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: WOODSTOCK 2 NE, VA **COOP ID: 449263**

Climate Division: VA 4 **NWS Call Sign:** **Elevation: 680 Feet** **Lat: 38˚54N** **Lon: 78˚28W**

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	41.9	20.1	31.0	80	1950	26	40.0	1974	-17	1994	19	19.9	1977	1055	0	.0	.0	8.7	4.8	26.6	1.1
Feb	46.2	21.8	34.0	84	1930	25	42.1	1976	-13	1996	5	22.2	1978	868	0	.0	.0	11.7	2.7	22.6	.3
Mar	55.4	30.0	42.7	89	1998	31	48.6	1977	-5	1960	8	36.8	1996	692	0	.0	.0	22.3	.5	17.1	@
Apr	65.2	38.1	51.7	94+	1941	20	56.6	1994	16+	1985	10	47.5	1975	400	1	.0	.3	28.4	.0	7.0	.0
May	74.6	48.7	61.7	98	1941	22	67.8	1991	26	1986	4	56.7	1997	147	44	.0	1.1	30.9	.0	.5	.0
Jun	82.7	57.4	70.1	103+	1934	29	72.8	1994	35	1930	1	66.5	1972	13	164	.0	6.0	30.0	.0	.0	.0
Jul	87.0	62.0	74.5	109	1930	20	79.0	1999	39	1960	8	71.0	2000	0	295	.7	12.1	31.0	.0	.0	.0
Aug	85.6	60.5	73.1	107	1930	4	76.5	1977	33	1986	30	69.5	1992	4	254	.4	9.6	31.0	.0	.0	.0
Sep	79.0	52.7	65.9	106+	1932	2	71.7	1998	28	1963	24	63.4	1975	56	81	.0	3.1	30.0	.0	.2	.0
Oct	68.7	40.5	54.6	96+	1941	7	61.2	1984	18	1969	24	48.3	1988	331	9	.0	.1	30.6	.0	6.0	.0
Nov	56.8	31.6	44.2	86	1982	2	50.0	1999	0	1938	26	38.7	1976	624	0	.0	.0	22.6	@	14.8	.0
Dec	46.7	24.7	35.7	80+	2001	6	43.4	1984	-10	1989	24	22.2	1989	909	0	.0	.0	12.5	2.6	23.8	.4
Ann	65.8	40.7	53.3	109	Jul 1930	20	79.0	Jul 1999	-17	Jan 1994	19	19.9	Jan 1977	5099	848	1.1	32.3	289.7	10.6	118.6	1.8

\+ 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: 1930-2001

(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	2.90	2.35	2.22	1976	1	6.83	1978	.35	1981
Feb	2.42	2.11	2.35	1998	5	5.52	1998	.33	1978
Mar	3.09	2.81	3.61	1936	17	8.09	1993	.62	1981
Apr	2.67	2.37	2.73	1992	22	5.74	1983	.51	1985
May	3.82	3.95	2.32	1950	29	7.66	1996	1.13	1977
Jun	3.65	3.23	3.47	1972	22	7.97	1972	.40	1990
Jul	3.63	3.48	3.50	1990	13	8.08	1990	.42	1998
Aug	3.26	3.13	4.19	1955	18	5.74	1994	.74	1991
Sep	3.66	2.72	5.21	1996	7	11.07	1996	.44	1985
Oct	3.12	2.73	6.03	1942	15	10.07	1976	.07	2000
Nov	2.85	2.76	3.50	1993	28	7.51	1985	.49	1998
Dec	2.45	1.91	2.94	1974	2	5.06	1974	.58	1980
Ann	37.52	37.21	6.03	Oct 1942	15	11.07	Sep 1996	.07	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.8	6.2	2.0	.6
Feb	8.2	5.6	1.6	.4
Mar	9.5	6.4	2.2	.6
Apr	9.1	6.2	1.7	.4
May	10.8	8.0	3.0	.7
Jun	10.3	7.6	2.3	.8
Jul	10.2	7.5	2.4	.5
Aug	10.0	6.8	2.1	.7
Sep	8.8	6.2	2.5	1.1
Oct	7.1	4.8	2.1	1.0
Nov	8.1	5.5	1.9	.6
Dec	7.9	4.8	1.7	.4
Ann	108.8	75.6	25.5	7.8

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	.65	.92	1.35	1.73	2.11	2.52	2.97	3.52	4.24	5.38	6.46
Feb	.51	.73	1.08	1.41	1.73	2.08	2.47	2.94	3.56	4.55	5.49
Mar	.78	1.07	1.52	1.92	2.31	2.73	3.19	3.74	4.46	5.60	6.66
Apr	.75	1.00	1.39	1.72	2.05	2.39	2.77	3.21	3.79	4.70	5.55
May	1.54	1.89	2.39	2.80	3.18	3.58	4.00	4.49	5.10	6.05	6.91
Jun	.80	1.14	1.67	2.16	2.64	3.15	3.73	4.43	5.34	6.79	8.16
Jul	1.00	1.34	1.87	2.32	2.77	3.24	3.75	4.37	5.16	6.41	7.57
Aug	1.28	1.58	2.01	2.36	2.70	3.04	3.41	3.84	4.38	5.21	5.97
Sep	.71	1.04	1.57	2.07	2.57	3.11	3.72	4.46	5.43	7.00	8.50
Oct	.31	.54	.97	1.40	1.87	2.40	3.02	3.80	4.87	6.64	8.36
Nov	.63	.90	1.31	1.69	2.07	2.47	2.92	3.46	4.17	5.31	6.37
Dec	.59	.81	1.17	1.49	1.81	2.15	2.52	2.97	3.56	4.49	5.36
Ann	27.47	29.43	31.94	33.83	35.51	37.12	38.79	40.62	42.84	46.05	48.82

