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

LATITUDE 41° 31' N.
LONGITUDE 87° 02' W.
ELEV. (GROUND) 801 Ft.

CLIMATOLOGICAL SUMMARY

STATION VALPARAISO, INDIANA

MEANS AND EXTREMES FOR PERIOD 1927-1956

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)	30	30	30	30		30			30	30		30	30		30		30	30	30	30	30	
Jan.	33.8	17.8	25.8	66	1950	-20	1930	1220	2.18	2.42	1949	8.6	28.5	1930	16.5	1931	6	0	13	27	4	Jan.
Feb.	36.5	19.9	28.2	69	1930	-19	1933	1030	2.08	2.13	1954	7.9	18.2	1935	10.0	1933	6	0	9	25	2	Feb.
Mar.	45.3	27.5	36.4	79	1945	-13	1943	890	3.02	2.18	1944	7.6	24.5	1932	13.2	1932	7	0	4	22	*	Mar.
Apr.	58.3	37.6	47.9	89	1942	17	1936	510	3.96	1.94	1933	1.6	6.8	1952	5.8	1952	9	0	*	9	0	Apr.
May	69.7	47.7	58.7	96	1934	27	1947	240	4.12	3.20	1948	0.3	4.4	1929	4.4	1929	8	0	0	1	0	May
June	79.2	57.7	68.5	103	1934	36	1945	60	4.28	4.88	1941	0.0	0.0	-	-	-	7	4	0	0	0	June
July	84.5	62.3	73.4	105	1934	41	1927	0	3.06	2.81	1954	0.0	0.0	-	-	-	6	7	0	0	0	July
Aug.	82.5	60.6	71.6	102	1934	42	1942	10	3.79	5.37	1934	0.0	0.0	-	-	-	6	5	0	0	0	Aug.
Sept.	75.8	53.6	64.7	101	1939	28	1942	100	3.38	2.72	1949	T	1.4	1942	1.4	1942	6	2	0	*	0	Sept.
Oct.	65.0	43.6	53.3	88	1947	20	1930	360	3.55	5.13	1955	0.2	2.6	1937	2.9	1929	6	0	0	3	0	Oct.
Nov.	48.3	31.5	39.9	79	1933	- 6	1950	750	2.96	2.21	1931	4.4	12.9	1937	7.0	1953	7	0	3	16	*	Nov.
Dec.	36.0	21.1	28.6	66	1948	-14	1951	1130	2.23	2.42	1949	9.0	31.3	1929	13.5	1929	6	0	11	30	2	Dec.
Year	59.5	40.1	49.8	105	1934	-20	1930	6300	38.61	5.37	1934	39.6	31.3	1929	16.5	1931	80	18	40	133	8	Year

(a) Average length of record, years.

T Trace, an amount too small to measure.

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

+ Also on earlier dates, months, or years.

* Less than one half.

CLIMATE OF VALPARAISO, INDIANA

Valparaiso temperatures are modified by relatively warm winds from Lake Michigan in the fall and early winter. Unseasonable high temperatures in the spring are tempered by relatively cool winds of the same source. Daily minimum temperatures in the fall are higher or equal to those at locations farther south in northern Indiana. Daily maximum temperatures are likewise affected but to a lesser degree. Hot days are less in number because of the modifying influence of lake winds. Most precipitation comes from storm centers passing eastward through the lakes region. However, part of the snowfall observed at Valparaiso is induced by northwesterly winds from Lake Michigan after storm centers have passed eastward. Differences between air and water temperatures plus moisture from Lake Michigan causes numerous snowflurries in the lee of the Lake.

Large changes in temperature and humidity are the result of cold dry air of the north meeting warm moist air of the south. The two types of air do not mix readily and therefore a boundary line or front is formed. Valparaiso is on the warm side of this seldom stationary front or line in mid-summer and on the north or cold side in mid-winter most of the time. Surges of cold air out of the northwest flow southeastward much as the waves of a lake or ocean crash high on the beach and then recede. Warm air moves in when such a wave recedes.

