

U. S. DEPARTMENT OF COMMERCE, ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
 IN COOPERATION WITH THE OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
 AND THE OHIO DEPARTMENT OF NATURAL RESOURCES - DIVISION OF WATER
 CLIMATOGRAPHY OF THE UNITED STATES NO. 20-33-37

CLIMATOLOGICAL SUMMARY

STATION: Millport, Ohio

LATITUDE 40° 43' N
 LONGITUDE 80° 54' W
 ELEV. (GROUND) 1145 FT.

MEANS AND EXTREMES FOR PERIOD 1936-1965

MONTH	TEMPERATURE (° F)													PRECIPITATION TOTALS (INCHES)													MONTH											
	MEANS			EXTREMES				MEAN DEGREE DAYS**	MEAN NUMBER OF DAYS				MEAN	GREATEST MONTHLY			MEAN	SNOW, SLEET				MEAN NUMBER OF DAYS																
	DAILY MAXIMUM	DAILY MINIMUM	MONTHLY	RECORD HIGHEST	YEAR	DAY	RECORD LOWEST		YEAR	DAY	MAX.	MIN.		9° AND ABOVE	32° AND BELOW	37° AND BELOW		0° AND BELOW	GREATEST DAILY	YEAR	DAY	MAXIMUM MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY		.01 or MORE	.10 or MORE	.50 or MORE	1.00 or MORE							
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	YEAR		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV
JAN	35.9	18.0	26.9	73	50	25	-23	63	29	1175.	0	11	27	3	3.02	9.72	37	1.94	55	21	7.6	17.0	63	9.0	48	24	12	7	1.9	4.3	JAN							
FEB	38.4	19.1	28.7	83*	61	24	-23*	63	26	1022.	0	8	25	2	2.41	5.37	56	1.61	51	1	5.9	15.2	60	8.0	64	19	10	6	1.2	4.2	FEB							
MAR	47.5	26.1	36.8	82*	50	27	-10	60	11	870.	0	3	43	0	3.53	7.58	45	2.39	84	10	6.1	19.6	62	10.5	62	7	12	6	2.2	4.4	MAR							
APR	60.4	35.3	47.8	89	42	36	5	64	1	515.	0	0	12	0	3.42	5.71	61	1.76*	58	29	1.2	6.5	61	4.0*	61	1	12	8	2.2	4.4	APR							
MAY	71.6	44.8	58.2	94	42	1	19	47	10	234.	0	0	3	0	3.68	8.00	56	2.41	46	27	0	5.63	5	63	1	11	6	2.2	4.7	MAY								
JUNE	80.1	53.8	66.9	100	52	26	30	45	5	57.	2	0	0	0	3.84	6.81	41	1.93	37	21	0	0	36	0	0	0	9	7	2.8	4.9	JUNE							
JULY	83.6	57.1	70.3	101	54	14	36	45	12	17.	2	0	0	0	4.11	12.29	38	3.26	41	12	0	0	36	0	0	0	9	7	2.8	4.9	JULY							
AUG	82.7	55.8	69.2	99	48	27	35*	46	31	28.	4	0	0	0	3.07	5.78	55	2.50	38	8	0	0	36	0	0	0	7	3	2.8	4.9	AUG							
SEPT	76.5	48.5	62.5	101	53	2	25*	63	25	139.	1	0	1	0	2.76	7.64	45	2.46	44	4	0	0	36	4	4	2	5	1.9	4.6	SEPT								
OCT	65.3	38.4	51.8	90	49	10	15	65	29	411.	0	0	0	0	2.53	8.82	54	2.90	34	36	1	3.5	62	3.5	62	6	5	1.6	4.3	OCT								
NOV	50.1	29.7	39.9	81*	61	3	-3	58	30	750.	0	0	1	19	0	2.36	6.27	50	1.88	30	4	3	0	22.6	53	9.0	55	28	10	6	1.3	4.2	NOV					
DEC	38.3	21.0	29.6	67	56		-18	58	11	1091.	0	9	26	1	2.23	4.59	42	1.63	37	17	5.4	18.0	60	7.0*	56	5	9	6	1.3	4.1	DEC							
YEAR	60.8	37.3	49.0	101	54	14	-23	63	29	6307.	12	32	144	6	36.9*	12.29	58	3.26	41	12	30.3	22.4	50	10.6	62	7	116	78	24.	6.	YEAR							

** BASE 65° F * Also on earlier dates, months or years

NARRATIVE CLIMATOLOGICAL SUMMARY

Millport is located in the southwest quadrant of Columbiana County in Ohio's Northeast Hills. Terrain within Columbiana County is hilly; the elevation of the earth's surface above sea level varies from about 790 to 1450 feet. A map of the physiographic regions of Ohio shows the northern half of Columbiana County to be part of Ohio's Glaciated Plateau while the southern portion is part of the state's Unglaciated Plateau. The topography within the Glaciated Plateau area is more subdued than that of the Unglaciated Plateau.

