

U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
 IN COOPERATION WITH MUNCIE CHAMBER OF COMMERCE
 CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 12

STATION MUNCIE, INDIANA

LATITUDE 40° 08' N.
 LONGITUDE 85 21 W.
 ELEV. (GROUND) 950 Ft.

CLIMATOLOGICAL SUMMARY

MEANS AND EXTREMES FOR PERIOD 1926-1955 (Temperature 1939-55)

Month	Temperature (°F)								** Mean degree days	Precipitation Totals (Inches)							Mean number of days						Month	
	Means				Extremes					Mean	Greatest daily	Year	Snow, Sleet				Precip. .10 inch or more	Temperatures						
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest	Year	Mean					Maximum monthly	Year	Greatest daily	Year		90° and above	32° and below	32° and below	0° and below	Max.		Min.
(a)	17	17	17	17	17	17	17	17	30	30	1937	30	30	1927	30	1927	30	17	17	17	17	Jan.		
Jan.	38.0	21.1	29.6	73	1944	-15	1940	1100	2.95	3.07	1937	5.1	15.9	1927	9.0	1927	6	0	10	26	3	Jan.		
Feb.	40.8	22.2	31.5	71	1954	-19	1951	940	2.17	2.38	1950	4.3	10.7	1939	5.5	1952+	5	0	6	23	2	Feb.		
Mar.	50.6	30.7	40.7	82	1939	-9	1943	750	3.48	2.35	1927	3.4	12.7	1942	8.0	1942	7	0	2	19	*	Mar.		
Apr.	62.3	40.2	51.3	88	1942	15	1940	410	3.61	2.32	1939	0.7	5.0	1931	5.0	1931	8	0	*	7	0	Apr.		
May	73.7	49.5	61.6	95	1941	27	1947+	170	4.16	2.79	1936	T	T	1954+	T	1954+	8	1	0	1	0	May		
June	83.5	59.9	71.7	101	1944	36	1945	30	4.36	3.15	1932	0	0	0	0	0	8	7	0	0	0	June		
July	87.4	62.1	74.8	105	1940	44	1945+	0	3.58	2.27	1935	0	0	0	0	0	6	11	0	0	0	July		
Aug.	85.5	60.2	72.9	103	1951	38	1946	0	3.55	3.91	1943	0	0	0	0	0	6	8	0	0	0	Aug.		
Sept.	79.1	52.8	66.0	102	1939	25	1942	90	3.70	4.09	1932	0	0	0	0	0	6	3	0	1	0	Sept.		
Oct.	68.7	43.2	56.0	91	1951	16	1952	300	2.77	2.37	1954	T	T	1954+	T	1954+	5	*	0	5	0	Oct.		
Nov.	50.8	32.2	41.5	80	1950	-3	1950	710	2.88	2.21	1955	2.3	17.1	1950	14.0	1950	6	0	2	16	*	Nov.		
Dec.	39.4	23.1	31.3	68	1951	-17	1951	1040	2.37	1.82	1953	4.4	15.3	1929	5.3	1947+	5	0	8	25	1	Dec.		
Year	66.3	41.4	53.9	105	1940	-17	1951	5540	39.58	4.09	1932	20.2	17.1	1950	14.0	1950	76	30	28	123	6	Year		

(a) Average length of record, years.

+ Also on earlier dates, months, or years.

T Trace, an amount too small to measure.

* Less than one half.

** Base 65°F. computed from monthly mean temperatures.

CLIMATE OF MUNCIE, INDIANA

The people of Muncie enjoy an invigorating climate of four well defined seasons of the year because of its location in the middle latitudes and away from the influence of oceans. The zone of conflict between polar air and tropical air moves back and forth across the locality resulting in frequent changes of temperatures and humidity bringing most of the year's rainfall. Muncie is, most of the time, on the warm side of this constantly moving boundary in the summer and on the cold side in the winter. The changing strengths of atmospheric forces above and below the boundary cause the movement of low pressure centers from the West across the plains, up the Ohio River Valley and St. Lawrence River Valley to the Atlantic. Most of Muncie's rainfall comes from these storms. Temperature changes are most frequent and pronounced in the winter as indicated by the larger differences of temperature in the winter months compared with the summer months.

