

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. 20-33-63

LATITUDE 41° 46' N
 LONGITUDE 81° 00' W
 ELEV. (GROUND) 850 FL.

CLIMATOLOGICAL SUMMARY

STATION: Geneva, Ohio

MEANS AND EXTREMES FOR PERIOD 1944-1965

MONTH	TEMPERATURE (° F)											PRECIPITATION TOTALS (INCHES)											MONTH								
	MEANS			EXTREMES				MEAN DEGREE DAYS **	MEAN NUMBER OF DAYS				SNOW, SLEET					MEAN NUMBER OF DAYS													
	DAILY MAXIMUM	DAILY MINIMUM	MONTHLY	RECORD HIGHEST	YEAR	DAY	RECORD LOWEST		YEAR	DAY	MAX.		MIN.		MEAN	GREATEST MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	MEAN	MAXIMUM MONTHLY		YEAR	GREATEST DAILY	YEAR	DAY	.01 or MORE	.10 or MORE	.50 or MORE	1.00 or MORE
								90° AND ABOVE			32° AND BELOW	32° AND BELOW	0° AND BELOW																		
JAN	34.6	19.5	27.0	72	50	25	-17	63	24	1171.	0	13	28	1	2.73	5.93	50	1.65	59	21	16.2	32.5	57	9.0	60	21	11	7	1.4	.1	JAN
FEB	36.3	19.6	27.9	68	54	15	-12	51	3	1044.	0	9	26	1	2.32	4.94	50	1.71	48	12	10.7	21.0	47	7.5	51	1	10	5	1.0	.3	FEB
MAR	44.1	26.5	35.3	80	45	27	-7	60	11	918.	0	5	23	0	3.07	5.23	51	1.98	64	4	10.3	33.3	47	10.0	47	28	11	8	1.7	.2	MAR
APR	57.4	37.2	47.3	85*	62	27	14*	64	1	534.	0	0	10	0	3.91	6.57	61	2.28	59	28	2.3	20.5	57	7.5	57	8	11	8	2.7	.5	APR
MAY	67.7	47.1	57.4	89	62	18	28	45	2	262.	0	0	0	0	3.88	7.27	46	2.34	46	31	.0	1.5	47	1.0	47	6	11	8	2.5	.8	MAY
JUNE	76.3	56.7	66.5	96	52	25	37	50	18	72.	0	0	0	0	3.66	6.69	48	2.46	61	13	.0	.0	.0	.0	.0	9	7	2.5	.8	JUNE	
JULY	80.0	61.1	70.5	94*	55	27	44	63	9	13.	1	0	0	0	3.14	7.43	59	2.37	50	20	.0	.0	.0	.0	.0	8	5	2.3	.7	JULY	
AUG	78.9	60.4	69.6	96	53	30	42	65	30	20.	1	0	0	0	3.45	8.30	56	2.56	56	4	.0	.0	.0	.0	.0	8	6	2.5	.8	AUG	
SEPT	73.4	54.3	63.8	98	54	5	35	59	17	115.	0	0	0	0	3.11	7.20	45	3.17	60	11	.0	11.0	54	8.0	54	31	7	6	1.7	.7	SEPT
OCT	63.7	44.8	54.2	87*	63	7	28*	65	29	34.3	0	0	1	0	3.16	10.67	54	4.09	54	15	.8	.0	.0	.0	.0	8	6	2.0	.5	OCT	
NOV	49.5	34.0	41.7	82	50	1	0	55	29	69.4*	0	1	13	0	3.73	6.81	50	2.13	63	12	11.0	40.5	50	18.0	56	22	12	9	2.2	.3	NOV
DEC	37.3	23.5	30.4	69	52	9	-4	62	13	1070.	0	10	26	0	2.91	5.59	62	2.10	65	4	21.0	71.0	62	23.0	62	9	12	8	1.3	.1	DEC
YEAR	58.2	40.3	49.3	98	54	5	-17	63	24	6256.	2	38	127	2	39.07	10.67	54	4.09	54	15	72.3	71.0	62	23.0	62	9	118	83	24.	6.	YEAR

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

NARRATIVE CLIMATOLOGICAL SUMMARY

Geneva is located in the northwest portion of Ashtabula County in northeast Ohio. Terrain within Ashtabula County is rolling to hilly; the elevation of the earth's surface above mean sea level varies from about 570 to 1200 feet. Fruit growing is especially important near the shores of Lake Erie which serves as the northern boundary of 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 Ashtabula County is marked by large annual, daily, and day to day ranges in temperature. Such a climate is characteristic of a land mass the size of North America and classified as continental. West to northerly winds blowing off Lake Erie tend to lower daily temperatures in summer and raise temperatures in winter. When winds are from directions other than those mentioned above the presence of the lake has little effect upon temperatures within Ashtabula County. In the Geneva area, winters are reasonably cold and cloudy with an average of 2 days with sub-zero temperatures but 3 of 10 years will pass with no sub-zero temperatures. Summers are moderately warm and humid but temperatures seldom go above 90°F. Weather changes occur every few days from the passing of cold or warm fronts and their associated centers of high and low pressure.

