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: OAKLAND 1 SE, MD **COOP ID: 186620**

Climate Division: MD 8 **NWS Call Sign:** **Elevation: 2,420 Feet** **Lat: 39˚24N** **Lon: 79˚24W**

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	36.1	17.4	26.8	74	1950	25	37.4	1974	-27	1963	29	12.7	1977	1186	0	.0	.0	4.7	12.3	28.1	3.3
Feb	39.6	18.9	29.3	70	1954	16	38.1	1990	-25	1978	20	15.2	1978	1000	0	.0	.0	6.4	8.9	24.8	2.6
Mar	49.5	26.3	37.9	81+	1998	30	45.0	1973	-20	1960	11	31.4+	1984	840	0	.0	.0	15.6	3.4	22.7	.5
Apr	60.3	34.7	47.5	87	1976	18	52.8	1994	3	1985	10	42.4	1975	525	0	.0	.0	24.3	.3	13.5	.0
May	69.0	44.3	56.7	89	1984	21	63.4	1991	19	1978	2	52.1	1994	273	15	.0	.0	30.5	.0	3.6	.0
Jun	76.0	52.6	64.3	92	1952	16	67.6	1994	28	1966	2	60.2	1972	77	57	.0	.0	30.0	.0	.1	.0
Jul	79.3	57.4	68.4	95	1988	16	72.5	1999	33	1988	1	65.2	1971	21	125	.0	.4	31.0	.0	.0	.0
Aug	78.2	55.9	67.1	97	1988	17	71.5	1988	32+	1964	15	63.3	1976	39	102	.0	.8	31.0	.0	.1	.0
Sep	72.1	49.5	60.8	95	1953	1	64.3	1998	23+	1951	29	57.6	1984	143	16	.0	.1	29.9	.0	1.1	.0
Oct	62.3	37.6	50.0	84+	1951	6	57.3	1984	12+	1965	29	44.3	1988	468	1	.0	.0	27.7	.0	10.1	.0
Nov	50.4	29.6	40.0	78	1948	5	46.9	1985	-9	1956	24	32.1	1976	750	0	.0	.0	15.9	2.2	19.2	.1
Dec	40.6	21.9	31.3	74	1951	7	39.8	1984	-23	1960	23	18.5	1989	1046	0	.0	.0	7.6	8.0	26.0	1.4
Ann	59.5	37.2	48.3	97	Aug 1988	17	72.5	Jul 1999	-27	Jan 1963	29	12.7	Jan 1977	6368	316	.0	1.3	254.6	35.1	149.3	7.9

\+ 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	3.51	3.45	1.87	1982	23	5.99	1978	.96	1980
Feb	3.18	3.12	3.30	1994	9	6.87	1994	1.01	1978
Mar	3.95	3.56	2.19	1989	6	9.12	1994	1.00	1990
Apr	4.07	3.66	2.20	1980	9	8.70	1973	1.29	1985
May	4.84	4.69	2.68	1985	31	10.55	1996	1.44	1991
Jun	4.60	4.36	2.26	1997	13	8.57	1981	1.29	1999
Jul	5.23	4.79	4.16	1985	9	11.69	1985	1.56	1987
Aug	4.15	3.84	4.40	1975	23	12.35	1975	2.02	1993
Sep	3.56	3.22	3.48	1996	6	8.20	1996	.56	1985
Oct	3.12	3.30	4.25	1954	15	8.29	1976	.82	1994
Nov	3.68	3.53	2.62	1985	5	12.58	1985	.82	1998
Dec	3.67	3.46	2.19	1957	26	7.77	1990	1.75+	1989
Ann	47.56	47.22	4.40	Aug 1975	23	12.58	Nov 1985	.56	Sep 1985

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	16.3	8.6	2.3	.5
Feb	14.0	7.9	1.6	.3
Mar	15.2	9.7	2.5	.4
Apr	14.4	9.4	2.4	.6
May	15.2	10.6	3.2	.8
Jun	13.3	9.0	3.1	1.0
Jul	12.6	8.9	3.4	1.0
Aug	12.3	8.2	2.7	1.0
Sep	11.5	7.8	2.4	.6
Oct	10.7	6.5	2.0	.4
Nov	13.0	8.1	2.2	.5
Dec	15.5	8.7	2.1	.7
Ann	164.0	103.4	29.9	7.8

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	1.21	1.54	2.02	2.43	2.82	3.23	3.67	4.18	4.84	5.86	6.79
Feb	1.23	1.52	1.94	2.29	2.62	2.96	3.33	3.75	4.29	5.11	5.86
Mar	1.35	1.72	2.26	2.73	3.17	3.62	4.12	4.70	5.45	6.60	7.66
Apr	1.68	2.05	2.57	3.00	3.41	3.82	4.26	4.77	5.42	6.40	7.30
May	2.10	2.54	3.14	3.64	4.10	4.57	5.07	5.65	6.37	7.48	8.48
Jun	1.68	2.11	2.73	3.25	3.75	4.26	4.81	5.45	6.27	7.53	8.69
Jul	1.86	2.35	3.06	3.66	4.24	4.82	5.46	6.21	7.16	8.63	9.98
Aug	1.82	2.19	2.71	3.13	3.53	3.93	4.35	4.84	5.46	6.40	7.25
Sep	1.11	1.45	1.95	2.38	2.80	3.23	3.70	4.26	4.98	6.10	7.13
Oct	.91	1.20	1.65	2.04	2.41	2.81	3.24	3.75	4.41	5.45	6.42
Nov	1.13	1.48	2.00	2.45	2.88	3.33	3.83	4.41	5.16	6.33	7.41
Dec	1.48	1.82	2.29	2.69	3.06	3.44	3.85	4.32	4.91	5.83	6.66
Ann	36.40	38.62	41.44	43.55	45.41	47.19	49.03	51.04	53.46	56.95	59.93

