NOAA Technical Memorandum ERL GLERL-94

LAKE ERIE WATER TEMPERATURE DATA ERIE, PENNSYLVANIA 1916-1992

Michael J. McCormick

Great Lakes Environmental Research Laboratory
Ann Arbor, Michigan
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DEPARTMENT OF COMMERCE

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ATMOSPHERIC ADMINISTRATION

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LAKE ERIE WATER TEMPERATURE DATA
ERIE, PENNSYLVANIA 1916-1992

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1. INTRODUCTION

Water temperature data from several sites around the Great Lakes were obtained to determine if any regional climatic changes or trends could be detected based upon these data sets. The study was partially supported by the NOAA Office of Global Programs. Site selection was based upon location and reasonable data access.

This technical memorandum contains data for Erie, PA from 1916-1992. Water temperature data are from Erie, Pennsylvania's Chestnut Street plant. The plant superintendent, Mr. John Presogna, facilitated data collation by arranging for some of his staff to enter the data into a computer compatible format.

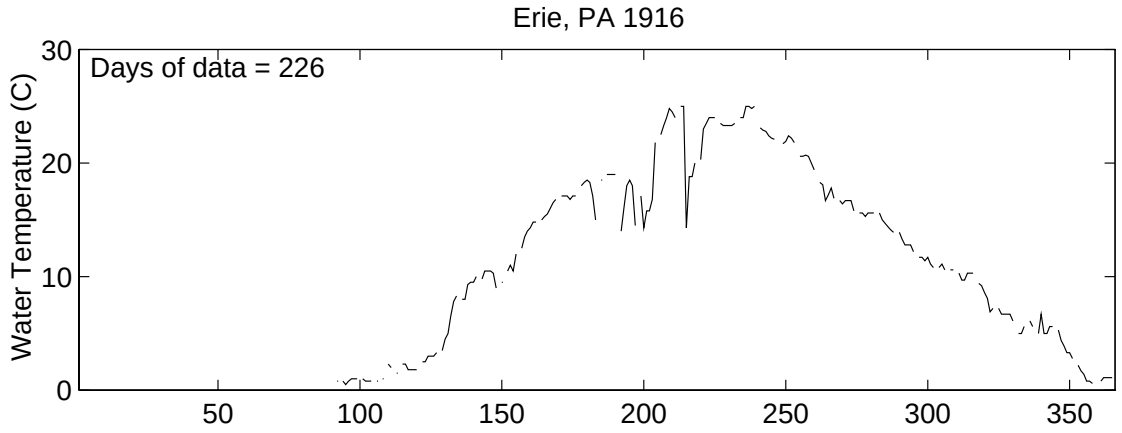
Data are available from 1916 to 1992. However, no data are available for 1956. A 60” pipe extends about 1.25 miles offshore from the Chestnut Street plant; the intake depth is 27-30' below the surface. Originally, the intake pipe was located in the Bay, but a new pipe was built in the early part of this century because of water quality concerns with respect to cholera. In 1908, the pipe was tunneled under the peninsula that forms the bay.

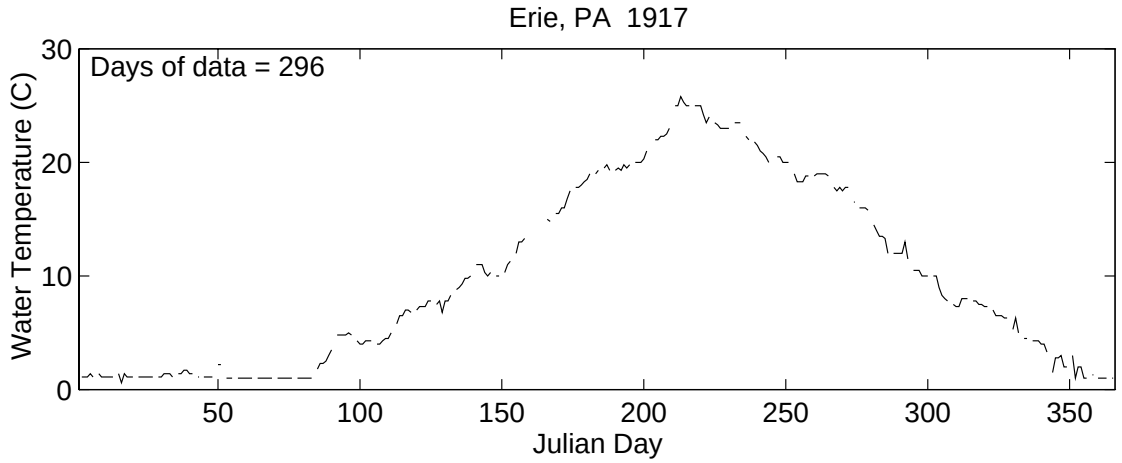
Water temperatures are taken in the plant six times a week (never on Sunday) between 08:00 and 09:00 h. However, this was not the case for 1959-1963 and 1979-1981 when significantly more data were available. The data are plotted and shown in the accompanying figures. Prior to final plotting all data were checked for consistency, and all questionable values were deleted **All missing data are denoted by -999.**

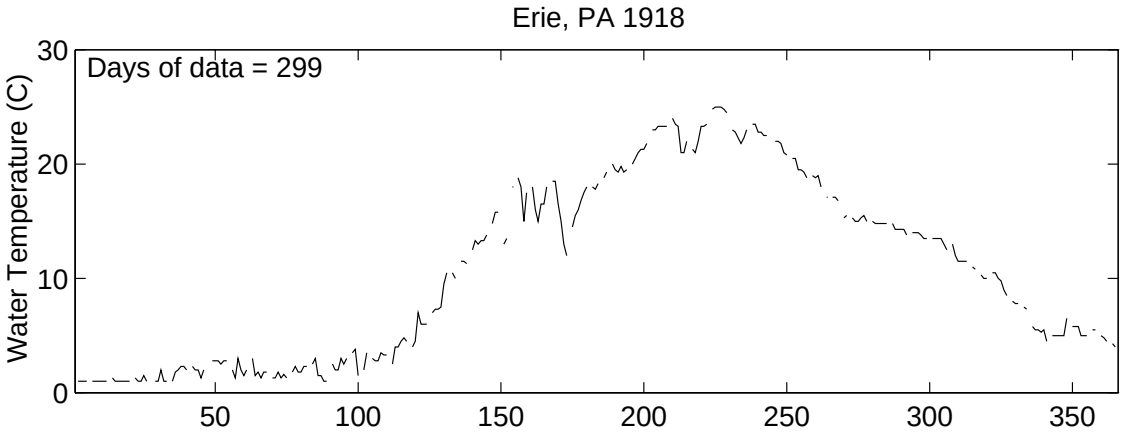
Data files are identified as TM094Dxx.edt where xx identifies the data year. Data are organized into four columns: month, day, year, and temperature. Although the data are reported to the nearest 0.1^{o}C, a more reasonable estimate of their accuracy is 0.5^{o}C given all the uncertainties with the raw data.

