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: BREMO BLUFF, VA **COOP ID: 440993**

Climate Division: VA 2 **NWS Call Sign:** **Elevation: 225 Feet** **Lat: 37˚43N** **Lon: 78˚17W**

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	44.4	21.6	33.0	75+	1999	24	42.4	1998	-14+	1987	28	22.3	1977	993	0	.0	.0	10.4	3.4	26.8	.7
Feb	49.4	23.3	36.4	83	2000	25	44.2	1976	-18	1996	6	26.5	1978	803	0	.0	.0	14.1	2.0	22.1	.2
Mar	58.3	31.1	44.7	90	1998	30	49.2	1976	3	1993	15	40.6	1996	630	0	.0	@	24.0	.2	17.1	.0
Apr	69.5	39.7	54.6	94	1995	19	59.2	1994	19	1997	10	49.7	1997	317	5	.0	.9	29.2	.0	5.5	.0
May	76.6	50.9	63.8	98	1996	21	68.4	1991	30+	1997	11	58.9	1997	104	65	.0	1.4	31.0	.0	.1	.0
Jun	84.4	59.9	72.2	100+	1998	26	75.3	1994	38	1997	5	67.9	1972	7	221	@	6.6	30.0	.0	.0	.0
Jul	88.1	65.2	76.7	105	1999	6	80.0	1993	46	1996	4	74.1	1984	0	361	.7	12.5	31.0	.0	.0	.0
Aug	87.2	62.7	75.0	102	1999	1	77.9+	1998	42	1986	30	71.3	1986	1	309	.3	9.6	31.0	.0	.0	.0
Sep	81.0	54.6	67.8	100+	1998	6	74.5	1998	34	1991	29	64.3	1990	42	126	.1	3.0	30.0	.0	.0	.0
Oct	70.3	42.3	56.3	92	1997	5	63.6	1984	22	2001	29	48.8	1987	294	24	.0	.1	30.6	.0	4.7	.0
Nov	58.7	32.7	45.7	84+	1993	15	53.7	1985	12+	2000	22	38.8	1996	579	0	.0	.0	24.4	.0	15.8	.0
Dec	48.6	24.9	36.8	81+	2001	6	44.2	1984	-6+	1989	24	25.3	1989	875	0	.0	.0	14.8	1.5	24.9	.1
Ann	68.0	42.4	55.3	105	Jul 1999	6	80.0	Jul 1993	-18	Feb 1996	6	22.3	Jan 1977	4645	1111	1.1	34.1	300.5	7.1	117.0	1.0

\+ 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: 1948-2001

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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	3.44	3.14	2.03	1949	22	9.56	1978	.22	1981
Feb	3.16	2.80	2.25	1994	11	9.34	1971	.38	1977
Mar	3.92	3.65	2.66	1994	2	10.17	1994	1.22	1988
Apr	3.13	2.48	2.60	1987	16	7.27	1983	.67	1985
May	4.11	3.49	3.16	1971	30	10.82	1971	1.09	1986
Jun	3.36	2.95	4.97	1962	12	8.70	1995	.52	1980
Jul	4.07	3.60	4.22	1975	14	10.01	1991	.64	1977
Aug	3.75	3.33	4.88	1969	20	11.03	1985	1.22	1995
Sep	3.45	2.53	4.38	1996	7	10.76	1999	.36	1984
Oct	3.99	3.56	5.80	1961	21	12.26	1976	.00	2000
Nov	3.31	3.09	5.45	1993	28	8.48	1985	.75	1981
Dec	2.98	2.59	4.54	1948	4	6.46	1973	.45	1988
Ann	42.67	43.15	5.80	Oct 1961	21	12.26	Oct 1976	.00	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.4	6.5	2.7	.9
Feb	7.4	5.8	2.0	.7
Mar	8.9	7.0	3.0	1.1
Apr	8.1	6.0	2.1	.8
May	9.8	6.9	2.9	.9
Jun	8.3	6.1	2.1	.7
Jul	9.2	6.7	2.5	1.2
Aug	8.0	5.8	2.3	1.1
Sep	7.3	5.1	2.4	1.1
Oct	6.7	5.2	2.7	1.3
Nov	7.8	5.6	2.3	1.0
Dec	7.4	5.2	2.2	.7
Ann	97.3	71.9	29.2	11.5

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	1.12	1.63	2.08	2.53	3.00	3.54	4.17	5.01	6.34	7.59
Feb	.72	1.01	1.47	1.89	2.31	2.75	3.24	3.84	4.62	5.86	7.02
Mar	1.25	1.63	2.18	2.65	3.10	3.57	4.08	4.68	5.46	6.67	7.79
Apr	.91	1.21	1.66	2.05	2.42	2.81	3.25	3.76	4.42	5.45	6.41
May	1.44	1.83	2.39	2.86	3.32	3.78	4.29	4.88	5.63	6.80	7.88
Jun	.63	.93	1.42	1.88	2.34	2.84	3.41	4.10	5.01	6.48	7.88
Jul	1.34	1.73	2.29	2.78	3.24	3.72	4.25	4.86	5.65	6.88	8.01
Aug	1.47	1.81	2.31	2.72	3.10	3.50	3.92	4.41	5.04	6.00	6.87
Sep	.47	.75	1.24	1.72	2.23	2.78	3.42	4.21	5.28	7.02	8.70
Oct	.34	.78	1.43	2.01	2.61	3.27	4.02	4.93	6.15	8.12	10.02
Nov	.92	1.24	1.71	2.13	2.53	2.96	3.43	3.98	4.70	5.83	6.89
Dec	.61	.88	1.31	1.71	2.12	2.55	3.04	3.62	4.40	5.64	6.81
Ann	30.89	33.18	36.11	38.33	40.30	42.20	44.16	46.32	48.94	52.72	55.99