Thunderstorms accompany most of the summer rainfall and occur when potential energy aloft is triggered by a change in moisture and temperature conditions. This phenomenon is related to hot humid days and night time cooling. Days with thunderstorms average about seven a month in the summer and about two a year occur during the winter months.

Relative humidity data are not available but estimates are possible. Relative humidity varies on a summer day from the 40's during a typical summer afternoon to 90 or 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 near 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 16 degrees while in the summer the range is 22 degrees. Temperatures in January varied 89 degrees; the range in July was 64 degrees.

Winds blow out of the southwest quadrant, however, northerly directions are nearly as frequent in the winter.

The record of a continuous recording raingage has been analyzed for rainfall intensity during the period of 1940-1950. In a rain storm of August 17, 1946 rainfall was 2.26 inches in one hour, 3.26 inches in 2 hours. On June 12, 1946 rainfall was 4.17 inches in 3 hours and 4.23 inches in 6 hours. On June 3, 1941, 4.77 inches fell in 12 hours.

Precipitation is greatest in late spring and early summer. The winter months are the driest. July is the warmest month of the year. An average July has 7 days of temperatures reaching 90 degrees or higher. January is the coldest. The winter season averages 8 days with minimum temperatures below zero.

Snowfall has occurred as early as September and as late as May. The most snow comes in December, however, the greatest snowfall of any one day occurred January 14, 1931 when 16.5 inches were recorded.

Degree day data are provided as an index of heating requirements for dwellings. Fuel consumption for heating is proportional to degree day summations. A month with twice the heating degree days of another month would require twice as much fuel for heating. 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.

Most of the summarization of data in this summary was accomplished by Richard Coote, Observer for the U.S. Weather Bureau at Valparaiso.

