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: PENNINGTON GAP, VA **COOP ID: 446626**

Climate Division: VA 6 **NWS Call Sign:** **Elevation: 1,470 Feet** **Lat: 36˚44N** **Lon: 83˚00W**

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	43.7	22.0	32.9	76	1999	23	44.4	1974	-25	1985	21	20.9	1977	997	0	.0	.0	11.0	3.6	23.7	1.1
Feb	48.9	23.4	36.2	80	1977	26	43.3	1976	-21	1996	5	28.1	1978	807	0	.0	.0	15.3	2.5	20.5	.5
Mar	57.9	30.6	44.3	86	1989	28	50.9	1973	-8	1993	16	35.7	1996	644	0	.0	.0	25.0	.5	16.0	.1
Apr	67.0	38.1	52.6	89	1986	27	56.9	1977	16	1985	10	46.1	1987	377	2	.0	.0	28.5	.1	7.0	.0
May	75.1	48.4	61.8	94	1941	23	68.1	1991	24	1971	4	57.3	1997	155	54	.0	@	30.9	.0	.9	.0
Jun	82.0	57.0	69.5	100	1936	30	73.4	1986	32	1966	1	64.8	1992	22	156	.0	2.7	30.0	.0	.0	.0
Jul	85.7	61.8	73.8	105	1952	29	77.1	1993	41	1961	10	70.3	1996	1	271	.0	8.1	31.0	.0	.0	.0
Aug	84.9	59.9	72.4	101	1983	21	76.1	1995	36	1986	29	69.0	1992	4	233	@	5.7	31.0	.0	.0	.0
Sep	79.5	53.3	66.4	101	1953	3	71.3	1998	28	1983	24	62.6	1982	53	96	.0	2.2	30.0	.0	.1	.0
Oct	69.3	39.6	54.5	94	1953	1	61.3	1984	16+	1987	22	48.2	1988	342	16	.0	.0	30.7	.0	6.8	.0
Nov	58.3	31.0	44.7	82+	1948	6	52.8	1985	3	1950	25	37.8	1976	610	0	.0	.0	23.8	.2	15.8	.0
Dec	47.7	24.9	36.3	78	1982	4	43.7	1971	-11	1962	13	25.5	1989	890	0	.0	.0	14.8	2.7	22.4	.3
Ann	66.7	40.8	53.8	105	Jul 1952	29	77.1	Jul 1993	-25	Jan 1985	21	20.9	Jan 1977	4902	828	@	18.7	302.0	9.6	113.2	2.0

\+ 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: 1931-2001

(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	4.32	4.07	3.20	1946	8	10.64	1972	1.04	1981
Feb	4.28	4.10	3.14	1934	26	8.04	1986	1.63	1978
Mar	4.41	3.80	4.74	1963	12	11.85	1975	1.50	1988
Apr	4.11	4.08	5.39	1977	4	10.47	1977	.29	1976
May	4.95	4.42	3.15	1971	7	8.09	1974	2.05	1977
Jun	4.51	4.41	3.50	1994	22	9.40	1989	1.58	1988
Jul	4.48	4.21	5.42	1991	25	11.88	1991	1.25	1990
Aug	3.85	3.82	3.85	1978	4	8.43	1978	1.12	1972
Sep	3.40	3.06	2.71	1964	29	8.05	1991	.75	1985
Oct	2.97	2.77	2.40	1961	4	7.61	1977	.33	2000
Nov	3.85	3.81	3.03	1973	27	8.13	1977	.75	1981
Dec	4.26	3.83	4.56	1969	30	9.61	1991	1.59	1980
Ann	49.39	46.59	5.42	Jul 1991	25	11.88	Jul 1991	.29	Apr 1976

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.4	8.1	3.1	1.0
Feb	9.4	7.9	3.3	1.0
Mar	10.7	8.6	3.0	1.0
Apr	10.3	7.6	3.1	1.0
May	12.1	9.2	3.9	1.2
Jun	10.5	7.9	2.7	1.2
Jul	10.9	7.9	3.0	1.1
Aug	8.9	6.9	2.9	1.1
Sep	7.2	5.9	2.0	.9
Oct	7.0	5.6	2.0	.6
Nov	8.8	7.0	2.7	1.1
Dec	9.8	8.1	3.1	1.0
Ann	116.0	90.7	34.8	12.2

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	1.34	1.75	2.36	2.89	3.39	3.92	4.50	5.17	6.05	7.41	8.68
Feb	1.95	2.33	2.85	3.28	3.67	4.07	4.49	4.98	5.59	6.51	7.35
Mar	1.39	1.81	2.43	2.96	3.48	4.01	4.59	5.28	6.16	7.54	8.81
Apr	1.18	1.57	2.16	2.67	3.17	3.69	4.26	4.94	5.82	7.20	8.48
May	2.34	2.76	3.36	3.83	4.27	4.72	5.19	5.73	6.40	7.42	8.34
Jun	1.61	2.03	2.65	3.16	3.66	4.16	4.71	5.35	6.17	7.43	8.59
Jul	1.57	1.99	2.61	3.12	3.62	4.12	4.68	5.32	6.15	7.42	8.60
Aug	1.37	1.74	2.26	2.70	3.12	3.55	4.02	4.57	5.27	6.35	7.34
Sep	.90	1.22	1.71	2.14	2.57	3.01	3.51	4.10	4.86	6.07	7.19
Oct	.73	1.01	1.44	1.83	2.21	2.61	3.06	3.59	4.29	5.39	6.43
Nov	1.01	1.38	1.93	2.43	2.91	3.42	3.98	4.65	5.52	6.90	8.18
Dec	1.36	1.77	2.37	2.88	3.37	3.88	4.44	5.09	5.93	7.24	8.46
Ann	33.50	36.52	40.42	43.40	46.06	48.64	51.32	54.29	57.91	63.19	67.78

