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U. S. DEPARTMENT OF COMMERCE, ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
IN COOPERATION WITH KENTUCKY AGRICULTURAL EXPERIMENT STATION
CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 15

LATITUDE 37° 19' N
LONGITUDE 87° 29' W
ELEV. (GROUND) 439 Ft.

CLIMATOLOGICAL SUMMARY

STATION MADISONVILLE, KENTUCKY

MEANS AND EXTREMES FOR PERIOD 1931-1960

Month	Temperature (°F) Means: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	** Mean degree days	Precipitation Totals (Inches): Mean	Greatest daily	Year	Snow, Sleet: Mean	Maximum monthly	Year	Greatest daily	Year	Mean number of days: Precip. .10 inch or more	Temperatures: Max. 90° and above	Max. 32° and below	Min. 32° and below	Min. 0° and below	Month
(a)	#	#	#	28		28		#	#	30		27	27		27		30	28	28	28	28	
Jan.	47.0	28.3	37.7	80	1943	-15	1942	846	5.01	4.93	1937	2.2	9.8	1940	6.0	1943	7	0	3	20	1	Jan.
Feb.	50.1	29.5	39.8	79	1954	-23	1951	706	3.82	2.95	1949	2.7	8.2	1948	7.0	1939	7	0	2	17	*	Feb.
Mar.	58.4	36.3	47.4	85	1945	- 5	1960	565	4.88	5.10	1935	1.7	20.5	1960	8.5	1960	8	0	1	13	*	Mar.
Apr.	70.4	46.5	58.5	93	1941	23	1954+	216	4.11	3.20	1935	0.1	2.0	1951	2.0	1951	7	*	0	3	0	Apr.
May	79.3	54.9	67.1	101	1941	31	1944	63	4.11	3.08	1937	0	0		0		7	3	0	*	0	May
June	87.8	63.8	75.8	105	1952+	41	1956	0	3.91	9.10	1935	0	0		0		7	13	0	0	0	June
July	90.8	67.1	79.0	108	1936	44	1947	0	4.14	5.10	1933	0	0		0		7	19	0	0	0	July
Aug.	89.9	65.6	77.8	106	1943	42	1946	0	3.62	3.78	1931	0	0		0		6	17	0	0	0	Aug.
Sept.	84.2	57.9	71.1	105	1954	28	1942	41	2.83	2.59	1954	0	0		0		5	9	0	*	0	Sept.
Oct.	73.8	46.7	60.3	95	1941	20	1952	193	2.51	2.59	1947	T	T	1954	T	1954	5	1	0	2	0	Oct.
Nov.	58.6	36.2	47.4	84	1952	- 2	1950	528	3.90	3.70	1957	0.5	4.0	1950+	4.0	1936	6	0	*	13	*	Nov.
Dec.	48.4	29.8	39.1	77	1951	- 4	1945	803	3.60	2.80	1932	1.0	6.0	1935	4.5	1935	6	0	2	19	*	Dec.
Year	69.9	46.9	58.4	108	July 1936	-23	Feb. 1951	3961	46.44	9.10	June 1935	8.2	20.5	March 1960	8.5	March 1960	78	62	8	87	1	Year

(a) Average length of record, years.

T Trace, an amount too small to measure.

** Base 65°F

+ Also on earlier dates, months, or years.

* Less than one half.

Normals, based on 1931-60 data.

CLIMATE OF MADISONVILLE, KENTUCKY

Madisonville, the county seat, is located near the center of Hopkins county in western Kentucky about equidistant from the Indiana border to the north and the Tennessee border to the south. The terrain is rolling with some open field and some wooded land, and is in the western part of the Western Coal Field Region about midway between the Green and Tradewater rivers. This summary is representative of Madisonville and the general area.

The climate is temperate with moderately cold winters and warm humid summers. Temperature, rainfall and humidity remain within limits agreeable to man and suitable for varied plant and animal life. All seasons are marked by weather changes that come from passing weather fronts and associated centers of high and low pressure. This activity is least in the late spring and summer months, somewhat greater in the fall, and greatest in the winter and early spring. Temperatures depart least from the average during the period of minimum activity and vary from the average most during the period of greatest activity.

Precipitation is fairly well distributed throughout the year, with no wet season and no dry season. The months of September and October have the least rainfall. Annual free-water evaporation, i.e., from shallow lakes and farm ponds, averages about 36 inches, about 10 inches less than the average annual precipitation. About 75% of this evaporation occurs during the 6-month period May-October.

Periods of dry and wet weather (below or above average precipitation) do occur, as shown by the table of monthly precipitation for past years. Of the mid-seasonal months, January in 1 out of 10 years has less than 25% of average and in 1 out of 5 years less than 39% of average. April, July and October in 1 out of 10 years have less than 32 to 49% of average, and in 1 out of 5 years less than 46 to 61% of average. In 1 out of 10 years January has an amount greater than 1.9 times the average amount; the other mid-seasonal months having amounts greater than 1.7 to 1.8 times the average amounts.

