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: ASHEVILLE RGNL AP, NC **COOP ID: 310300**

Climate Division: NC 1 **NWS Call Sign: AVL** **Elevation: 2,140 Feet** **Lat: 35˚26N** **Lon: 82˚32W**

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	45.9	25.8	35.8	80	1999	27	46.4	1974	-16	1985	21	22.9	1977	890	0	.0	.0	13.3	2.7	22.5	.4
Feb	50.0	28.0	39.0	78	1996	27	45.0	1990	-2	1967	25	31.4	1978	714	0	.0	.0	16.4	1.6	18.6	@
Mar	57.7	34.9	46.3	83	1985	30	51.5	1997	2	1993	15	41.3	1971	566	0	.0	.0	25.2	.3	12.0	.0
Apr	66.5	41.8	54.1	89+	1972	15	58.5	1981	22	1987	1	50.2	1983	317	6	.0	.0	28.9	.0	4.2	.0
May	73.5	50.6	62.0	93	1996	19	66.7	1991	28	1989	8	58.1	1976	122	45	.0	.1	30.9	.0	.3	.0
Jun	80.0	58.3	69.2	96	1969	28	72.8	1981	35	1966	2	65.0	1972	17	159	.0	1.5	30.0	.0	.0	.0
Jul	83.3	62.7	73.0	96+	1988	8	77.4	1993	44	1988	2	69.6	1976	7	271	.0	5.1	31.0	.0	.0	.0
Aug	81.7	61.8	71.8	100	1983	21	75.7	1983	42	1986	29	68.5	1976	2	229	@	2.5	31.0	.0	.0	.0
Sep	76.0	55.4	65.7	92+	1998	5	70.3	1998	30	1967	30	61.5	1976	63	100	.0	.4	30.0	.0	.0	.0
Oct	67.1	43.3	55.2	86+	1986	4	61.8	1984	21	1976	29	49.5	1987	296	8	.0	.0	30.7	.0	3.6	.0
Nov	57.4	35.3	46.4	81+	1974	3	55.2	1985	8	1970	25	39.7	1976	542	0	.0	.0	24.4	@	12.9	.0
Dec	49.3	28.8	39.0	78	1971	26	46.1	1971	-7	1983	25	31.1	1989	790	0	.0	.0	17.2	1.3	20.3	.1
Ann	65.7	43.9	54.8	100	Aug 1983	21	77.4	Jul 1993	-16	Jan 1985	21	22.9	Jan 1977	4326	818	@	9.6	309.0	5.9	94.4	.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: 1964-2001

(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	4.06	3.50	4.42	1998	7	9.96	1998	.45	1981
Feb	3.83	4.24	3.36	1990	16	8.07	1990	.44	1978
Mar	4.59	3.77	4.17	1968	12	9.86	1975	.77	1985
Apr	3.50	3.38	2.75	1973	26	8.70	1998	.25	1976
May	4.42	4.25	4.39	1973	27	8.83	1973	1.06	1988
Jun	4.38	3.93	3.97	1997	26	10.73	1989	.90	1990
Jul	3.87	3.46	4.02	1969	27	9.92	1982	.46	1986
Aug	4.30	4.03	4.32	1990	21	9.22	1995	.52	1981
Sep	3.72	3.21	4.40	1964	29	9.12	1977	.16	1984
Oct	3.18	3.21	5.18	1964	4	8.82	1990	.00	2000
Nov	3.82	3.52	2.93	1979	2	7.76	1979	1.19	1981
Dec	3.40	3.44	2.36	1991	1	8.48	1973	.59	1980
Ann	47.07	48.02	5.18	Oct 1964	4	10.73	Jun 1989	.00	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.0	7.1	2.7	1.0
Feb	9.5	6.4	2.6	.9
Mar	11.8	7.7	2.9	1.2
Apr	9.5	5.8	2.6	1.0
May	11.4	7.8	2.7	1.0
Jun	11.8	7.8	2.9	1.0
Jul	11.8	7.5	2.6	.9
Aug	12.2	7.3	2.7	1.0
Sep	9.7	6.2	2.6	.9
Oct	7.4	4.9	2.3	.8
Nov	9.7	6.2	2.6	1.4
Dec	9.9	5.9	2.2	.9
Ann	125.7	80.6	31.4	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	1.18	1.57	2.15	2.65	3.14	3.65	4.21	4.88	5.74	7.08	8.34
Feb	.81	1.17	1.73	2.24	2.75	3.30	3.91	4.65	5.63	7.19	8.66
Mar	1.43	1.86	2.51	3.07	3.61	4.17	4.78	5.50	6.43	7.88	9.22
Apr	.70	1.01	1.53	2.00	2.48	2.99	3.57	4.26	5.19	6.67	8.07
May	1.30	1.72	2.35	2.89	3.42	3.98	4.58	5.30	6.23	7.68	9.03
Jun	1.03	1.44	2.08	2.66	3.23	3.83	4.51	5.31	6.37	8.05	9.63
Jul	.73	1.08	1.65	2.17	2.71	3.28	3.93	4.71	5.76	7.43	9.03
Aug	1.02	1.42	2.05	2.61	3.17	3.76	4.42	5.21	6.25	7.89	9.43
Sep	.69	1.02	1.56	2.07	2.58	3.14	3.77	4.53	5.55	7.18	8.73
Oct	.23	.56	1.06	1.53	2.02	2.55	3.17	3.92	4.94	6.60	8.20
Nov	1.54	1.89	2.39	2.80	3.18	3.57	4.00	4.49	5.11	6.06	6.92
Dec	.89	1.22	1.71	2.14	2.57	3.01	3.51	4.10	4.86	6.07	7.20
Ann	32.57	35.34	38.92	41.64	44.07	46.42	48.86	51.55	54.83	59.61	63.74