+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	.2	.0	#	0
Feb	1.9	.0	#	0
Mar	.9	.0	#	0
Apr	.0	.0	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	.0	.0	0	0
Nov	#	.0	#	0
Dec	#	.0	#	0
Ann	3.0	.0	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	1.5	1977	7	1.5	1986	9	1996	16	1	1996
Feb	9.0	1979	19	16.8	1979	11	1996	3	1	1996
Mar	10.0	1980	2	10.0	1980	2+	1999	9	#+	1999
Apr	.0	0	0	.0	0	0	0	0	0	0
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	.0	0	0	.0	0	0	0	0	0	0
Nov	#	1996	14	#	1996	#	1996	14	#	1996
Dec	#	1999	24	#	1999	#	1999	24	#	1999
Ann	10.0	Mar 1980	2	16.8	Feb 1979	11	Feb 1996	3	1+	Feb 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.2	.2	.0	.0	.0
Feb	.4	.4	.3	.2	.0
Mar	.1	.1	.1	.1	.1
Apr	.0	.0	.0	.0	.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	.0	.0	.0	.0	.0
Nov	.0	.0	.0	.0	.0
Dec	.0	.0	.0	.0	.0
Ann	.7	.7	.4	.3	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.0	.0	.0	.0
Feb	.1	.0	.0	.0
Mar	.0	.0	.0	.0
Apr	.0	.0	.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	.0	.0	.0	.0
Nov	.0	.0	.0	.0
Dec	.0	.0	.0	.0
Ann	.1	.0	.0	.0

+ 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	5/17	5/12	5/08	5/05	5/03	4/30	4/27	4/23	4/18
32	5/03	4/29	4/26	4/23	4/21	4/18	4/16	4/13	4/08
28	4/24	4/19	4/15	4/12	4/09	4/07	4/04	3/31	3/26
24	4/13	4/07	4/03	3/31	3/27	3/24	3/20	3/16	3/11
20	4/03	3/28	3/23	3/19	3/15	3/11	3/07	3/02	2/23
16	3/22	3/14	3/09	3/04	2/28	2/23	2/18	2/13	2/05

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	9/27	10/01	10/04	10/06	10/09	10/11	10/13	10/16	10/20
32	10/05	10/09	10/12	10/15	10/17	10/20	10/23	10/26	10/30
28	10/10	10/16	10/21	10/25	10/29	11/01	11/05	11/10	11/16
24	10/23	10/29	11/02	11/05	11/09	11/12	11/15	11/19	11/25
20	11/07	11/12	11/15	11/19	11/22	11/25	11/28	12/01	12/07
16	11/11	11/21	11/29	12/05	12/11	12/17	12/23	12/30	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	171	166	162	158	155	151	146	140
32	198	191	187	183	179	175	171	166	160
28	228	219	212	207	202	196	191	184	175
24	250	241	235	230	225	221	215	209	201
20	274	266	260	255	251	246	242	236	228
16	311	300	293	287	282	277	271	265	256

***** 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	993	803	630	317	104	7	0	1	42	294	579	875	4645
60	838	663	475	188	38	1	0	0	11	180	433	720	3547
57	745	579	385	125	16	0	0	0	4	126	350	628	2958
55	683	523	327	91	8	0	0	0	2	97	297	572	2600
50	541	392	197	32	1	0	0	0	0	43	182	429	1817
32	145	63	5	0	0	0	0	0	0	0	6	81	300

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	175	184	398	678	984	1204	1384	1331	1074	753	417	229	8811
55	1	0	7	79	280	514	671	618	386	137	18	7	2718
57	0	0	3	53	226	454	609	556	328	105	11	1	2346
60	0	0	0	26	154	364	516	463	245	66	4	0	1838
65	0	0	0	5	65	221	361	309	126	24	0	0	1111
70	0	0	0	0	18	104	210	167	46	6	0	0	551

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	45	84	214	468	741	971	1145	1088	852	518	232	84	45	129	343	811	1552	2523	3668	4756	5608	6126	6358	6442
45	20	42	118	326	586	821	990	933	702	369	133	41	20	62	180	506	1092	1913	2903	3836	4538	4907	5040	5081
50	4	15	53	205	431	671	835	778	553	233	63	15	4	19	72	277	708	1379	2214	2992	3545	3778	3841	3856
55	0	3	21	113	282	521	680	623	404	128	25	3	0	3	24	137	419	940	1620	2243	2647	2775	2800	2803
60	0	0	7	54	150	372	525	468	264	56	6	0	0	0	7	61	211	583	1108	1576	1840	1896	1902	1902
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	44	74	164	311	462	647	778	735	556	343	172	61	44	118	282	593	1055	1702	2480	3215	3771	4114	4286	4347

(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