A statistical study of heavy precipitation in just a few hours in this area indicates the probability of occurrence of totals at least as great as those listed below:

Frequency in 100 years	Inches in 1 hour	6 hours	12 hours
1	3.0	4.8	5.8
4	2.5	4.0	4.7
20	1.9	3.0	3.7
100	1.3	2.2	2.5

Snowfall is quite variable from year to year. Some winters have little. The greatest annual total recorded for the period of this summary was 28.5 inches, in 1960; the least recorded, a trace, in 1956. Thunderstorms occur on an average of about 52 days each year. They are most frequent in the spring and summer months but can occur in any month. They cause most of the short-duration high-intensity type of rainfall indicated in the preceding table.

Wind, sunshine and relative humidity records are not available, but estimates of these elements are possible from data from nearby locations. Winds blow most frequently from the south to the southwest. Average wind speed from July through October ranges from about 6 to 7 miles per hour; from November through June, it ranges from about 8 to 10 miles per hour. Percentage of possible sunshine for the mid-season months averages about 42% for January, 61% for April, 75% for July, and 66% in October. Relative humidity rises and falls in a manner opposite to that of temperature during a typical day, with the highest humidity usually occurring with the minimum temperature and the lowest humidity usually with the highest temperature of the day. Humidity readings in the mid-season months at 7 a.m. and 1 p.m. average about: January 80%, 68%; April 75%, 53%; July 79%, 52%; October 83%, 51%.

Heating degree-days in the foregoing table provide a basis for computing heating requirements, fuel consumption being proportional to degree-day totals. Degree-days for any one day are obtained by subtracting the mean temperature for that day from 65 degrees.

The growing season (defined as the number of days between the last spring and the first fall temperature of 32°) averages about 186 days. The season has averaged 207 days or more in 10% of the years, 197 days or more in 25% of the years, less than 175 days in 25% of the years, and less than 165 days in 10% of the years.

This area has a favorable and moderate climate, with many of the days of the year being nearly ideal in temperature. The fall season has many mild, sunny days and is considered one of the better times of the year for outdoor activities.

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(Summary prepared April 1967)

Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931	38.6	43.2	42.5	57.4	64.4	78.0	81.4	76.8	76.9	63.8	56.8	47.4	60.6
1932	44.4	49.0	43.2	59.4	67.6	77.1	81.2	78.8	70.2	58.2	44.2	38.2	59.3
1933	45.6	35.6M	47.5	57.8	70.8	78.2	79.1	76.5	76.6	58.9	47.6	46.3	60.0
1934	41.4	33.8	45.6	58.6	69.5	79.8	83.4	79.1	69.7	61.6	52.4	38.0	59.4
1935	39.6	42.9	57.3	56.8	65.9	72.1	81.1	79.6	70.0	61.7	48.2	31.8	58.9
1936	31.9	33.3	53.5	55.4	70.9	77.9	85.0	83.7	76.8	60.0	44.5	42.0	59.6
1937	42.8	39.8	44.6	58.2	68.1	76.6	77.0	80.0	69.6	57.1	44.8	36.8	58.0
1938	37.4	48.7	57.4	61.5	67.8	73.6	78.8	79.8	72.2	61.6	50.3	39.5	60.7
1939	42.6	40.0	51.9	56.6	68.6	77.2	80.0	77.2	76.5	63.3	45.2	40.8	60.0
1940	21.2	37.6	46.6	56.8	64.2	75.8	78.2	77.7	68.0	62.6	46.6	44.2	56.6
1941	38.7	34.6	43.4	62.3	70.8	77.2	80.8	79.8	74.9	66.2	48.0	43.4	60.0
1942	33.5	35.6	48.5	60.0	67.0	76.2	81.3	77.0	70.0	59.6	51.0	36.8	58.0
1943	38.4	41.8	43.2	57.0	68.7	78.8	79.4	80.0	66.5	57.0	44.8	35.4	57.6
1944	38.3	43.0	46.1	56.4	70.5	78.9	78.2	78.0	70.0	58.3	48.4	33.0	58.3
1945	32.4	38.2	56.6	60.1	62.6	72.2	75.2	76.5	73.2	57.3	49.6	32.3	57.2
1946	37.6	42.1	57.6	61.4	64.0	75.2	76.9	72.4	69.7	60.8	51.6	43.6	59.4
1947	40.1	30.7	39.4	59.4	63.6	73.8	73.1	81.6	71.2	65.6	45.2	38.3	56.8
1948	27.4	38.8	50.5	61.5	64.8	74.7	78.1	75.2	69.8	-	-	41.1	-
1949	43.4	42.1	44.9	54.8M	67.3	75.9	80.4	75.7	64.5	61.6	45.7	40.2	58.0
1950	44.0	39.0	42.6	51.7M	65.6M	73.3	74.4	72.9	68.0	63.5	42.0	31.2	55.7
1951	37.6	38.3	45.9	54.5	66.5	73.8	77.8	77.1	68.0	59.8	40.5	39.7	56.6
1952	41.2	43.1	46.5	56.4	66.7	81.3	79.7	77.0	68.4	54.3	48.7	41.1	58.7
1953	42.7	43.5	51.1	55.7	69.6	79.5	78.8	77.3	71.0	60.9	46.9	38.3	59.6
1954	37.6	47.0	47.0	63.5	61.8	77.3	80.4	79.9	74.0	60.8	47.8	38.8	59.7
1955	36.3	39.9	50.1M	63.2	68.5	69.6	81.1	78.9	73.4	59.2	45.8	37.4	58.6
1956	34.3	43.5	49.0	56.6	68.7	74.5	78.8	77.1	68.4	62.9	47.3	46.4	59.0
1957	34.4	44.8	46.6	61.5	67.5	75.4	77.6	75.8	70.0	55.4	47.4	44.3	58.4
1958	33.9	28.7	41.8	57.8	66.4	72.6	78.1	75.9	69.9	58.3	50.5	32.9	55.6
1959	33.7	40.0	47.0	59.2	70.1	73.3	76.3	77.7	71.0	59.4	43.5	41.6	57.7
1960	38.1	35.9	32.7	61.2	63.6	73.3M	-	78.7	72.7	60.6	47.2	32.5	-

