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: CHARLOTTESVILLE 2 W, VA **COOP ID: 441593**

Climate Division: VA 3 **NWS Call Sign:** **Elevation: 870 Feet** **Lat: 38˚02N** **Lon: 78˚31W**

Temperature (˚F)

Month	Mean (1)			Extremes										Degree Days (1) Base Temp 65		Mean Number of Days (3)					
	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	44.7	26.2	35.5	79	1950	27	44.4	1990	-10	1994	19	25.5	1977	915	0	.0	.0	10.3	4.4	23.6	.4
Feb	48.7	28.6	38.7	81+	2000	26	45.6	1990	1+	1996	6	28.4	1979	738	0	.0	.0	13.1	2.8	19.4	.0
Mar	57.8	36.0	46.9	92	1998	31	53.0	2000	10+	1996	9	40.5	1993	562	0	.0	@	22.4	.4	11.3	.0
Apr	69.0	45.1	57.1	95	1960	24	62.1	1985	21	1950	14	52.1	1983	250	11	.0	.8	28.9	.0	1.6	.0
May	76.3	54.0	65.2	96	1996	21	71.4	1991	33	1966	10	61.0	1992	83	87	.0	1.2	31.0	.0	.0	.0
Jun	83.9	61.8	72.9	100+	1994	16	75.9	1981	40	1967	1	68.4	1992	6	241	@	5.4	30.0	.0	.0	.0
Jul	88.0	65.8	76.9	104	1953	31	81.0	1987	49	1988	1	73.0	1984	0	370	.9	10.7	31.0	.0	.0	.0
Aug	86.4	64.3	75.4	105	1999	1	79.0	1988	44	1986	30	71.7	1992	1	321	.2	7.7	31.0	.0	.0	.0
Sep	80.1	58.3	69.2	107	1954	7	74.8	1998	35	1974	24	66.3	1975	29	155	.0	3.1	30.0	.0	.0	.0
Oct	69.5	47.0	58.3	96	1954	5	64.6	1984	26	1972	20	53.1	1987	236	26	.0	@	30.6	.0	1.2	.0
Nov	59.2	38.5	48.9	88	1950	2	55.7	1999	10	1950	26	42.8	1996	485	1	.0	.0	23.9	@	8.9	.0
Dec	48.5	30.0	39.3	83	1998	8	47.1	1984	-3	1983	25	27.1	1989	798	0	.0	.0	13.5	2.1	19.1	.1
Ann	67.7	46.3	57.0	107	Sep 1954	7	81.0	Jul 1987	-10	Jan 1994	19	25.5	Jan 1977	4103	1212	1.1	28.9	295.7	9.7	85.1	.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: 1948-2001

(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	3.71	3.55	2.50	1978	9	9.70	1978	.21	1981
Feb	3.30	2.95	3.09	1984	14	8.02	1998	.42	1978
Mar	4.05	3.60	3.00	1993	4	8.25	1994	1.10	1981
Apr	3.34	2.81	2.82	1983	3	9.82	1983	.87	1985
May	4.86	4.39	4.75	1982	28	10.53	1971	1.63	1986
Jun	4.46	3.22	7.49	1972	22	12.81	1972	.79	1999
Jul	4.94	4.31	5.02	1994	28	14.83	1994	1.10	1987
Aug	4.14	4.25	5.38	1949	15	7.97	1984	1.25	1995
Sep	4.85	3.14	9.20	1987	8	17.96	1987	.62	1985
Oct	4.22	3.23	6.24	1961	21	12.70	1976	.01	2000
Nov	3.74	2.78	4.69	1993	28	13.06	1985	.90	1981
Dec	3.26	2.77	3.46	1948	4	7.42	1973	.37	1980
Ann	48.87	49.81	9.20	Sep 1987	8	17.96	Sep 1987	.01	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.1	6.6	2.7	1.0
Feb	9.8	6.2	2.2	.8
Mar	11.1	6.7	2.8	1.1
Apr	10.4	6.1	1.9	.8
May	12.6	8.0	3.0	1.2
Jun	10.2	6.4	2.7	1.1
Jul	12.0	7.4	2.9	1.4
Aug	11.0	7.1	2.9	1.1
Sep	10.0	6.1	2.7	1.5
Oct	8.3	5.1	2.6	1.3
Nov	9.5	5.5	2.5	1.2
Dec	9.7	5.7	2.1	.9
Ann	124.7	76.9	31.0	13.4

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	.80	1.14	1.69	2.18	2.68	3.20	3.80	4.51	5.45	6.95	8.37
Feb	.79	1.10	1.58	2.01	2.44	2.89	3.40	4.00	4.79	6.04	7.22
Mar	1.36	1.74	2.30	2.78	3.24	3.71	4.22	4.83	5.60	6.80	7.91
Apr	.93	1.25	1.73	2.15	2.56	2.98	3.46	4.02	4.74	5.88	6.94
May	1.77	2.23	2.89	3.44	3.96	4.50	5.08	5.76	6.63	7.96	9.18
Jun	.81	1.21	1.86	2.47	3.09	3.76	4.52	5.44	6.66	8.63	10.51
Jul	1.03	1.49	2.21	2.87	3.54	4.25	5.05	6.01	7.28	9.31	11.23
Aug	1.68	2.06	2.60	3.04	3.46	3.88	4.33	4.86	5.52	6.54	7.47
Sep	.51	.87	1.54	2.22	2.95	3.76	4.72	5.92	7.55	10.25	12.89
Oct	.43	.75	1.33	1.91	2.55	3.26	4.10	5.15	6.58	8.95	11.27
Nov	.87	1.22	1.77	2.26	2.75	3.27	3.85	4.54	5.45	6.89	8.25
Dec	.77	1.07	1.55	1.97	2.40	2.85	3.35	3.95	4.73	5.98	7.15
Ann	35.09	37.77	41.20	43.79	46.10	48.32	50.62	53.15	56.22	60.67	64.52

