

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. 20-33-41

CLIMATOLOGICAL SUMMARY

STATION: Carpenter, Ohio

LATITUDE 39°10' N
 LONGITUDE 82°13' W
 ELEV. (GROUND) 710 Ft.

MEANS AND EXTREMES FOR PERIOD 1938-1965

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							0° AND BELOW	MEAN	MAXIMUM MONTHLY		YEAR	GREATEST DAILY	YEAR	DAY	MEAN	MAXIMUM MONTHLY	YEAR	GREATEST DAILY
JAN	41.4	22.0	31.7	76	50	25	-28	63	28	1028.	0	7	25	2	3.21	10.00	50	2.71	51	14	5.5	26.5	48	9.0	48	24	10	7	2.1	.5	JAN
FEB	44.8	23.5	34.1	76	54	15	-17	51	3	868.	0	4	22	1	3.01	7.10	56	2.32	65	26	5.7	20.5	48	12.0	60	14	10	7	1.8	.5	FEB
MAR	53.7	30.2	41.9	86	50	27	-10	43	4	713.	0	1	19	0	4.22	9.29	63	2.02	63	19	3.1	13.7	60	10.5	54	1	11	8	2.7	.9	MAR
APR	66.4	39.7	53.0	90	42	30	14	64	1	368.	0	0	8	0	3.84	8.71	48	3.30	48	12	.1	1.5	59	1.5	59	12	11	8	2.5	.7	APR
MAY	76.4	48.8	62.6	97*	53	31	22	63	2	141.	1	0	1	0	4.23	6.78	56	2.32	53	22	.0	.0	58	.0	0	0	11	8	2.9	.9	MAY
JUNE	84.2	57.4	70.8	107	52	16	34	47	1	24.	7	0	0	0	3.94	10.78	41	4.50	41	1	.0	.0	38	.0	0	10	7	2.5	.9	JUNE	
JULY	86.7	60.9	73.8	105	52	13	40	54	9	3.	10	0	0	0	4.28	11.48	58	2.94	42	10	.0	.0	38	.0	0	10	7	2.8	1.0	JULY	
AUG	85.5	59.2	72.3	102	52	9	36	65	29	9.	7	0	0	0	3.67	8.04	47	3.94	38	5	.0	.0	38	.0	0	7	6	2.6	.9	AUG	
SEPT	79.3	51.7	65.5	102	53	3	24	42	29	90.	2	0	0	0	2.96	6.21	65	2.34	59	30	.0	.0	38	.0	0	7	4	2.1	.7	SEPT	
OCT	68.9	40.6	54.7	90*	51	4	12	62	27	331.	0	0	7	0	1.96	3.50	55	1.23	56	4	.0	.0	38	.0	0	7	4	1.2	.2	OCT	
NOV	54.4	31.3	42.8	84	48	5	-8	58	30	663.	0	0	17	0	2.74	6.14	45	1.51	62	10	2.1	20.0	50	8.0	50	26	9	6	1.9	.2	NOV
DEC	43.3	24.0	33.6	74	56	7	-17	62	13	968.	0	5	24	0	2.59	6.00	42	3.09	48	15	3.6	12.0	44	8.0	42	20	9	6	1.6	.3	DEC
YEAR	65.4	40.7	53.0	107	52	16	-28	63	28	5206.	27	17	123	3	40.65	11.48	58	4.50	41	1	20.1	26.5	48	12.0	60	14	112	78	27.	8.	YEAR

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

NARRATIVE CLIMATOLOGICAL SUMMARY

Carpenter is located in the northwest quadrant of Meigs County in south central Ohio. Even though the area around Carpenter is within the Hocking River drainage basin, the Ohio River lies only 14 miles to the southeast. The village of Carpenter is located in a west-east oriented valley at an elevation of 630 feet. Within a distance of 1 mile, some hills rise nearly 300 feet above the valley floor. Terrain in all of Meigs County is rugged and hilly. A map of the physiographic regions of Ohio shows Meigs County to be a part of Ohio's Nonglaciated Plateau. Soils within this area are generally thin except in the valleys where most of the agriculture and manufacturing activities are located.

