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. 20-33-66

CLIMATOLOGICAL SUMMARY

LATITUDE 40° 21' N
LONGITUDE 82° 41' W
ELEV. (GROUND) 1300 Ft.

STATION: Centerburg, Ohio

MEANS AND EXTREMES FOR PERIOD 1951-1965

	TEMPERATURE (° F)													PRECIPITATION TOTALS (INCHES)						SNOW, SLEET									
	MEANS			EXTREMES						MEAN DEGREE DAYS **	MEAN NUMBER OF DAYS					MEAN	GREATEST MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	MEAN	MAXIMUM MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	MEAN NUMBER OF DAYS			
											MAX.		MIN.																	
MONTH	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														.01 or MORE	.10 or MORE	.50 or MORE	1.00 or MORE	MONTH
JAN	35.0	17.9	26.4	61*	59	21	-22	63	24	1189.	0	12	28	3		3.22	8.38	59	4.66	59	21	9.8	19.7	59	7.5	64	1	12	7	1.8	.4	JAN
FEB	39.1	20.8	29.9	69	57	25	-13	63	22	988.	0	6	24	2		2.55	5.40	56	2.35	59	10	7.6	15.5	61	7.0	61	1	10	6	1.5	.3	FEB
MAR	47.2	27.1	37.1	76	63	29	-11	60	8	860.	0	2	22	0		4.14	8.97	64	2.46	63	4	6.9	16.4	60	8.0	56	16	12	8	2.7	.6	MAR
APR	61.8	38.3	50.0	85*	60	24	5	64	1	453.	0	0	10	0		4.18	8.64	64	2.48	61	25	1.0	5.0	53	3.0	53	18	12	9	2.7	.6	APR
MAY	72.8	48.0	60.4	92	64	19	27	63	1	181.	0	0	1	0		3.63	6.38	57	1.74	56	27	.0						11	8	2.1	.6	MAY
JUNE	80.5	56.2	68.3	97*	53	30	40*	63	12	40.	2	0	0	0		4.37	8.12	57	2.52	57	28	.0						10	7	3.4	1.3	JUNE
JULY	83.7	59.6	71.6	100	54	14	40	63	10	6.	4	0	0	0		4.43	7.15	53	3.07	53	18	.0						10	7	3.4	1.1	JULY
AUG	82.3	58.0	70.1	98	53	30	36	65	29	17.	3	0	0	0		3.23	5.77	65	3.05	64	3	.0						8	6	2.4	.7	AUG
SEPT	77.1	51.6	64.3	97*	54	6	28	59	18	106.	1	0	0	0		2.81	8.37	62	3.26	62	14	.0						7	4	2.0	.5	SEPT
OCT	65.7	41.0	53.3	91	53	3	18*	62	26	367.	0	0	5	0		2.23	5.64	54	2.32	60	9	.1	1.5	62	1.5	62	25	8	5	1.6	.1	OCT
NOV	50.6	30.8	40.7	77	61	3	-10	58	30	726.	0	1	17	0		2.64	5.30	51	3.07	55	16	2.9	8.0	58	7.0	58	28	9	6	1.3	.4	NOV
DEC	37.9	21.3	29.6	68	56	6	-17	58	10	1094.	0	10	25	2		2.46	5.14	51	1.08	56	7	8.9	17.1	56	8.0	60	20	10	5	1.6	.3	DEC
YEAR	61.1	39.2	50.1	100	54	JULY 14	-22	63	JAN 24	6027.	10	31	132	7		39.89	8.97	MAR 64	4.66	JAN 59	21	37.2	17.1	DEC 56	8.0	MAR 56	16	119	78	27.	7.	YEAR

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

NARRATIVE CLIMATOLOGICAL SUMMARY

Centerburg is located in the extreme southwest portion of Knox County in Ohio's central hills. Terrain within most of Knox County is rugged and hilly; the elevation of the earth's surface above mean sea level varies from about 850 to 1420 feet. Soils are generally thin in Knox County except in the valleys where most of the agricultural activities are located. 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 Knox County is marked by large annual, daily, and day to day ranges of temperature. Such a climate is characteristic of a land mass the size of North America and is classified as continental. In the Centerburg area, summers are moderately warm and humid with an average of 10 days with temperatures of 90°F or higher. Winters are reasonably cold and cloudy with an average of 7 days with sub-zero temperatures. About 1 of 20 winters will pass without any 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.

