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: BARNESVILLE, OH **COOP ID: 330430**

Climate Division: OH10 **NWS Call Sign:** **Elevation: 1,240 Feet** **Lat: 39˚59N** **Lon: 81˚09W**

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	35.0	17.6	26.3	75	1950	25	36.1	1998	-25	1963	29	11.9	1977	1201	0	.0	.0	4.1	13.6	28.2	3.2
Feb	38.7	19.5	29.1	76	2000	27	37.4	1998	-21	1963	27	16.9	1978	1006	0	.0	.0	5.8	9.7	24.0	2.2
Mar	49.2	27.8	38.5	84	1950	27	45.4	1973	-19	1943	4	30.9	1984	821	0	.0	.0	14.7	3.2	22.0	.2
Apr	60.5	36.5	48.5	90	1948	26	53.2	1985	3	1964	1	42.3	1975	497	1	.0	.0	23.8	.1	10.4	.0
May	70.5	47.1	58.8	93	1940	22	66.4	1991	21	1966	10	52.8	1971	234	42	.0	@	30.6	.0	1.6	.0
Jun	78.6	56.0	67.3	96	1988	26	70.6	1994	30	1966	2	61.7	1972	48	117	.0	.8	30.0	.0	@	.0
Jul	82.3	60.6	71.5	100	1988	17	75.9	1999	40+	1963	10	67.6	1971	8	208	@	2.1	31.0	.0	.0	.0
Aug	81.1	58.5	69.8	103	1948	27	75.4	1995	36	1965	29	66.0	1971	25	174	.0	1.5	31.0	.0	.0	.0
Sep	74.6	51.4	63.0	101+	1953	3	67.4	1998	25+	1956	21	58.7	1974	104	44	.0	.6	30.0	.0	.2	.0
Oct	63.3	40.0	51.7	89+	1949	9	57.1	1984	14+	1962	28	45.3	1976	422	8	.0	.0	27.6	.0	6.2	.0
Nov	50.8	31.8	41.3	86	1940	22	47.2	1985	-13	1958	30	33.4	1976	712	0	.0	.0	15.6	1.3	16.8	@
Dec	39.8	23.4	31.6	83	1946	2	39.2	1982	-17+	1989	23	17.7	1989	1035	0	.0	.0	6.8	8.5	25.1	1.0
Ann	60.4	39.2	49.8	103	Aug 1948	27	75.9	Jul 1999	-25	Jan 1963	29	11.9	Jan 1977	6113	594	@	5.0	251.0	36.4	134.5	6.6

\+ 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: 1940-2001

(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	3.00	2.81	2.03	1998	8	6.92	1999	.75	1984
Feb	2.71	2.70	2.17	1988	2	4.95	1989	.12	1987
Mar	3.55	3.59	3.00	1945	5	6.24	1989	1.29	1986
Apr	3.79	4.07	2.30	1940	19	6.85	1981	.83	1971
May	4.34	4.29	3.04	1956	28	8.17	1990	1.64	1976
Jun	4.65	4.51	3.39	1970	27	11.75	1981	1.31+	1988
Jul	4.77	4.38	3.67	1988	21	9.07	1992	1.29	1987
Aug	3.93	3.44	5.12	1980	11	12.33	1980	.75	1996
Sep	3.51	2.91	2.42+	1996	7	7.53	1975	.69	1985
Oct	2.81	2.63	2.75	1954	16	6.16	1983	.35	1982
Nov	3.56	3.08	2.91	1985	5	14.96	1985	.77	1976
Dec	3.16	2.68	2.09	1978	9	9.35	1990	1.45	1985
Ann	43.78	42.97	5.12	Aug 1980	11	14.96	Nov 1985	.12	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	14.2	7.3	1.9	.3
Feb	11.6	6.2	1.6	.5
Mar	13.0	8.4	2.3	.6
Apr	13.7	8.7	2.6	.5
May	13.3	9.1	3.2	.7
Jun	11.4	7.9	3.4	1.3
Jul	11.3	7.6	3.5	1.2
Aug	10.9	7.1	2.6	.8
Sep	10.2	6.2	2.4	1.0
Oct	10.7	6.1	2.0	.5
Nov	12.4	8.1	2.3	.6
Dec	13.8	7.7	1.9	.5
Ann	146.5	90.4	29.7	8.5

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	.90	1.19	1.61	1.98	2.34	2.71	3.12	3.60	4.22	5.19	6.09
Feb	.57	.82	1.22	1.58	1.95	2.33	2.77	3.30	3.99	5.10	6.14
Mar	1.52	1.84	2.29	2.65	3.00	3.35	3.72	4.15	4.70	5.52	6.27
Apr	1.49	1.84	2.34	2.75	3.14	3.53	3.96	4.46	5.09	6.05	6.93
May	1.77	2.17	2.73	3.19	3.63	4.07	4.55	5.10	5.80	6.87	7.84
Jun	1.37	1.81	2.47	3.05	3.61	4.19	4.83	5.59	6.57	8.10	9.52
Jul	1.88	2.32	2.95	3.47	3.96	4.46	5.00	5.62	6.41	7.62	8.73
Aug	1.25	1.62	2.18	2.65	3.10	3.58	4.09	4.70	5.48	6.70	7.82
Sep	.96	1.29	1.80	2.24	2.68	3.13	3.64	4.23	5.01	6.23	7.36
Oct	.78	1.04	1.45	1.80	2.15	2.51	2.91	3.38	4.00	4.96	5.87
Nov	1.07	1.41	1.91	2.35	2.77	3.22	3.70	4.28	5.02	6.17	7.25
Dec	1.28	1.57	1.98	2.31	2.63	2.96	3.31	3.71	4.22	5.00	5.71
Ann	34.44	36.32	38.69	40.47	42.02	43.51	45.04	46.71	48.72	51.59	54.05

