

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. 20-33-1R

LATITUDE 39°50' N
 LONGITUDE 81°55' W
 ELEV. (GROUND) 1020 FT.

CLIMATOLOGICAL SUMMARY

STATION: Philo, Ohio

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	YEAR	GREATEST DAILY	YEAR	DAY	SNOW, SLEET					MEAN NUMBER OF DAYS						
	DAILY MAXIMUM	DAILY MINIMUM	MONTHLY	RECORD HIGHEST	YEAR	DAY	RECORD LOWEST	YEAR		DAY	90° AND ABOVE	32° AND BELOW	32° AND BELOW							32° AND BELOW	OF AND BELOW	MAXIMUM MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY		MEAN	MAXIMUM MONTHLY	YEAR	GREATEST DAILY
JAN	40.2	22.1	51.1	70	50	29	1045	0	7	44	1	3.05	10.48	37	2.30	37	22	5.7	18.0	46	6.0	48	24	12	7	1.0	4.3	JAN			
FEB	42.1	23.2	53.3	70	54	15	874	0	4	27	1	2.64	5.64	56	1.84	45	26	6.2	19.3	60	7.4	60	14	12	6	1.9	4.3	FEB			
MAR	50.0	30.0	61.5	80	60	27	726	0	1	11	1	4.00	9.41	64	2.81	64	9	4.6	12.2	60	8.0	56	16	13	6	2.4	4.6	MAR			
APR	60.6	39.3	72.4	92*	60	26	464	0	0	6	1	3.81	6.79	61	2.19	45	12	5	3.7	53	2.6	38	9	13	6	2.4	4.6	APR			
MAY	70.7	48.1	82.7	95*	53	31	225	0	0	0	0	3.97	9.27	56	4.03	30	27	0	0	0	0	0	0	0	0	0	0	0	0	MAY	
JUNE	84.3	57.8	91.0	99*	52	29	55	0	0	0	0	4.27	8.32	37	4.05	37	21	0	0	0	0	0	0	0	0	0	0	0	0	JUNE	
JULY	87.0	61.1	94.0	104	39	14	29	0	0	0	0	4.52	8.31	36	2.99	36	10	0	0	0	0	0	0	0	0	0	0	0	0	JULY	
AUG	86.0	59.9	92.9	103	66	40	9	0	0	0	0	3.42	7.52	34	3.41	34	13	0	0	0	0	0	0	0	0	0	0	0	0	AUG	
SEPT	80.3	52.1	86.5	107	73	44	29	0	0	0	0	2.76	6.61	65	3.14	61	13	0	0	0	0	0	0	0	0	0	0	0	0	SEPT	
OCT	67.4	42.0	75.1	92*	39	44	12	0	0	0	0	2.31	7.61	36	2.81	30	17	0	0	0	0	0	0	0	0	0	0	0	0	OCT	
NOV	55.4	31.0	65.1	84	20	1	9	0	0	0	0	2.54	5.46	50	2.31	33	4	2.0	20.5	50	10.3	50	20	10	6	1.5	2.2	NOV			
DEC	42.2	24.2	53.2	72	50	0	11	0	0	0	0	2.59	5.47	64	1.58	30	7	5.2	14.5	62	6.0	44	12	11	6	1.7	4.2	DEC			
YEAR	65.1	41.1	53.1	107	55	4	525	0	32	17	118	3	40.08	10.46	37	4.05	37	29.0	20.9	50	10.3	50	20	10	6	1.7	4.2	YEAR			

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

NARRATIVE CLIMATOLOGICAL SUMMARY

Philo is located at the 90 degree bend of the Muskingum River in the south central portion of Muskingum County in southeast Ohio. The Muskingum River drains about half of eastern Ohio and empties into the Ohio River about 50 miles to the south. Terrain within Muskingum County is rugged and hilly; the elevation of the earth's surface above mean sea level varies from about 680 to 1290 feet. Some excellent farm land is located in the Muskingum Valley whose average width is about 500 feet and is flanked by hills which rise 200 to 300 feet above the valley floors. Grazing and mining are important activities within the county. Valley areas are subject to extended periods of atmospheric stagnation. During such periods, the ability of the atmosphere to transport and diffuse pollutants emitted into the air is reduced.