\+ 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: 1931-2001
(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	4.2	2.0	1	#	9.0	1996	8	24.0	1977	9	1985	28	4	1977	2.0	2.0	.8	.2	.0	2.8	1.6	.9	.0
Feb	3.7	1.4	1	#	11.0	1986	14	23.0	1979	11	1986	14	4	1979	1.4	1.3	.4	.2	.1	1.4	.6	.3	.1
Mar	1.5	.0	#	0	3.5	1977	1	6.0+	1999	15	1993	14	1	1993	.8	.7	.1	.0	.0	.4	.0	.0	.0
Apr	.2	.0	#	0	4.0	1987	3	4.0	1987	13	1987	5	2	1987	.1	.1	.1	.0	.0	.1	.1	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	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	#	.0	#	0	#	2000	10	#	2000	#	2000	10	#	2000	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.1	.0	0	0	2.0	1975	14	2.0	1975	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Dec	1.7	.0	#	0	6.5	1995	7	6.9	2000	7	1995	7	1	2000	1.1	1.0	.2	.1	.0	.9	.2	.1	.0
Ann	11.4	3.4	N/A	N/A	11.0	Feb 1986	14	24.0	Jan 1977	15	Mar 1993	14	4+	Feb 1979	5.5	5.2	1.6	.5	.1	5.6	2.5	1.3	.1

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	5/29	5/23	5/18	5/15	5/11	5/07	5/04	4/29	4/23
32	5/16	5/11	5/07	5/04	5/01	4/28	4/25	4/21	4/16
28	5/10	5/03	4/28	4/24	4/20	4/16	4/11	4/06	3/30
24	4/20	4/13	4/09	4/05	4/01	3/29	3/25	3/20	3/14
20	4/05	3/29	3/23	3/19	3/14	3/10	3/05	2/28	2/20
16	3/25	3/17	3/12	3/07	3/02	2/26	2/21	2/16	2/08

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	9/16	9/21	9/24	9/28	10/01	10/03	10/07	10/10	10/15
32	9/29	10/03	10/06	10/09	10/11	10/13	10/16	10/19	10/23
28	10/04	10/09	10/13	10/16	10/20	10/23	10/26	10/30	11/04
24	10/14	10/20	10/25	10/29	11/01	11/04	11/08	11/13	11/19
20	10/28	11/03	11/07	11/11	11/14	11/18	11/22	11/26	12/02
16	11/09	11/17	11/22	11/26	11/30	12/04	12/09	12/14	12/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	168	159	152	147	142	137	131	125	116
32	183	176	171	167	163	158	154	149	142
28	206	198	192	187	182	177	172	166	158
24	235	228	222	217	213	209	204	198	191
20	271	262	255	250	245	239	234	227	218
16	299	290	283	278	272	267	261	254	245

***** 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	997	807	644	377	155	22	1	4	53	342	610	890	4902
60	842	667	495	239	72	3	0	0	15	219	463	735	3750
57	749	583	409	168	40	1	0	0	6	159	379	642	3136
55	695	528	353	128	25	0	0	0	3	125	326	586	2769
50	550	396	231	54	6	0	0	0	0	61	205	441	1944
32	160	62	15	0	0	0	0	0	0	0	8	85	330

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	185	178	394	615	922	1124	1294	1252	1033	696	388	218	8299
55	7	0	19	53	234	434	581	539	345	108	15	6	2341
57	0	0	12	33	187	375	519	477	288	80	9	0	1980
60	0	0	5	15	127	288	426	384	207	47	3	0	1502
65	0	0	0	2	54	156	271	233	96	16	0	0	828
70	0	0	0	0	16	61	133	106	28	3	0	0	347

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	62	98	245	449	709	917	1067	1036	824	491	231	88	62	160	405	854	1563	2480	3547	4583	5407	5898	6129	6217
45	28	45	145	313	554	767	912	881	674	342	132	43	28	73	218	531	1085	1852	2764	3645	4319	4661	4793	4836
50	6	18	72	193	401	617	757	726	524	215	65	16	6	24	96	289	690	1307	2064	2790	3314	3529	3594	3610
55	0	1	33	99	260	467	602	571	377	110	26	1	0	1	34	133	393	860	1462	2033	2410	2520	2546	2547
60	0	0	4	40	138	320	447	416	241	46	4	0	0	0	4	44	182	502	949	1365	1606	1652	1656	1656
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	40	80	183	305	458	616	725	706	542	339	164	59	40	120	303	608	1066	1682	2407	3113	3655	3994	4158	4217

(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