

Climatology of the United States

No. 20

1971-2000

Station: HOPEWELL, VA

COOP ID: 444101

Climate Division: VA 1

NWS Call Sign:

Elevation: 40 Feet

Lat: 37° 18N

Lon: 77° 17W

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	50.2	29.2	39.7	80	1943	17	48.5	1974	-11	1985	21	28.9	1977	784	0	.0	.0	15.8	1.6	20.1	.2
Feb	54.1	31.4	42.8	84	1930	25	50.4	1976	-3	1936	8	31.6	1979	623	0	.0	.0	18.1	.7	16.2	@
Mar	62.9	38.5	50.7	91+	1985	29	55.3	1976	8	1937	1	45.6	1984	443	1	.0	.1	27.9	.1	9.1	.0
Apr	73.2	46.3	59.8	96+	1985	24	64.9	1994	23	1985	10	55.1	1975	183	26	.0	1.1	29.9	.0	2.2	.0
May	80.2	55.4	67.8	100+	1941	28	74.6	1991	30	1956	9	65.1	1992	40	127	.0	3.4	31.0	.0	.0	.0
Jun	87.4	63.7	75.6	104+	1952	27	78.7	1994	40	1988	4	71.8	1979	1	318	.1	12.8	30.0	.0	.0	.0
Jul	91.0	68.2	79.6	105	1998	22	82.9	1993	47	1988	2	76.0	1984	0	453	1.6	19.7	31.0	.0	.0	.0
Aug	89.3	66.7	78.0	106	1932	31	81.5	1995	46	1982	30	73.8	1982	0	403	1.0	15.6	31.0	.0	.0	.0
Sep	83.7	60.5	72.1	104	1932	1	77.5	1998	38+	1983	25	67.9	1984	15	228	.3	6.2	30.0	.0	.0	.0
Oct	73.6	48.6	61.1	100	1941	6	66.6	1971	23+	1962	27	52.9	1988	179	58	.0	.5	31.0	.0	1.5	.0
Nov	63.7	40.1	51.9	88	1993	15	59.9	1985	15+	1970	25	45.2	1984	398	5	.0	.0	27.2	.0	8.5	.0
Dec	54.1	32.9	43.5	85	1998	7	51.8	1971	3+	1983	26	32.6	1989	668	0	.0	.0	19.8	.7	15.9	.0
Ann	72.0	48.5	60.2	106	Aug 1932	31	82.9	Jul 1993	-11	Jan 1985	21	28.9	Jan 1977	3334	1619	3.0	59.4	322.7	3.1	73.5	.2

+ 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: 1930-2001

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

028-A

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: HOPEWELL, VA

COOP ID: 444101

Climate Division: VA 1

NWS Call Sign:

Elevation: 40 Feet

Lat: 37°18N

Lon: 77°17W

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	4.09	4.35	2.99	1937	29	8.06	1978	.54	1981	11.4	7.4	3.0	1.0	1.32	1.71	2.28	2.77	3.24	3.73	4.26	4.89	5.69	6.95	8.11
Feb	3.14	2.98	2.14	1983	11	5.63	1979	.54	1978	9.8	6.3	2.3	.7	1.01	1.31	1.75	2.13	2.49	2.86	3.27	3.75	4.36	5.32	6.20
Mar	4.28	3.62	2.75	1993	4	8.27	1975	1.34	1985	11.1	7.4	3.1	1.0	1.42	1.82	2.42	2.93	3.41	3.91	4.46	5.11	5.93	7.21	8.40
Apr	3.43	3.31	3.49	1987	16	7.64	1987	.64	1976	9.8	5.9	2.3	.9	.99	1.32	1.81	2.23	2.65	3.08	3.56	4.12	4.84	5.98	7.04
May	4.05	4.03	3.81	1948	26	7.93	1990	1.02	1997	10.6	6.9	2.7	1.3	1.45	1.83	2.38	2.84	3.29	3.74	4.24	4.81	5.54	6.68	7.72
Jun	2.80	2.94	5.00	1939	2	4.78	1973	.35	1990	9.2	5.3	2.2	.5	.75	1.01	1.42	1.77	2.12	2.49	2.90	3.38	4.01	4.99	5.92
Jul	4.50	4.61	4.69	1959	10	8.17	1999	.04	1983	10.4	7.7	2.9	1.3	1.12	1.54	2.20	2.78	3.36	3.96	4.64	5.45	6.50	8.16	9.72
Aug	4.23	4.16	6.62	1985	19	12.49	1985	.44	1997	9.2	6.4	3.0	1.1	1.08	1.48	2.09	2.64	3.17	3.74	4.37	5.12	6.09	7.64	9.08
Sep	4.73	4.60	7.61	1999	16	16.85	1999	.58	1986	8.2	5.4	2.7	1.4	.78	1.19	1.88	2.53	3.20	3.93	4.76	5.77	7.13	9.33	11.43
Oct	3.57	2.97	4.65	1961	21	9.53	1977	.00	2000	8.0	5.1	2.4	1.1	.48	.94	1.54	2.05	2.55	3.08	3.68	4.39	5.33	6.82	8.23
Nov	3.29	3.00	2.66	1959	7	7.00	1985	.87	1991	9.2	5.6	2.3	.9	.98	1.29	1.76	2.16	2.56	2.97	3.42	3.94	4.63	5.70	6.69
Dec	3.15	3.19	3.27	1958	29	7.03	1973	.56	1980	10.0	6.2	2.3	.7	.77	1.06	1.52	1.93	2.34	2.77	3.24	3.81	4.56	5.74	6.85
Ann	45.26	43.95	7.61	Sep 1999	16	16.85	Sep 1999	.00	Oct 2000	116.9	75.6	31.2	11.9	33.99	36.22	39.05	41.18	43.06	44.87	46.73	48.78	51.25	54.81	57.87