The climate of Muskingum County is classified as continental. Such a climate is characteristic of a land mass the size of North America and is marked by large annual, daily and day to day ranges of temperature. In this area, summers are moderately warm and humid with several days when temperatures exceed 89° F. Winters are reasonably cold and cloudy with only occasional 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 pressures.

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 lowest in summer and highest in winter. For the year, relative humidity averages about 80% at 1 and 7 AM, 60% at 1 PM, and 70% at 7 PM. During summer afternoons, the relative humidity is often in the 50-60% range. 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 35% in December. Fog that reduces visibility to less than 1/4 mile is most frequent in summer and fall. Damaging winds of 35 to 85 mph occur most often during spring and summer. Such storms are usually associated with migrating thunderstorms.

Heating degree days (mean 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 the Philo area varies widely from year to year, however, it is normally abundant and well distributed throughout the year with fall being the driest season. Showers and thundershowers account for most of the rainfall during the growing season. Heavy rains of 2.1, 2.9, 3.4, 4.1, 4.6, and 5.1 inches in 24-hours can be expected to occur at least once in 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. During any year, snow-fall may fluctuate widely from the means shown in the above table.

Evaporation is greatest during the warm months and is then most critical for agriculture. When evaporation greatly exceeds precipitation for prolonged periods a drought may occur. During the period 1929-1968, extended periods of moderate to extreme drought in southeast Ohio, as determined from the Palmer Drought Severity Index have occurred during the 1930, 1931, 1932, 1934, 1936, 1953, and 1954 growing seasons. The longest continuing period of moderate to extreme drought in southeast Ohio is 21 months (November 1952-July 1954).

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, 9 such storms have been reported in Muskingum County.

Philo's normal average annual temperature is near the average for southeast Ohio. In 8 of 10 years, the average annual temperature is in the 51.5° F-54.7° F range. On nights with clear skies and light winds there is often a large variation in observed surface temperatures within Muskingum 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 valley floors and the tops of hills. The daily range in temperature is usually greatest in late summer and early fall and least in winter. Annual extremes in temperature normally occur soon after June 21 and December 22. The highest temperature during the year is equal to or greater than 94° F in 9 of 10 years, 98° F in 5 of 10 years, and 103° F in 1 of 10 years. Lowest temperature during the year is equal to or less than 3° F in 9 of 10 years, -6° F in 5 of 10 years, and -15° 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 158 days at Philo. In 10% of the years the growing season is longer than 182 days and in 1 of 10 years it is shorter than 134 days. Similar information for other locations within Muskingum County may differ significantly from the Philo data due to variations of topography within the county.

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 Columbus, Ohio 43215

May, 1969

STATION HISTORY

DATE	LOCATION	ELEVATION	OBSERVER
10/1901-11/1965	(From Post Office)	(Ft. MSL)	
11/1965-Present	0.1 mile SW	750	Louis Hardtla
	2.7 miles SW	1020	R. M. Burkholter

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°
90	FEB 16	MAR 7	MAR 21	APR 5	APR 16	MAY 3
70	MAR 1	MAR 18	APR 1	APR 15	APR 25	MAY 11
50	MAR 9	MAR 25	APR 9	APR 21	MAY 2	MAY 17
30	MAR 17	APR 1	APR 16	APR 28	MAY 8	MAY 23
10	MAR 28	APR 11	APR 27	MAY 7	MAY 18	MAY 31

PERCENT CHANCE OF EARLIER DATE IN FALL	TEMPERATURE LEVELS					
	16°	20°	24°	28°	32°	36°
10		OCT 20	OCT 10	SEPT 23	SEPT 17	
30		NOV 6	OCT 27	OCT 15	OCT 2	SEPT 23
50		NOV 13	NOV 2	OCT 23	OCT 7	SEPT 27
70		NOV 20	NOV 7	OCT 29	OCT 13	OCT 1
90		NOV 30	NOV 15	NOV 6	OCT 21	OCT 6

