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: DELAWARE, OH **COOP ID: 332119**

Climate Division: OH 5 **NWS Call Sign:** **Elevation: 920 Feet** **Lat: 40˚19N** **Lon: 83˚04W**

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	33.6	16.6	25.1	68	1999	23	35.8	1990	-28	1994	19	9.5	1977	1237	0	.0	.0	3.2	13.6	28.5	4.2
Feb	37.5	19.0	28.3	73	1957	25	37.8	1998	-16	1977	9	12.8	1978	1030	0	.0	.0	4.8	10.5	24.7	3.0
Mar	48.5	27.9	38.2	85	1939	24	46.3	2000	-9	1984	9	28.6	1984	830	0	.0	.0	13.6	3.0	22.0	.3
Apr	60.7	37.1	48.9	89+	1962	30	54.8	1985	13	1964	1	42.6	1975	483	1	.0	.0	24.0	.2	10.0	.0
May	71.6	47.7	59.7	96	1962	18	67.9	1991	23	1966	10	53.4	1997	221	57	.0	.2	30.7	.0	.8	.0
Jun	80.7	57.3	69.0	101+	1988	26	72.9	1999	35	1972	11	63.7	1972	35	154	@	2.8	30.0	.0	.0	.0
Jul	84.6	61.3	73.0	106+	1936	14	77.7	1999	41	1988	1	69.8	1979	2	248	@	5.3	31.0	.0	.0	.0
Aug	83.1	59.1	71.1	102	1936	22	76.1	1995	36	1946	30	66.9	1992	18	206	@	3.3	31.0	.0	.0	.0
Sep	76.4	51.3	63.9	102	1939	14	67.6	1971	28	1942	29	59.5	1975	98	63	.0	1.2	30.0	.0	.3	.0
Oct	63.9	39.9	51.9	91+	1953	3	58.6	1971	16	1988	31	45.1	1988	416	10	.0	.0	28.5	.0	7.2	.0
Nov	49.7	31.2	40.5	79+	1950	1	46.3	1985	-4	1958	30	33.1	1976	736	0	.0	.0	14.8	1.5	17.9	.0
Dec	38.4	22.5	30.5	74	1982	4	38.9	1982	-27	1989	23	15.5	1989	1072	0	.0	.0	5.4	8.6	25.6	1.5
Ann	60.7	39.2	50.0	106+	Jul 1936	14	77.7	Jul 1999	-28	Jan 1994	19	9.5	Jan 1977	6178	739	@	12.8	247.0	37.4	137.0	9.0

\+ 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: 1936-2001

(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	2.32	2.14	2.59	1959	22	5.18	1995	.52	1981
Feb	1.91	1.75	2.16	1975	24	4.72	1975	.23	1987
Mar	2.57	2.54	2.82	1964	10	4.40	1992	.84	1996
Apr	3.44	3.18	2.75	2000	8	6.68	1972	.83	1971
May	3.98	3.75	2.60+	1972	9	7.49	1990	1.13	1988
Jun	4.21	3.85	4.88	1937	21	8.08	1973	1.03	1984
Jul	4.06	3.77	3.25	1999	2	11.54	1992	.28	1974
Aug	3.67	3.49	3.80	1979	29	8.30	1979	.15	1983
Sep	2.94	2.77	3.90	1979	14	7.47	1986	.42	1978
Oct	2.50	2.09	2.25	1946	17	5.35	1983	.76	1994
Nov	3.26	3.00	3.17	1955	16	10.49	1985	.46	1976
Dec	2.72	2.36	2.50	2000	14	8.90	1990	.55	1976
Ann	37.58	37.31	4.88	Jun 1937	21	11.54	Jul 1992	.15	Aug 1983

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.6	6.4	1.3	.3
Feb	9.7	5.0	1.1	.2
Mar	11.8	6.7	1.4	.3
Apr	12.9	7.7	2.2	.5
May	12.2	8.0	2.7	.8
Jun	10.5	7.6	2.8	1.2
Jul	10.1	6.9	2.7	1.0
Aug	9.6	6.6	2.6	1.0
Sep	8.8	5.4	2.0	.8
Oct	9.4	5.7	1.8	.5
Nov	11.5	6.8	2.4	.8
Dec	11.5	6.7	1.5	.5
Ann	129.6	79.5	24.5	7.9

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	.60	.82	1.15	1.45	1.75	2.05	2.40	2.81	3.34	4.18	4.97
Feb	.48	.66	.94	1.19	1.43	1.69	1.97	2.31	2.76	3.46	4.11
Mar	1.03	1.27	1.60	1.88	2.14	2.41	2.69	3.02	3.44	4.08	4.67
Apr	1.09	1.42	1.90	2.32	2.72	3.13	3.59	4.12	4.81	5.88	6.87
May	1.46	1.83	2.37	2.82	3.25	3.69	4.16	4.72	5.42	6.51	7.51
Jun	1.51	1.90	2.48	2.96	3.42	3.89	4.40	5.00	5.76	6.93	8.01
Jul	.89	1.26	1.86	2.39	2.93	3.51	4.16	4.93	5.95	7.58	9.11
Aug	.61	.93	1.46	1.97	2.49	3.05	3.70	4.48	5.53	7.23	8.86
Sep	.54	.80	1.23	1.63	2.04	2.48	2.98	3.58	4.38	5.67	6.90
Oct	.94	1.18	1.51	1.79	2.05	2.32	2.62	2.96	3.39	4.06	4.67
Nov	.82	1.13	1.60	2.02	2.44	2.87	3.36	3.94	4.69	5.88	7.00
Dec	.91	1.16	1.54	1.86	2.17	2.49	2.84	3.25	3.77	4.58	5.33
Ann	27.91	29.81	32.24	34.07	35.69	37.25	38.85	40.61	42.75	45.82	48.47

