

CLIMATOLOGICAL SUMMARY

STATION: Painesville, Ohio

LATITUDE 41° 45' N.
 LONGITUDE 81° 16' W.
 ELEV. (GROUND) 600 Ft.

MEANS AND EXTREMES FOR PERIOD 1950-1965

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	0° AND BELOW	MEAN	GREATEST MONTHLY	YEAR		GREATEST DAILY	YEAR	DAY	MEAN	MAXIMUM MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	.01 or MORE	.10 or MORE
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
	35.3	21.2	28.2	70	50	25	-15	63	24	1135	2.95	6.56	50	1.40	59	21	12.4	31.5	57	10.0	64	13	13	7	1.6	.3	JAN									
	36.6	21.5	29.0	69	57	25	-9	63	25	1013	2.41	4.94	50	2.03	50	13	10.4	21.2	64	7.0	51	1	11	6	1.1	.3	FEB									
	42.3	27.4	34.8	80	63	29	3	60	9	930	2.90	5.50	50	1.90	50	12	10.2	22.2	54	14.6	54	1	12	7	1.6	.3	MAR									
	55.9	38.0	46.9	87	57	25	19	34	3	543	3.47	6.49	54	2.44	57	4	1.5	14.0	57	6.0	57	7	13	8	2.0	.4	APR									
	67.3	48.2	57.7	92	56	22	25	63	24	255	2.80	6.43	53	2.24	53	22	.0	1.0	63	6.0	53	1	11	6	1.0	.3	MAY									
	76.7	57.4	67.0	96	53	20	39	58	7	60	2.97	7.17	57	2.26	57	22	.0	1.0	57	6.0	57	1	9	6	2.0	.6	JUNE									
	80.5	61.6	71.0	95	56	1	43	63	15	7	3.30	6.65	58	2.20	50	19	.0	10.0	54	9.0	54	31	9	5	1.8	.7	JULY									
	79.2	60.8	70.0	96	51	31	47	50	22	13	3.15	7.53	56	2.25	56	15	.0	10.0	54	9.0	54	31	9	5	2.1	.7	AUG									
	74.2	55.2	64.7	95*	59	9	34	27	23	97	2.71	5.61	58	1.70	62	20	.0	10.0	54	9.0	54	31	9	5	2.1	.7	SEPT									
	64.1	45.8	54.9	91	51	4	25	65	25	322	3.17	11.33	54	3.50	54	15	.7	10.0	54	9.0	54	31	9	5	1.8	.7	OCT									
	50.9	35.9	43.4	81*	61	3	7	58	29	647	3.46	7.05	50	2.16	63	13	6.9	39.5	50	21.0	50	24	12	7	2.1	.6	NOV									
	38.7	25.7	32.2	68	56	6	-4	60	24	1013	2.38	4.06	53	1.25	57	7	14.7	36.2	62	10.0	58	6	13	7	1.0	.1	DEC									
YEAR	58.4	41.5	49.5	96*	53	20	-15	63	24	6035	3	36	117	1	25.68	11.33	54	3.50	54	15	55.8	39.5	50	21.0	50	24	129	75	22	6	YEAR					

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

NARRATIVE CLIMATOLOGICAL SUMMARY

Painesville is located near the center of Lake County in northeast Ohio. Terrain along the Lake Erie shoreline within Lake County is relatively flat. The elevation of the earth's surface above mean sea level is about 575 feet along the shoreline but 4 to 7 miles from the Lake the topography becomes rolling to hilly with elevations of up to 1245 feet. Fruit growing is an important activity at the lower elevations near Lake Erie.

The climate of Lake County is marked by large annual, daily, and day to day ranges in temperatures. West to northerly winds blowing off Lake Erie tend to lower daily high 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 the rolling to hilly portions of Lake County. Summers are moderately warm and humid in this part of Ohio but temperatures rarely climb higher than 90° F. Winters are reasonably cold and cloudy but the relatively warm waters of Lake Erie temper the air temperatures of on shore winds. Because of this tempering effect subzero temperatures occur in only 3 of 5 winters. Weather changes occur every few days from the passing of cold or warm fronts and their associated centers of high and low pressures.