M One or more days of record missing.

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931	1.48	4.17	3.58	4.09	2.71	3.30	2.29	8.22	2.33	2.70	5.15	5.91	45.93
1932	10.13	4.56	4.89	4.21	.92	4.06	3.33	3.29	4.67	3.59	2.76	6.80	53.21
1933	5.17	6.47	6.56	5.81	5.83	.36	10.16	.96	3.79	2.71	2.24	4.83	54.89
1934	1.33	2.78	4.90	2.95	3.62	4.76	5.43	4.34	4.99	.33	3.43	3.12	41.98
1935	6.01	1.61	14.06	6.93	6.51	15.73	3.49	3.62	1.31	1.71	3.59	1.85	66.42
1936	1.33	1.81	6.03	6.35	2.02	.29	1.47	1.71	4.55	3.53	3.55	5.19	37.83
1937	22.97	2.61	1.05	4.92	5.84	4.19	3.45	1.17	2.90	6.50	1.85	2.63	60.08
1938	3.43	2.35	6.49	2.51	5.29	3.02	8.24	3.65	3.77	1.02	3.83	1.63	45.23
1939	8.09	8.79	5.51	7.80	2.87	4.49	2.20	2.89	1.02	2.59	1.57	2.53	50.35
1940	2.60	3.79	3.93	4.57	3.71	1.96	.98	4.27	1.08	.62	4.56	4.70	36.77
1941	2.91	.78	.69	1.78	1.28	2.44	7.73	4.58	T	4.73	2.46	2.04	31.42
1942	3.13	3.52	5.20	4.94	3.64	3.15	2.09	2.21	2.55	3.19	4.75	2.93	41.30
1943	.92	1.59	7.75	3.84	6.78	4.55	1.98	1.96	3.61	1.64	1.72	2.90	39.24
1944	1.08	4.79	4.15	4.74	3.50	.65	2.15	3.89	2.89	.46	3.49	3.40	35.19
1945	3.60	6.60	8.73	5.02	3.71	8.47	1.44	2.17	4.36	1.28	5.83	2.30	53.51
1946	5.20	7.55	4.34	1.63	5.95	1.78	2.99	3.78	2.17	2.58	5.39	4.04	47.40
1947	5.81	.22	3.09	6.45	5.31	3.71	2.61	5.64	2.79	2.91	2.99	2.02	43.55
1948	2.63	3.66	6.55	1.40	2.95	3.30	10.26	1.51	2.56	2.31	10.14	3.18	50.45
1949	8.10	E5.71	6.79	1.84	1.76	6.47	2.97	8.22	1.37	6.66	3.19	5.61	58.69
1950	11.94	5.13	4.03	3.13	6.18	5.02	4.36	6.43	8.54	1.44	4.83	2.27	63.30
1951	7.67	3.76	3.28	2.47	.70	5.57	3.93	3.70	3.92	1.01	7.28	6.40	49.69
1952	6.16	2.25	7.97	2.52	1.57	.79	3.99	1.74	2.28	1.07	2.89	4.39	37.62
1953	4.52	1.34	6.25	4.60	6.20	3.82	3.73	.45	.47	1.12	1.34	3.52	37.36
1954	5.03	2.80	1.49	3.29	3.53	2.18	2.48	4.92	4.30	3.16	.68	4.78	38.64
1955	.95	6.04	5.54	6.16	4.13	3.11	2.22	3.64	2.84	1.99	3.32	1.26	41.20
1956	3.87	8.45	3.03	5.73	5.53	2.76	5.67	2.15	.07	3.44	2.40	3.20	46.30
1957	4.29	3.87	1.99	5.88	8.43	5.60	5.03	.48	1.31	2.68	12.05	6.40	58.01
1958	2.20	1.99	3.73	3.92	5.25	3.33	8.30	2.14	3.66	1.08	3.08	.72	39.40
1959	5.20	2.67	2.21	1.07	4.88	2.85	3.82	14.09	3.04	5.46	2.53	3.60	51.42
1960	2.43	2.93	2.70	2.73	2.58	5.47	5.50	.83	1.65	1.64	4.13	3.70	36.29