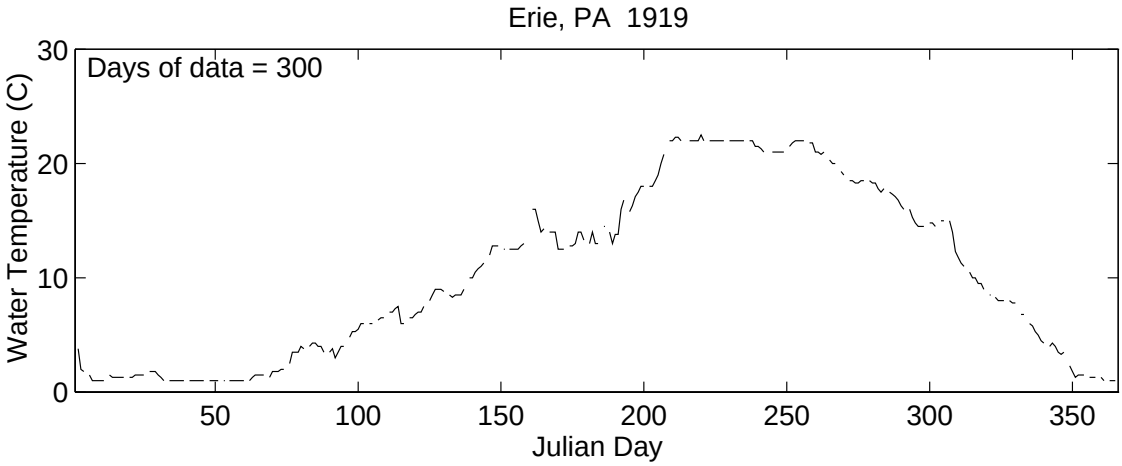
All data are available in a simple ASCII format. The data files are available from GLERL’s WWW site or from the anonymous FTP site. From the GLERL home page (www.glerl.noaa.gov), select FTP server, **or** point your browser to: ftp://ftp.glerl.noaa.gov/publications/tech_reports/glerl-94.

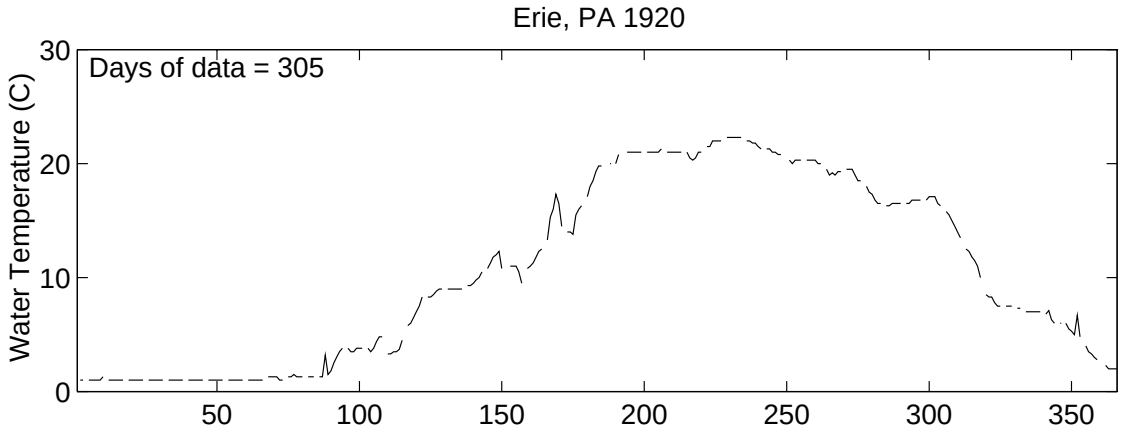
Although great care has been used in checking these data, mistakes may still be present. If errors are found, please contact the author at mccormick@glerl.noaa.gov.

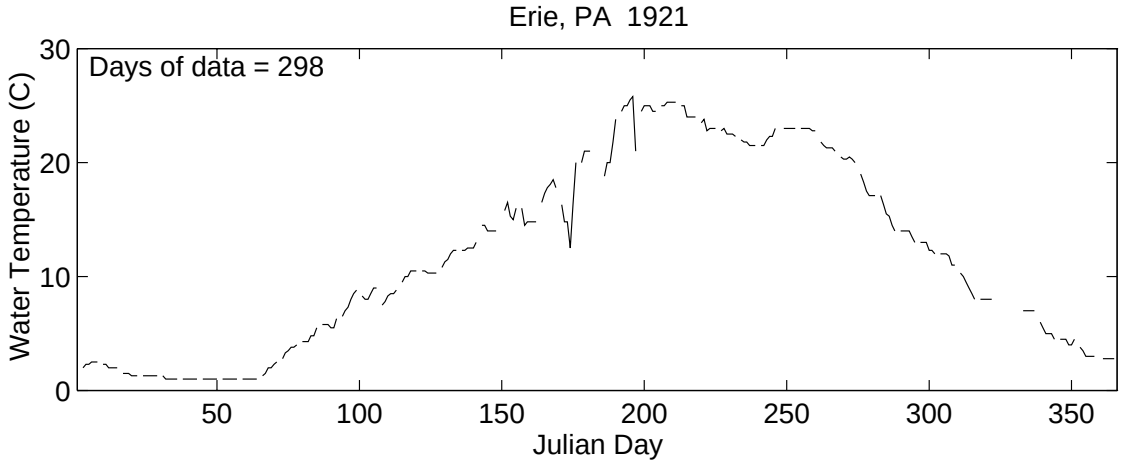

Erie, PA 1916
Days of data = 226
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

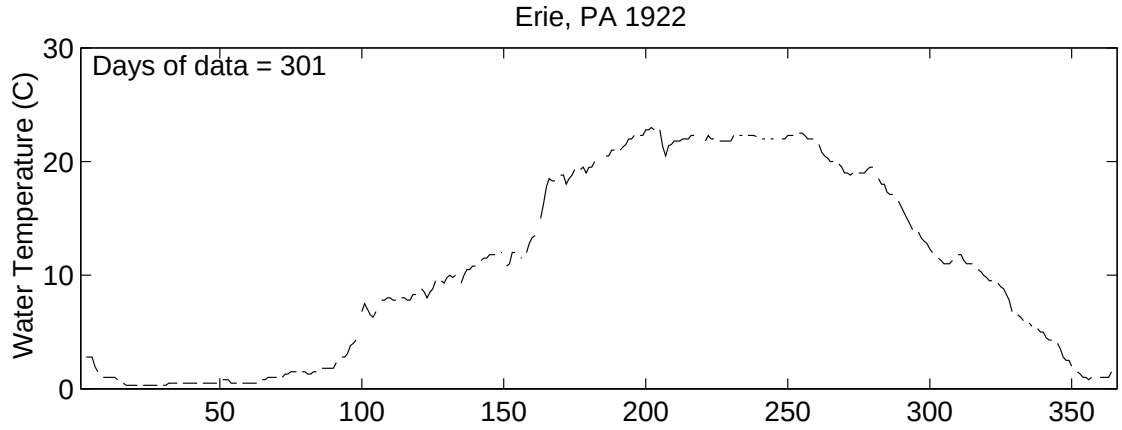

Erie, PA 1917
Days of data = 296
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