Centerburg's normal average annual temperature is one half degree below the average for Ohio's central hills. In 1 of 10 years the average annual temperature will be equal to or less than 48.3°F and in a like number of years the average temperature for the year will be equal to or greater than 52.0°F. On nights with clear skies and light winds there is often a large variation in observed surface temperatures within Knox 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 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 90°F in 9 of 10 years, 94°F in 5 of 10 years, and 99°F in 1 of 10 years. Lowest temperature during the year is equal to or less than -1°F in 9 of 10 years, -10°F in 5 of 10 years, and -19°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 154 days at Centerburg. The growing season is longer than 174 days in 10% of the years and shorter than 134 days in 10% of the years. Similar information for other locations within Knox County may differ significantly from the Centerburg data due to the variations in topography within the county.

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 Centerburg 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. Thunderstorms occur on about 40 days each year and are most frequent from April through August. Heavy rains of 2.4, 3.3, 3.9, 4.7, 5.3, and 5.9 inches in 24-hours can be expected to occur at least 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. During any year, snowfall may fluctuate widely from the annual mean of 37 inches.

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 Ohio's central hills as determined from the Palmer Drought Index have occurred during the 1930, 1931, 1934, 1941, 1944, 1953, 1954, 1962, and 1963 growing seasons. The longest continuing period of moderate to extreme drought in Ohio's central hills is 24 months (October 1952-September 1954).

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 45-55% 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 August but only 30% in in December and January. Fog that reduces visibility to less than 1/4 mile is most frequent in fall and winter. Damaging winds of 35 to 85 mph 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 often by lightning and thunder. Since 1900, 3 tornadoes have been reported in Knox County. During the last decade, Ohio has averaged about 11 tornadoes per year.

Marvin E. Miller
January 1969 ESSA Weather Bureau State Climatologist
Box 15307, Civic Center Station
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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 20	MAR 6	MAR 24	APR 7	APR 17	APR 27
70	MAR 4	MAR 17	MAR 31	APR 15	APR 26	MAY 7
50	MAR 12	MAR 25	APR 5	APR 21	MAY 2	MAY 14
30	MAR 21	APR 1	APR 10	APR 28	MAY 7	MAY 20
10	APR 2	APR 12	APR 17	MAY 6	MAY 16	MAY 30
PERCENT CHANCE OF EARLIER DATE IN FALL						
10	NOV 11	OCT 20	OCT 19	SEPT 27	SEPT 21	SEPT 11
30	NOV 20	OCT 28	OCT 25	OCT 8	SEPT 28	SEPT 19
50	NOV 26	NOV 3	OCT 29	OCT 16	OCT 3	SEPT 25
70	DEC 2	NOV 8	NOV 3	OCT 24	OCT 8	SEPT 30
90	DEC 11	NOV 17	NOV 9	NOV 4	OCT 15	OCT 8

STATION HISTORY

DATE	LOCATION (From Post Office)	ELEVATION (Ft. MSL)	OBSERVER
11/1950-9/1952	0.2 mile NW	1210	Dana Dixon
10/1952-12/1953	2.0 mile SW	1195	H. H. Palmer
12/1953-5/1960	0.2 mile NE	1210	E. T. Wiltsce
5/1960-6/1966	0.6 mile NE	1220	C. Weekley
8/1966-11/1966	0.6 mile NE	1220	R. Wingo
11/1966-6/1967	0.2 mile E	1240	C. Weekley
6/1967-1/1968	0.5 mile SSE	1200	W. E. Stopher
1/1968-12/1968	0.4 mile SSE	1215	C. W. Rhoads
12/1968-Present	2.6 mile N	1300	Martha Watson