E Estimated

STATION HISTORY

This study of local climate is possible because citizens of the area since the year 1889 have generously donated a few minutes each day, seven days a week, reading and recording weather information. The instruments used until May, 1902, were the personal property of Mr. John B. Atkinson. Since that time observations have been made using equipment supplied by the Weather Bureau. The station was first located at Earlington, 0.3 mile west of the Post Office, at the residence of the first observer, Mr. Atkinson, from 7/1/89 to 9/21/11. Mr. B. Southworth served from 9/21/11 to 9/30/48, the station being located at his residence 0.3 mile west of the Post Office. In November 1948 the equipment was relocated several miles north at the site of the Madisonville Municipal Water Plant, 1.3 miles southeast of the Post Office. At the latter location the observers have been: Mr. J. W. McCoy, 12/4/48 to 5/14/52; Mr. Homer Welborn, Jr., 5/15/52 to date. Another station (equipment, recording rain gage) was located at Madisonville from 4/24/43 to 3/1/49 at the residence of the observer, Mr. B. C. Bacon, 0.2 mile northwest of the Post Office. This equipment was moved to the Municipal Water Plant site 3/1/49. All station locations have been at elevations from 420 to 440 feet above mean sea level.

EXTREMES AND DATES OF OCCURRENCE (7/1/1889-12/31/1966)

Month	Highest Temperature		Lowest Temperature		Greatest Daily Precipitation		Greatest Monthly Snowfall	
Jan.	80	1/24/43	-16	1/24/63+	4.93	1/21/37	27.0	1918
Feb.	81	2/28/18	-28	2/13/99	4.03	2/23/09	13.2	1921
Mar.	91	3/24/29	-5	3/6/60	5.10	3/11/35	20.5	1960
Apr.	93	4/12/41+	20	4/2/24	3.60	4/30/11	6.0	1904
May	105	5/28/11	29	5/1/63	3.50	5/7/15	0	-
June	107	6/29/13	40	6/13/03+	9.10	6/21/35	0	-
July	110	7/27/30	44	7/23/47	5.10	7/25/33	0	-
Aug.	111	8/11/18	42	8/31/46	3.78	8/5/31	0	-
Sept.	108	9/6/25	28	9/29/42	4.01	9/12/01	0	-
Oct.	98	10/1/19	20	10/22/52	5.60	10/6/10	4.5	1925
Nov.	85	11/6/15	-2	11/25/50	3.70	11/14/57	4.0	1950+
Dec.	77	12/31/51	-14	12/9/17	3.82	12/8/24	27.2	1917

+ Also on earlier dates, months, or years.

PROBABILITY OF LOW TEMPERATURES IN SPRING AND FALL

Minimum Temp.	Percent of occurrence after the date in spring					Percent of occurrence before the date in fall				
	90%	75%	50%	25%	10%	10%	25%	50%	75%	90%
32	3/30	4/6	4/14	4/22	4/29	10/2	10/9	10/17	10/25	11/1
28	3/9	3/18	3/26	4/3	4/12	10/15	10/22	10/30	11/7	11/14
24	3/1	3/9	3/19	3/29	4/6	10/24	11/1	11/9	11/17	11/25
20	2/20	3/1	3/11	3/21	3/30	11/11	11/19	11/27	12/5	12/13
16	2/5	2/16	2/27	3/10	3/21	11/22	11/29	12/7	12/15	12/22

This table, based on a statistical study for the area for a 30-year period, indicates the dates when low temperatures last occur in the spring and first occur in the fall. The average date is given in the 50% column. In the spring the table shows that for a temperature 32° or lower, there is a 90% chance (9 chances in 10) after March 30; a 10% chance (1 chance in 10), after April 29. In the fall, there is a 10% chance (1 chance in 10) of a freeze 32° or lower before October 2; a 90% chance (9 chances out of 10), before November 1.

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