\+ 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: 1936-2001
(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	6.8	4.3	2	2
Feb	5.1	4.3	2	1
Mar	3.0	3.0	#	#
Apr	1.0	.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
Nov	.9	.0	#	#
Dec	3.9	2.0	1	#
Ann	20.7	13.6	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	7.0	1996	8	32.0	1978	18	1978	21	9	1978
Feb	8.0	1971	9	13.9	1993	15	1978	1	9	1978
Mar	6.2	1994	10	8.0	1971	9	1984	1	4	1984
Apr	11.4	1987	5	12.1	1987	12	1987	5	1	1987
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	1.0	1989	19	1.0+	1989	#	1993	30	#	1993
Nov	6.0	1980	18	7.0	1980	4	1980	18	#+	1996
Dec	8.2	1995	20	11.3	1995	8	1995	27	4	1995
Ann	11.4	Apr 1987	5	32.0	Jan 1978	18	Jan 1978	21	9+	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.6	3.1	1.0	.2	.0
Feb	2.8	1.8	.7	.1	.0
Mar	1.7	1.1	.2	.1	.0
Apr	.4	.2	.1	@	@
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	.6	.3	@	@	.0
Dec	1.9	1.5	.3	.2	.0
Ann	12.0	8.0	2.3	.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	10.8	5.9	3.6	1.3
Feb	8.3	4.4	3.2	1.0
Mar	3.3	1.4	.9	.0
Apr	.3	.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	.6	@	.0	.0
Dec	3.8	1.0	.3	.0
Ann	27.1	12.8	8.0	2.3

+ 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	5/27	5/22	5/18	5/15	5/12	5/09	5/06	5/02	4/27
32	5/11	5/06	5/03	5/01	4/28	4/26	4/23	4/20	4/16
28	4/27	4/23	4/20	4/18	4/16	4/13	4/11	4/08	4/04
24	4/15	4/10	4/07	4/05	4/02	3/31	3/28	3/25	3/21
20	4/06	4/01	3/29	3/26	3/24	3/21	3/19	3/15	3/11
16	3/30	3/24	3/20	3/16	3/13	3/09	3/05	3/01	2/23

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	9/19	9/23	9/26	9/29	10/01	10/03	10/05	10/08	10/12
32	9/27	10/01	10/04	10/07	10/09	10/12	10/14	10/17	10/22
28	10/09	10/14	10/17	10/21	10/23	10/26	10/29	11/02	11/07
24	10/21	10/27	10/31	11/03	11/07	11/10	11/13	11/17	11/23
20	10/30	11/05	11/10	11/14	11/18	11/22	11/26	12/01	12/08
16	11/12	11/19	11/24	11/28	12/02	12/06	12/10	12/15	12/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	156	151	147	144	141	138	135	131	126
32	181	175	170	167	163	160	156	152	145
28	208	202	198	194	190	187	183	178	172
24	239	231	226	222	217	213	209	204	196
20	263	255	249	244	239	234	229	223	215
16	289	280	274	268	263	258	253	247	238

***** 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	1237	1030	830	483	221	35	2	18	98	416	736	1072	6178
60	1082	890	675	339	128	9	0	3	36	283	586	917	4948
57	989	806	587	259	86	4	0	0	16	215	497	824	4283
55	927	750	529	209	62	2	0	0	9	175	439	764	3866
50	780	618	390	109	24	0	0	0	2	95	304	621	2943
32	309	216	71	1	0	0	0	0	0	1	27	205	830

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	95	111	265	508	858	1109	1269	1211	955	617	281	156	7435
55	0	0	10	27	208	421	556	498	274	78	4	2	2078
57	0	0	5	16	169	363	494	436	222	56	2	0	1763
60	0	0	0	6	119	278	401	346	151	32	0	0	1333
65	0	0	0	1	57	154	248	206	63	10	0	0	739
70	0	0	0	0	21	64	114	100	17	2	0	0	318

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	18	31	117	300	612	866	1019	962	720	387	136	38	18	49	166	466	1078	1944	2963	3925	4645	5032	5168	5206
45	4	9	66	190	460	716	864	807	570	252	74	16	4	13	79	269	729	1445	2309	3116	3686	3938	4012	4028
50	1	2	32	109	318	566	709	652	421	145	33	4	1	3	35	144	462	1028	1737	2389	2810	2955	2988	2992
55	0	0	14	52	196	419	554	497	287	77	11	0	0	0	14	66	262	681	1235	1732	2019	2096	2107	2107
60	0	0	5	22	108	280	399	344	170	30	0	0	0	0	5	27	135	415	814	1158	1328	1358	1358	1358
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	7	19	82	190	379	567	689	640	459	244	82	20	7	26	108	298	677	1244	1933	2573	3032	3276	3358	3378

(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