Jul	4.40	4.13	3.50	1973	21	9.88	1992	1.17	1997
Aug	3.99	3.93	3.45	1980	15	8.79	1980	1.14	1991
Sep	3.93	3.76	3.42	1980	14	7.09	1996	.80	1985
Oct	2.87	2.55	3.85	1954	16	5.56	1978	1.10	1991
Nov	3.49	3.19	2.45	1999	2	12.00	1985	1.03	1976
Dec	3.11	2.79	2.27	1991	3	5.51	1990	1.51	1989
Ann	42.26	42.63	3.85	Oct 1954	16	12.00	Nov 1985	.43	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	16.1	7.3	1.2	.3
Feb	12.5	6.7	1.2	.1
Mar	13.5	8.4	1.9	.5
Apr	13.3	8.2	2.2	.6
May	14.3	9.3	2.4	.4
Jun	13.3	8.9	3.3	.9
Jul	12.1	8.3	3.1	1.2
Aug	11.6	6.7	2.8	.9
Sep	11.9	7.6	2.8	.7
Oct	12.2	6.7	1.8	.4
Nov	13.7	7.9	2.1	.6
Dec	15.4	8.2	1.7	.5
Ann	159.9	94.2	26.5	7.1

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	1.10	1.35	1.70	1.99	2.26	2.54	2.84	3.19	3.63	4.30	4.91
Feb	.90	1.12	1.42	1.67	1.91	2.15	2.42	2.72	3.10	3.69	4.23
Mar	1.39	1.70	2.14	2.50	2.84	3.18	3.55	3.98	4.52	5.35	6.10
Apr	1.40	1.72	2.17	2.54	2.89	3.24	3.63	4.07	4.63	5.49	6.27
May	1.64	2.00	2.49	2.90	3.28	3.67	4.09	4.57	5.18	6.10	6.94
Jun	1.61	2.06	2.70	3.25	3.78	4.32	4.90	5.59	6.47	7.84	9.09
Jul	1.50	1.91	2.52	3.04	3.53	4.03	4.59	5.23	6.06	7.34	8.53
Aug	1.23	1.61	2.17	2.66	3.13	3.61	4.15	4.77	5.58	6.85	8.01
Sep	1.61	1.97	2.48	2.89	3.29	3.69	4.12	4.62	5.25	6.22	7.09
Oct	1.12	1.38	1.76	2.08	2.37	2.67	3.00	3.38	3.86	4.59	5.27
Nov	1.02	1.36	1.85	2.29	2.71	3.14	3.63	4.20	4.93	6.09	7.16
Dec	1.63	1.88	2.22	2.50	2.75	3.00	3.26	3.56	3.93	4.49	4.98
Ann	33.57	35.32	37.53	39.18	40.63	42.01	43.43	44.98	46.84	49.50	51.77

\+ 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: 1949-2001
(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	12.6	8.5	3	2	9.0	1994	5	29.8	1978	19	1978	22	14	1977	9.1	4.6	1.0	.2	.0	16.8	10.0	6.7	2.0
Feb	8.7	8.6	3	2	5.8	1971	9	16.4	1971	20	1977	7	13	1977	6.4	3.2	.8	.1	.0	13.2	8.6	5.5	2.4
Mar	6.7	4.9	1	#	12.8	1973	18	25.0	1971	13	1993	15	4	1978	4.2	2.2	.7	.3	.1	6.1	2.6	1.2	.4
Apr	1.1	.5	#	#	4.5	1987	3	5.4	1975	5	1987	3	#+	2000	1.2	.4	.1	.0	.0	.7	.1	@	.0
May	#	.0	0	0	#	1996	14	#+	1996	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	.1	.0	#	0	.5	1974	20	.6	1993	1	1974	20	#+	1997	.1	.0	.0	.0	.0	@	.0	.0	.0
Nov	2.7	1.7	#	#	6.0	1971	22	10.7	1971	8	1971	25	1	1995	2.4	.9	.2	@	.0	2.2	.6	.2	.0
Dec	9.1	8.5	2	1	10.0	1995	20	21.1	1995	19	1995	28	9	1995	6.3	3.2	.6	.2	@	10.0	5.1	2.9	.8
Ann	41.0	32.7	N/A	N/A	12.8	Mar 1973	18	29.8	Jan 1978	20	Feb 1977	7	14	Jan 1977	29.7	14.5	3.4	.8	.1	49.0	27.0	16.5	5.6

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

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	9/02	9/07	9/11	9/14	9/17	9/20	9/23	9/27	10/02
32	9/14	9/19	9/23	9/27	9/30	10/03	10/06	10/10	10/15
28	9/22	9/29	10/05	10/09	10/13	10/17	10/22	10/27	11/03
24	10/12	10/18	10/21	10/25	10/28	10/31	11/03	11/07	11/12
20	10/24	10/30	11/02	11/06	11/09	11/12	11/15	11/19	11/24
16	11/05	11/12	11/17	11/21	11/25	11/29	12/03	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	132	124	118	113	108	103	98	92	83
32	150	143	139	135	131	127	123	119	112
28	187	179	173	168	164	159	155	149	141
24	211	204	198	194	190	186	182	176	169
20	237	230	224	220	216	212	207	202	195
16	265	257	250	245	240	235	230	224	215

***** 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	1267	1075	915	595	319	103	32	57	170	491	769	1099	6892
60	1112	935	760	446	205	41	6	14	80	350	619	944	5512
57	1019	851	667	359	149	20	0	5	45	274	530	851	4770
55	957	795	607	304	117	12	0	2	29	228	470	789	4310
50	803	657	464	181	55	3	0	0	7	134	329	644	3277
32	321	236	97	3	0	0	0	0	0	3	27	210	897

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	76	85	205	398	732	965	1124	1082	851	541	247	134	6440
55	0	0	1	9	135	286	411	370	189	53	1	0	1455
57	0	0	0	5	105	235	349	312	145	37	0	0	1188
60	0	0	0	2	68	165	261	228	90	20	0	0	834
65	0	0	0	0	27	78	132	116	30	5	0	0	388
70	0	0	0	0	9	24	49	43	6	0	0	0	131

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	20	89	226	515	749	895	853	632	318	113	30	14	34	123	349	864	1613	2508	3361	3993	4311	4424	4454
45	2	6	45	135	370	599	740	698	483	195	53	8	2	8	53	188	558	1157	1897	2595	3078	3273	3326	3334
50	0	0	21	72	242	451	585	543	340	102	21	3	0	0	21	93	335	786	1371	1914	2254	2356	2377	2380
55	0	0	7	33	138	306	430	392	214	44	8	0	0	0	7	40	178	484	914	1306	1520	1564	1572	1572
60	0	0	1	10	64	183	278	243	114	11	0	0	0	0	1	11	75	258	536	779	893	904	904	904
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	7	15	68	167	337	485	586	558	407	213	79	15	7	22	90	257	594	1079	1665	2223	2630	2843	2922	2937

(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