The climate of Columbiana County is classified as continental. Such a climate is marked by large annual, daily, and day to day ranges of temperature. In this area, summers are moderately warm and humid with occasional days when temperatures exceed 90°F. Winters are reasonably cold and cloudy with an average of 6 days with subzero temperatures. Weather changes occur every few days from the passing of cold or warm fronts and their associated centers of high and low pressure.

Normal average temperature for the year is about 2 degrees below the average for Ohio's Northeast Hills. On nights with clear skies and light winds there is often a large variation in observed surface temperatures within Columbiana County. This is especially true in the vicinity of hills. On such nights, the air near the tops of hills becomes cooler and denser than air at the same heights over the valleys. These air temperature and density differences cause the cool air to drain down the slopes and into the valleys. This drainage often results in large differences in surface temperatures between the valley floors and the tops of hills. The daily range in temperature is usually greatest in late summer and least in winter. The extreme temperature range (record high minus record low) during the period 1894-1967 is 131 degrees. Annual extremes in temperature normally occur soon after June 21 and December 22. The annual high temperature is less than 91°F in 1 of 10 years, less than 94 in 3 of 10 years, 95 in 1 of 2 years, higher than 96 in 3 of 10 years, and higher than 99 in 1 of 10 years. Lowest temperature during the year is less than -19°F in 1 of 10 years, less than -14 in 3 of 10 years, -12 in 1 of 2 years, higher than -8 in 3 of 10 years, and higher than -3 in 1 of 10 years. Average temperature for the year is less than 46.9°F in 1 of 10 years, less than 48.5°F in 3 of 10 years, higher than 49.8°F in 3 of 10 years, and higher than 50.8°F in 1 of 10 years.

Taking the number of days between the last freezing temperature (32°F) of spring and the first freezing temperature in fall as the crop-growing season, this season averages 130 days at Millport. The growing season is more than 151 days in 10% of the years, more than 139 days in 30% of the years, less than 122 days in 30% of the years, and less than 110 days in 10% of the years. Since 1935, Millport records show that temperatures of 32°F or less have been recorded as late as June 7 in Spring and as early as September 8 in Fall. Similar information for other Columbiana County areas may differ significantly from the Millport data due to the variations in topography within the county.

PROBABILITY OF FREEZES OCCURRING AS LATE IN THE
 SPRING OR AS EARLY IN THE FALL AS DATES SHOWN
 IN THE FOLLOWING TABLE

PERCENT CHANCE OF LATER DATE IN SPRING	TEMPERATURE LEVELS											
	16°	20°	24°	28°	32°	36°	16°	20°	24°	28°	32°	36°
90	FEB 28	MAR 24	APR 5	APR 14	APR 26	APR 30	MAY 12	MAR 10	APR 6	APR 18	APR 26	MAY 8
70	MAR 10	APR 2	APR 14	APR 26	MAY 8	MAY 10	MAY 23	MAR 21	APR 8	APR 21	MAY 7	MAY 30
50	MAR 29	APR 14	APR 27	MAY 8	MAY 24	JUNE 6		MAR 29	APR 14	APR 27	MAY 8	JUNE 6
30	APR 10	APR 22	MAY 6	MAY 17	JUNE 3	JUNE 16		APR 10	APR 22	MAY 6	MAY 17	JUNE 16
PERCENT CHANCE OF EARLIER DATE IN FALL	NOV 3	OCT 20	OCT 6	SEPT 22	SEPT 12	AUG 21	NOV 13	OCT 29	OCT 16	OCT 1	SEPT 19	SEPT 2
90	NOV 3	OCT 20	OCT 6	SEPT 22	SEPT 12	AUG 21	NOV 20	NOV 5	OCT 23	OCT 7	SEPT 25	SEPT 10
70	NOV 26	NOV 11	OCT 30	OCT 13	SEPT 30	SEPT 18	NOV 13	NOV 26	NOV 11	OCT 30	OCT 13	SEPT 18
50	DEC 6	NOV 21	NOV 9	OCT 22	OCT 7	SEPT 29	DEC 6	NOV 21	NOV 9	OCT 22	OCT 7	SEPT 29

Heating degree days as shown in the above table are a measure of the departure of the average daily temperature from 65°F. When the average daily temperature is above 65°F, the degree day value for that day is zero. The daily totals are accumulated from July 1 through June 30. At any point during the year, the accumulated degree days can be used as an index of past temperature effect upon power consumption and fuel consumption for heating of homes and businesses.

As is characteristic of continental climates, precipitation in Columbiana County varies widely from year to year, however, it is normally abundant and well distributed throughout the year with fall being the driest season. The mean annual precipitation of 36.96 inches is slightly more than 1 inch below the normal for Ohio's Northeast Hills. Showers and thundershowers account for most of the rainfall during the growing season. Thunderstorms occur on about 40 days each year. Most of these occur April through August. Annual maximum daily precipitation amounts of 1.9, 2.4, 2.7, 3.2, 3.5 and 3.8 inches occur once every 2, 5, 10, 25, 50, and 100 years, respectively. As is typical of much of Ohio, most precipitation during the winter months comes in the form of rain. Snowfall may fluctuate widely from the annual mean of 30.3 inches. About 1 of 4 winters will have at least 40 inches of snow.