+ 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: 1930-2001

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

Complete documentation available from:
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Station: HOPEWELL, VA

COOP ID: 444101

Climate Division: VA 1

NWS Call Sign:

Elevation: 40 Feet

Lat: 37° 18N

Lon: 77° 17W

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	2.1	.0	#	0	13.0	2000	25	13.0	2000	5	1987	26	#	1987	.7	.6	.3	.3	.1	.0	.0	.0	.0
Feb	3.7	.0	#	0	8.0	1979	19	17.3	1979	2	1978	2	#+	1990	.9	.8	.6	.3	.0	.1	.0	.0	.0
Mar	1.0	.0	0	0	13.0	1980	2	14.5	1980	0	0	0	0	0	.2	.2	.1	.1	.1	.0	.0	.0	.0
Apr	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.1	.0	0	0	2.3	1987	11	2.3	1987	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Dec	.1	.0	#	0	1.0	1988	9	1.0	1988	3	1989	8	#+	1990	.1	.1	.0	.0	.0	.0	.0	.0	.0
Ann	7.0	.0	N/A	N/A	13.0+	Jan 2000	25	17.3	Feb 1979	5	Jan 1987	26	#+	Dec 1990	2.0	1.8	1.0	.7	.2	.1	.0	.0	.0

+ 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: HOPEWELL, VA

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Climate Division: VA 1

NWS Call Sign:

Elevation: 40 Feet

Lat: 37° 18N

Lon: 77° 17W

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	5/05	4/30	4/27	4/24	4/21	4/18	4/15	4/11	4/07
32	4/19	4/15	4/12	4/09	4/06	4/04	4/01	3/29	3/24
28	4/10	4/04	3/31	3/27	3/23	3/20	3/16	3/12	3/05
24	3/30	3/22	3/17	3/12	3/08	3/04	2/27	2/22	2/14
20	3/15	3/06	2/28	2/22	2/17	2/12	2/07	1/31	1/23
16	3/01	2/20	2/14	2/09	2/03	1/29	1/22	1/14	0/00
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	10/07	10/11	10/14	10/17	10/19	10/22	10/24	10/27	10/31
32	10/11	10/16	10/20	10/23	10/27	10/30	11/02	11/06	11/12
28	10/24	10/29	11/01	11/05	11/07	11/10	11/13	11/17	11/22
24	11/03	11/11	11/17	11/21	11/26	11/30	12/05	12/11	12/19
20	11/25	12/02	12/08	12/12	12/17	12/21	12/26	12/31	1/08
16	12/06	12/15	12/21	12/27	1/01	1/07	1/14	1/23	0/00
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	201	194	189	185	181	177	172	167	160
32	224	217	211	207	203	198	194	188	181
28	252	244	238	233	228	224	219	213	204
24	292	282	274	268	262	256	250	242	232
20	339	324	315	308	301	294	286	278	266
16	>365	>365	346	336	329	322	315	307	297

* 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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Climate Division: VA 1 NWS Call Sign: Elevation: 40 Feet Lat: 37°18N Lon: 77°17W

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	784	623	443	183	40	1	0	0	15	179	398	668	3334
60	637	487	299	88	8	0	0	0	3	94	265	522	2403
57	550	408	221	49	2	0	0	0	1	58	196	437	1922
55	493	357	176	31	1	0	0	0	0	39	156	382	1635
50	361	240	88	7	0	0	0	0	0	12	78	261	1047
32	61	21	0	0	0	0	0	0	0	0	0	27	109

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	300	322	581	833	1110	1307	1476	1426	1203	902	597	382	10439
55	19	14	43	174	398	617	763	713	513	228	63	24	3569
57	13	9	27	132	337	557	701	651	454	184	42	17	3124
60	8	4	12	81	250	467	608	558	366	128	21	9	2512
65	0	0	1	26	127	318	453	403	228	58	5	0	1619
70	0	0	0	5	46	181	299	253	116	20	0	0	920

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	125	175	362	605	875	1081	1240	1190	973	665	378	192	125	300	662	1267	2142	3223	4463	5653	6626	7291	7669	7861
45	62	98	230	458	720	931	1085	1035	823	510	256	108	62	160	390	848	1568	2499	3584	4619	5442	5952	6208	6316
50	33	48	140	317	565	781	930	880	673	362	158	57	33	81	221	538	1103	1884	2814	3694	4367	4729	4887	4944
55	11	18	73	192	410	631	775	725	523	229	82	23	11	29	102	294	704	1335	2110	2835	3358	3587	3669	3692
60	0	4	34	104	265	481	620	570	376	127	36	7	0	4	38	142	407	888	1508	2078	2454	2581	2617	2624
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	80	117	231	385	569	727	839	814	657	427	239	118	80	197	428	813	1382	2109	2948	3762	4419	4846	5085	5203

(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/normal/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.

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| <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 |
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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