\+ 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: 1948-2001
(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	4.7	2.5	1	#	17.5	1996	7	17.5	1996	24	1987	26	5	1996	2.3	1.4	.6	.3	.1	6.3	4.2	1.9	.4
Feb	6.1	4.0	1	#	12.5	1983	11	23.5	1979	19	1979	19	8	1979	2.2	1.6	.6	.3	.1	5.2	3.1	2.0	.2
Mar	3.2	.3	#	0	9.2	1980	2	12.7	1980	13	1980	2	2	1980	1.2	.9	.4	.2	.0	1.7	1.0	.6	.1
Apr	.3	.0	#	0	3.0	1990	7	3.0	1990	3	1971	7	#+	1982	.2	.1	@	.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	.1	.0	#	0	2.6	1979	10	3.3	1979	3	1979	10	#	1979	.1	@	.0	.0	.0	@	@	.0	.0
Nov	.8	.0	#	0	7.0	1971	25	7.0	1971	7	1971	25	1	1971	.4	.2	.1	@	.0	.4	.2	@	.0
Dec	2.6	.2	#	0	10.5	1989	13	25.6	1989	6	1997	30	1	1997	1.4	.7	.4	.2	@	1.3	.5	.2	.0
Ann	17.8	7.0	N/A	N/A	17.5	Jan 1996	7	25.6	Dec 1989	24	Jan 1987	26	8	Feb 1979	7.8	4.9	2.1	1.0	.2	14.9	9.0	4.7	.7

+ 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	4/28	4/24	4/21	4/18	4/16	4/13	4/11	4/08	4/04
32	4/16	4/13	4/11	4/09	4/07	4/05	4/03	4/01	3/29
28	4/09	4/04	4/01	3/29	3/26	3/23	3/20	3/17	3/12
24	3/30	3/24	3/20	3/17	3/14	3/11	3/07	3/04	2/26
20	3/19	3/12	3/07	3/02	2/26	2/22	2/18	2/12	2/05
16	3/08	3/01	2/24	2/20	2/16	2/12	2/08	2/03	1/27

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	10/05	10/11	10/15	10/18	10/21	10/25	10/28	11/01	11/07
32	10/13	10/19	10/24	10/28	10/31	11/04	11/08	11/12	11/18
28	10/24	10/30	11/03	11/07	11/10	11/14	11/18	11/22	11/28
24	11/13	11/19	11/23	11/26	11/30	12/03	12/07	12/11	12/17
20	11/21	11/28	12/03	12/07	12/11	12/15	12/20	12/25	1/01
16	11/28	12/06	12/12	12/17	12/22	12/27	1/01	1/07	1/15

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	208	201	196	192	188	184	180	175	168
32	227	220	215	211	206	202	198	193	185
28	254	245	239	234	229	224	218	212	203
24	285	277	270	265	260	255	250	244	235
20	317	307	300	293	288	282	276	268	258
16	337	327	320	314	308	302	296	289	278

***** 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	915	738	562	250	83	6	0	1	29	236	485	798	4103
60	760	598	414	134	27	0	0	0	6	130	344	644	3057
57	668	515	331	83	11	0	0	0	2	83	265	559	2517
55	613	464	278	57	5	0	0	0	1	59	218	501	2196
50	469	335	169	17	0	0	0	0	0	19	122	364	1495
32	106	44	6	0	0	0	0	0	0	0	2	59	217

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	214	231	468	752	1027	1225	1393	1344	1116	814	509	283	9376
55	8	6	27	118	319	535	680	631	427	159	34	13	2957
57	2	1	17	85	263	475	618	569	368	121	21	9	2549
60	0	0	7	46	186	385	525	476	282	75	10	1	1993
65	0	0	0	11	87	241	370	321	155	26	1	0	1212
70	0	0	0	1	28	119	222	178	63	6	0	0	617

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	68	105	259	515	779	980	1143	1089	870	558	283	110	68	173	432	947	1726	2706	3849	4938	5808	6366	6649	6759
45	33	55	159	374	624	830	988	934	720	404	174	55	33	88	247	621	1245	2075	3063	3997	4717	5121	5295	5350
50	10	22	89	247	472	680	833	779	571	269	91	21	10	32	121	368	840	1520	2353	3132	3703	3972	4063	4084
55	1	5	40	144	325	531	678	624	422	151	42	8	1	6	46	190	515	1046	1724	2348	2770	2921	2963	2971
60	0	0	18	76	195	381	523	469	279	72	15	1	0	0	18	94	289	670	1193	1662	1941	2013	2028	2029
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	43	69	159	306	483	660	786	748	564	329	161	60	43	112	271	577	1060	1720	2506	3254	3818	4147	4308	4368

(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