The climate of Carpenter is classified as continental. Such a climate is marked by large annual, daily, and day to day ranges of temperature. The annual extremes of temperature normally occur soon after June 21 and December 22. In Meigs County, summers are moderately warm and humid, with occasional days when temperatures exceed 90°F; winters are reasonably cold and cloudy with an average of 3 days with sub-zero temperatures. Weather changes occur every few days from the passing of cold or warm fronts and their associated centers of high and low pressure.

Temperature range between the highest and lowest for the year is large. The extreme temperature range (record high minus record low) during the period 1938-1965 is 135 degrees. On nights with clear skies and calm winds, the air near the tops of hills within Meigs County becomes cooler and denser than the air at the same height near the centers of 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 temperature between the valley floors and the tops of the hills. The normal daily range in temperature is greatest in late summer and least in early winter. Coldest month of record is January 1940. In that month the average daily maximum temperature was 25.6°F while the daily minimum averaged slightly more than 8°F. Warmest month of record is July 1952 when the average daily maximum temperature was slightly more than 95°F and the daily minimum was 66.4°F. Temperature in excess of 90°F has been recorded as early as late April; however, such days are more common in the period June through August. Maximum temperatures below freezing occur most frequently from mid-December through February. Normal mean temperature for the year is 2.3°F below the average for south central Ohio.

Heating degree days as shown in the above table are a measure of the departure of the mean daily temperature from 65°F. 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.

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 18	MAR 8	MAR 22	APR 8	APR 21	APR 30				
70	MAR 3	MAR 19	MAR 31	APR 17	APR 29	MAY 10				
50	MAR 12	MAR 26	APR 7	APR 23	MAY 5	MAY 18				
30	MAR 21	APR 2	APR 13	APR 29	MAY 10	MAY 25				
10	APR 2	APR 12	APR 22	MAY 8	MAY 18	JUNE 5				

PERCENT CHANCE OF EARLIER DATE IN FALL										
10	NOV 1	OCT 22	OCT 11	SEPT 29	SEPT 21	SEPT 11				
30	NOV 11	NOV 1	OCT 20	OCT 8	SEPT 28	SEPT 18				
50	NOV 18	NOV 7	OCT 27	OCT 14	OCT 3	SEPT 24				
70	NOV 25	NOV 14	NOV 2	OCT 20	OCT 7	SEPT 29				
90	DEC 5	NOV 23	NOV 11	OCT 29	OCT 14	OCT 7				

Taking the number of days between the last freezing temperature (32°F) of spring and the first freezing temperatures in fall as the crop growing season, this season averages 151 days in length. The growing season is 165 days or more in 10% of the years, 156 days or more in 30% of the years, less than 145 days in 30% of the years, and less than 136 days in 10% of the years. Temperatures of 32°F or less have been recorded as early as September 21 in Fall and as late as May 25 in Spring.

Precipitation is normally abundant and well distributed throughout the year with fall being the driest season. The average annual precipitation of 40.65 inches is only slightly below the average for south central Ohio. 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 May through August. As is typical of all Ohio, most precipitation during the winter months comes in the form of rain. Snowfall averages about 20 inches a year, although as little as 3 inches fell during the winter of 1949-50 and as much as 52 inches fell during the winter of 1947-48. About 1 out of 7 winters will have at least 30 inches of snow. On the average, daily snowfall of 1 inch or more occurs 8 times each year. The good distribution of precipitation throughout the year lessens the need for irrigation to maintain healthy vegetation.

Evaporation is greatest during the warm months and is then most critical for agriculture. During the period May through August, potential pan evaporation exceeds the normal rainfall by slightly more than 7 inches. When evaporation exceeds rainfall for prolonged periods, a drought may occur; however, severe droughts seldom occur in Meigs County.

