

Climatography of the United States

No. 20

1971-2000

Station: BROOKNEAL, VA

COOP ID: 441082

Climate Division: VA 3

NWS Call Sign:

Elevation: 428 Feet Lat: 37°04N Lon: 78°57W

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	24.4	34.1	74	1985	2	42.7	1974	-7	1985	21	23.7	1977	959	0	.0	.0	9.8	3.4	25.0	.3
Feb	47.8	25.5	36.7	80	1985	25	44.3	1990	0	1979	10	27.3	1979	794	0	.0	.0	13.8	1.9	21.7	.1
Mar	56.8	32.3	44.6	88+	1998	31	49.3	1977	11+	1999	9	39.3	1999	635	0	.0	.0	24.0	.2	17.2	.0
Apr	67.1	39.9	53.5	94+	1985	23	57.2	1985	15	1985	10	50.7	1997	346	1	.0	.6	29.1	.0	5.0	.0
May	75.0	50.1	62.6	93+	1998	31	68.6	1991	33+	2001	1	59.0	1994	127	51	.0	1.2	31.0	.0	@	.0
Jun	82.7	59.7	71.2	99	1981	26	75.0	1981	38	1985	14	67.5	1972	13	198	.0	7.2	30.0	.0	.0	.0
Jul	87.0	64.5	75.8	103+	1980	17	79.5	1986	48+	2001	7	70.7	2000	0	334	.5	12.8	31.0	.0	.0	.0
Aug	85.8	63.3	74.6	104+	1983	23	78.3	1980	45	1998	20	70.5	2000	2	297	.4	10.8	31.0	.0	.0	.0
Sep	78.7	55.8	67.3	99+	1998	8	72.0	1980	33+	2001	27	62.2	2000	51	118	.0	3.3	30.0	.0	.0	.0
Oct	67.7	42.2	55.0	91	1998	1	62.7	1984	19+	2001	30	49.5	1988	328	16	.0	.1	30.6	.0	4.1	.0
Nov	57.3	33.1	45.2	83	1971	3	53.2	1985	9+	2000	23	38.1	2000	594	0	.0	.0	25.0	@	15.0	.0
Dec	47.1	26.3	36.7	77+	1998	8	43.9	1984	0+	1983	26	25.6	1989	877	0	.0	.0	13.9	2.0	23.5	.1
Ann	66.4	43.1	54.8	104+	Aug 1983	23	79.5	Jul 1986	-7	Jan 1985	21	23.7	Jan 1977	4726	1015	.9	36.0	299.2	7.5	111.5	.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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1950-2001

(3) Derived from 1971-2000 serially complete daily data

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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: BROOKNEAL, VA

COOP ID: 441082

Climate Division: VA 3

NWS Call Sign:

Elevation: 428 Feet Lat: 37°04N

Lon: 78°57W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	4.16	4.46	2.36+	1978	26	9.43	1978	.72	1981	12.0	7.5	3.0	.9	1.39	1.78	2.36	2.85	3.32	3.80	4.34	4.96	5.75	6.99	8.13
Feb	3.29	3.04	2.32	1979	25	6.49	1979	.42	1978	9.8	6.7	2.3	.6	1.02	1.33	1.80	2.20	2.58	2.98	3.42	3.94	4.60	5.64	6.60
Mar	4.13	3.61	2.90	1975	30	11.72	1975	.89	1985	11.8	7.8	3.0	.9	1.21	1.61	2.20	2.71	3.20	3.72	4.29	4.96	5.83	7.19	8.46
Apr	3.52	3.17	3.47	1978	27	8.49	1983	.88	1986	11.3	6.8	2.5	.7	1.09	1.43	1.92	2.35	2.76	3.19	3.66	4.21	4.92	6.02	7.05
May	4.08	3.89	2.85	1960	8	10.03	1971	1.24	1999	12.5	7.3	2.6	.9	1.51	1.89	2.44	2.90	3.34	3.78	4.27	4.83	5.55	6.66	7.68
Jun	3.25	3.16	4.70	1972	22	9.06	1972	.52	1986	10.7	5.7	1.8	.8	.80	1.11	1.58	2.00	2.42	2.86	3.35	3.94	4.70	5.91	7.05
Jul	4.34	4.88	5.80	1965	12	7.19	1974	.65	1977	8.0	4.9	1.9	.8	1.63	2.04	2.62	3.10	3.56	4.03	4.54	5.13	5.89	7.04	8.10
Aug	3.83	3.39	3.83	1985	18	12.58	1985	.25	1980	10.7	6.1	2.2	1.1	.96	1.32	1.88	2.37	2.86	3.37	3.95	4.63	5.52	6.92	8.24
Sep	3.62	3.05	4.60	1979	22	10.57	1999	.12	1985	10.0	6.2	2.3	1.1	.39	.66	1.16	1.66	2.20	2.81	3.53	4.42	5.64	7.65	9.62
Oct	3.72	3.19	3.76	1972	6	10.36	1990	.15	2000	8.7	5.4	2.6	1.2	.39	.67	1.18	1.70	2.25	2.88	3.62	4.54	5.80	7.88	9.91
Nov	3.14	3.05	2.10	1972	14	9.48	1985	.78	1998	10.0	5.4	2.1	1.0	.99	1.29	1.73	2.11	2.47	2.85	3.27	3.76	4.39	5.37	6.28
Dec	3.16	3.21	2.05	1962	25	6.18	1973	.36	1980	10.5	6.5	2.2	.8	.83	1.13	1.59	1.99	2.39	2.80	3.26	3.81	4.53	5.65	6.71
Ann	44.24	44.02	5.80	Jul 1965	12	12.58	Aug 1985	.12	Sep 1985	126.0	76.3	28.5	10.8	33.37	35.52	38.25	40.31	42.12	43.86	45.65	47.62	50.00	53.42	56.36