As is characteristic of continental climates, precipitation varies widely from year to year, however, it is normally abundant and well distributed throughout the year with winter being the driest season. Painesville's average annual precipitation of 35.68 inches is slightly more than 1 inch below the mean for northeast Ohio. Showers and thundershowers account for most of the rainfall during the growing season. Thunderstorms occur on about 35 days each year. Most of these occur April through August. Over the level terrain of Lake County, most precipitation during the winter months comes from rain but this is not the case 4 to 7 miles southeast of the Lake as this area is a part of Ohio's "snow belt". Average annual snowfall within Lake County varies from about 55 inches along the Lake Erie shoreline to more than 90 inches along the Geauga-Lake County line. As is typical of all of Ohio, seasonal snowfall in Lake County is subject to wide variations from the annual means.

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 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 1950-February 1953).

Painesville's normal average annual temperature is near the average for northeast Ohio. In 8 of 10 years the average annual temperature will be within the 48.7° F to 51.3° F range. On nights with clear skies and light winds there is often a large variation in observed surface temperatures within Lake County. This is especially true

in the rolling to hilly portion of the county. 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 90° F in 9 of 10 years, 92° F in 5 of 10 years, and 95° F in 1 of 10 years. Lowest temperature during the year is equal to or less than 6° F in 9 of 10 years, -1° F in 5 of 10 years, and -8° 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.

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 but less than 30% in December and January. Fog that reduces visibility to less than 1/4 mile is most frequent during the cold half of the year. Damaging winds of 35 to 85 mph occur most often during spring and summer. Such storms are usually associated with migrating thunderstorms. Even though Ohio averages about 10 tornadoes per year, no tornadoes have ever been reported within Lake County.

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 193 days at Painesville. The growing season is longer than 212 days in 10% of the years and shorter than 174 days in 10% of the years. The average length of the growing season decreases southeastward from Lake Erie being about 170 days at the Lake Geauga County line.

October 1969

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

STATION HISTORY

DATE	LOCATION	ELEVATION	OBSERVER
1/1950-Present	(From Post Office) 3.5 miles	(Ft. MSL) 600	Employees of City pumping station presently under direction of B. L. Carpenter

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 15	MAR 3	MAR 15	MAR 23	APR 6	APR 15		
70	FEB 25	MAR 13	MAR 26	APR 3	APR 17	APR 27		
50	MAR 4	MAR 20	MAR 31	APR 10	APR 24	MAY 4		
30	MAR 11	MAR 27	APR 5	APR 17	MAY 1	MAY 11		
10	MAR 21	APR 6	APR 13	APR 28	MAY 12	MAY 22		
PERCENT CHANCE OF EARLIER DATE IN FALL								
10		NOV 18	NOV 15	NOV 1	OCT 23	SEPT 29		
30		NOV 26	NOV 21	NOV 8	OCT 30	OCT 7		
50		DEC 2	NOV 25	NOV 14	NOV 4	OCT 13		
70		DEC 8	NOV 29	NOV 17	NOV 6	OCT 19		
90		DEC 16	DEC 6	NOV 27	NOV 15	OCT 27		