Humidity, cloudiness, sunshine, and wind observations are not recorded in Carpenter; however, estimates of these variables can be made from observations taken in Parkersburg, West Virginia. 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. Cloudiness is greatest in winter and least in summer. This variation is most clearly illustrated by the percentage of possible sunshine which is about 70% in July and 30% in December. For the year, the wind near the ground blows most frequently from the southwest, averaging 5 mph during summer and 7 mph in winter. Damaging winds occur most often during spring and summer. Such storms are usually associated with migrating thunderstorms. Due to the terrain of Meigs County, the occurrence of heavy fog is quite variable but most frequent during summer and fall. Many valley areas average 50 days of heavy fog each year. Such areas are especially susceptible to atmospheric stagnation; however, death from smog is as yet unknown.

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. Ohio averages slightly more than 11 tornadoes each year. Since 1900, only one such storm has been reported in Meigs County.

Marvin E. Miller
 March 1968
 ESSA Weather Bureau State Climatologist
 Box 357
 Columbus, Ohio 43216

STATION HISTORY

DATE	LOCATION	ELEVATION	OBSERVER
1/1938-Present	(From Post Office) 0.5 mile NE	(FT. MSL) 710	Observer Employees of Carpenter Branch of Ohio Agricultural Research and Development Center

AVERAGE TEMPERATURE (°F)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNU
38	32.4	35.7	47.7	54.1	60.3	68.4	72.5	73.4	64.7	52.9	43.1	33.3	53.6
39	35.9	37.7	43.3	48.6	53.7	62.3	72.0	71.9	61.3	52.9	38.1	33.3	53.2
40	16.9	31.5	38.3	47.7	59.5	72.5	71.3	71.3	61.3	52.9	41.3	33.0	50.2
41	30.9	28.5	33.9	35.6	42.8	50.4	62.1	70.6	63.9	55.0	44.0	29.7	52.4
42	29.6	28.5	44.2	53.8	62.1	72.4	72.1	72.4	63.9	55.0	44.0	29.7	52.4
43	33.0	33.0	38.0	47.6	62.9	75.4	74.2	71.7	61.5	50.8	39.7	29.2	51.5
44	31.9	33.7	38.9	50.5	67.5	72.7	72.9	72.7	63.9	51.4	41.1	30.2	52.4
45	30.3	35.0	52.3	56.1	59.4	69.6	73.4	72.5	69.4	53.6	45.5	28.7	53.9
46	34.4	35.9	52.2	53.6	61.7	71.0	73.5	67.8	64.8	56.8	47.3	38.7	54.8
47	38.6	25.0	34.9	55.3	60.3	69.9	69.8	71.2	66.5	60.8	41.3	33.1	52.7
48	23.3	34.7	47.0	57.2	59.6	71.4	75.5	73.1	67.7	52.0	48.8	37.0	53.9
49	42.5	40.5	42.6	49.3	63.4	73.4	79.3	73.9	61.1	59.5	47.8	33.3	52.0
50	42.2	34.0	37.1	48.8	64.2	71.2	74.0	71.8	63.5	57.2	37.8	32.6	52.5
51	33.9	33.8	42.1	50.2	61.5	69.4	72.3	68.7	64.0	48.6	37.1	35.1	54.8
52	31.5	35.7	41.4	53.2	63.8	78.7	80.1	79.2	69.8	68.9	41.4	27.8	54.4
53	36.7	35.8	44.1	53.0	70.9	76.3	76.4	71.9	64.7	57.4	42.0	35.6	55.3
54	39.8	41.4	42.6	56.0	62.3	62.9	74.2	72.9	68.8	57.5	41.5	33.8	54.1
55	39.8	38.2	42.0	52.1	62.8	70.4	73.2	73.1	64.7	58.0	44.9	44.9	54.4
57	29.9	40.4	43.1	56.4	63.8	72.9	75.0	71.4	68.1	53.1	44.5	38.7	54.5
58	29.8	25.8	38.9	53.8	60.8	67.4	74.2	71.1	66.1	53.1	45.8	27.1	51.7
59	28.9	37.2	40.9	54.6	66.2	68.2	74.6	75.9	68.6	56.1	41.9	38.0	54.3
60	35.6	31.3	29.8	51.0	60.4	69.1	71.3	74.7	68.2	55.3	44.2	27.1	52.0
61	28.0	39.6	47.3	47.9	57.9	66.6	72.6	72.6	69.1	55.8	44.3	34.3	52.8
62	29.4	35.5	41.3	50.6	67.0	70.6	71.6	71.6	61.0	56.2	41.4	27.8	51.3
63	29.7	25.9	47.3	54.3	60.0	68.9	72.1	70.0	63.6	58.0	46.0	25.4	52.1
64	33.3	29.3	42.8	59.3	64.9	70.9	74.0	71.0	62.9	50.7	45.6	37.8	53.5
65	31.0	33.1	38.1	59.2	67.2	69.1	73.1	74.0	70.9	67.4	45.7	38.6	53.3
66	25.9	33.1	45.1	51.4	59.7	70.4	74.9	72.7	62.8	51.4	45.0	34.1	52.1
67	37.2	29.9	45.5	56.5	58.2	68.2	71.4	72.2	65.3	61.1	40.5	37.4	52.9