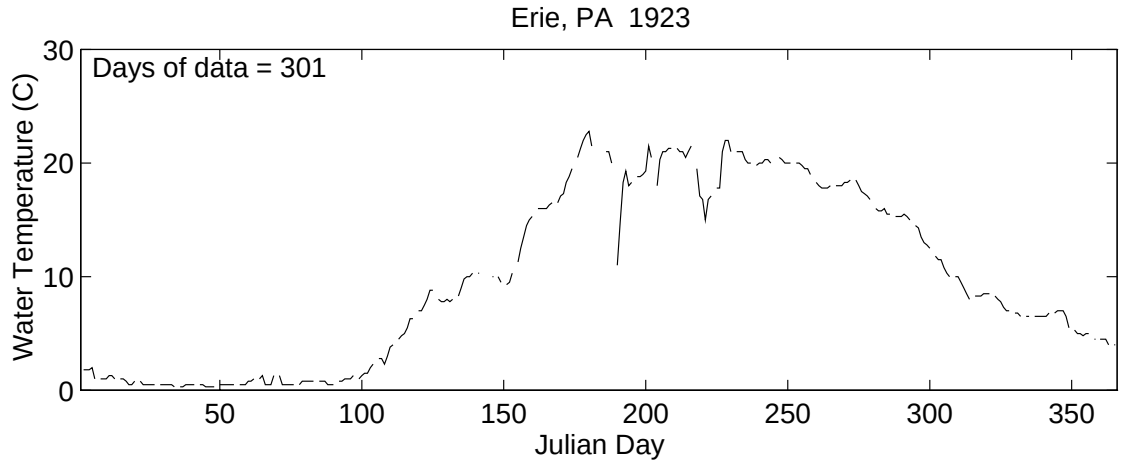

Erie, PA 1918
Days of data = 299
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

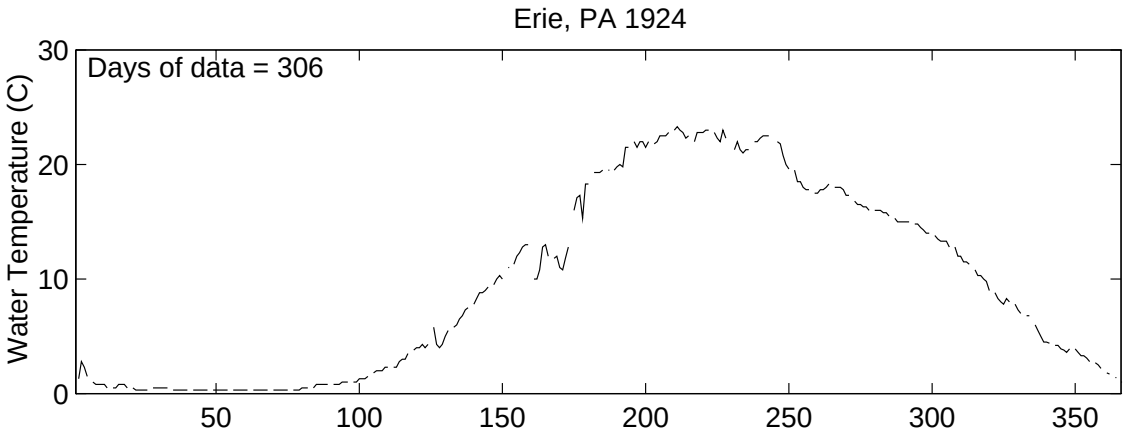

Erie, PA 1919
Days of data = 300
Water Temperature (C)
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10
20
30
50
100
150
200
250
300
350
Julian Day

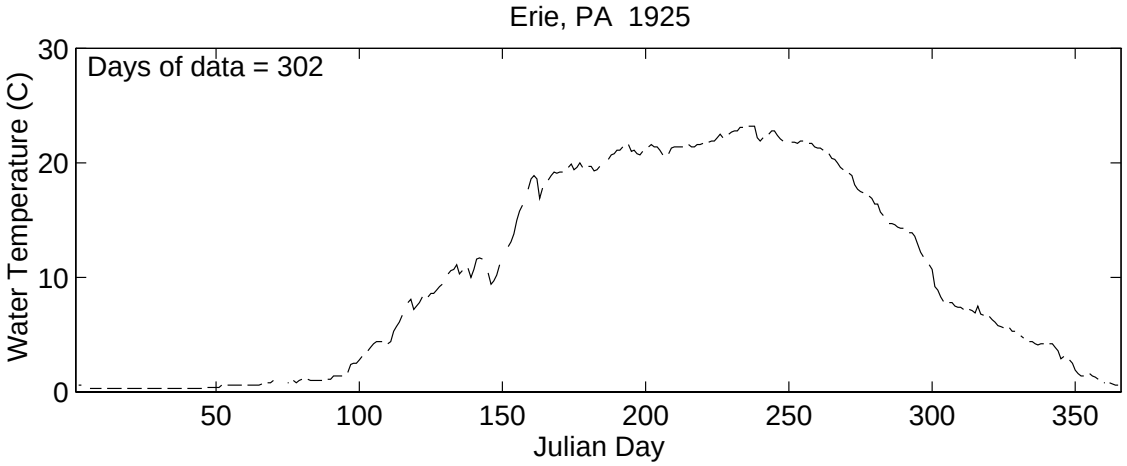

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Water Temperature (C)
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200
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300
350

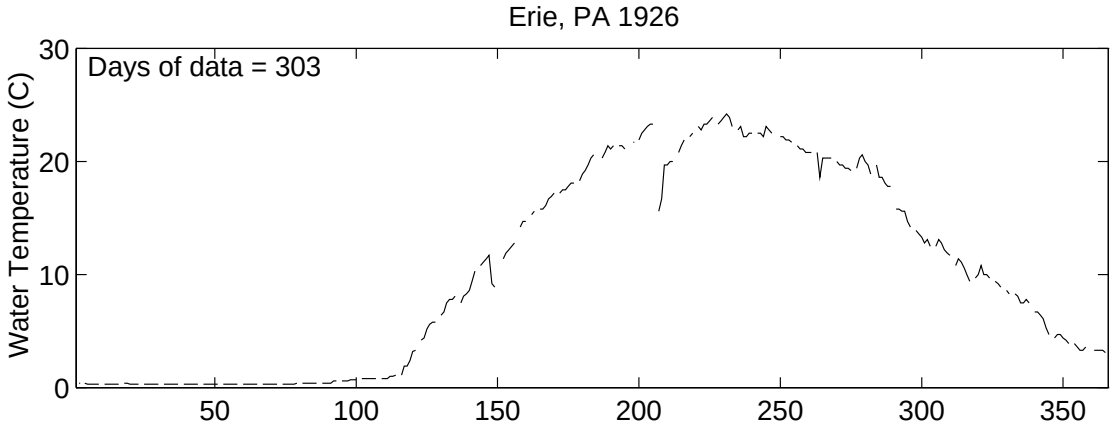

Erie, PA 1921
Days of data = 298
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