Geneva's normal average annual temperature is about 1 degree below the average for northeast Ohio. In 1 of 10 years, the average annual temperature will be equal to or greater than 51.0°F and in a like number of years the average annual temperature will be equal to or less than 47.6°F. On nights with clear skies and light winds there is often a large variation in observed surface temperatures within Ashtabula 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 April 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 87°F in 9 of 10 years, 91°F in 5 of 10 years, and 95°F in 1 of 10 years. Lowest temperature during the year is equal or less than 4°F in 9 of 10 years, -2°F in 5 of 10 years, and -10°F in 1 of 10 years.

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.

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

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 25	MAR 8	MAR 18	APR 4	APR 18	APR 30
70	MAR 8	MAR 17	MAR 27	APR 11	APR 25	MAY 7
50	MAR 15	MAR 24	APR 2	APR 16	APR 30	MAY 13
30	MAR 23	MAR 30	APR 8	APR 21	MAY 6	MAY 18
10	APR 2	APR 6	APR 17	APR 28	MAY 13	MAY 25

PERCENT CHANCE OF EARLIER DATE IN FALL						
	NOV 19	NOV 14	NOV 6	OCT 31	OCT 16	SEPT 26
30	NOV 27	NOV 22	NOV 14	NOV 6	OCT 24	OCT 6
50	DEC 3	NOV 27	NOV 20	NOV 11	OCT 30	OCT 13
70	DEC 9	DEC 3	NOV 25	NOV 15	NOV 4	OCT 19
90	DEC 17	DEC 11	DEC 3	NOV 22	NOV 12	OCT 29

182 days at Geneva. The growing season is longer than 199 days in 10% of the years and shorter than 164 days in 10% of the years. Similar information for other locations within Ashtabula County may differ significantly from the Geneva data due to distance from Lake Erie and variations in topography within the county.

As is characteristic of continental climates, precipitation in the Geneva 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 2.2, 2.8, 3.2, 3.7, 4.1, and 4.5 inches in 24 hours can be expected to occur at least once every 2, 5, 10, 25, 50, and 100 years respectively. Throughout much of Ohio, most precipitation during the winter comes in the form of rain. Such is not the case, however, in most of Ashtabula County as this area averages 70 inches or more of snow each year.

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 1929-1967, extended periods of moderate to extreme drought in northeast Ohio as determined from the Palmer Drought Severity Index have occurred during the 1930-1936, 1953, 1954, 1962, and 1963 growing seasons. The longest continuing period of moderate to extreme drought is 32 months (July 1930-February 1933).

Relative humidity, the ratio between the amount of moisture in the air and the amount of moisture 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 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.

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 Ashtabula County. During the last decade, Ohio has averaged about 11 tornadoes per year.

July 1968
 Marvin E. Miller
 ESSA Weather Bureau State Climatologist
 Box 15307, Civic Center Station
 Columbus, Ohio 43215
 STATION HISTORY

DATE	LOCATION	ELEVATION	OBSERVER
	(From Post Office)	(Ft. MSL)	
5/1943-8/1965	3.0 miles SW	860	Lester G. Dean
8/1965-Present	4.0 miles SW	850	Employees of Grand River Orchards