\+ 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: 1964-2001
(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	2.7	#	0	14.0	1988	7	15.7	1996	14	1988	8	2+	1996	2.6	1.3	.4	.2	.1	4.3	2.2	1.0	.1
Feb	3.1	2.3	#	0	8.6	1979	18	17.8	1979	9	1979	19	2	1979	2.3	.9	.3	.1	.0	2.2	.9	.2	.0
Mar	2.6	.4	#	0	14.0	1993	13	18.2	1993	18	1993	14	3	1993	1.5	.7	.3	.1	@	1.1	.5	.3	.2
Apr	.7	.0	#	0	11.5	1987	3	11.5	1987	12	1987	4	1	1987	.3	.2	.1	@	@	.2	.1	.1	@
May	#	.0	#	0	#	1992	7	#	1992	0	0	0	#	1999	.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	#	.0	0	0	#	1993	31	#+	1993	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.4	.0	#	0	5.0	1975	23	5.0	1975	3	1975	23	#	2000	.4	.1	@	@	.0	.1	@	.0	.0
Dec	1.7	.3	#	0	16.3	1971	3	16.3	1971	14	1971	4	1+	1993	1.2	.4	.1	.1	@	1.0	.5	.2	@
Ann	13.2	5.7	N/A	N/A	16.3	Dec 1971	3	18.2	Mar 1993	18	Mar 1993	14	3	Mar 1993	8.3	3.6	1.2	.5	.1	8.9	4.2	1.8	.3

+ 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	5/18	5/13	5/09	5/06	5/03	4/29	4/26	4/22	4/17
32	5/08	5/02	4/28	4/25	4/22	4/19	4/15	4/12	4/06
28	4/19	4/14	4/09	4/06	4/02	3/30	3/27	3/22	3/17
24	4/02	3/27	3/23	3/20	3/16	3/13	3/10	3/06	2/28
20	3/18	3/12	3/07	3/04	3/01	2/25	2/22	2/17	2/11
16	3/10	3/01	2/23	2/18	2/13	2/08	2/03	1/28	1/19

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	9/26	9/30	10/03	10/05	10/07	10/09	10/12	10/15	10/19
32	10/05	10/08	10/11	10/13	10/15	10/18	10/20	10/22	10/26
28	10/16	10/21	10/26	10/29	11/01	11/05	11/08	11/12	11/18
24	10/31	11/05	11/09	11/12	11/15	11/18	11/21	11/25	11/30
20	11/10	11/17	11/22	11/26	11/30	12/04	12/08	12/13	12/20
16	11/27	12/05	12/11	12/16	12/21	12/26	12/31	1/06	1/14

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	175	169	164	160	157	153	150	145	139
32	193	187	183	179	176	172	169	164	159
28	239	230	223	217	212	207	201	194	185
24	266	258	252	247	243	238	233	227	219
20	299	290	284	279	274	269	264	258	249
16	348	330	321	314	307	301	294	286	275

***** 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	890	714	566	317	122	17	7	2	63	296	542	790	4326
60	749	589	426	191	65	2	0	0	17	189	412	650	3290
57	664	505	339	123	33	0	0	0	6	130	329	559	2688
55	606	449	284	86	20	0	0	0	3	97	276	503	2324
50	465	317	165	26	4	0	0	0	0	39	163	361	1540
32	113	26	3	0	0	0	0	0	0	0	3	49	194

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	212	256	482	692	958	1141	1299	1263	1041	748	458	279	8829
55	2	3	25	94	257	451	586	550	353	108	23	6	2458
57	1	1	15	66	204	391	524	488	297	76	14	3	2080
60	0	0	6	33	134	303	431	395	217	40	5	1	1565
65	0	0	0	6	45	159	271	229	100	8	0	0	818
70	0	0	0	0	8	55	133	102	28	1	0	0	327

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	78	112	264	462	721	910	1061	1025	809	509	250	118	78	190	454	916	1637	2547	3608	4633	5442	5951	6201	6319
45	31	52	155	319	567	760	906	870	659	355	147	55	31	83	238	557	1124	1884	2790	3660	4319	4674	4821	4876
50	5	17	75	198	412	610	751	715	509	220	69	25	5	22	97	295	707	1317	2068	2783	3292	3512	3581	3606
55	0	0	32	101	266	460	596	560	362	115	27	2	0	0	32	133	399	859	1455	2015	2377	2492	2519	2521
60	0	0	2	39	140	310	441	405	225	46	3	0	0	0	2	41	181	491	932	1337	1562	1608	1611	1611
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	57	85	174	290	451	606	730	702	525	316	162	79	57	142	316	606	1057	1663	2393	3095	3620	3936	4098	4177

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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