TOTAL PRECIPITATION (INCHES)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
50	6.56	4.54	5.50	4.43	1.52	2.78	6.09	1.98	4.59	2.09	7.05	2.03	49.36
51	3.61	3.03	2.14	2.43	2.75	2.22	2.02	4.03	3.51	5.50	3.32	2.97	33.21
52	2.16	2.76	2.38	2.89	6.43	2.69	2.51	2.29	3.41	1.50	4.10	4.06	33.27
53	3.67	3.35	4.14	6.49	1.52	2.18	2.27	1.81	2.21	11.3	1.73	1.73	43.06
54	2.41	3.22	3.88	2.72	1.93	2.85	1.54	4.38	1.30	6.18	3.77	1.26	35.54
55	1.71	3.03	4.59	3.60	5.83	2.25	4.68	9.53	3.22	3.29	2.86	2.29	43.00
56	2.37	2.42	1.22	5.10	4.39	7.17	1.96	2.83	6.31	2.60	4.32	1.56	39.68
57	1.64	1.97	6.02	2.77	2.87	3.81	6.65	4.23	1.89	6.00	3.90	2.22	37.14
58	1.65	2.90	2.76	4.12	2.11	.98	3.76	1.43	1.89	6.00	3.90	2.22	37.14
59	5.05	2.90	2.76	4.12	2.11	.98	3.76	1.43	1.89	6.00	3.90	2.22	37.14
60	2.16	1.47	1.44	2.97	3.66	3.60	3.27	1.75	1.01	1.19	3.42	.79	26.73
61	.20	3.52	2.17	4.29	1.30	3.97	5.59	4.24	2.93	2.29	2.72	2.60	36.51
62	3.06	1.56	1.38	2.52	1.75	1.87	1.08	2.18	.82	1.32	5.05	2.11	24.58
63	1.78	1.71	4.32	4.43	2.88	1.45	3.27	2.87	1.43	2.57	1.06	3.06	32.48
64	1.43	1.71	4.32	4.43	2.88	1.45	3.27	2.87	1.43	2.57	1.06	3.06	32.48
65	4.44	2.27	2.33	1.57	3.07	3.52	2.29	2.63	1.45	4.44	2.45	1.59	30.45
66	1.64	1.81	1.50	3.44	2.01	2.20	1.76	3.79	2.58	3.20	5.47	4.15	30.41
67	3.15	1.74	2.84	3.88	4.29	3.39	2.82	2.20	2.82	2.46	3.14	4.41	37.80
68	24.9	37.9	51.0	55.4	68.2	71.6	72.3	67.6	57.2	45.3	31.4	50.6	
69	26.9	27.3	33.9	48.6									

AVERAGE TEMPERATURE (° F)

YR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
50	35.4	29.6	31.3	41.5	56.3	66.7	69.1	69.2	62.6	56.2	39.1	27.4	48.7
51	30.3	29.2	27.3	45.0	57.7	68.2	70.3	68.5	62.9	57.3	37.4	32.2	49.6
52	32.3	30.5	33.0	46.9	54.3	66.7	74.7	63.5	49.3	44.8	35.2	30.5	50.5
53	34.0	33.9	37.3	43.5	57.8	68.4	70.9	70.7	64.3	54.7	45.7	36.3	51.7
54	28.7	33.0	34.4	50.5	58.5	66.9	69.7	68.6	59.7	53.6	42.6	33.4	50.6
55	27.1	29.5	36.6	53.0	59.4	68.1	75.5	74.0	64.9	56.9	40.2	29.3	50.8
56	27.0	29.8	33.1	40.5	55.4	66.0	70.1	70.2	60.4	56.2	43.7	38.1	49.6
57	24.3	31.5	36.6	48.3	56.1	68.6	64.7	68.4	63.4	51.2	43.3	36.7	49.8
58	28.3	22.4	32.9	47.1	55.3	62.1	70.8	74.4	64.5	59.0	44.7	24.7	48.0
59	25.0	29.3	35.4	49.2	51.6	66.9	71.9	73.9	68.9	54.6	41.1	36.6	51.4
60	31.0	29.2	26.4	50.8	58.4	57.3	70.0	71.4	67.7	54.0	46.5	27.5	50.0
61	23.5	30.7	38.9	42.2	53.7	65.0	71.1	71.2	68.8	57.9	45.3	32.6	50.1
62	25.7	26.2	33.6	47.4	64.5	67.5	68.4	70.4	62.9	56.5	42.5	27.6	49.5
63	21.0	21.3	37.8	48.2	58.8	68.0	70.8	67.4	61.4	60.6	46.3	30.3	46.7
64	31.4	27.3	38.2	49.5	61.9	67.6	73.8	69.6	64.9	51.6	48.3	34.0	51.4
65	27.5	29.1	31.3	43.5	62.2	66.5	69.0	69.1	68.0	53.0	44.4	37.7	50.1
66	25.2	27.3	38.1	44.8	53.8	68.8	72.8	69.4	62.3	52.0	44.1	32.6	49.3
67	32.8	24.1	33.7	47.9	51.3	70.2	69.8	68.6	61.3	56.3	39.1	36.5	49.3
68	24.9	24.9	37.9	51.0	55.4	68.2	71.6	72.3	67.6	57.2	45.3	31.4	50.6
69	26.9	27.3	33.9	48.6									