AVERAGE TEMPERATURE (°F)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNU
44	31.8	29.1	33.8	43.1	52.9	69.1	71.8	72.3	64.5	52.2	42.9	28.5	50.0
45	31.1	28.6	32.9	42.8	52.3	68.4	68.2	62.4	51.7	41.9	28.9	28.6	48.6
46	31.7	29.3	33.5	43.5	53.2	69.2	70.0	68.7	62.6	52.3	37.8	30.0	48.1
47	31.2	28.8	33.0	43.0	52.7	68.7	68.4	62.6	52.3	41.9	28.9	28.6	48.6
48	19.9	25.9	38.8	50.2	52.6	65.1	70.5	69.0	64.7	48.9	45.2	32.9	48.6
49	33.5	33.2	35.9	44.8	58.8	70.7	73.5	70.4	60.4	56.8	39.8	34.4	50.9
50	30.9	27.5	29.7	40.8	56.8	65.5	67.4	67.7	60.4	55.0	36.9	24.4	47.4
51	28.7	28.7	35.3	45.2	57.9	65.6	68.8	67.7	62.6	56.3	35.9	31.6	48.7
52	31.0	30.4	34.9	48.9	55.7	70.7	76.0	69.4	63.8	50.2	44.4	34.3	50.8
53	32.8	35.7	38.3	45.3	58.3	68.6	71.7	71.4	65.1	55.4	45.1	34.2	51.7
54	27.4	34.3	34.1	52.3	54.8	69.3	69.3	65.8	55.8	41.9	31.6	50.6	
55	27.0	28.9	31.5	54.7	60.5	69.6	73.9	73.3	65.2	54.8	38.9	21.9	50.8
56	26.6	29.3	33.4	44.7	55.1	68.7	68.3	60.2	54.8	42.3	34.3	49.3	
57	27.7	32.2	38.8	50.2	57.3	68.6	70.1	68.1	64.2	51.1	42.3	35.5	50.1
58	27.5	33.9	38.9	49.1	56.6	62.6	71.2	68.9	64.3	53.6	44.1	29.1	48.1
59	23.4	28.5	34.4	48.7	62.2	68.0	71.7	74.4	67.6	52.6	37.6	34.0	50.3
60	23.9	28.1	21.8	49.0	55.8	64.1	68.4	70.6	64.6	52.1	43.5	28.8	47.6
61	21.6	30.0	38.5	42.3	53.8	65.0	70.3	70.0	68.7	55.5	41.6	25.8	48.9
62	23.3	24.4	32.6	47.8	63.4	67.0	69.2	69.1	60.7	54.4	41.6	26.5	48.3
63	18.9	18.8	37.4	48.6	54.9	67.1	70.9	67.2	60.1	60.5	44.4	24.0	47.7
64	29.0	25.5	36.5	48.1	61.0	66.0	72.2	66.5	63.3	50.7	45.5	31.8	49.7
65	25.9	26.4	29.9	43.5	62.1	64.8	66.9	67.5	65.8	51.7	39.8	32.9	48.1
66	22.8	25.0	36.8	43.6	52.9	67.8	72.9	67.6	59.7	51.8	43.0	31.3	47.9
67	23.1	22.1	31.8	47.9	51.4	68.2	66.9	59.9	52.5	36.7	32.4	32.4	47.9
68	31.2	22.4	37.2	50.9	53.4	70.0	68.2	66.9	59.9	52.5	36.7	32.4	47.9

MONTHLY AND SEASONAL SNOWFALL

SEASON	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL
44-45	.0	.0	6.0	21.5	22.0	8.0	5.0	.0	.0	62.5
45-46	.0	.0	3.2	25.0	17.0	12.5	1.5	.0	.0	59.2
46-47	.0	.0	.5	17.2	16.5	21.0	33.3	.0	1.5	90.0
47-48	.0	.0	16.0	9.0	18.0	5.5	3.0	.0	.0	51.5
48-49	.0	.0	.0	.0	6.0	1.0	2.5	.0	.0	17.0
49-50	.0	.0	12.5	13.5	6.9	13.4	17.0	4.5	.0	67.8
50-51	.0	.0	46.5	20.1	30.5	14.5	16.0	.0	.0	124.6
51-52	.0	.0	17.0	21.0	13.0	7.5	4.5	2.0	.0	64.6
52-53	.0	.0	1.0	11.5	14.5	5.0	4.0	.0	.0	36.0
53-54	.0	.0	18.1	32.6	25.5	7.5	17.8	.0	.0	99.5
54-55	.0	11.0	5.0	24.5	13.0	12.2	6.0	.0	.0	71.7
55-56	.0	.0	15.0	20.7	14.0	8.5	12.5	4.5	.0	75.2
56-57	.0	.0	32.5	11.5	32.5	7.5	20.5	.0	.0	113.0
57-58	.0	2.5	8.0	9.0	19.5	17.2	7.0	1.0	.0	64.2
58-59	.0	.0	48.0	17.0	9.0	5.0	20.5	.0	.0	99.5
59-60	.0	.0	19.0	9.0	15.0	15.5	19.7	5.7	.0	83.9
60-61	.0	.0	5.6	3.2	10.8	2.5	1.3	2.5	.0	48.1
61-62	.0	.0	1.0	71.0	14.5	18.5	10.0	2.0	.0	125.5
62-63	.0	.0	6.0	71.0	14.5	18.5	10.0	2.0	.0	125.5
63-64	.0	.0	5.5	36.8	12.0	12.6	3.5	.0	.0	70.4
64-65	.0	.0	13.5	10.0	24.8	10.0	16.0	2.0	.0	76.3
65-66	.0	.0	10.0	15.5	34.2	9.0	18.5	4.0	.0	92.2
66-67	.0	.0	10.0	38.8	15.0	19.6	13.4	0.5	.0	97.3
67-68	.0	.0	47.0	9.5	21.5	17.5	7.0	.0	.0	102.5