Afternoon thunderstorms are the primary source of summer rainfall which are triggered when moisture and temperature conditions aloft are favorable, usually following a hot, humid day. Night time cooling may have the same reaction but less often resulting in early morning thundershowers. Days with thunderstorms are estimated to average about seven a month in the summer. About one a year occurs during the winter months.

Relative humidity data is not available but estimates are possible. Relative humidity varies on an average summer day from the 40's during a typical summer afternoon to 90 and higher just before dawn. Relative humidity rises and falls much as temperature does during a 24-hour period but the highest percent usually occurs with the minimum temperature and the lowest percent with the maximum temperature. In the winter the most probable range of humidity from afternoon to night is from the 60's to the 90's. Fog is a visible indicator of humidities in the high 90's to 100 percent.

An average day has a greater range of temperature in the summer than in the winter. The table shows that winter days have a daily temperature range of 17 degrees while in the summer the range is 25 degrees. January temperatures have varied 88 degrees compared to a variation of only 65 degrees for the month of August. Winter season temperatures are more varied than those of the summer.

Prevailing winds in the Muncie area are from the southwest during the year except in the winter and early spring when west and northwest directions are predominate. The mid-winter month of January has winds out of the northwest a majority of the time.

Rainfall intensities for the Muncie area, based on the sta-

tistical treatment of rainfall data, indicates that the probability of 1.3 inches of rain in one hour is about once in two years, 2.1 inches in one hour occurs about once in 10 years, and 2.5 inches in one hour about once in 25 years. In a 6-hour period 2.0 inches occurs once in 2 years, 3.4 inches in a 10 year period and 4.1 inches about once in 25 years. In a 24-hour period a 2.8 inch rain occurs about once in 2 years, 4.3 inches once in 10 years and 5 inches once in 25 years.

Precipitation is greatest in June and least in December and February. The most rain comes in late spring and early summer. The winter months are the driest. April, May and June each average 8 days having .10 inch or more of rain. The number of days per month drop to 5 in the late summer and winter. July is the warmest month of the year. An average July has 11 days of temperatures reaching 90 degrees or higher. January is the coldest. The winter season averages 6 days with minimum temperatures below zero.

Snowfall has occurred as early as October and as late as May. The most snow comes in January, however, the greatest snowfall of any one day occurred November 26, 1950 when 14 inches was recorded. The same month broke all records for greatest monthly total when 17.1 inches was recorded. The average for a year is 20.2 inches.

Degree day data is provided as an index of heating requirements for buildings. For example, a month with twice the heating degree days of another month would require twice as much fuel for heating. Fuel consumption for heating is proportional to degree day summations. Degree days for a single day are obtained by subtracting the mean temperature from 65. The need for the heating of buildings is considered none or slight if a day has an average temperature of 65 or higher.

The White River flowing through Muncie occasionally floods low lands near its banks. The river gauge 200 feet down stream from the Walnut street bridge would have read about 19.6 feet according to high water marks on March 25, 1913. This is the highest stage of record. Next highest is 18.07 feet on January 15, 1937, and third highest of record is 10.98 feet on February 14, 1950. The zero of the river gauge near the bottom of the river is 920.10 feet above mean sea level. The height of flood water above mean sea level which is the reference point of most topographic maps may be determined by adding the river gauge reading to 920.10 feet; thus the high water of 1913 came to 939.7 feet above mean sea level.

