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: LOUISA, VA **COOP ID: 445050**

Climate Division: VA 2 **NWS Call Sign:** **Elevation: 420 Feet** **Lat: 38˚02N** **Lon: 78˚00W**

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	44.5	21.3	32.9	77+	1975	29	42.3	1990	-14	2000	28	21.9	1977	995	0	.0	.0	10.7	3.6	24.4	.9
Feb	49.2	23.5	36.4	81	1985	24	45.0	1990	-21	1996	5	24.6	1979	802	0	.0	.0	14.0	1.8	20.9	.2
Mar	58.6	30.7	44.7	89	1990	12	49.7	1977	2+	1993	15	40.0	1993	632	0	.0	.0	24.5	.2	14.8	.0
Apr	69.3	38.8	54.1	95	1976	18	59.7	1994	13	1985	10	49.4	1975	332	2	.0	.5	29.4	.0	6.0	.0
May	76.1	48.6	62.4	96	1996	20	69.0	1991	26	1986	4	59.1	1973	126	44	.0	1.0	31.0	.0	.4	.0
Jun	83.1	57.4	70.3	100+	1952	26	73.6	1996	38+	1997	5	65.5	1972	18	176	.0	5.1	30.0	.0	.0	.0
Jul	86.6	62.1	74.4	104	1953	30	77.8	1999	42	1988	1	71.2	1975	1	291	.2	11.1	31.0	.0	.0	.0
Aug	84.8	60.5	72.7	104	1953	31	75.9	1995	38+	1986	30	68.9	1982	5	241	.1	7.5	31.0	.0	.0	.0
Sep	78.7	53.6	66.2	104	1954	7	71.9	1998	29	1983	24	62.7	1975	53	88	@	2.3	30.0	.0	.1	.0
Oct	68.6	40.9	54.8	94+	1954	4	62.4	1984	18	1969	24	49.5	1987	329	12	.0	.0	30.6	.0	4.7	.0
Nov	58.1	32.2	45.2	88	1974	1	52.4	1985	11+	1989	24	38.2	1976	596	0	.0	.0	24.1	.0	13.6	.0
Dec	47.9	24.7	36.3	79+	1998	7	44.2	1984	-9	1989	23	24.6	1989	890	0	.0	.0	14.1	1.8	21.7	.3
Ann	67.1	41.2	54.2	104+	Sep 1954	7	77.8	Jul 1999	-21	Feb 1996	5	21.9	Jan 1977	4779	854	.3	27.5	300.4	7.4	106.6	1.4

\+ 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

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	3.48	3.01	2.02	1996	7	8.53	1978	.10	1981
Feb	3.00	2.55	3.98	1984	14	8.22	1998	.29	1978
Mar	3.85	3.60	3.90	1993	4	8.94	1994	1.12+	1986
Apr	3.07	2.73	2.53	1987	16	7.17	1983	.49	1985
May	3.92	3.70	2.27	1990	27	10.40	1971	.70	1997
Jun	3.75	3.13	6.51	1975	26	10.82	1972	.56	1980
Jul	4.45	4.56	5.18	1956	22	11.71	1991	.52	1998
Aug	3.63	3.47	11.18	1969	20	9.33	1985	.48	1991
Sep	4.05	3.34	4.59	1996	6	11.14	1987	.91	1980
Oct	3.88	2.89	4.18	1972	6	10.82	1972	.00	2000
Nov	3.82	3.28	5.76	1993	28	10.88	1985	.70	1981
Dec	3.12	2.95	3.18	1992	10	6.78	1973	.40	1980
Ann	44.02	43.37	11.18	Aug 1969	20	11.71	Jul 1991	.00	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.3	6.3	2.7	.8
Feb	8.5	5.8	1.8	.7
Mar	9.9	6.7	2.7	1.1
Apr	9.7	6.4	2.0	.7
May	10.8	7.4	2.7	.9
Jun	9.6	6.2	2.5	1.0
Jul	10.3	7.1	3.0	1.3
Aug	8.7	5.6	2.5	.9
Sep	8.2	5.5	2.5	1.5
Oct	7.5	5.0	2.5	1.2
Nov	8.3	6.0	2.7	1.0
Dec	8.4	5.5	2.2	.9
Ann	109.2	73.5	29.8	12.0

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	.77	1.09	1.60	2.06	2.52	3.01	3.57	4.23	5.10	6.49	7.80
Feb	.60	.88	1.32	1.72	2.13	2.56	3.05	3.65	4.43	5.68	6.87
Mar	1.28	1.65	2.18	2.64	3.07	3.52	4.02	4.59	5.34	6.49	7.55
Apr	.95	1.24	1.68	2.05	2.41	2.78	3.19	3.68	4.30	5.27	6.17
May	.97	1.34	1.91	2.42	2.92	3.45	4.04	4.74	5.66	7.11	8.48
Jun	.64	.97	1.51	2.03	2.55	3.13	3.78	4.58	5.64	7.35	8.99
Jul	1.04	1.45	2.11	2.69	3.27	3.88	4.57	5.40	6.48	8.19	9.80
Aug	.95	1.29	1.81	2.28	2.73	3.21	3.75	4.38	5.20	6.50	7.72
Sep	.72	1.08	1.67	2.22	2.79	3.40	4.09	4.94	6.06	7.88	9.61
Oct	.32	.74	1.37	1.94	2.53	3.17	3.90	4.79	5.99	7.93	9.80
Nov	.84	1.19	1.75	2.25	2.76	3.30	3.91	4.63	5.59	7.12	8.56
Dec	.66	.95	1.40	1.82	2.24	2.69	3.19	3.79	4.59	5.86	7.06
Ann	30.64	33.21	36.51	39.03	41.26	43.43	45.68	48.16	51.18	55.57	59.37

