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: UPPER MARLBORO 3 NNW, MD **COOP ID: 189070**

Climate Division: MD 4 **NWS Call Sign:** **Elevation: 100 Feet** **Lat: 38˚52N** **Lon: 76˚47W**

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	42.5	22.4	32.5	75+	1967	25	41.2	1998	-12	1984	22	21.7	1977	1009	0	.0	.0	7.7	5.8	26.3	.8
Feb	46.0	24.8	35.4	80	1985	25	41.1	1976	-8+	1979	14	23.0	1979	830	0	.0	.0	10.1	3.7	22.7	.4
Mar	55.0	32.5	43.8	89	1998	31	48.8	1977	2	1960	11	38.8	1984	659	0	.0	.0	20.5	.4	16.2	.0
Apr	65.4	41.4	53.4	94+	1960	24	59.0	1994	18	1969	1	49.1	1975	350	2	.0	.5	28.3	.0	3.8	.0
May	74.2	51.1	62.7	97	1991	31	69.6	1991	28	1966	11	58.4	1997	130	56	.0	1.2	31.0	.0	.1	.0
Jun	82.5	60.0	71.3	100	1988	23	74.9	1994	39+	1972	11	67.3	1979	12	198	@	5.5	30.0	.0	.0	.0
Jul	87.0	64.7	75.9	102+	1988	17	80.0	1987	43	1988	1	72.2	2000	0	336	.4	11.5	31.0	.0	.0	.0
Aug	85.4	62.8	74.1	102+	1983	21	77.7	1988	39	1982	29	70.5	1992	3	285	.2	8.0	31.0	.0	.0	.0
Sep	79.0	55.4	67.2	99	1983	12	72.2	1998	30	1974	24	64.0	1990	46	111	.0	2.6	30.0	.0	@	.0
Oct	68.1	42.4	55.3	91+	1959	6	62.2	1984	20	1969	24	50.0	1988	316	14	.0	.1	30.6	.0	4.3	.0
Nov	57.8	34.7	46.3	85+	1971	3	51.6	1985	13	1974	27	40.1	1976	562	0	.0	.0	22.8	@	13.6	.0
Dec	47.2	26.8	37.0	80	1998	7	43.4	1984	1+	1958	16	24.4	1989	868	0	.0	.0	12.6	2.5	23.5	.0
Ann	65.8	43.3	54.6	102+	Jul 1988	17	80.0	Jul 1987	-12	Jan 1984	22	21.7	Jan 1977	4785	1002	.6	29.4	285.6	12.4	110.5	1.2

+ 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: 1956-2001

(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	3.49	3.01	2.25	1976	1	8.38	1978	.53	1981
Feb	2.76	2.54	2.98	1998	5	6.53	1998	.54	1978
Mar	3.90	4.11	2.14	1984	29	8.56	1993	1.30	1981
Apr	3.28	2.95	2.20	1983	16	9.45	1983	.37	1985
May	4.31	4.22	3.84	1982	29	9.66	1989	.83	1986
Jun	3.83	3.42	4.92	1972	22	9.98	1972	.55	1988
Jul	4.11	4.00	4.05	1975	14	8.53	1975	.93	1999
Aug	3.90	3.03	4.05	1971	28	11.67	1971	.70	1989
Sep	4.00	3.18	4.95	1975	26	14.04	1975	.75	1986
Oct	3.66	3.22	3.80	1973	3	7.98	1971	.10	2000
Nov	3.25	2.69	2.68	1963	7	6.54	1997	.35	1981
Dec	3.20	2.70	2.42	1986	25	6.44	1977	.73	1980
Ann	43.69	42.23	4.95	Sep 1975	26	14.04	Sep 1975	.10	Oct 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.9	6.9	2.4	.7
Feb	8.4	5.9	1.9	.5
Mar	9.5	7.0	3.1	1.0
Apr	9.9	6.8	2.3	.6
May	10.8	8.2	2.9	.8
Jun	9.8	6.7	2.4	.9
Jul	10.2	7.4	2.9	1.0
Aug	8.7	6.6	2.5	1.1
Sep	8.1	5.9	2.4	1.0
Oct	7.8	5.2	2.3	.9
Nov	8.0	5.5	2.3	.8
Dec	9.0	5.8	2.2	.9
Ann	110.1	77.9	29.6	10.2

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	1.14	1.47	1.96	2.37	2.77	3.19	3.64	4.17	4.85	5.91	6.89
Feb	.73	.99	1.39	1.74	2.09	2.45	2.85	3.33	3.95	4.93	5.84
Mar	1.29	1.66	2.20	2.66	3.11	3.57	4.07	4.65	5.40	6.57	7.65
Apr	1.05	1.36	1.82	2.21	2.59	2.98	3.41	3.92	4.57	5.58	6.52
May	1.57	1.98	2.56	3.05	3.51	3.99	4.50	5.10	5.87	7.05	8.13
Jun	1.20	1.56	2.10	2.56	3.01	3.47	3.98	4.58	5.35	6.54	7.65
Jul	1.16	1.55	2.14	2.66	3.16	3.68	4.26	4.95	5.84	7.23	8.53
Aug	.91	1.28	1.85	2.36	2.87	3.41	4.01	4.73	5.67	7.17	8.58
Sep	.74	1.10	1.69	2.23	2.78	3.38	4.06	4.88	5.97	7.73	9.40
Oct	.61	.92	1.46	1.96	2.48	3.04	3.68	4.47	5.51	7.21	8.84
Nov	.79	1.09	1.57	1.99	2.41	2.85	3.35	3.94	4.71	5.93	7.08
Dec	.78	1.07	1.54	1.96	2.37	2.81	3.29	3.87	4.63	5.84	6.97
Ann	32.04	34.32	37.23	39.43	41.38	43.25	45.19	47.32	49.89	53.62	56.83