AVERAGE TEMPERATURE (° F)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNL
51	30.3	29.6	38.9	48.0	61.8	68.8	72.6	70.1	62.5	55.9	32.7	31.0	50.2
52	33.7	34.2	38.5	51.1	59.5	74.7	75.4	70.6	63.6	47.9	41.4	34.1	52.1
53	33.1	34.2	40.0	46.2	63.1	72.2	74.4	72.0	65.1	56.7	42.6	33.3	52.7
54	29.0	36.8	36.1	55.9	55.8	71.0	71.8	69.8	66.8	54.6	40.5	29.5	51.5
55	25.4	29.8	39.5	55.5	62.1	64.9	75.3	73.8	66.3	52.5	37.2	26.8	50.7
56	25.0	32.0	37.1	46.4	59.1	68.4	70.6	70.0	61.2	56.7	40.4	37.8	50.4
57	21.6	33.3	38.2	51.2	60.4	69.2	71.6	69.2	63.7	49.1	40.7	33.3	50.1
58	25.4	21.3	35.4	49.8	58.0	64.2	70.9	68.3	62.7	51.2	41.2	19.8	47.3
59	23.2	30.6	36.2	50.1	64.1	68.8	72.1	73.8	66.9	53.0	37.4	33.7	50.8
60	30.1	27.7	24.5	53.6	57.1	67.3	69.5	72.1	67.0	54.3	43.0	23.1	49.1
61	21.6	35.6	42.4	44.3	54.6	65.8	70.6	70.5	68.0	55.7	41.5	29.3	50.0
62	24.7	28.5	36.4	48.6	65.9	68.7	69.6	70.3	60.2	53.5	40.6	24.1	49.3
63	18.4	21.5	41.5	50.3	57.3	67.6	69.9	66.4	61.8	59.6	43.1	19.4	48.1
64	28.8	26.4	38.4	51.0	61.4	66.7	71.6	67.5	63.4	50.0	45.1	32.0	50.2
65	26.8	27.9	34.4	48.7	65.8	67.5	69.5	68.3	66.1	50.6	43.6	36.5	50.5

TOTAL PRECIPITATION (INCHES)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY.	AUG	SEPT	OCT	NOV	DEC	ANNL
51	4.48	3.03	4.76	4.30	3.65	3.96	1.83	1.14	3.97	2.00	5.30	5.14	43.56
52	5.18	2.87	4.26	4.75	4.01	2.32	3.57	1.69	2.49	.72	1.31	2.68	35.85
53	4.64	1.11	2.58	2.90	3.86	4.79	7.15	2.37	2.22	.59	1.66	2.26	36.13
54	3.08	1.55	5.11	3.98	1.17	3.04	4.80	3.87	.61	5.64	1.97	2.49	37.31
55	2.26	3.54	6.24	2.40	2.18	3.75	5.26	2.57	2.98	3.11	4.60	.48	39.37
56	1.73	5.40	4.03	3.62	5.62	6.17	5.65	3.66	2.07	1.29	1.43	3.71	44.38
57	2.43	1.58	1.99	6.38	6.38	8.12	3.56	1.94	4.53	1.70	3.35	4.89	46.85
58	2.22	1.13	1.66	4.69	3.39	6.54	6.31	3.85	3.15	.85	2.21	1.04	37.04
59	8.38	3.88	2.49	4.07	4.80	5.96	3.61	2.58	1.58	4.74	3.96	2.99	49.04
60	3.48	3.77	1.64	2.06	6.03	4.01	3.12	4.91	.25	4.12	1.42	1.73	36.54
61	.78	2.51	5.53	6.44	2.69	3.87	6.52	3.60	2.79	1.37	3.80	2.93	42.83
62	3.47	2.75	2.78	.94	2.67	3.48	3.16	4.44	8.37	3.03	3.68	1.46	40.23
63	1.06	.87	6.47	3.30	2.32	1.92	4.38	1.54	.77	.00	1.14	.69	24.46
64	2.16	1.15	8.97	8.04	3.48	5.03	4.41	4.66	1.35	.76	1.70	3.32	45.03
65	2.97	3.23	3.60	4.88	2.33	2.66	3.15	5.77	5.02	3.60	2.12	1.12	40.45
66	3.18	2.32	1.85	2.84	2.94	1.41	6.68	5.77	2.74	1.83	5.06	3.22	39.84*
67	1.07	2.55	4.59	3.58	4.71	1.15	4.89	2.32	3.33	3.01	3.65	3.72	38.57
68	3.12	.48	2.95	3.74	9.74	5.13	4.19	3.00	3.76	1.73	4.71	4.36	46.91

* PRECIPITATION RECORDS FOR THE PERIOD 1966-1968 WERE OBTAINED FROM MRS. CARRIE V. HOOVER, 27 LANDRUM AVENUE.