\+ 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	6.0	3.0	1	#
Feb	5.2	3.5	1	#
Mar	2.0	.0	#	0
Apr	.4	.0	0	0
May	#	.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	2.3	.0	#	0
Ann	16.8	6.5	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	16.0	1996	7	31.0	1987	24	1987	26	5	1996
Feb	11.0	1983	11	23.3	1996	17	1979	19	6	1979
Mar	8.8	1993	13	12.5	1980	11	1980	2	1	1993
Apr	4.5	1971	7	4.5	1971	0	0	0	0	0
May	#	1989	7	#	1989	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	1.5	1979	10	1.5	1979	#	1979	10	#	1979
Nov	6.5	1987	11	6.5	1987	6	1987	11	#+	1996
Dec	11.5	1973	17	16.7	1989	14	1973	17	4	1989
Ann	16.0	Jan 1996	7	31.0	Jan 1987	24	Jan 1987	26	6	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.9	1.6	.8	.3	.1
Feb	1.8	1.6	.6	.3	.1
Mar	.8	.7	.2	.1	.0
Apr	.2	.2	@	.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
Nov	.3	.3	.2	@	.0
Dec	.9	.8	.3	.1	@
Ann	5.9	5.2	2.1	.8	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	5.9	4.4	2.4	.7
Feb	3.1	1.9	1.2	.2
Mar	1.0	.6	.2	@
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	.2	.2	@	.0
Dec	1.8	1.3	.9	.2
Ann	12.0	8.4	4.7	1.1

+ 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	5/24	5/19	5/15	5/12	5/09	5/06	5/03	4/30	4/25
32	5/07	5/03	4/29	4/27	4/24	4/21	4/19	4/15	4/11
28	4/28	4/23	4/19	4/16	4/12	4/09	4/06	4/02	3/28
24	4/13	4/07	4/03	3/30	3/27	3/24	3/20	3/16	3/10
20	4/02	3/27	3/24	3/20	3/17	3/14	3/11	3/07	3/01
16	3/22	3/15	3/10	3/06	3/02	2/26	2/22	2/17	2/10

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	9/21	9/25	9/28	9/30	10/03	10/05	10/07	10/10	10/14
32	9/29	10/04	10/08	10/11	10/13	10/16	10/19	10/23	10/28
28	10/10	10/16	10/20	10/23	10/27	10/30	11/03	11/07	11/13
24	10/23	10/29	11/02	11/06	11/10	11/13	11/17	11/21	11/27
20	11/09	11/15	11/18	11/21	11/24	11/27	12/01	12/04	12/09
16	11/19	11/24	11/29	12/02	12/06	12/09	12/13	12/17	12/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	164	158	153	149	146	142	138	133	127
32	191	185	180	176	172	168	164	159	152
28	222	213	207	202	197	192	186	180	171
24	254	245	238	232	227	222	216	209	200
20	275	267	261	256	252	247	242	236	228
16	304	295	289	283	278	273	267	261	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	995	802	632	332	126	18	1	5	53	329	596	890	4779
60	840	662	477	197	47	2	0	0	14	205	448	735	3627
57	747	578	387	130	21	0	0	0	5	144	363	643	3018
55	685	526	331	93	10	0	0	0	2	110	309	587	2653
50	542	396	202	31	1	0	0	0	0	49	189	443	1853
32	142	73	7	0	0	0	0	0	0	0	6	90	318

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	170	195	399	660	941	1148	1313	1259	1025	706	400	223	8439
55	0	4	9	63	238	458	600	546	337	103	13	7	2378
57	0	0	4	40	187	398	538	484	280	75	7	1	2014
60	0	0	0	17	120	310	445	391	199	42	2	0	1526
65	0	0	0	2	44	176	291	241	88	12	0	0	854
70	0	0	0	0	9	76	153	114	24	2	0	0	378

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	63	102	248	483	750	963	1122	1071	845	524	254	105	63	165	413	896	1646	2609	3731	4802	5647	6171	6425	6530
45	27	52	147	339	595	813	967	916	695	377	155	54	27	79	226	565	1160	1973	2940	3856	4551	4928	5083	5137
50	12	22	77	213	441	663	812	761	546	238	87	28	12	34	111	324	765	1428	2240	3001	3547	3785	3872	3900
55	0	7	36	118	293	513	657	606	398	137	40	6	0	7	43	161	454	967	1624	2230	2628	2765	2805	2811
60	0	0	13	57	169	365	502	451	262	61	11	0	0	0	13	70	239	604	1106	1557	1819	1880	1891	1891
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	47	82	177	320	481	648	768	729	556	343	169	68	47	129	306	626	1107	1755	2523	3252	3808	4151	4320	4388

(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