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Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1939	33.8	32.0	41.6	48.0	64.8	73.6	74.4	72.8	71.6	55.9	39.2	33.8	53.4
1940	14.3	30.2	36.2	47.0	57.2	72.0	76.2	75.4	64.6	57.6	39.4	37.0	50.6
1941	29.2	26.6	33.8	55.4	63.9	70.3	74.5	72.0	69.2	58.0	43.0	36.9	52.8
1942	28.6	26.4	42.4	54.8	62.7	71.4	75.2	71.8	63.8	55.0	44.1	27.0	52.0
1943	28.4	31.5	36.5	47.4	62.0	74.7	74.2	72.8	61.4	53.0	38.7	29.0	50.8
1944	33.6	33.6	37.0	49.6	67.6	75.2	75.4	74.6	66.3	54.2	43.5	25.4	53.0
1945	21.6	31.3	52.4	53.3	56.4	69.0	72.0	71.6	67.4	52.2	43.1	24.2	51.2
1946	30.4	33.9	52.0	52.2	58.7	70.4	-	-	66.4	58.3	46.4	35.8	-
1947	33.6	22.1	33.0	50.6	58.6	68.0	70.4	-	66.8	61.6	38.0	30.9	-
1948	21.2	30.4	-	60.0	70.5	74.4	71.9	71.9	66.9	51.6	46.4	33.8	-
1949	33.7	35.5	42.0	51.4	62.5	73.1	77.7	73.2	60.3	59.0	41.9	33.6	53.9
1950	37.8	30.8	30.8	45.3	63.2	68.7	71.7	70.3	64.6	59.0	36.2	28.5	50.6
1951	30.4	30.1	41.8	50.3	63.1	70.0	73.1	71.2	63.2	57.9	34.7	29.8	51.3
1952	32.4	34.6	42.4	52.1	60.8	75.8	77.7	70.6	63.2	47.8	44.0	34.7	53.0
1953	33.5	35.8	42.6	47.7	64.6	75.1	74.9	73.1	67.2	57.5	43.5	33.3	54.1
1954	31.5	39.2	37.9	57.3	56.9	74.5	75.9	72.7	69.2	55.8	42.0	31.4	53.7
1955	27.2	31.9	42.0	57.7	63.9	66.6	78.1	75.1	67.9	55.4	38.9	28.2	52.8
1956	26.5	32.6	40.0	48.7	63.1	69.6	71.4	73.7	64.9	60.4	42.8	-	-

STATION HISTORY

The first known weather records taken at Nuncie were in the periods of October 1863 through August 1864 and from August 1866 to May 1870. These are filed at the National Archives. An incomplete record exists for the period of February 1, 1887 to February 28, 1895 when rainfall and temperatures at observation three times a day were recorded at the southwest corner of Walnut and Jackson streets. Observers were T. E. Huston, A. L. Michener, Stevens and Durham. From September 1, 1916 through 1917 observations of temperature and precipitation were provided by Harvey M. Anthony from a location opposite the post office. These were resumed October 1, 1920 and continued until November 30, 1921 by Mr. Anthony after returning from the war. Harry W. Hoppes is credited with a long record from December 1, 1921 through June 10, 1938 from an address of 417 University Avenue. The elevation above mean sea level is reported as 949 feet and previous locations were near 960 feet indicating very little change in elevation.

James C. Fidler commenced observations July 1, 1938 at 1620 W. Jackson Street which is two blocks north and seventeen blocks west of the post office. The instruments were moved September 8, 1939 to 4.5 miles southeast of the post office where they have been since that time with Homer D. Fidler taking observations since February 1, 1950. The change in elevation of the instruments from the city location appears insignificant. Temperatures probably average a little lower than at the city location where buildings probably resulted in a warmer exposure for thermometers.

Rainfall is also recorded at the city disposal plant along with river stage readings. After processing and publishing the records are filed at the National Weather Records Center, Asheville, North Carolina. Daily measurements from both of these stations are published monthly in Climatological Data--Indiana and available by subscription from Superintendent of Documents, Government Printing Office, Washington, D. C. Help in the procuring and use of such data may be obtained from the State Climatologist.