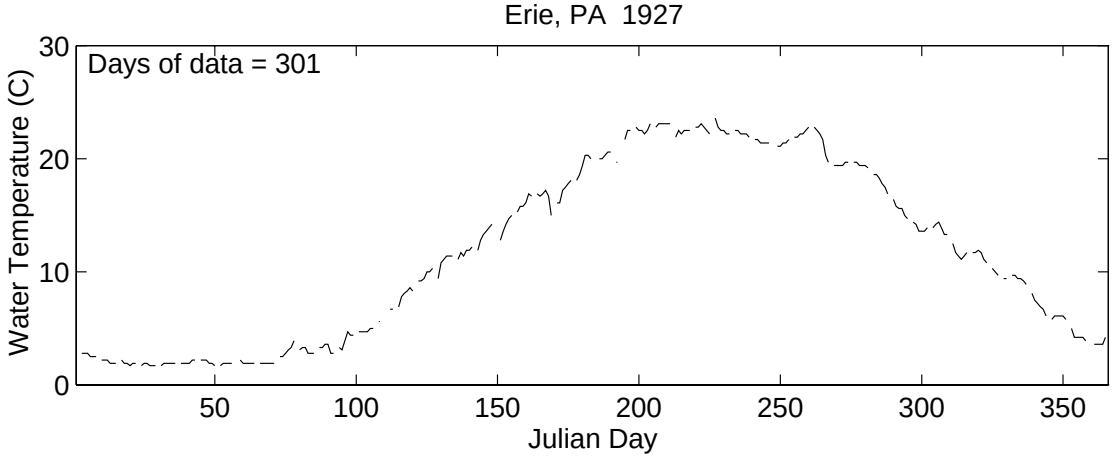

Erie, PA 1922
Days of data = 301
Water Temperature (C)
0
10
20
30
50
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150
200
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300
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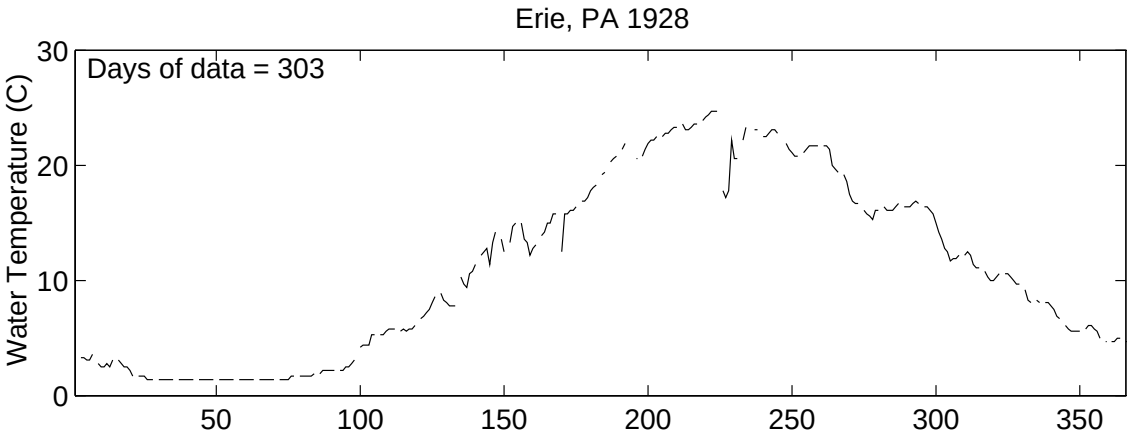

Erie, PA 1923
Days of data = 301
Water Temperature (C)
0
10
20
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100
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200
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300
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Julian Day

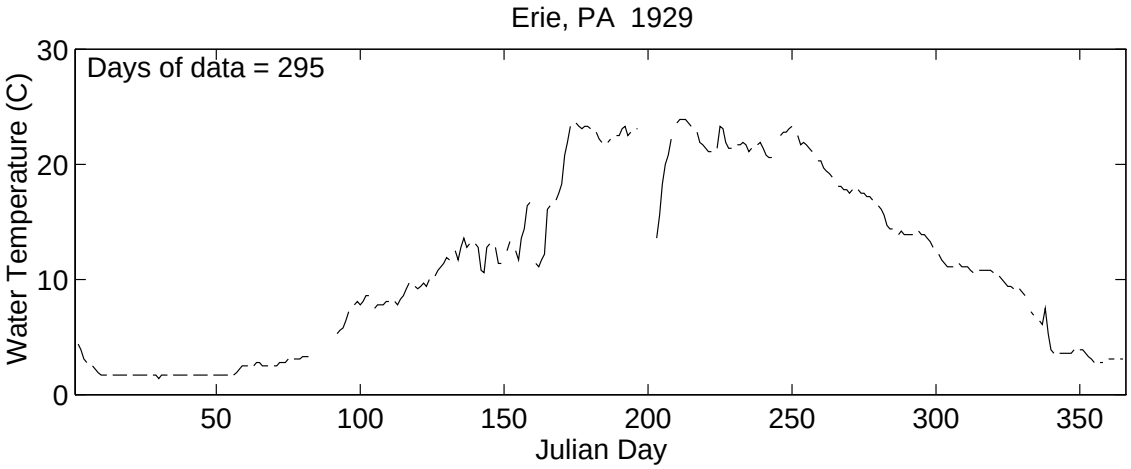

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Days of data = 306
Water Temperature (C)
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30
50
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200
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300
350

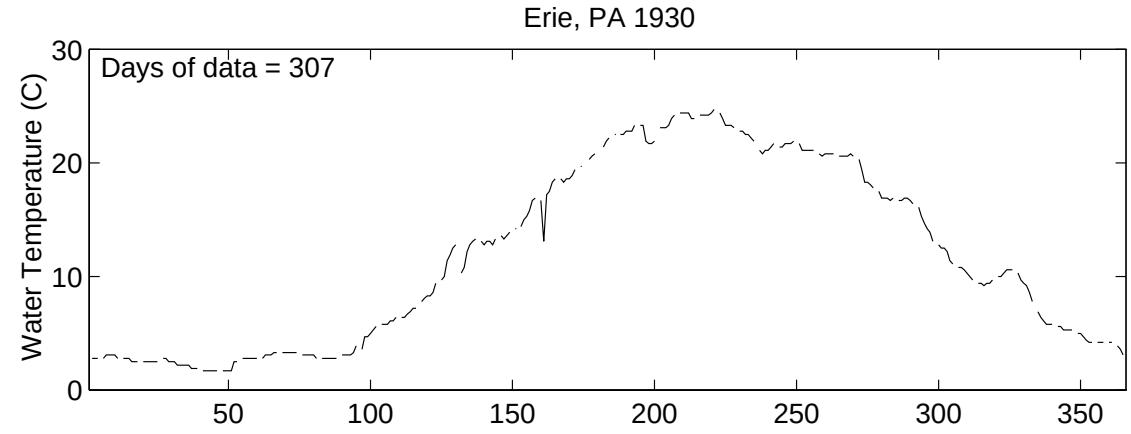

Erie, PA 1925
Days of data = 302
Water Temperature (C)
0
10
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300
350
Julian Day