TOTAL PRECIPITATION (INCHES)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNU
44	1.44	2.16	2.59	4.33	3.86	4.39	1.46	2.48	2.66	3.04	4.03	2.37	33.12
45	1.17	1.54	4.23	3.20	7.97	4.06	1.25	1.83	.91	3.64	2.83	2.89	42.75
46	1.80	2.17	4.07	6.73	5.67	4.04	2.22	2.98	2.11	7.70	3.31	3.76	52.90
48	4.86	2.80	4.79	3.21	4.60	6.69	2.11	3.27	1.72	3.89	3.18	2.26	39.38
49	2.99	1.99	2.22	3.29	4.31	3.25	3.28	4.38	2.74	.74	4.75	36.40	
50	5.93	4.94	4.62	4.80	2.47	2.92	4.40	6.20	2.34	6.81	2.41	2.81	50.30
51	3.67	2.91	5.23	3.77	2.67	3.33	2.34	2.02	3.72	2.05	4.82	4.91	41.44
52	5.04	2.46	2.50	3.63	4.87	2.59	2.09	5.57	2.53	.50	2.96	3.18	37.92
53	2.98	.67	2.43	2.99	6.87	2.42	3.00	2.04	3.21	.93	4.19	3.77	35.30
54	2.97	2.73	4.59	6.41	1.85	2.76	2.20	2.57	10.67	2.60	2.76	44.47	
55	1.82	2.15	3.93	3.91	2.33	2.40	1.96	3.08	3.40	3.82	4.82	1.56	42.36
56	1.51	3.52	4.16	4.70	5.35	4.21	4.02	8.30	1.98	3.50	2.46	3.09	34.11
57	2.58	1.89	1.95	3.64	3.77	5.39	4.91	7.88	4.92	4.42	4.25	1.98	43.17
58	2.89	.80	.91	3.04	2.74	5.39	4.51	7.88	4.92	4.42	4.25	1.98	43.17
59	4.39	3.06	2.38	5.50	4.35	2.38	7.43	1.89	3.88	5.94	4.86	3.13	49.09
60	2.82	2.67	1.48	1.66	5.71	2.27	3.53	4.88	4.08	1.60	3.31	1.64	35.45
61	.86	3.27	2.94	6.57	1.70	6.62	6.30	4.92	2.80	3.90	2.88	2.39	44.45
62	2.86	1.95	1.36	2.03	1.13	3.96	3.42	3.06	4.88	3.20	2.99	5.59	36.43
63	1.27	1.21	2.71	2.82	1.65	2.08	1.95	1.77	.99	1.04	5.39	3.16	26.05
64	1.59	1.69	4.75	5.07	3.61	2.31	2.40	3.48	3.17	2.63	1.91	2.98	35.59
65	4.95	3.27	2.28	2.04	3.45	3.99	2.63	3.39	1.60	3.52	3.69	2.62	37.43
66	3.55	1.91	1.71	3.43	3.12	1.98	1.07	4.42	4.42	2.19	1.34	4.86	41.88
67	3.56	2.12	1.71	4.73	3.62	5.93	3.27	3.11	3.11	2.91	6.66	2.68	41.55
68	3.56	.76	1.06	2.91	4.16	3.21	3.27	3.27	3.11	2.91	6.66	2.68	41.55

PRECIPITATION WITH PROBABILITY EQUAL OR LESS THAN:

	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
JAN	.81	1.07	1.46	1.80	2.12	2.46	2.84	3.23	3.55	4.74	5.57
FEB	.96	1.15	1.46	1.70	1.94	2.16	2.44	2.73	3.11	3.66	4.21
MAR	1.23	1.51	1.91	2.24	2.55	2.87	3.22	3.61	4.12	4.88	5.58
APR	1.71	2.06	2.55	2.95	3.32	3.65	4.10	4.56	5.15	6.03	6.83
MAY	1.45	1.81	2.33	2.75	3.18	3.60	4.05	4.58	5.26	6.30	7.25
JUN	1.65	1.98	2.43	2.79	3.13	3.47	3.84	4.26	4.79	5.58	6.30
JUL	1.26	1.55	1.95	2.29	2.61	2.94	3.29	3.64	4.11	4.77	5.70
AUG	1.14	1.47	1.85	2.15	2.45	2.75	3.05	3.35	3.79	4.30	5.13
SEP	1.08	1.38	1.70	2.01	2.31	2.61	2.91	3.21	3.60	4.16	5.00
OCT	1.08	1.38	1.70	2.01	2.31	2.61	2.91	3.21	3.60	4.16	5.00
NOV	1.08	1.38	1.70	2.01	2.31	2.61	2.91	3.21	3.60	4.16	5.00
DEC	1.08	1.38	1.70	2.01	2.31	2.61	2.91	3.21	3.60	4.16	5.00

ANN 30-22 32.01 34.25 35.94 37.43 38.05 40.31 41.92 43.85 46.62 49.01

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.