+ 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: 1956-2001
(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	6.9	5.0	1	#	11.0	1987	23	28.0	1996	24	1996	13	8	1996	2.8	2.1	.9	.3	.1	7.4	3.8	2.4	1.3
Feb	5.6	1.7	1	#	22.0	1979	19	33.2	1979	30	1979	21	8	1979	1.9	1.4	.8	.2	.1	5.1	3.3	2.2	.6
Mar	1.6	.0	#	#	6.4	1999	9	9.0	1978	7	1993	15	1+	1999	.7	.5	.3	.2	.0	1.5	.7	.4	.0
Apr	.1	.0	#	0	1.5	1972	8	1.5	1972	2	1972	8	#+	2000	@	@	.0	.0	.0	@	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.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	.1	.0	#	0	3.0	1979	11	3.0	1979	3	1979	11	#	1979	@	@	@	.0	.0	@	@	.0	.0
Nov	.5	.0	#	0	9.0	1987	12	9.0	1987	9	1987	12	1	1987	.1	.1	.1	@	.0	.2	.1	@	.0
Dec	.9	.0	#	#	5.0	1973	17	5.5+	1982	4	1982	13	1	1982	.7	.3	.1	@	.0	1.0	.2	.0	.0
Ann	15.7	6.7	N/A	N/A	22.0	Feb 1979	19	33.2	Feb 1979	30	Feb 1979	21	8+	Jan 1996	6.2	4.4	2.2	.7	.2	15.2	8.1	5.0	1.9

+ 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	5/17	5/13	5/10	5/07	5/04	5/02	4/29	4/26	4/22
32	4/29	4/24	4/21	4/18	4/15	4/12	4/09	4/06	4/01
28	4/17	4/12	4/09	4/05	4/03	3/31	3/28	3/24	3/19
24	4/08	4/03	3/30	3/27	3/24	3/21	3/18	3/14	3/09
20	3/25	3/19	3/15	3/12	3/09	3/06	3/02	2/26	2/21
16	3/21	3/13	3/07	3/02	2/26	2/21	2/16	2/10	2/02

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	9/24	9/28	10/02	10/05	10/08	10/11	10/14	10/17	10/22
32	10/05	10/10	10/14	10/17	10/20	10/23	10/26	10/29	11/03
28	10/15	10/20	10/24	10/27	10/29	11/01	11/04	11/08	11/12
24	10/27	11/02	11/07	11/11	11/15	11/19	11/23	11/28	12/04
20	11/14	11/21	11/26	11/29	12/03	12/07	12/11	12/15	12/22
16	11/28	12/04	12/09	12/13	12/16	12/20	12/23	12/28	1/03

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	156	152	148	143	136
32	212	203	197	192	187	182	177	171	162
28	232	224	219	214	209	205	200	194	186
24	261	252	246	240	235	230	224	218	209
20	295	286	279	274	269	264	258	252	243
16	325	314	306	299	293	286	280	271	260

***** 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	1009	830	659	350	130	12	0	3	46	316	562	868	4785
60	854	690	504	212	54	1	0	0	12	194	414	713	3648
57	761	606	412	143	26	0	0	0	4	135	328	622	3037
55	699	550	355	103	15	0	0	0	2	102	275	565	2666
50	555	419	221	36	2	0	0	0	0	43	158	422	1856
32	147	78	9	0	0	0	0	0	0	0	3	80	317

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	161	172	373	642	949	1177	1359	1305	1055	722	431	236	8582
55	0	0	7	55	251	487	646	592	367	111	13	8	2537
57	0	0	2	35	200	427	584	530	309	81	6	3	2177
60	0	0	0	14	135	338	491	437	227	47	2	0	1691
65	0	0	0	2	56	198	336	285	111	14	0	0	1002
70	0	0	0	0	15	89	190	149	37	3	0	0	483

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	41	70	190	421	713	949	1121	1069	825	486	228	77	41	111	301	722	1435	2384	3505	4574	5399	5885	6113	6190
45	22	29	108	282	558	799	966	914	675	338	137	38	22	51	159	441	999	1798	2764	3678	4353	4691	4828	4866
50	6	9	54	168	406	649	811	759	525	209	69	18	6	15	69	237	643	1292	2103	2862	3387	3596	3665	3683
55	0	1	25	89	266	501	656	604	377	109	28	2	0	1	26	115	381	882	1538	2142	2519	2628	2656	2658
60	0	0	7	38	150	353	501	450	242	50	10	0	0	0	7	45	195	548	1049	1499	1741	1791	1801	1801
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	29	53	128	253	443	633	768	726	530	314	150	54	29	82	210	463	906	1539	2307	3033	3563	3877	4027	4081

(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