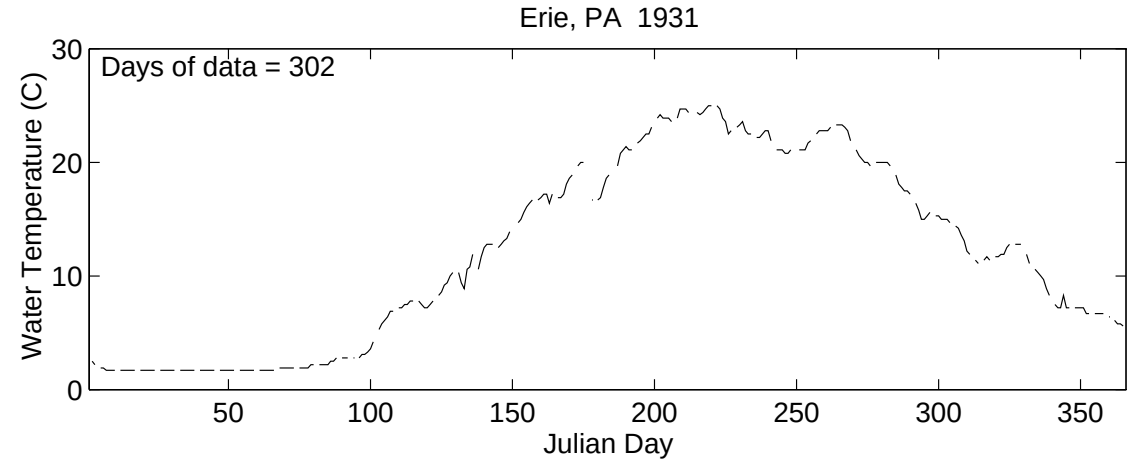

Erie, PA 1926
Days of data = 303
Water Temperature (C)
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30
50
100
150
200
250
300
350

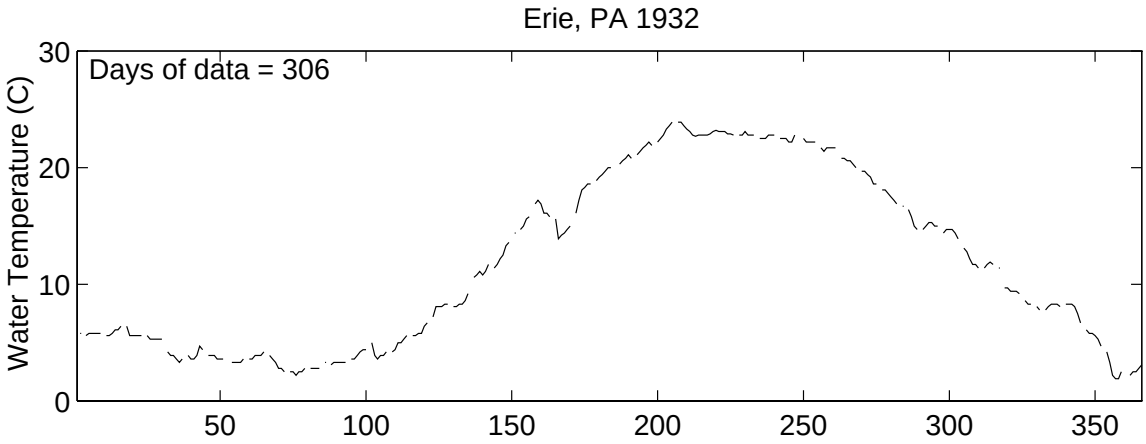

Erie, PA 1927
Days of data = 301
Water Temperature (C)
0
10
20
30
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200
250
300
350
Julian Day

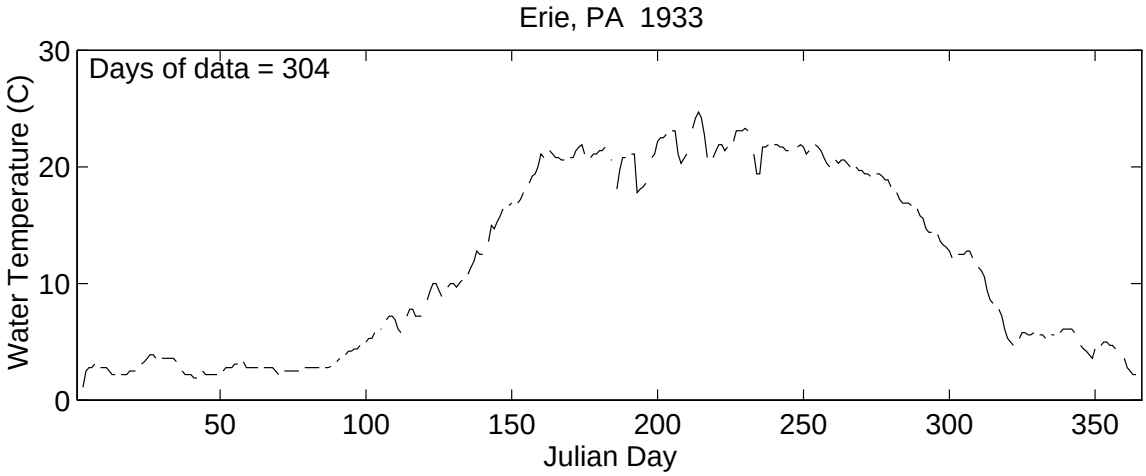

Erie, PA 1928
Days of data = 303
Water Temperature (C)
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10
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200
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300
350

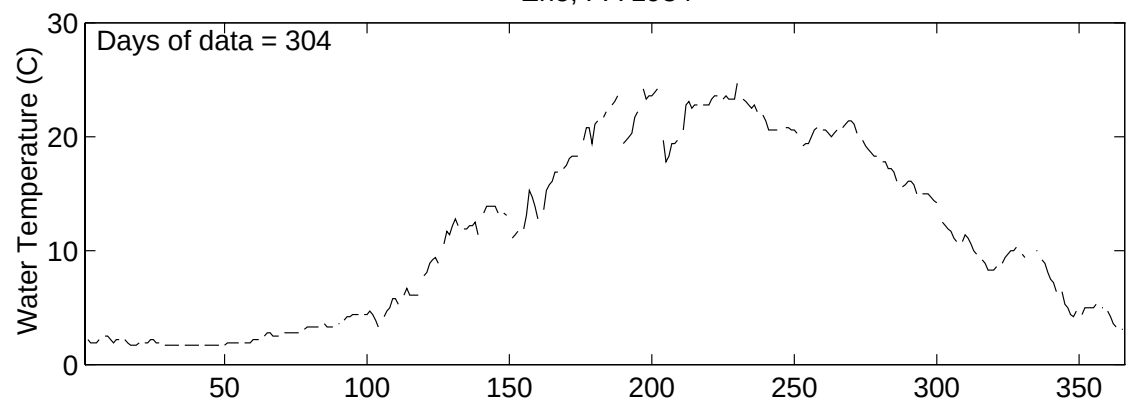

Erie, PA 1929
Days of data = 295
Water Temperature (C)
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100
150
200
250
300
350
Julian Day

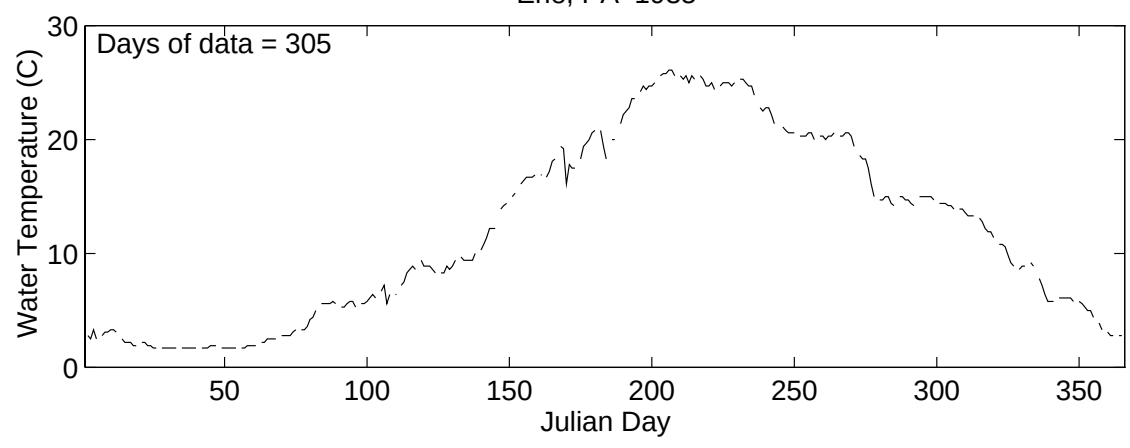

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Days of data = 307
Water Temperature (C)
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30
50
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150
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300
350