\+ 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

Complete documentation available from:
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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	23.3	21.5	5	3
Feb	18.2	15.3	4	2
Mar	13.5	9.4	1	#
Apr	4.7	3.5	#	#
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	.5	.0	#	0
Nov	7.0	5.7	1	#
Dec	12.2	10.8	3	1
Ann	79.4	66.2	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	19.0	1996	8	52.7	1978	41	1996	12	30	1996
Feb	16.0	1983	10	38.4	1972	24	1986	15	16	1985
Mar	16.0	1999	4	59.4	1999	19	1978	4	8	1978
Apr	8.5	1987	4	16.3	1987	13	1987	4	1	1987
May	.5	1971	4	.5+	1973	#+	1997	10	#+	1997
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	3.0	1972	19	3.0+	1979	#+	2000	10	#+	2000
Nov	21.5	1995	15	26.0	1976	40	1995	17	5	1995
Dec	16.0	1974	1	37.9	1974	31	1992	13	15	1992
Ann	21.5	Nov 1995	15	59.4	Mar 1999	41	Jan 1996	12	30	Jan 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	10.9	8.3	3.1	1.2	.3
Feb	8.6	6.2	2.3	.9	.1
Mar	6.5	4.8	1.9	.8	.1
Apr	2.4	1.7	.7	.2	.0
May	.1	.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	.5	.3	@	.0	.0
Nov	3.6	2.8	1.2	.3	.1
Dec	7.4	5.7	1.9	.6	.1
Ann	40.0	29.8	11.1	4.0	.7

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	18.1	11.5	6.3	2.5
Feb	14.8	9.6	6.1	3.9
Mar	6.5	3.5	2.3	.8
Apr	.9	.5	.1	.1
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	3.4	1.3	.6	.0
Dec	9.1	4.8	3.1	.6
Ann	52.8	31.2	18.5	7.9

+ 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	6/20	6/13	6/08	6/04	5/31	5/26	5/22	5/17	5/10
32	6/03	5/28	5/24	5/21	5/17	5/14	5/11	5/07	5/01
28	5/15	5/11	5/08	5/06	5/04	5/02	4/29	4/27	4/23
24	5/03	4/28	4/25	4/22	4/19	4/16	4/13	4/09	4/04
20	4/19	4/15	4/12	4/10	4/07	4/05	4/02	3/30	3/26
16	4/10	4/06	4/03	3/31	3/28	3/26	3/23	3/20	3/16

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	9/02	9/07	9/11	9/14	9/17	9/20	9/23	9/26	10/02
32	9/12	9/17	9/20	9/23	9/25	9/28	10/01	10/04	10/08
28	9/27	10/02	10/05	10/08	10/10	10/13	10/16	10/19	10/24
24	10/09	10/13	10/16	10/19	10/21	10/24	10/26	10/29	11/02
20	10/20	10/25	10/28	10/31	11/03	11/05	11/08	11/12	11/17
16	10/29	11/04	11/09	11/12	11/16	11/19	11/23	11/27	12/03

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	137	127	120	114	108	103	97	90	80
32	146	141	137	133	130	127	124	120	114
28	177	171	167	163	159	155	151	147	141
24	205	198	193	189	185	181	177	172	165
20	226	220	216	212	209	205	202	197	191
16	255	247	241	236	231	227	222	216	208

***** 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	1186	1000	840	525	273	77	21	39	143	468	750	1046	6368
60	1031	860	685	377	155	21	1	6	51	324	600	891	5002
57	938	776	592	291	101	7	0	0	23	246	511	798	4283
55	876	720	533	238	72	3	0	0	12	200	453	736	3843
50	730	582	390	125	24	0	0	0	2	107	316	593	2869
32	271	178	57	1	0	0	0	0	0	1	29	179	716

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	108	102	240	466	765	970	1128	1086	864	557	269	156	6711
55	0	0	3	13	124	284	415	373	185	43	3	0	1443
57	0	0	0	6	91	227	353	311	136	27	1	0	1152
60	0	0	0	2	52	151	261	224	75	12	0	0	777
65	0	0	0	0	15	57	125	102	16	1	0	0	316
70	0	0	0	0	3	11	39	29	1	0	0	0	83

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	23	33	109	265	526	740	887	847	633	325	125	44	23	56	165	430	956	1696	2583	3430	4063	4388	4513	4557
45	4	13	58	159	376	590	732	692	484	201	63	17	4	17	75	234	610	1200	1932	2624	3108	3309	3372	3389
50	0	2	24	88	242	442	577	537	341	104	25	2	0	2	26	114	356	798	1375	1912	2253	2357	2382	2384
55	0	0	9	39	133	299	422	382	207	43	5	0	0	0	9	48	181	480	902	1284	1491	1534	1539	1539
60	0	0	2	8	56	167	271	234	104	10	0	0	0	0	2	10	66	233	504	738	842	852	852	852
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	13	25	87	189	329	471	585	551	389	212	84	28	13	38	125	314	643	1114	1699	2250	2639	2851	2935	2963

(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