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Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1927	23.8	34.0	40.5	48.4	56.9	64.1	65.3	74.0	68.7	58.0	53.7	28.4	51.4
1928	25.1	30.0	36.4	45.0	58.8	63.3	72.4	71.8	60.2	55.8	42.2	31.4	49.4
1929	18.5	20.0	43.5	50.9	56.8	65.6	72.8	69.0	64.0	50.6	35.3	26.0	47.8
1930	19.2	37.2	36.1	49.2	61.4	68.6	73.8	72.9	66.3	52.2	41.3	28.2	50.6
1931	30.0	34.6	34.0	49.2	55.4	71.9	75.8	72.6	70.8	57.8	48.8	37.5	53.2
1932	33.7	34.2	28.6	47.4	60.0	70.4	73.8	71.8	63.2	52.6	36.1	27.8	50.0
1933	35.0	25.6	35.8	47.9	61.3	75.8	75.3	69.9	69.0	51.5	38.0	31.0	51.4
1934	31.0	20.8	31.6	48.8	64.4	72.6	77.0	71.6	64.6	54.7	44.2	25.3	50.6
1935	25.2	29.2	42.8	45.4	52.4	65.1	74.8	71.6	63.4	52.6	38.4	23.8	48.7
1936	18.2	15.2	39.0	44.0	62.4	64.6	76.9	74.5	66.2	52.6	37.2	32.2	48.6
1937	27.6	27.0	33.0	47.6	58.7	66.4	72.8	74.8	63.9	50.4	35.5	25.6	48.6
1938	24.9	33.8	44.2	50.0	58.9	67.1	73.2	73.6	65.2	57.1	43.2	28.7	51.6
1939	30.0	26.4	37.4	44.6	61.8	71.1	72.6	71.6	69.0	55.2	39.8	33.7	51.1
1940	15.2	28.2	31.8	45.2	55.6	69.2	73.8	72.6	63.4	56.8	37.9	32.5	48.6
1941	27.1	24.4	32.0	54.4	62.0	69.6	73.0	70.5	68.0	55.6	42.4	35.8	51.2
1942	25.0	24.6	39.1	52.4	61.0	69.6	73.8	70.4	62.2	53.8	41.6	23.2	49.8
1943	22.4	28.7	33.1	45.0	56.5	71.9	73.5	72.4	60.7	52.4	36.2	27.6	48.4
1944	30.8	29.0	31.6	45.6	63.4	72.0	72.8	73.0	65.4	52.3	42.4	22.5	50.0
1945	18.5	28.4	48.6	48.2	53.2	64.9	70.8	70.8	63.8	51.2	41.8	22.2	48.5
1946	27.0	29.3	47.8	50.3	55.9	67.2	73.6	68.0	64.6	57.8	43.2	33.0	51.5
1947	28.2	20.4	30.6	46.6	53.5	65.7	70.0	79.5	65.7	61.2	34.8	29.0	48.8
1948	17.4	25.8	36.9	52.5	54.1	67.4	74.3	71.9	67.1	50.7	43.9	30.5	49.4
1949	29.0	28.0	35.1	47.2	59.1	71.2	76.3	71.9	58.9	57.0	40.2	30.0	50.3
1950	31.6	25.4	32.0	42.3	59.4	67.4	69.6	68.8	62.8	57.5	35.2	20.0	47.6
1951	25.5	26.9	35.3	45.6	59.3	65.2	69.9	66.7	61.5	55.7	33.5	26.8	47.7
1952	28.0	31.6	35.2	49.7	57.3	72.5	74.6	70.4	63.4	48.6	41.3	31.3	50.3
1953	28.7	32.2	38.5	45.5	60.2	70.8	72.4	70.7	64.2	56.9	42.8	31.8	51.2
1954	27.2	36.9	34.6	53.4	55.5	72.4	72.9	70.5	66.8	53.2	41.6	29.5	51.2
1955	24.4	27.6	37.0	54.9	62.1	65.6	77.0	75.0	64.1	55.5	36.7	25.9	50.5
1956	26.7	28.1	37.6	55.0	60.2	71.7	71.8	71.5	63.7	58.7	40.0	33.4	50.8
1957	18.6	32.4	37.3	48.4	58.9	68.7	73.0	69.9	62.7	50.5			