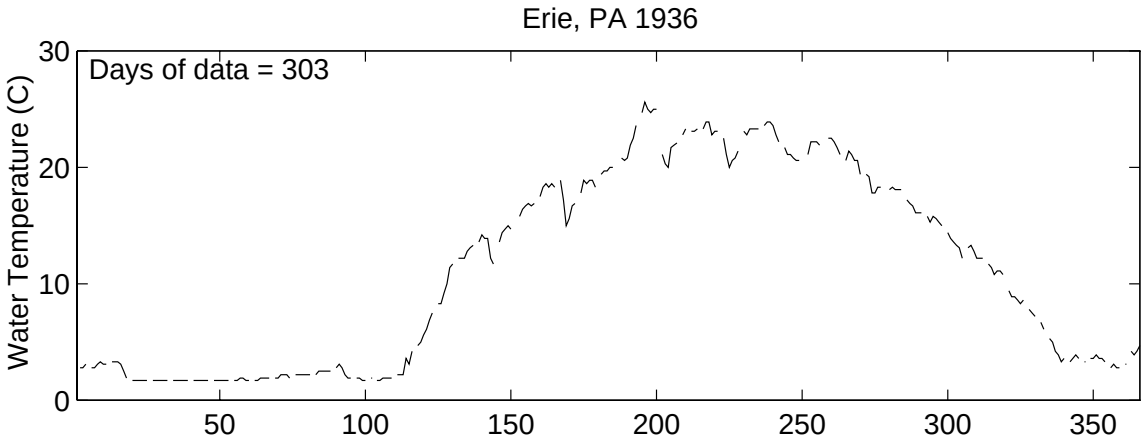

Erie, PA 1931
Days of data = 302
Water Temperature (C)
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20
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100
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200
250
300
350
Julian Day

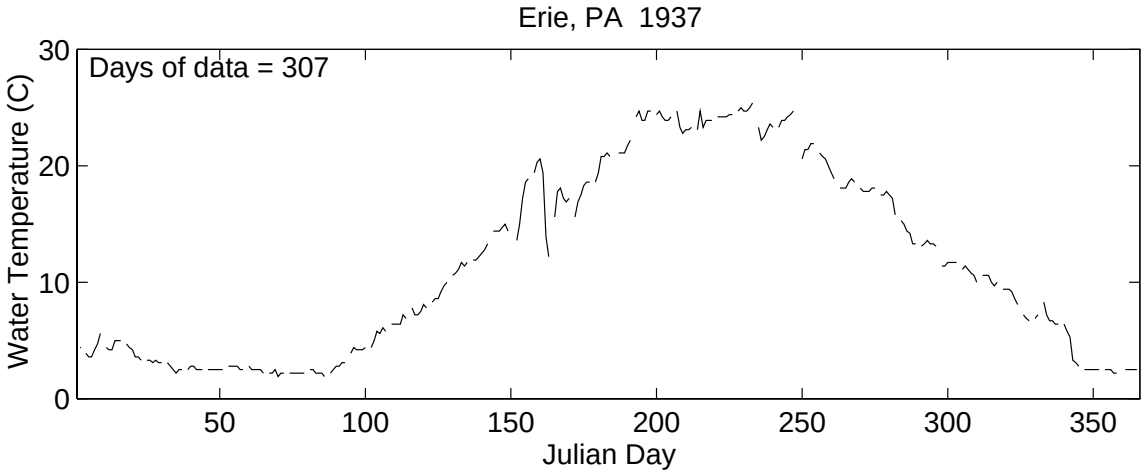

Erie, PA 1932
Days of data = 306
Water Temperature (C)
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10
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100
150
200
250
300
350

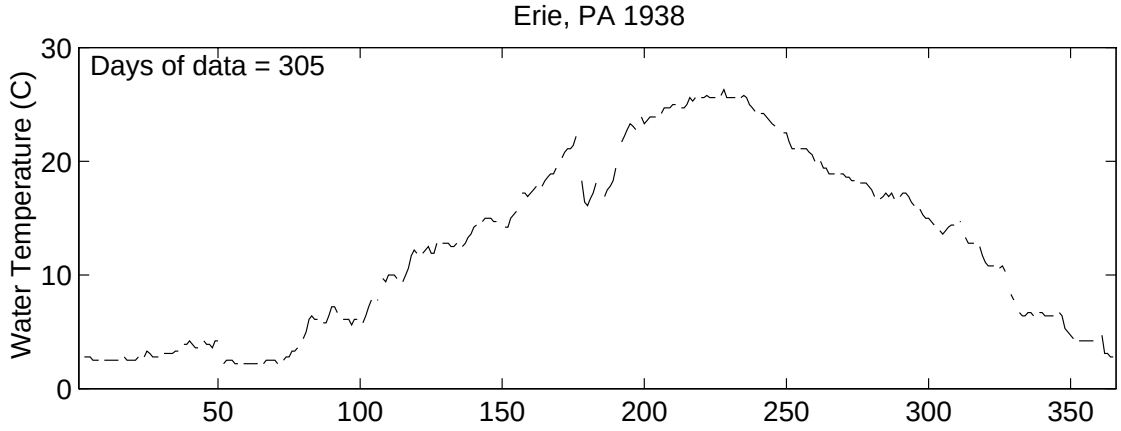

Erie, PA 1933
Days of data = 304
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

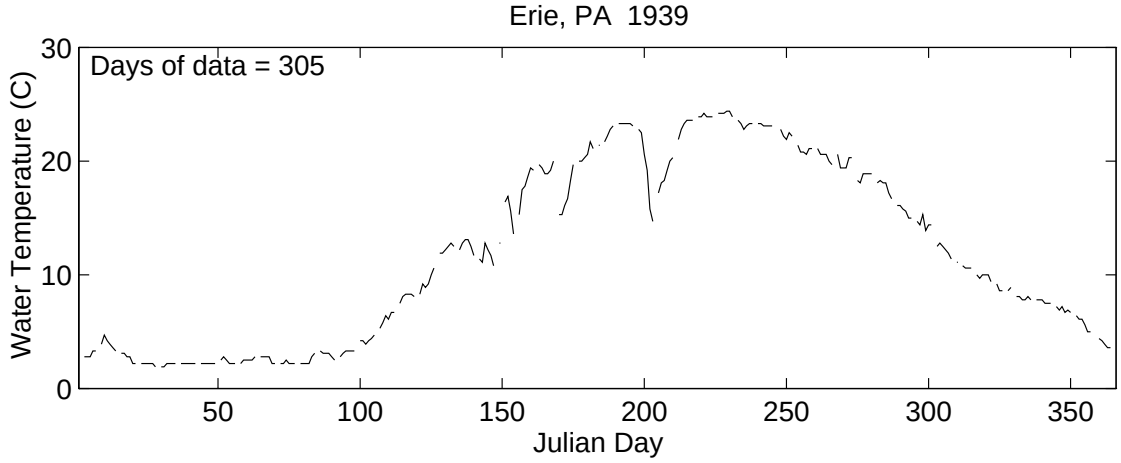

Erie, PA 1934
Days of data = 304
Water Temperature (C)
0
10
20
30
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100
150
200
250
300
350