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1937	2.37	2.34	6.09	5.33	5.23	2.71	3.70	2.93	2.25	2.38	4.79	2.33	42.55
1938	1.80	2.50	3.40	2.92	2.50	6.95	5.77	2.17	1.46	3.11	2.92	1.85	37.35
1939	4.75	1.20	2.62	4.32	7.21	8.24	4.91	4.35	2.08	3.70	2.82	5.79	52.09
1940	7.16	2.25	2.53	2.92	2.09	4.28	3.16	2.37	3.60	1.61	2.16	0.88	34.91
1941	0.65	1.80	3.04	3.38	2.17	3.04	4.67	7.10	2.61	5.11	3.49	3.33	40.39
1942	5.56	1.91	2.77	1.93	0.98	6.25	1.67	1.56	9.67	3.05	2.35	4.51	42.21
1943	1.56	1.51	4.04	3.54	10.54	0.10	1.98	5.30	8.02	2.07	1.15	2.59	42.20
1944	1.65	0.76	3.23	2.46	0.71	4.06	1.30	3.87	3.48	0.06	1.70	1.87	24.95
1945	2.20	0.50	3.23	2.89	5.40	3.61	7.08	1.42	3.82	1.03	3.16	2.19	35.73
1946	1.57	2.81	2.61	2.42	4.21	1.98	1.07	3.90	3.55	3.96	2.76	2.62	33.46
1947	8.20	2.14	2.36	5.47	4.94	6.38	4.05	6.70	2.27	3.21	2.10	3.14	50.96
1948	0.99	2.88	7.86	3.48	6.86	6.96	3.37	1.35	4.30	0.77	4.11	1.42	44.35
1949	4.32	3.55	3.43	5.73	0.82	5.17	3.97	2.38	0.87	2.77	1.45	1.27	35.73
1950	1.27	1.84	1.08	5.67	3.50	1.45	2.23	1.71	0.78	2.89	2.64	2.08	27.14
1941	1.25	0.37	1.00	1.66	1.84	7.82	4.88	1.23	3.28	5.97	2.49	1.75	33.54
1942	0.80	2.39	3.19	3.80	3.14	4.65	2.35	3.54	3.54	1.05	4.13	1.88	36.35
1943	1.20	1.71	3.78	2.33	0.54	3.27	6.52	6.43	2.86	1.44	1.92	0.75	41.84
1944	0.18	2.46	4.49	3.99	4.81	1.62	1.04	3.43	1.99	0.77	2.45	1.24	30.87
1945	0.54	2.35	7.32	3.99	3.90	6.52	3.63	3.21	7.49	2.71	3.54	2.61	47.81
1946	1.20	2.65	2.85	1.80	5.75	4.72	3.50	2.55	0.52	3.27	3.45	3.00	34.96
1947	4.11	0.40	2.11	6.25	4.70	3.47	5.73	3.62	4.03	2.98	1.52	2.25	41.17
1948	2.23	2.16	-	-	3.63	6.35	3.01	2.62	3.26	2.98	4.49	3.66	-
1949	6.14	2.29	2.16	-	3.57	5.75	3.23	2.44	2.69	3.07	0.64	2.55	-
1950	11.07	5.98	3.44	3.48	2.99	5.94	4.64	3.80	4.78	1.42	6.42	2.22	56.81
1951	2.39	3.27	2.10	2.21	3.24	5.38	2.82	0.96	2.39	1.38	4.61	3.68	34.43
1952	3.93	2.12	4.49	4.24	4.24	2.54	1.38	4.06	6.66	0.79	3.36	2.44	41.25
1953	2.01	1.81	3.92	2.94	6.10	2.76	5.48	2.72	1.39	1.02	1.55	3.60	35.39
1954	2.50	2.66	2.49	2.46	3.56	2.96	2.76	6.36	0.19	10.52	2.00	1.98	40.64
1955	2.59	2.09	4.38	4.31	3.32	3.32	3.45	4.63	5.80	4.24	5.19	0.51	43.83
1956	1.52	3.04	1.93	6.18	5.07	2.31	3.53	2.47	0.66	0.83	2.20	-	-

DATES OF FREEZING TEMPERATURES IN SPRING AND FALL (1938-55)

Minimum Temperature	Last in Spring		First in Fall	
	Earliest	Latest	Earliest	Latest
32 or lower	4/2/51	5/1	9/24/50	10/25/55
28 or lower	3/17/52	4/13	9/28/42	11/9/38
24 or lower	3/5/42	4/2	10/7/52	11/4
20 or lower	2/16/51	3/18	10/18/48	11/28/41
16 or lower	2/10/51	3/9	10/21/52	11/28/53
			10/21/52	12/22/39

Example in using table: The average date of the last temperature of 32 or colder in the spring is May 1. The earliest date of this event in all springs of the 1938-1955 period was April 2 in 1951. The latest date was May 13 in 1946. Thirty-two or colder occurred for the first time in the fall as early as September 24 in 1950 and as late as October 25 in 1955. The average date is October 5. The short period of record will cause the average to fluctuate greatly from year to year until much more data becomes available.

The date of killing frost is a few days later in the spring and earlier in the fall than temperatures of 32 degrees or lower because temperatures on the ground are usually colder than at the standard thermometer location of 5 feet above the ground. This difference in temperature is greatest on nights when the wind is calm and the skies are clear resulting in maximum ground radiation.