TOTAL PRECIPITATION (INCHES)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
36	1.72	1.74	3.04	2.87	2.33	1.95	4.47	1.85	7.61	3.85	2.62	2.62	39.76
37	10.48	1.74	1.68	2.71	6.36	6.32	7.26	3.65	3.81	3.01	1.23	3.43	53.38
38	2.13	2.66	5.46	3.40	8.00	3.20	5.14	4.66	6.28	7.00	3.03	1.61	45.13
39	3.60	4.45	4.96	6.50	7.41	7.44	7.42	7.19	5.85	4.12	3.73	3.01	59.37
40	1.88	3.77	3.13	6.34	3.31	4.94	1.96	5.57	1.84	1.54	3.09	2.75	40.94
41	2.32	4.77	1.01	3.95	6.52	6.52	3.76	4.24	1.49	3.16	2.46	2.07	33.66
42	1.31	2.37	3.75	2.27	3.73	2.86	3.46	3.25	4.21	2.28	1.75	1.50	33.60
43	2.44	2.00	5.08	3.52	3.05	3.10	4.30	4.02	1.65	1.83	1.34	4.17	36.59
44	1.84	3.92	7.42	3.70	2.60	4.33	4.28	1.76	5.92	2.33	5.10	1.84	49.72
45	1.88	3.39	7.43	4.72	2.60	4.33	4.28	1.76	5.92	2.33	5.10	1.84	49.72
46	7.5	3.63	3.63	1.91	9.14	2.61	3.37	4.34	4.19	3.31	2.02	2.35	38.65
47	5.18	3.92	1.60	5.44	7.04	4.44	2.25	2.73	6.1	2.68	1.89	3.42	38.27
48	2.76	3.57	4.96	5.77	4.65	4.44	5.83	2.96	6.07	1.84	3.75	3.23	49.35
49	5.01	2.86	4.17	3.54	2.56	5.42	6.01	1.98	2.76	1.42	1.92	2.13	39.59
50	6.97	3.19	3.54	3.61	5.25	5.38	2.30	1.77	1.39	5.46	2.74	2.74	45.26
51	3.33	3.67	4.93	3.60	3.42	8.01	3.55	6.3	4.10	1.07	1.09	5.17	47.57
52	3.30	2.55	3.38	4.21	3.07	4.32	4.91	3.2	6.53	1.17	1.33	2.10	49.48
53	4.11	1.46	3.73	3.23	3.31	3.65	3.57	7.2	1.53	3.05	1.89	3.68	42.97
54	2.00	1.37	3.00	4.94	2.42	2.12	2.19	3.63	4.21	3.31	2.74	1.37	31.05
55	1.23	4.40	3.04	3.19	2.12	2.19	3.63	4.21	3.31	2.74	1.37	1.14	31.05
56	2.02	5.64	4.72	4.85	9.27	3.82	7.35	9.27	1.78	1.66	1.36	2.33	50.07
57	2.26	2.16	1.79	4.76	3.60	4.84	2.19	8.9	1.63	1.60	3.32	4.51	33.55
58	1.70	1.20	1.89	3.45	4.14	5.76	8.51	6.03	5.34	1.59	2.61	1.04	44.96
59	4.34	3.91	2.53	2.84	3.90	4.02	6.11	3.39	3.38	3.57	3.61	2.30	43.38
60	2.72	5.27	1.34	1.38	4.21	1.95	2.54	2.74	2.00	2.76	1.51	1.43	27.85
61	1.56	3.32	3.74	6.79	3.74	5.20	4.84	4.89	4.22	2.57	2.87	2.98	46.72
62	3.00	4.46	3.70	1.86	3.29	1.14	4.10	1.89	4.42	2.12	3.02	2.86	35.47
63	2.04	1.54	6.63	2.87	1.27	3.13	4.23	3.23	6.2	8.2	1.42	1.42	52.40
64	2.59	1.87	9.41	5.98	1.83	5.18	3.53	2.48	8.5	5.0	2.59	5.87	40.17
65	3.20	4.00	3.40	5.40	2.11	2.06	3.61	3.77	6.61	3.08	1.97	1.66	40.17
66	3.04	2.81	8.6	3.36	2.42	1.23	7.82	2.45	3.05	1.57	4.77	2.25	35.60
67	94	1.60	5.40	2.77	4.60	2.07	5.65	1.68	2.19	2.17	3.35	2.35	37.25
68	2.48	3.51	3.46	2.05	7.90	3.46	1.40	4.58	1.67	2.13	3.03	2.58	37.25
69	2.43	3.91	3.00	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40