+ 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: 1950-2001

(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Station: BROOKNEAL, VA

COOP ID: 441082

Climate Division: VA 3

NWS Call Sign:

Elevation: 428 Feet

Lat: 37°04N

Lon: 78°57W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	4.0	2.6	1	#	7.0	1980	5	15.1	1980	8	1982	15	3	1977	2.2	1.3	.6	.3	.0	4.7	2.8	.5	.0
Feb	4.7	2.1	1	#	10.3	1983	11	20.0	1979	12	1983	12	4	1979	2.2	1.3	.4	.3	.1	3.5	1.8	1.1	.2
Mar	1.9	.0	#	#	7.8	1980	2	10.4	1980	9	1980	3	1	1980	1.1	.6	.3	.1	.0	1.0	.6	.3	.0
Apr	.0	.0	#	0	.2	1982	9	.2	1982	#	1982	9	#	1982	.1	.0	.0	.0	.0	.0	.0	.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	0	#	1979	11	#	1979	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.4	.0	#	0	3.8	1971	25	4.0	1971	3	1972	17	#+	1981	.2	.1	.1	.0	.0	.2	.1	.0	.0
Dec	1.6	.1	#	#	9.5	1973	17	10.8	1973	11	1973	18	1	1982	.8	.4	.2	.1	.0	.9	.5	.3	.1
Ann	12.6	4.8	N/A	N/A	10.3	Feb 1983	11	20.0	Feb 1979	12	Feb 1983	12	4	Feb 1979	6.6	3.7	1.6	.8	.1	10.3	5.8	2.2	.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

Complete documentation available from:

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No. 20 1971-2000

Station: BROOKNEAL, VA

COOP ID: 441082

Climate Division: VA 3

NWS Call Sign:

Elevation: 428 Feet

Lat: 37°04N

Lon: 78°57W

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	5/16	5/12	5/08	5/06	5/03	5/01	4/28	4/25	4/20
32	4/30	4/26	4/23	4/20	4/18	4/15	4/12	4/09	4/05
28	4/17	4/13	4/09	4/07	4/04	4/01	3/30	3/26	3/22
24	4/01	3/28	3/24	3/21	3/19	3/16	3/13	3/10	3/05
20	3/27	3/20	3/14	3/10	3/06	3/02	2/25	2/20	2/13
16	3/17	3/07	2/27	2/21	2/15	2/09	2/03	1/26	1/16
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	9/23	9/28	10/01	10/04	10/07	10/09	10/12	10/16	10/21
32	10/06	10/11	10/15	10/17	10/20	10/23	10/26	10/29	11/03
28	10/15	10/21	10/25	10/28	11/01	11/04	11/07	11/11	11/17
24	10/31	11/06	11/10	11/14	11/18	11/21	11/25	11/29	12/05
20	11/09	11/16	11/21	11/25	11/29	12/03	12/07	12/12	12/19
16	11/25	12/03	12/09	12/14	12/18	12/23	12/28	1/02	1/10
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	177	170	165	160	156	152	147	142	134
32	200	195	191	188	185	182	178	175	169
28	233	225	219	215	210	205	200	195	187
24	265	258	252	248	243	239	234	229	222
20	295	286	279	273	268	262	256	249	240
16	335	325	318	311	305	300	293	286	276

* 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

Complete documentation available from:
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Station: BROOKNEAL, VA

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Climate Division: VA 3 NWS Call Sign: Elevation: 428 Feet Lat: 37°04N Lon: 78°57W

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	959	794	635	346	127	13	0	2	51	328	594	877	4726
60	804	654	480	207	49	2	0	0	15	206	446	722	3585
57	711	570	390	136	22	0	0	0	6	146	361	629	2971
55	649	514	333	97	12	0	0	0	3	113	308	572	2601
50	507	382	203	32	1	0	0	0	0	52	188	428	1793
32	120	53	6	0	0	0	0	0	0	0	5	76	260

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	184	183	394	645	947	1175	1357	1319	1057	711	401	222	8595
55	0	0	8	52	246	485	644	606	370	111	13	5	2540
57	0	0	3	31	194	425	582	544	313	82	7	0	2181
60	0	0	0	11	128	337	489	451	232	49	2	0	1699
65	0	0	0	1	51	198	334	297	118	16	0	0	1015
70	0	0	0	0	13	90	188	159	43	3	0	0	496

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	49	89	222	468	741	972	1139	1058	848	508	249	79	49	138	360	828	1569	2541	3680	4738	5586	6094	6343	6422
45	23	41	123	325	586	822	984	903	698	357	147	41	23	64	187	512	1098	1920	2904	3807	4505	4862	5009	5050
50	3	17	63	203	433	672	829	748	548	227	79	14	3	20	83	286	719	1391	2220	2968	3516	3743	3822	3836
55	0	0	23	111	287	522	674	593	400	124	35	2	0	0	23	134	421	943	1617	2210	2610	2734	2769	2771
60	0	0	6	50	161	374	519	438	261	54	9	0	0	0	6	56	217	591	1110	1548	1809	1863	1872	1872
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	39	73	170	314	475	648	773	708	553	332	177	63	39	112	282	596	1071	1719	2492	3200	3753	4085	4262	4325

(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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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