Evaporation is greatest during the warm months and is then most critical for agriculture. During the period May through September, potential pan evaporation exceeds the normal rainfall by about 11 inches. During the period 1936-1967 the driest growing season of record, 1963, the pan evaporation exceeded the rainfall by more than 20 inches. When evaporation exceeds rainfall for prolonged periods, a drought may occur, however, severe droughts seldom occur in Columbiana County.

Relative humidity, the ratio between the amount of moisture in the air and the amount which could be present without condensation at the same temperature and pressure, is an important factor in human and animal comfort and in the growth and development of vegetation. Generally, humidity rises and falls inversely with the daily temperature and is highest in winter and lowest in summer. For the year, relative humidity averages about 80% at 1 and 7 AM, 60% at 1 PM, and 70% at 7 PM. Cloudiness is greatest in winter and least in summer. This seasonal variation in cloudiness is most clearly illustrated by the percentage of possible sunshine which is about 70% in July and 30% in December. Heavy fog occurs on about 20 days each year and is most frequent during the cold half of the year. Death from smog is unknown. The prevailing wind direction for the year is southwest, averaging 10 mph. Damaging winds occur most often during spring and summer. Such storms are usually associated with migrating thunderstorms.

The tornado, one of the most destructive of all atmospheric storms, is characterized by a violently rotating column of air which is nearly always observable as a "funnel cloud". It frequently leaves great destruction along a narrow path, and is usually accompanied by heavy rain and hail and often by lightning and thunder. Since 1900, 5 such storms have been reported in Columbiana County. During the last decade, Ohio has averaged slightly more than 11 tornadoes a year.

March 1968

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STATION HISTORY

Date	Location (From Millport)	Elevation	Observer
7/1892-4/1909	2.0 miles NW	1250	G. F. Copeland
5/1909-2/1956	2.0 miles NW	1145	L. H. Copeland
2/1956-Present	2.0 miles NW	1145	E. R. Copeland

AVERAGE TEMPERATURE (°F)

TOTAL PRECIPITATION (INCHES)

YR	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	ANNL
36	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
37	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
38	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
39	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
40	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
41	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
42	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
43	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
44	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
45	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
46	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
47	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
48	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
49	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
50	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
51	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
52	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
53	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
54	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
55	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
56	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
57	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
58	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
59	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
60	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
61	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
62	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
63	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
64	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
65	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
66	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
67	21.0	18.1	35.5	42.3	52.3	62.4	71.3	71.2	66.3	51.1	36.0	23.1	48.1
SEASON	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL			

MONTHLY AND SEASONAL SNOWFALL

SEASON	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL
36-37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37-38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38-39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39-40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40-41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41-42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42-43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43-44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44-45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45-46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46-47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47-48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48-49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49-50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51-52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52-53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53-54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54-55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55-56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56-57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57-58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58-59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59-60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60-61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61-62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62-63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63-64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64-65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65-66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66-67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67-68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PRECIPITATION WITH PROBABILITY EQUAL OR LESS THAN

ANN	27.53	30.49	32.84	34.30	35.57	36.80	38.05	39.42	41.07	43.43	45.45
JAN	0.85	1.13	1.57	1.94	2.31	2.70	3.13	3.63	4.29	5.21	6.47
FEB	0.71	0.93	1.28	1.58	1.87	2.17	2.50	2.89	3.40	4.20	5.25
MAR	1.23	1.56	2.04	2.45	2.84	3.25	3.68	4.20	4.85	5.66	6.72
APR	1.45	1.79	2.27	2.67	3.05	3.43	3.85	4.32	5.01	5.87	6.97
MAY	1.70	2.04	2.52	2.91	3.27	3.64	4.02	4.49	5.20	6.13	7.27
JUN	1.50	1.89	2.44	2.81	3.25	3.61	3.91	4.20	5.00	5.86	7.04
JUL	1.01	1.33	1.81	2.18	2.50	2.77	3.02	3.27	3.90	4.81	5.65
AUG	0.81	1.07	1.40	1.73	2.02	2.27	2.53	2.79	3.32	4.11	4.95
SEP	0.71	0.93	1.28	1.58	1.87	2.17	2.50	2.89	3.40	4.20	5.25
OCT	0.82	1.09	1.44	1.87	2.16	2.46	2.79	3.20	3.84	4.42	5.25
NOV	0.82	1.09	1.44	1.87	2.16	2.46	2.79	3.20	3.84	4.42	5.25
DEC	0.82	1.09	1.44	1.87	2.16	2.46	2.79	3.20	3.84	4.42	5.25

Median precipitation amounts (0.50 probability level) in the above table differ from the means shown on the opposite page because of the method used in making the computations. The above values were determined from the incomplete gamma distribution whose curve has been found to give best fits to precipitation climatological series.