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1927	2.19	2.21	2.28	7.09	4.73	3.35	5.21	2.79	7.76	2.65	6.08	4.44	50.78
1928	0.92	2.22	1.84	2.65	2.04	3.28	4.57	4.45	2.46	4.19	3.74	2.40	34.76
1929	3.66	0.76	4.97	6.47	4.28	4.65	2.43	3.20	2.31	4.02	2.84	3.60	43.19
1930	3.40	2.02	2.68	3.08	2.27	2.77	2.38	1.34	2.82	2.60	1.80	0.66	27.82
1931	2.68	0.77	3.65	2.52	4.84	4.63	1.19	3.89	3.32	5.40	5.87	1.87	40.63
1932	2.40	1.37	4.26	2.02	1.97	4.79	5.63	5.64	1.60	5.15	2.07	3.30	40.20
1933	2.41	2.08	3.86	6.35	4.90	2.64	2.72	2.93	4.89	4.45	0.94	1.27	39.44
1934	1.00	1.60	2.58	2.22	0.61	1.89	0.42	6.87	5.69	1.65	4.79	2.16	31.48
1935	2.80	4.52	4.28	2.28	8.43	5.41	1.36	3.67	3.42	1.11	4.75	1.76	43.79
1936	1.54	1.78	1.34	2.96	2.02	0.91	0.24	6.31	5.61	4.41	1.67	2.90	31.69
1937	3.05	1.48	1.42	6.09	2.28	4.55	3.66	2.72	2.46	4.83	2.25	1.92	36.77
1938	1.91	3.15	4.45	2.45	7.19	5.65	6.45	2.86	5.26	0.56	1.58	2.01	43.50
1939	2.96	3.73	2.24	4.80	2.64	6.57	4.20	2.02	0.64	3.46	2.07	1.26	36.59
1940	1.71	1.24	2.12	4.32	6.16	4.32	1.80	4.15	0.86	3.27	3.74	2.31	36.02
1941	2.34	1.34	1.86	3.37	3.87	7.86	2.34	1.40	4.16	12.27	4.67	1.68	47.16
1942	2.26	3.62	3.38	2.65	3.14	4.08	3.03	3.00	2.45	1.77	4.37	2.60	36.35
1943	2.48	1.62	4.73	5.07	8.21	3.09	4.58	7.40	2.03	1.96	2.55	0.42	44.14
1944	1.10	1.64	6.74	4.96	3.51	3.00	1.11	2.79	2.23	2.75	2.53	1.67	34.02
1945	0.97	1.44	3.06	4.04	6.89	4.93	4.23	3.18	6.06	1.81	2.50	1.59	40.70
1946	1.88	2.06	2.91	1.84	3.04	9.62	0.48	5.00	2.48	2.51	2.46	3.31	37.59
1947	1.91	0.58	2.80	7.88	4.70	4.58	1.57	2.11	5.19	2.12	2.31	1.56	37.31
1948	1.81	2.38	3.53	2.10	7.02	2.18	1.56	1.19	2.27	0.68	2.71	2.54	29.97
1949	3.22	2.87	3.09	2.30	3.81	2.00	3.10	3.54	4.39	3.03	2.57	5.19	39.11
1950	4.73	3.52	2.81	6.06	1.34	8.27	4.83	1.49	2.47	1.23	2.65	2.07	41.47
1951	1.70	1.52	2.60	3.96	5.92	2.20	4.81	7.35	5.26	4.70	3.67	3.30	46.99
1952	1.41	0.69	3.21	4.46	3.84	5.65	2.16	1.88	0.90	1.13	2.40	1.91	29.64
1953	2.23	1.71	3.42	3.06	4.66	4.55	2.56	2.75	2.38	1.68	1.33	2.28	32.61
1954	1.22	3.95	4.15	5.54	2.18	3.62	5.89	5.85	1.74	11.63	1.34	2.35	49.46
1955	1.44	1.71	2.21	3.34	2.73	2.85	2.43	7.30	2.05	6.80	2.46	0.74	36.06
1956	1.09	2.65	1.30	6.64	5.23	1.73	4.52	2.78	0.72	0.76	1.53	1.71	30.66
1957	2.00	1.28	2.43	7.78	3.73	5.36	4.61	6.90	0.66	5.18			