\+ 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

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	8.9	5.8	1	#
Feb	6.5	3.6	1	#
Mar	3.8	1.0	#	#
Apr	.4	.0	#	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.1	.0	#	0
Nov	.8	.0	#	0
Dec	2.5	.8	#	#
Ann	23.0	11.2	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	17.3	1971	1	33.0	1996	27	1996	9	10	1996
Feb	23.0	1983	12	34.7	1983	32	1983	12	9	1978
Mar	18.0	1994	3	23.0	1994	22	1994	3	2	1994
Apr	5.5	1971	7	5.5	1971	6	1971	7	#+	1990
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	2.5	1979	10	2.5	1979	3	1979	10	#	1979
Nov	6.0	1971	25	6.0	1971	6	1971	25	#+	1996
Dec	6.0	1990	28	9.5	1997	7	1992	12	2	1989
Ann	23.0	Feb 1983	12	34.7	Feb 1983	32	Feb 1983	12	10	Jan 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.7	2.0	.9	.3	.2
Feb	2.4	1.7	.7	.4	.1
Mar	1.3	1.1	.4	.3	.1
Apr	.2	.1	.1	@	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.1	@	.0	.0	.0
Nov	.4	.3	.2	.1	.0
Dec	1.3	.8	.3	.1	.0
Ann	8.4	6.0	2.6	1.2	.4

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	6.7	4.3	1.7	1.2
Feb	4.9	3.4	2.3	.6
Mar	1.4	.8	.4	.0
Apr	.1	@	@	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	@	@	.0	.0
Nov	.5	.2	@	.0
Dec	1.9	.7	.2	.0
Ann	15.5	9.4	4.6	1.8

+ 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	5/19	5/15	5/13	5/10	5/08	5/06	5/04	5/01	4/27
32	5/13	5/08	5/04	5/01	4/28	4/25	4/22	4/18	4/13
28	4/25	4/20	4/17	4/14	4/11	4/08	4/05	4/02	3/28
24	4/13	4/08	4/05	4/02	3/31	3/28	3/26	3/23	3/18
20	4/01	3/27	3/23	3/19	3/16	3/13	3/10	3/06	2/28
16	3/27	3/20	3/15	3/10	3/06	3/02	2/25	2/20	2/13

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	9/25	9/28	10/01	10/04	10/07	10/11	10/16
32	9/26	10/02	10/06	10/09	10/12	10/15	10/19	10/22	10/28
28	10/09	10/14	10/18	10/21	10/24	10/27	10/30	11/03	11/08
24	10/16	10/23	10/27	10/31	11/04	11/07	11/11	11/16	11/22
20	11/01	11/08	11/12	11/16	11/20	11/24	11/28	12/03	12/09
16	11/16	11/23	11/29	12/03	12/07	12/11	12/16	12/21	12/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	165	158	153	149	145	141	137	132	126
32	190	182	176	171	166	162	157	151	143
28	216	209	204	200	195	191	187	182	174
24	239	231	226	221	217	213	208	203	196
20	276	266	260	254	248	243	237	230	221
16	299	291	285	280	275	271	266	260	252

***** 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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1055	868	692	400	147	13	0	4	56	331	624	909	5099
60	900	728	537	257	63	1	0	0	14	203	475	754	3932
57	807	644	445	180	32	0	0	0	5	141	388	661	3303
55	745	588	388	136	19	0	0	0	2	106	334	605	2923
50	601	458	251	54	3	0	0	0	0	45	208	461	2081
32	179	103	14	0	0	0	0	0	0	0	8	100	404

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	147	159	345	590	920	1141	1318	1273	1016	701	373	214	8197
55	0	0	6	36	225	451	605	560	328	94	9	6	2320
57	0	0	1	21	177	391	543	498	270	66	4	0	1971
60	0	0	0	7	115	303	450	405	190	36	1	0	1507
65	0	0	0	1	44	164	295	254	81	9	0	0	848
70	0	0	0	0	10	61	152	125	21	1	0	0	370

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	42	76	198	418	710	937	1096	1048	814	492	218	78	42	118	316	734	1444	2381	3477	4525	5339	5831	6049	6127
45	18	33	110	280	556	787	941	893	664	342	124	39	18	51	161	441	997	1784	2725	3618	4282	4624	4748	4787
50	2	12	52	163	404	637	786	738	514	213	56	13	2	14	66	229	633	1270	2056	2794	3308	3521	3577	3590
55	0	1	20	88	263	487	631	583	367	110	21	3	0	1	21	109	372	859	1490	2073	2440	2550	2571	2574
60	0	0	4	36	143	339	476	428	235	47	5	0	0	0	4	40	183	522	998	1426	1661	1708	1713	1713
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	39	66	152	278	454	620	734	700	532	325	152	60	39	105	257	535	989	1609	2343	3043	3575	3900	4052	4112

(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