+ 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: 1940-2001
(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	10.7	8.6	2	1
Feb	7.4	5.6	2	1
Mar	4.8	3.6	#	#
Apr	1.2	.0	#	0
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	.0	.0	#	0
Nov	1.8	.8	#	#
Dec	5.4	4.9	1	#
Ann	31.3	23.5	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	9.5	1994	4	39.2	1978	19	1978	21	11	1977
Feb	8.4	1986	15	20.5	1979	19	1979	19	11	1985
Mar	15.0	1993	14	20.8	1993	17	1993	15	5	1978
Apr	10.0	1987	5	18.0	1987	12	1987	5	1	1987
May	#	1989	7	#+	1989	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	.2	1988	24	.2	1988	#+	1989	21	#+	1989
Nov	5.2	1993	1	10.3	1995	4+	1995	15	1	1995
Dec	6.0	1989	16	17.6	1974	11	1974	6	5	1974
Ann	15.0	Mar 1993	14	39.2	Jan 1978	19+	Feb 1979	19	11+	Feb 1985

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.4	4.1	1.1	.4	.0
Feb	5.2	2.9	.8	.2	.0
Mar	3.4	1.8	.4	.1	@
Apr	.6	.2	.1	.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	.0
Nov	1.4	.8	.2	@	.0
Dec	4.6	2.4	.5	.1	.0
Ann	22.6	12.2	3.1	.9	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	13.1	7.5	5.4	2.0
Feb	11.4	5.1	3.4	2.0
Mar	4.5	1.9	1.0	.5
Apr	.3	.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	1.7	.4	.0	.0
Dec	6.7	2.9	.9	.2
Ann	37.7	17.9	10.8	4.7

+ 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	5/31	5/25	5/21	5/17	5/14	5/11	5/07	5/03	4/28
32	5/21	5/15	5/11	5/07	5/04	4/30	4/26	4/22	4/16
28	5/02	4/27	4/23	4/20	4/17	4/14	4/11	4/07	4/02
24	4/23	4/18	4/15	4/11	4/08	4/05	4/02	3/30	3/24
20	4/19	4/12	4/07	4/03	3/31	3/27	3/23	3/18	3/11
16	4/04	3/29	3/24	3/21	3/17	3/14	3/10	3/06	2/27

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	160	153	148	144	140	136	132	127	120
32	185	177	171	166	161	156	151	145	137
28	219	210	203	198	192	187	181	175	166
24	243	233	226	219	213	207	201	193	183
20	265	254	245	239	232	226	219	211	200
16	289	279	271	265	259	253	246	239	228

***** 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	1201	1006	821	497	234	48	8	25	104	422	712	1035	6113
60	1046	866	666	351	135	13	0	5	36	287	563	880	4848
57	953	782	576	271	90	5	0	0	16	217	475	787	4172
55	891	726	519	221	65	2	0	0	8	177	418	729	3756
50	739	590	378	118	24	0	0	0	1	96	286	585	2817
32	275	189	61	1	0	0	0	0	0	1	24	179	730

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	98	107	263	495	831	1059	1222	1172	930	610	302	168	7257
55	0	0	8	25	184	371	509	459	248	73	6	4	1887
57	0	0	3	15	146	314	447	397	195	51	3	0	1571
60	0	0	0	5	98	232	354	309	126	28	1	0	1153
65	0	0	0	1	42	117	208	174	44	8	0	0	594
70	0	0	0	0	14	41	92	79	8	0	0	0	234

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	24	38	128	301	591	823	976	932	700	378	153	49	24	62	190	491	1082	1905	2881	3813	4513	4891	5044	5093
45	8	17	71	190	443	673	821	777	551	243	84	20	8	25	96	286	729	1402	2223	3000	3551	3794	3878	3898
50	2	3	39	112	304	523	666	622	405	140	39	6	2	5	44	156	460	983	1649	2271	2676	2816	2855	2861
55	0	0	20	57	185	379	511	467	269	68	14	1	0	0	20	77	262	641	1152	1619	1888	1956	1970	1971
60	0	0	4	24	92	242	358	315	154	23	1	0	0	0	4	28	120	362	720	1035	1189	1212	1213	1213
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	14	24	85	189	361	539	659	621	440	227	91	26	14	38	123	312	673	1212	1871	2492	2932	3159	3250	3276

(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