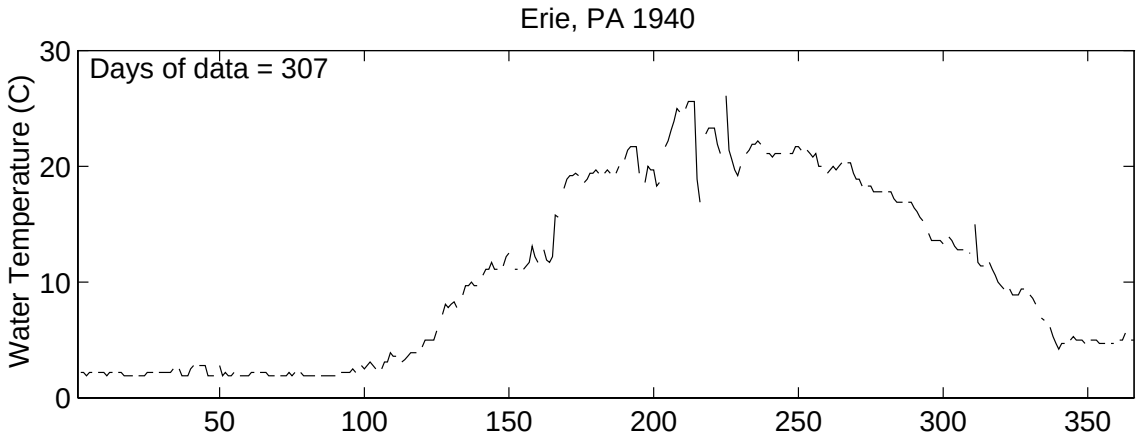

Erie, PA 1935
Days of data = 305
Water Temperature (C)
0
10
20
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100
150
200
250
300
350
Julian Day

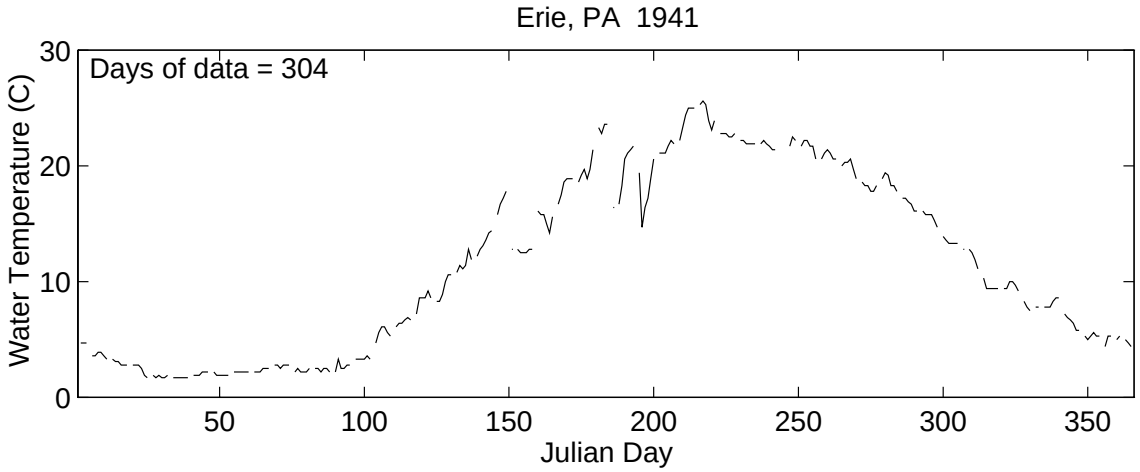

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Water Temperature (C)
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300
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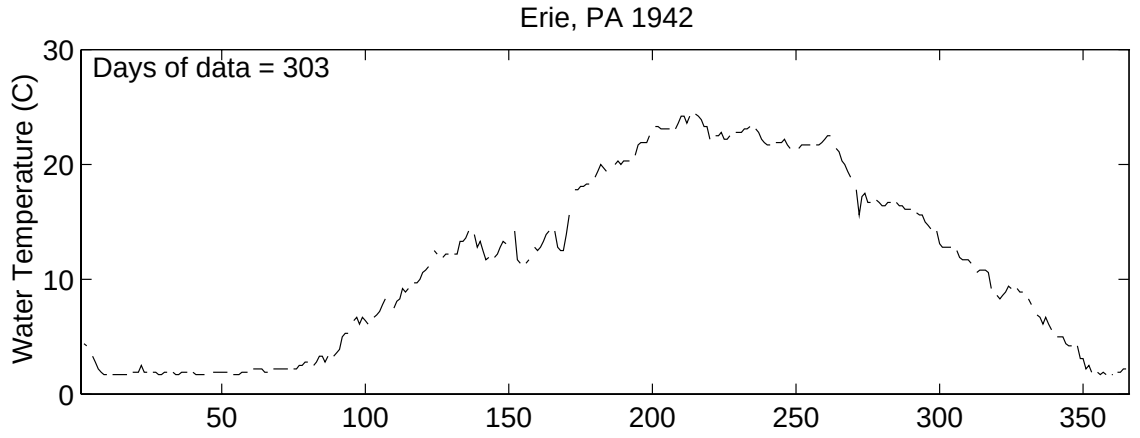

Erie, PA 1937
Days of data = 307
Water Temperature (C)
0
10
20
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100
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200
250
300
350
Julian Day

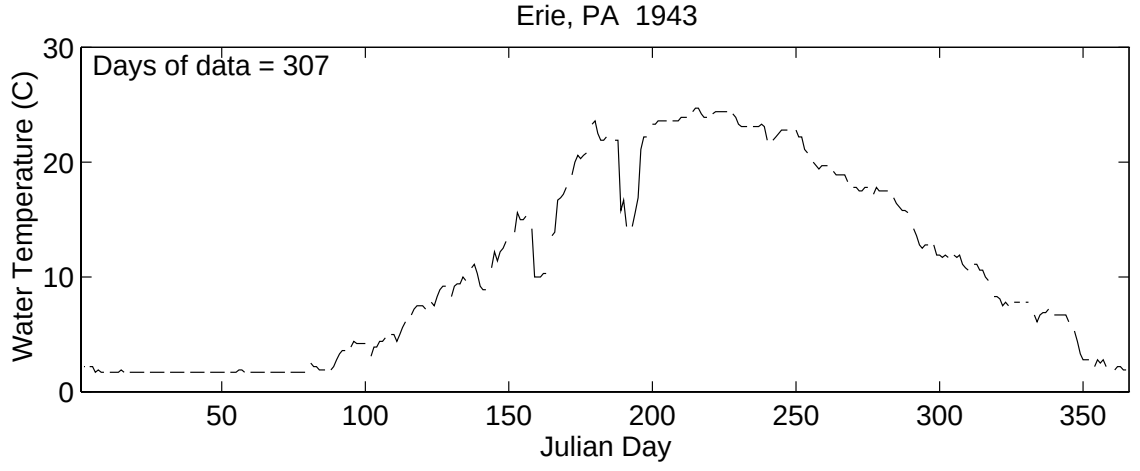

Erie, PA 1938
Days of data = 305
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

