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: LURAY 5 E, VA **COOP ID: 445096**

Climate Division: VA 4 **NWS Call Sign:** **Elevation: 1,400 Feet** **Lat: 38˚40N** **Lon: 78˚22W**

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	46.0	22.6	34.3	80	1950	26	44.6	1990	-10+	1994	19	22.6	1977	951	0	.0	.0	8.6	6.1	27.5	1.6
Feb	50.1	24.5	37.3	79	2000	26	45.5	1990	-14	1996	5	26.6	1978	776	0	.0	.0	11.6	4.0	23.4	.3
Mar	59.0	30.8	44.9	90+	1990	16	50.6	1977	-2+	1993	15	39.9	1993	625	0	.0	.1	21.0	.6	19.2	.1
Apr	70.6	39.2	54.9	94+	1976	19	60.6	1985	15	1985	10	50.6	1975	305	3	.0	.4	27.7	.0	8.8	.0
May	78.1	47.7	62.9	97+	1996	21	68.3	1991	26+	1970	7	58.4	1994	122	56	.0	1.1	30.9	.0	1.2	.0
Jun	84.7	56.0	70.4	99	1988	23	73.1	2000	31	1977	8	66.9	1974	14	174	.0	4.2	30.0	.0	@	.0
Jul	87.9	60.2	74.1	105	1988	8	77.8	1988	39	1988	1	72.1	1984	0	281	.5	8.8	31.0	.0	.0	.0
Aug	86.0	58.7	72.4	101	1953	31	76.9	1988	37+	1986	29	69.0	1992	6	233	.1	5.6	31.0	.0	.0	.0
Sep	80.9	52.2	66.6	102+	1954	7	71.5	1998	28	1974	24	63.3	1984	48	94	.0	2.1	30.0	.0	.3	.0
Oct	70.5	40.8	55.7	97	1953	1	63.5	1984	17	1952	21	50.0	1976	310	20	.0	.1	30.1	.0	7.4	.0
Nov	60.7	33.5	47.1	85	1950	1	54.0	1985	6	1970	25	40.6	1976	537	1	.0	.0	22.9	.1	16.4	.0
Dec	49.5	25.4	37.5	79+	2001	6	46.5	1984	-7+	1989	22	26.9	1989	854	0	.0	.0	13.3	3.2	25.3	.4
Ann	68.7	41.0	54.8	105	Jul 1988	8	77.8	Jul 1988	-14	Feb 1996	5	22.6	Jan 1977	4548	862	.6	22.4	288.1	14.0	129.5	2.4

+ 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

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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	3.08	2.62	3.92	1968	14	8.03	1998	.21	1981
Feb	2.64	1.98	3.20	1972	13	7.85	1998	.34	1978
Mar	3.38	3.21	4.12	1954	1	8.91	1994	1.07	1981
Apr	3.15	2.83	4.50	1992	22	7.81	1987	.61	1986
May	3.92	3.83	3.20	1971	30	7.73	1971	1.10	1977
Jun	3.98	3.68	4.95	1972	22	10.71	1972	.94	1999
Jul	3.77	3.89	2.50	1993	27	6.65	1996	.88	1998
Aug	3.51	3.33	8.82	1955	18	7.05	1984	1.13	1981
Sep	4.35	2.99	9.42	1996	7	17.29	1996	.91	1998
Oct	3.49	2.63	6.02	1972	6	9.49	1972	.10	2000
Nov	3.49	2.91	4.30	1962	10	14.21	1985	.65	1981
Dec	2.85	2.13	3.95	1992	11	7.98	1992	.34	1985
Ann	41.61	40.92	9.42	Sep 1996	7	17.29	Sep 1996	.10	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.2	5.9	1.7	.7
Feb	7.4	5.3	1.5	.6
Mar	10.1	6.6	2.2	.9
Apr	10.6	6.2	1.9	.7
May	11.6	7.5	2.7	1.0
Jun	10.2	6.8	2.6	1.1
Jul	11.5	7.2	2.4	.9
Aug	10.4	6.6	2.3	.8
Sep	9.3	5.8	2.8	1.3
Oct	8.2	5.1	1.9	.9
Nov	8.9	5.8	2.2	1.0
Dec	8.7	5.4	1.9	.7
Ann	116.1	74.2	26.1	10.6

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	.49	.76	1.20	1.63	2.06	2.54	3.09	3.76	4.65	6.10	7.49
Feb	.37	.59	.97	1.34	1.72	2.14	2.63	3.22	4.03	5.34	6.60
Mar	.98	1.30	1.78	2.20	2.61	3.04	3.51	4.07	4.79	5.92	6.97
Apr	.86	1.15	1.61	2.00	2.39	2.80	3.26	3.79	4.49	5.58	6.61
May	1.48	1.85	2.37	2.81	3.22	3.65	4.11	4.64	5.32	6.36	7.31
Jun	1.08	1.46	2.03	2.54	3.03	3.55	4.12	4.80	5.68	7.07	8.36
Jul	1.59	1.93	2.41	2.81	3.18	3.55	3.95	4.42	5.00	5.89	6.70
Aug	1.29	1.62	2.09	2.49	2.87	3.25	3.67	4.15	4.77	5.72	6.59
Sep	.73	1.11	1.75	2.34	2.96	3.62	4.38	5.31	6.55	8.55	10.46
Oct	.34	.59	1.07	1.55	2.08	2.67	3.37	4.25	5.45	7.45	9.40
Nov	.63	.94	1.45	1.93	2.42	2.94	3.54	4.26	5.22	6.77	8.24
Dec	.34	.57	.97	1.37	1.79	2.26	2.80	3.48	4.40	5.91	7.37
Ann	29.74	32.04	34.99	37.22	39.21	41.12	43.10	45.29	47.94	51.78	55.10