PRECIPITATION WITH PROBABILITY EQUAL OR LESS THAN
 .05 .10 .20 .30 .40 .50 .60 .70 .80 .90 .95

JAN .83 1.12 1.36 1.55 2.32 2.72 3.16 3.68 4.35 5.41 6.40
 FEB 1.03 1.29 1.68 2.00 2.31 2.62 2.76 3.36 3.97 4.65 5.37
 MAR 1.36 1.93 2.29 2.78 3.20 3.67 4.17 4.78 5.51 6.66 7.71
 APR 1.63 1.80 2.38 2.85 3.22 3.59 4.00 4.40 5.04 5.93 6.72
 MAY 1.67 2.07 2.53 3.00 3.53 4.07 4.13 4.72 5.54 6.54 7.59
 JUN 2.17 2.26 3.10 3.52 3.92 4.32 4.76 5.22 5.72 6.73 7.59
 JUL 2.16 1.49 1.82 2.35 2.74 3.14 3.57 4.07 5.1 5.73 7.59
 AUG .65 .91 1.32 1.68 2.03 2.41 2.83 3.34 4.00 5.05 6.03
 SEP .61 .93 1.17 1.46 1.75 2.05 2.36 2.78 3.29 4.00 4.83
 OCT .95 1.15 1.53 1.81 2.08 2.36 2.66 3.00 3.44 4.12 4.74
 NOV .78 1.02 1.59 1.71 2.02 2.34 2.70 3.11 3.65 4.49 5.27
 DEC .78 1.02 1.59 1.71 2.02 2.34 2.70 3.11 3.65 4.49 5.27

ANN. 30.22 32.16 34.67 36.53 38.20 39.40 41.43 43.23 45.40 48.53 51.22

Medium 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 gamma distribution whose curve has been found to give best fit to precipitation climatological series.