MONTHLY AND SEASONAL SNOWFALL

SEASON	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL
38-39	0.0	0.0	5.5	7.0	5.0	6.5	0.0	0.0	0.0	17.0
39-40	0.0	0.0	6.0	7.0	1.0	1.5	1.0	0.0	0.0	28.5
40-41	0.0	0.0	0.0	0.0	0.0	2.5	4.0	0.0	0.0	20.0
41-42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
42-43	0.0	0.0	0.0	11.2	6.0	2.5	3.5	0.0	0.0	23.2
43-44	0.0	0.0	1.0	4.0	0.5	3.0	1.0	0.0	0.0	12.5
44-45	0.0	0.0	1.0	12.0	11.1	4.0	0.5	0.0	0.0	28.6
45-46	0.0	0.0	0.5	11.5	2.5	1.8	0.0	0.0	0.0	16.3
46-47	0.0	0.0	0.0	1.0	3.8	1.9	5.5	0.0	0.0	24.2
47-48	0.0	1.0	3.5	26.5	20.5	0.3	0.3	0.0	0.0	51.8
48-49	0.0	0.0	2.0	4.5	0.0	3.0	0.0	0.0	0.0	9.5
49-50	0.0	0.0	1.0	1.0	1.2	4.6	0.0	0.0	0.0	2.8
50-51	0.0	20.0	1.0	4.7	4.5	4.4	0.0	0.0	0.0	34.6
51-52	0.0	2.3	3.7	4.5	1.0	0.8	1.0	0.0	0.0	10.9
52-53	0.0	2.3	3.5	4.5	0.0	6.5	0.0	0.0	0.0	17.0
53-54	0.0	2.6	1.8	4.5	1.2	10.5	0.2	0.0	0.0	20.8
54-55	0.0	1.1	4.5	3.5	7.0	0.3	0.6	0.0	0.0	16.4
55-56	0.0	2.5	4.3	7.7	0.0	3.6	0.5	0.0	0.0	14.6
56-57	0.0	1.7	1.0	4.6	0.0	3.0	0.0	0.0	0.0	10.3
57-58	0.0	0.0	3.5	3.0	3.8	3.5	0.0	0.0	0.0	13.8
58-59	0.0	5.0	0.0	7.0	0.0	3.5	1.5	0.0	0.0	17.0
59-60	0.0	4.7	4.0	10.3	20.3	13.7	0.0	0.0	0.0	42.9
60-61	0.0	1.1	2.4	10.0	10.5	0.5	1.3	0.0	0.0	24.8
61-62	0.0	0.0	6.2	4.0	6.1	0.0	0.0	0.0	0.0	22.5
62-63	0.0	0.0	7.9	6.5	5.0	0.0	0.0	0.0	0.0	19.4
63-64	0.0	1.5	7.5	13.6	16.2	0.0	0.0	0.0	0.0	38.9
64-65	0.0	1.5	1.0	14.5	9.7	0.0	0.0	0.0	0.0	28.8
65-66	0.0	5.0	1.0	14.0	12.1	7.5	0.0	0.0	0.0	29.9
67-68	0.0	5.0	7.0	14.0	12.1	7.5	0.0	0.0	0.0	28.8