\+ 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	6.2	3.8	1	#
Feb	3.8	1.3	1	#
Mar	3.7	.0	#	0
Apr	.6	.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	.2	.0	#	0
Nov	1.0	.0	#	0
Dec	2.5	.0	#	0
Ann	18.0	5.1	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	15.0	1971	1	25.0	1978	19	1978	22	8	1978
Feb	24.0	1983	12	24.0	1983	26	1983	12	6	1983
Mar	33.5	1994	3	40.5	1994	38	1994	3	4	1994
Apr	6.0	1990	7	6.0	1990	3	1971	7	#	1971
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	4.0	1979	10	6.0	1979	4	1979	10	#	1979
Nov	7.6	1971	25	9.0	1995	7	1971	25	1	1971
Dec	7.0	1973	17	19.0	1973	12	1973	18	2	1989
Ann	33.5	Mar 1994	3	40.5	Mar 1994	38	Mar 1994	3	8	Jan 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.9	1.6	.6	.2	@
Feb	1.6	1.2	.6	.3	.1
Mar	1.1	.9	.3	.2	.1
Apr	.3	.2	.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	.1	@	.0	.0
Nov	.3	.3	.1	.1	.0
Dec	.7	.6	.4	.2	.0
Ann	6.0	4.9	2.1	1.0	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	4.9	2.9	1.5	1.0
Feb	4.6	3.7	1.6	.5
Mar	1.8	1.1	.6	.1
Apr	@	@	.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
Nov	.3	.1	.1	.0
Dec	.7	.5	.4	.1
Ann	12.3	8.3	4.2	1.7

+ 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	6/01	5/27	5/22	5/19	5/16	5/12	5/09	5/04	4/29
32	5/18	5/14	5/10	5/07	5/04	5/02	4/29	4/25	4/21
28	5/01	4/26	4/23	4/20	4/17	4/14	4/11	4/08	4/03
24	4/17	4/12	4/09	4/06	4/03	4/01	3/29	3/26	3/21
20	4/05	4/01	3/29	3/26	3/24	3/21	3/18	3/15	3/11
16	3/29	3/22	3/17	3/13	3/09	3/05	2/28	2/23	2/16

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	9/18	9/22	9/25	9/27	9/29	10/01	10/03	10/06	10/10
32	9/27	10/01	10/04	10/06	10/08	10/10	10/13	10/15	10/19
28	10/11	10/15	10/18	10/21	10/24	10/26	10/29	11/01	11/05
24	10/18	10/24	10/28	10/31	11/03	11/07	11/10	11/14	11/20
20	10/31	11/07	11/11	11/15	11/19	11/22	11/26	12/01	12/07
16	11/12	11/19	11/25	11/29	12/04	12/08	12/12	12/18	12/25

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	153	147	143	139	136	132	129	124	118
32	175	168	164	160	156	152	148	144	137
28	210	202	197	193	189	185	180	175	168
24	235	228	222	218	213	209	204	199	191
20	262	254	249	244	240	235	230	225	217
16	297	288	281	275	269	264	258	251	241

***** 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	951	776	625	305	122	14	0	6	48	310	537	854	4548
60	796	636	472	175	47	2	0	0	12	192	394	699	3425
57	710	552	385	112	21	0	0	0	4	137	314	612	2847
55	652	501	329	79	11	0	0	0	2	106	264	553	2497
50	508	371	206	25	1	0	0	0	0	48	160	412	1731
32	138	60	10	0	0	0	0	0	0	0	5	78	291

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	210	208	408	688	958	1150	1304	1251	1036	733	458	248	8652
55	10	6	15	77	256	460	591	538	348	126	28	10	2465
57	7	0	9	50	204	400	529	476	291	95	18	7	2086
60	0	0	2	23	137	312	436	383	208	58	8	0	1567
65	0	0	0	3	56	174	281	233	94	20	1	0	862
70	0	0	0	0	15	70	136	109	26	5	0	0	361

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	44	67	180	398	670	881	1036	986	759	454	212	72	44	111	291	689	1359	2240	3276	4262	5021	5475	5687	5759
45	22	31	94	267	516	731	881	831	609	310	122	34	22	53	147	414	930	1661	2542	3373	3982	4292	4414	4448
50	5	10	49	160	365	581	726	676	459	189	63	14	5	15	64	224	589	1170	1896	2572	3031	3220	3283	3297
55	1	0	22	89	230	431	571	521	317	99	27	3	1	1	23	112	342	773	1344	1865	2182	2281	2308	2311
60	0	0	7	40	125	288	416	369	189	40	4	0	0	0	7	47	172	460	876	1245	1434	1474	1478	1478
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	37	58	134	269	428	577	688	656	487	299	154	61	37	95	229	498	926	1503	2191	2847	3334	3633	3787	3848

(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