AVERAGE TEMPERATURE (°F)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
36	24.9	25.3	45.1	47.4	64.5	72.0	76.4	76.5	71.2	56.3	49.1	37.0	53.1
37	39.7	34.3	37.5	51.7	58.5	75.0	75.7	75.5	64.2	25.3	49.1	37.0	53.1
38	32.3	40.5	48.9	55.3	64.5	69.0	75.4	74.7	67.0	57.7	45.7	37.0	53.1
39	36.0	44.5	49.6	65.0	74.1	74.4	74.2	71.9	58.5	41.2	37.3	35.4	55.4
40	18.6	32.2	36.8	46.7	51.5	72.5	74.8	74.1	65.9	56.0	42.6	35.7	52.0
41	32.2	29.6	35.0	57.6	64.6	72.4	76.1	72.5	69.9	50.4	45.3	39.2	54.5
42	30.4	35.4	45.4	57.3	64.4	72.4	74.9	72.8	68.6	50.0	44.3	39.2	54.5
43	33.3	34.1	39.4	47.0	55.5	72.0	72.9	64.4	52.7	40.7	30.9	52.5	52.5
44	33.3	36.3	40.1	51.3	59.2	70.1	74.6	74.3	64.7	54.5	43.9	28.0	53.7
45	33.2	34.0	31.6	53.3	58.2	69.4	73.0	72.7	63.2	53.7	44.4	28.1	53.9
46	35.8	35.8	52.1	52.3	61.0	70.1	72.0	67.3	63.3	57.4	47.5	37.7	54.4
47	37.7	35.0	34.6	52.7	60.1	69.1	72.0	67.3	63.3	57.4	47.5	37.7	54.4
48	29.3	34.2	35.8	56.7	63.2	76.7	72.7	68.8	63.7	40.7	32.4	52.5	52.5
49	36.8	34.8	42.4	50.5	59.6	77.8	74.0	68.5	61.5	46.1	38.4	53.3	53.3
50	42.0	34.9	37.8	47.7	63.0	65.2	70.9	69.6	63.6	57.4	37.3	25.1	51.7
51	33.2	34.8	41.7	50.4	62.6	69.0	73.6	70.5	63.5	50.5	37.4	34.3	52.1
52	36.6	30.0	40.3	51.7	60.5	78.0	75.8	71.8	66.9	49.5	42.0	36.4	53.4
53	37.2	36.1	42.5	49.3	65.7	73.1	74.8	72.4	66.1	53.6	43.3	33.0	54.3
54	32.3	39.6	39.3	58.4	56.8	72.1	73.4	72.0	68.5	57.3	42.4	33.4	53.8
55	30.0	33.9	43.2	57.9	64.7	66.8	78.0	77.3	68.6	56.9	41.0	30.6	54.1
56	26.9	36.6	40.5	50.0	62.0	70.7	72.3	73.5	64.8	53.7	43.1	41.7	53.6
57	28.4	37.8	41.3	52.7	62.6	67.9	74.5	72.1	67.3	54.8	44.3	37.0	53.6
58	29.3	29.3	33.6	53.7	62.6	67.9	74.5	72.1	67.3	54.8	44.3	37.0	53.6
59	27.6	35.7	40.5	55.3	66.6	70.9	74.5	71.7	66.1	52.2	43.4	34.8	53.9
60	34.3	30.6	28.7	56.7	66.0	69.4	71.4	72.5	68.9	52.1	44.3	28.2	51.6
61	25.3	37.5	45.6	64.6	67.5	67.9	72.9	72.0	64.2	59.5	44.5	33.2	52.6
62	27.5	32.8	39.8	50.1	67.5	71.1	71.6	62.5	62.5	55.1	41.9	26.5	51.6
63	23.0	25.4	45.5	51.5	59.7	68.9	71.8	69.7	63.5	50.1	41.1	29.2	59.5
64	32.0	29.5	41.6	54.6	64.3	70.8	74.9	70.9	65.7	50.9	45.1	35.7	53.0
65	29.4	31.0	37.5	51.7	67.5	69.6	72.5	72.0	67.9	52.5	45.1	38.5	52.9
66	24.4	31.2	44.5	50.2	58.0	70.8	74.2	69.0	59.5	49.6	43.8	32.6	50.7
67	35.6	28.4	43.9	52.5	65.2	72.5	72.5	69.0	62.3	55.5	37.4	36.6	50.7
68	25.3	26.4	45.5	55.1	59.7	73.2	73.3	73.5	66.1	56.1	44.8	30.4	52.3
69	28.3	32.5	37.6										

MONTHLY AND SEASONAL SNOWFALL

SEASON	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL
36-37	0	0	2.1	4.6	4.0	3.3	6.0	0	0	20.2
37-38	0	2	4	3.8	4.3	1.2	2.8	3.2	0	18.6
38-39	0	0	5.0	6.2	10.3	13.7	2.5	1.0	0	38.7
39-40	0	0	3.7	4.0	5.8	4.6	5.7	0	0	28.0
40-41	0	0	0	0	0	0	0	0	0	0
41-42	0	0	1.1	1.1	4.4	2.3	6.4	1	0	14.4
42-43	0	0	1.5	7.5	7.7	1.7	5.3	1.2	0	24.9
43-44	0	0	2	8	3	3.3	3.0	0	0	7.9
44-45	0	0	2	13.0	8.2	1.5	0	0	0	22.0
45-46	0	0	8							