MONTHLY AND SEASONAL SNOWFALL

SEASON	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL
51-52	.0	.0	1.5	11.0	3.0	8.0	2.0	1.0	.0	26.5
52-53	.0	.0	3.0	3.5	8.2	1.5	7.0	5.0	.0	28.2
53-54	.0	.0	5.0	7.0	4.5	1.5	5.0	.0	.0	23.0
54-55	.0	.7	6.1	9.5	14.5	12.3	7.2	.0	.0	50.3
55-56	.0	.0	4.9	3.7	13.2	1.0	11.9	2.3	.0	37.0
56-57	.0	.0	3.6	17.1	15.5	3.2	2.4	2.7	.0	44.5
57-58	.0	.2	.0	7.1	8.1	6.9	7.7	.0	.0	30.0
58-59	.0	.0	8.0	10.8	15.7	1.3	12.2	.0	.0	48.0
59-60	.0	.0	7.3	9.6	4.3	13.5	16.4	2.1	.0	53.2
60-61	.0	.0	2.0	15.8	7.7	15.5	.0	2.9	.0	43.9
61-62	.0	.0	1.2	10.2	6.5	14.5	11.0	.0	.0	43.4
62-63	.0	1.5	.0	13.2	11.0	9.7	4.4	.0	.0	39.8
63-64	.0	.0	2.0	10.7	14.3	10.0	5.0	.0	.0	42.0
64-65	.0	.0	.0	3.0	9.1	8.0	2.5	.0	.0	22.6
65-66	.0	.0	.0	.0	9.0	9.0	3.0	.0	.0	21.0#
66-67	.0	.0	8.0	2.0	3.0	16.0	9.0	.0	.0	38.0
67-68	.0	.0	2.5	8.5	14.5	3.0	6.5	.0	.0	35.0
68-69	.0	.0	1.2	5.0						

SNOWFALL RECORD FROM SEPTEMBER 1965-PRESENT WAS OBTAINED FROM MRS. CARRIE V. HOOVER, 27 LANDRUM AVENUE.

PRECIPITATION WITH PROBABILITY EQUAL OR LESS THAN

	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
JAN	.94	1.25	1.71	2.10	2.49	2.89	3.34	3.86	4.54	5.60	6.59
FEB	.84	1.08	1.43	1.74	2.03	2.33	2.66	3.04	3.54	4.30	5.00
MAR	1.47	1.86	2.43	2.90	3.35	3.82	4.32	4.91	5.66	6.82	7.88
APR	1.58	1.97	2.53	2.99	3.43	3.88	4.37	4.94	5.65	6.75	7.76
MAY	1.55	1.88	2.34	2.72	3.07	3.42	3.81	4.25	4.80	5.64	6.40
JUN	2.04	2.42	2.94	3.37	3.76	4.16	4.58	5.06	5.66	6.56	7.36
JUL	2.29	2.66	3.15	3.54	3.90	4.26	4.64	5.07	5.60	6.39	7.09
AUG	1.31	1.61	2.03	2.37	2.70	3.03	3.39	3.80	4.33	5.13	5.85
SEP	.43	.67	1.07	1.46	1.86	2.30	2.81	3.42	4.25	5.58	6.85
OCT	.07	.17	.41	.70	1.04	1.46	1.97	2.65	3.63	5.32	7.02
NOV	.95	1.20	1.56	1.86	2.14	2.44	2.76	3.13	3.61	4.34	5.01
DEC	.61	.84	1.20	1.52	1.83	2.16	2.53	2.97	3.54	4.45	5.29
ANN	30.40	32.29	34.70	36.50	38.09	39.62	41.19	42.92	44.99	47.99	50.56

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.