TOTAL PRECIPITATION (INCHES)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNU
38	1.88	3.40	4.63	4.80	5.84	3.84	3.46	7.16	4.18	0.50	3.68	1.52	44.89
39	1.37	5.50	5.26	7.87	1.02	6.93	3.46	4.91	1.62	1.59	4.56	2.56	47.26
40	1.21	4.81	3.26	6.73	4.20	3.65	5.15	1.27	1.59	4.26	2.56	4.10	44.10
41	2.59	5.55	1.07	1.95	3.53	10.78	2.11	3.66	1.95	3.34	2.64	1.50	38.37
42	1.44	2.21	3.77	1.80	4.35	2.77	7.82	2.99	2.79	1.85	3.60	6.00	40.32
43	2.46	1.33	5.26	3.63	6.32	1.82	6.03	4.22	0.61	1.70	1.18	1.86	38.42
44	1.60	3.50	5.11	3.02	4.66	2.80	3.81	2.02	5.51	4.79	6.14	2.89	49.05
45	3.02	4.98	5.76	1.93	6.06	2.60	3.80	2.01	2.55	2.08	2.49	41.43	
47	7.20	1.61	2.44	5.34	5.17	3.52	4.36	8.04	2.90	1.63	3.13	2.10	47.44
48	4.39	4.71	5.78	8.71	3.65	5.81	3.90	2.84	4.93	1.84	4.27	3.80	54.03
49	5.72	3.44	2.83	2.69	3.16	3.35	4.72	3.16	3.13	1.90	2.37	3.56	40.03
50	10.00	2.98	1.89	3.95	3.68	3.44	7.65	2.82	4.87	1.19	2.12	4.49	49.35
51	6.26	3.49	5.28	2.98	4.27	2.47	1.88	3.07	1.86	4.03	4.42	3.44	44.99
52	4.59	1.85	5.19	2.78	3.90	4.26	1.61	2.97	1.68	1.48	1.73	2.82	34.66
53	3.22	0.97	3.58	2.73	6.29	4.22	4.10	2.44	0.95	0.51	1.17	1.36	32.21
54	1.92	1.58	3.33	3.59	3.87	1.89	3.05	1.81	2.21	2.88	1.35	0.7	37.89
55	1.46	4.69	4.22	4.70	4.40	2.59	3.04	4.62	2.04	3.20	1.90	3.46	48.69
56	2.42	7.10	6.06	3.21	6.78	2.14	2.95	3.40	3.48	2.58	3.55	4.81	47.81
57	3.79	2.90	1.69	3.49	2.69	2.81	2.95	4.47	3.44	2.58	3.55	4.81	34.81
58	2.46	1.72	1.86	4.51	4.40	7.02	11.48	5.09	4.42	0.78	2.69	0.90	47.33
59	4.44	2.66	1.82	3.53	4.21	4.17	3.29	2.70	4.62	2.77	3.29	2.55	40.73
60	3.33	2.80	1.87	1.98	4.34	3.77	3.77	2.84	2.46	1.95	1.72	1.49	32.02
61	1.61	3.20	4.06	5.93	4.43	5.10	5.32	4.83	1.88	3.34	2.21	3.01	43.82
62	2.52	5.44	4.67	2.61	5.21	1.15	6.54	1.47	4.02	2.73	2.32	2.51	41.19
63	1.37	1.46	9.29	1.57	1.83	1.90	3.75	1.79	1.19	0.50	2.15	1.24	28.04
64	2.54	1.80	7.74	5.99	1.96	4.59	2.50	2.13	2.55	3.34	3.24	4.76	40.14
65	1.90	1.62	1.58	1.72	1.58	1.55	5.06	2.00	6.21	6.15	1.71	3.57	30.32
66	3.50	3.81	1.13	5.32	1.72	0.48	7.55	8.41	6.15	1.71	3.57	2.76	40.99
67	0.76	1.76	0.14	2.71	8.10	0.89	3.04	2.72	2.90	1.85	3.00	2.49	37.96

ANN 30.88 32.83 35.29 37.15 38.79 40.36 41.98 43.75 45.89 48.98 51.63

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

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.