MONTHLY AND SEASONAL SNOWFALL

SEASON	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL
50-51	.0	.0	39.5	13.6	19.2	14.8	12.0	.0	.0	99.1
51-52	.0	.0	8.0	19.6	9.4	8.0	6.0	3.3	.0	54.3
52-53	.0	.0	1.7	10.4	7.8	5.8	7.4	2.5	.0	35.6
53-54	.0	.0	4.7	20.7	19.4	10.3	22.2	.0	.0	77.3
54-55	.0	10.0	1.0	8.1	10.6	8.1	10.7	.0	.0	48.5
55-56	.0	.0	15.0	10.0	8.4	6.1	18.9	2.3	.0	50.7
56-57	.0	.0	3.0	12.0	35.0	16.0	3.0	14.0	.0	92.8
57-58	.0	2.0	15.0	12.0	15.0	16.0	20.4	.0	.0	31.0
58-59	.0	.0	7.5	26.5	12.3	11.0	20.4	.0	.0	67.8
59-60	.0	.0	8.0	7.0	2.0	11.1	11.5	.0	.0	39.6
60-61	.0	.0	4.0	15.5	4.0	9.0	2.5	.0	.0	35.0
61-62	.0	.0	.0	7.2	5.0	17.6	8.5	.0	.0	30.3
62-63	.0	.0	.0	38.2	25.1	19.4	11.2	.0	1.0	94.9
63-64	.0	.0	.0	5.7	28.7	19.0	21.2	.0	.0	77.6
64-65	.0	.0	.0	.0	12.3	15.0	8.0	17.7	.0	55.0
65-66	.0	.0	.0	3.0	1.0	12.5	9.2	7.4	0.8	33.9
66-67	.0	.0	.0	14.0	17.6	21.0	7.5	4.1	.0	66.2
67-68	.0	.0	.0	2.7	2.5	10.0	6.0	3.5	.0	24.0
68-69	.0	.0	.0	2.7	7.3	10.0	2.5	.0	.0	22.5

PRECIPITATION WITH PROBABILITY EQUAL OR LESS THAN												
	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95	
JAN	.71	.99	1.42	1.80	2.19	2.59	3.04	3.56	4.28	5.33	6.43	
FEB	.90	1.42	1.82	2.26	2.75	3.31	3.93	4.69	5.64	6.93	8.42	
MAR	1.32	1.66	2.32	2.50	2.86	3.33	3.93	4.69	5.64	6.93	8.42	
APR	1.94	2.23	3.11	3.25	3.61	4.09	4.79	5.67	6.73	8.11	9.81	
MAY	2.66	3.03	4.11	4.25	4.61	5.19	5.93	6.93	8.11	9.81	12.01	
JUN	3.42	3.89	5.11	5.25	5.61	6.19	7.03	8.11	9.31	10.81	13.01	
JUL	4.20	4.67	6.03	6.17	6.53	7.17	8.03	9.11	10.31	11.81	14.01	
AUG	5.00	5.47	6.93	7.07	7.43	8.07	8.93	10.03	11.23	12.73	15.01	
SEP	5.80	6.27	7.83	7.97	8.33	8.97	9.83	10.93	12.13	13.63	16.01	
OCT	6.60	7.07	8.73	8.87	9.23	9.87	10.73	11.83	13.03	14.53	17.01	
NOV	7.40	7.87	9.63	9.77	10.13	10.77	11.63	12.73	13.93	15.43	18.01	
DEC	8.20	8.67	10.53	10.67	11.03	11.67	12.53	13.63	14.83	16.33	19.01	
ANN	26.34	28.19	30.34	32.31	33.88	35.39	36.95	38.66	40.73	43.72	46.30	

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