STATION HISTORY

The first early weather records for Valparaiso begin April 20, 1890 and end April 30, 1906. Observers during this time were J. N. Roe, W. J. Lightcap, M. E. Bogarte, George M. Dodge, and C. W. Skinner. Latitude was given as 42° 28' N., Longitude 87° 10' W. and elevation 732 feet above m.s.l.

Rainfall and temperatures have been recorded since January 15, 1915 at the Water Works except for slight moves to improve the exposure and avoid shade. Such a move was made October 1, 1951. J. F. Bradley began the observations in 1915 and continued until his death for a period of about 36 years. Evaporation measurements were begun by Richard Coote in April, 1947. He has recorded rainfall, temperature, wind and evaporation regularly since that time. The measurement of maximum and minimum temperatures of evaporation pan water commensed in March, 1957. The station is located 3 miles north-northeast of the Valparaiso post office. Flint Lake is 50 feet to the south and 300 feet west of the station. Surrounding terrain is gentle rolling and about 20% wooded. Latitude is 41° 31' N., longitude 87° 2' W. and elevation 801 feet above mean sea level.

EXTREMES AND DATE OF OCCURRENCE FOR PERIOD OF (1891-1906 & 1915-1956)

Month	Record Daily Temperature Highest		Lowest		Precipitation Greatest Daily		Snowfall Greatest Monthly	
Jan.	67	1/22/06	-21	1/12/1918	1.66	1/2/97	28.5	1930
Feb.	69	1/22/22	-21	2/13/1905	1.20	2/13/94	19.0	1896
Mar.	79	3/27/45	-13	3/8/1943	2.05	3/19/98	24.5	1932
Apr.	92	4/29/99	9	4/6/1920	1.87	4/30/20	13.0	1920
May	96	5/31/34	25	5/4/1926	2.40	5/16/23	4.4	1929
June	103	6/1/34	32	6/16/1917	3.51	6/15/20	0	
July	105	7/23/34	40	7/31/1918	2.30	7/29/03	0	
Aug.	102	8/9/34	33	8/1/1895	7.34	8/27/23	0	
Sept.	101	9/14/39	28	9/25/1942	2.42	9/2/23	1.4	1942
Oct.	92	10/1/97	15	10/31/1917	2.00	10/20/98	6.6	1925
Nov.	79	11/1/33	- 6	11/25/1950	1.76	11/1/21	12.9	1937
Dec.	66	12/5/48	-22	12/28/1924	2.25	12/18/95	31.3	1929

TOTAL EVAPORATION (inches) AND WIND (miles)

Year	April Wind	April Evap.	May Wind	May Evap.	June Wind	June Evap.	July Wind	July Evap.	August Wind	August Evap.	September Wind	September Evap.	October Wind	October Evap.	November Wind	November Evap.
1947	-	4.42	-	4.26	1268	5.13	979	5.76	868	6.19	1103	4.06	952	2.77	-	-
1948	2078	4.30	958	4.95	858	4.59	900	5.92	700	5.70	956	4.08	1174	2.24	2407	1.48
1949	1412	3.55	1183	5.61	612	5.07	964	6.21	679	5.56	962	-	1422	2.67	1890	1.49
1950	2392	2.40	1552	5.60	774	6.37	274	5.08	292	4.80	405	2.54	803	2.09	-	-
1951	-	-	1434	5.17	541	4.16	409	4.56	438	4.89	980	3.65	1037	2.41	-	-
1952	1888	3.86	971	4.32	693	6.85	313	5.91	206	5.19	483	4.58	-	-	-	-
1953	2531	3.42	1424	5.24	756	6.69	406	6.60	368	5.98	850	5.08	776	3.34	1664	1.88
1954	2027	4.43	-	-	903	6.77	644	6.42	741	5.55	1062	4.81	1249	2.78	-	-
1955	2014	4.80	1282	5.80	331	5.39	342	6.69	742	7.02	819	4.75	1456	3.47	-	-
1956	2030	3.86	1655	6.05	432	6.82	490	6.07	544	5.15	922	4.90	1092	3.46	1835	-
1957	1791	3.05	1565	5.17	988	5.71	789	6.18	725	5.88	884	3.74	-	-	-	-
Ave.	2018	3.81	1336	5.22	741	5.78	651	5.95	573	5.63	857	4.22	1107	2.80	1949	1.62

Evaporation is the measurement of the decrease in depth of water in a tank 4 feet in diameter and 10 inches deep. Wind data is miles of wind flowing across the top of the tank during the month.

DATES OF FREEZING TEMPERATURES IN SPRING AND FALL (1921-57)

Minimum Temperature	Last in Spring Earliest	Average	Latest	First in Fall Earliest	Average	Latest
32 or lower	4/11/24	4/30*	5/18/25	9/24/28	10/16*	11/5/27
28 or lower	3/22/45	4/15	5/13/38	9/25/42	10/31	11/25/31
24 or lower	3/4/45	3/31	4/23/36	10/18/48	11/7	11/25/31
20 or lower	2/27/45	3/21	4/15/26	10/21/52	11/19	12/7/34
16 or lower	2/14/31	3/12	4/9/57	11/3/51	11/27	1/9/32

Use of the table: The average date of the last temperature of 32 or colder in the spring is April 30. The earliest date of this event in all springs of the 1921-1957 period was April 11 in 1924. The latest date was May 18 in 1925. In the fall, 32 or colder occurred as early as September 24 (1928) and as late as November 5, 1927. The average date is October 16.

* The average date of killing frost is a few days later in the spr and earlier in the fall because temperatures on the ground are usually colder the standard thermometer location of 5 feet above the ground.