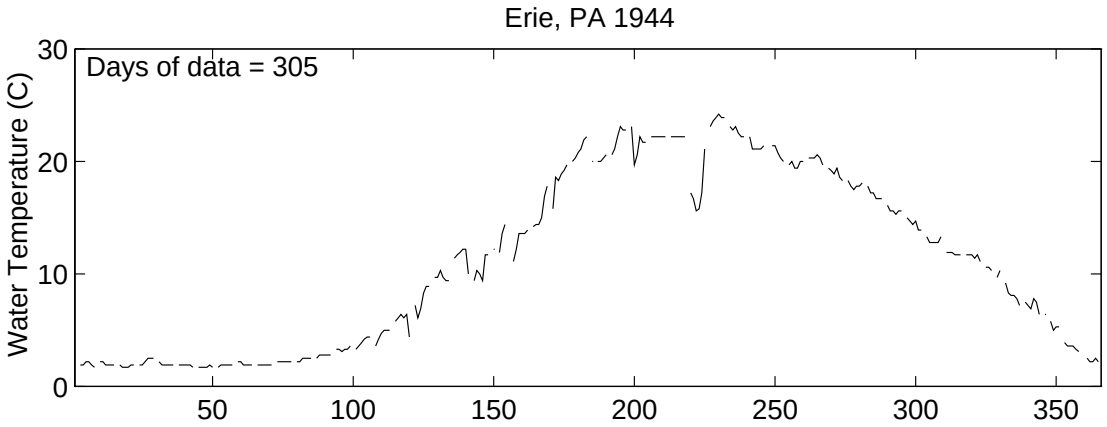

Erie, PA 1939
Days of data = 305
Water Temperature (C)
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20
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150
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250
300
350
Julian Day

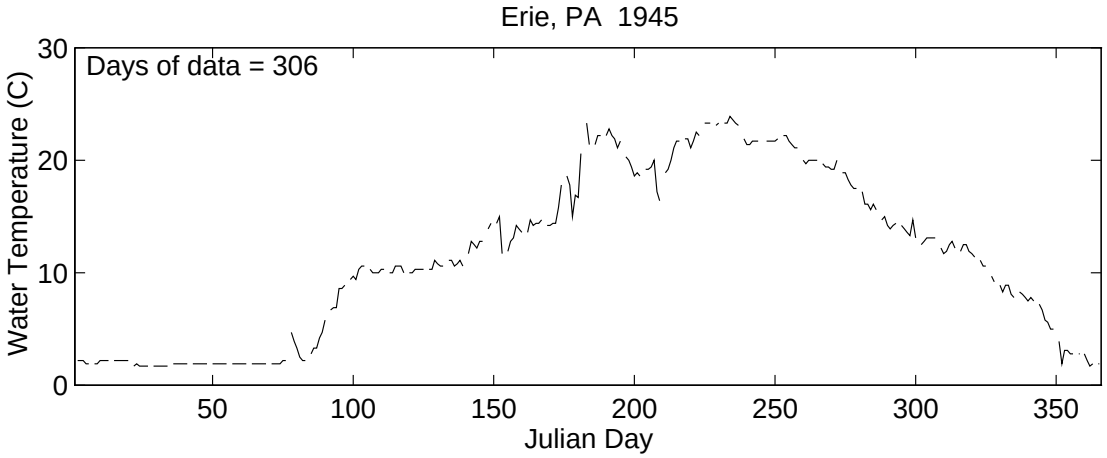

Erie, PA 1940
Days of data = 307
Water Temperature (C)
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30
50
100
150
200
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300
350

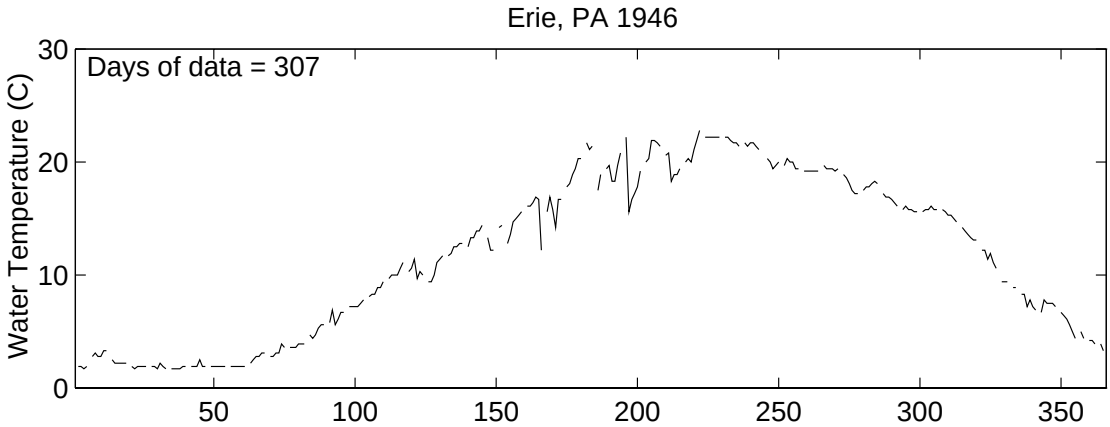

Erie, PA 1941
Days of data = 304
Water Temperature (C)
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100
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250
300
350
Julian Day

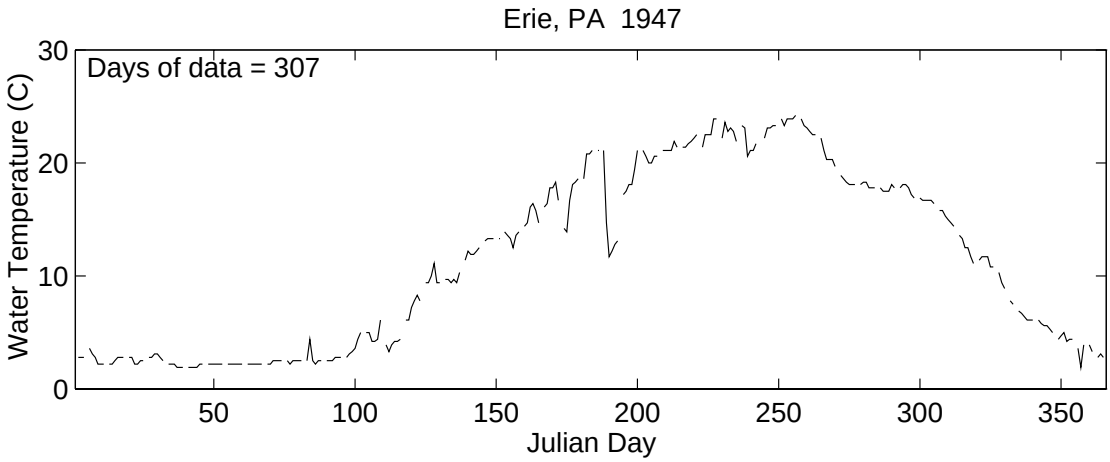

Erie, PA 1942
Days of data = 303
Water Temperature (C)
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10
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30
50
100
150
200
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300
350

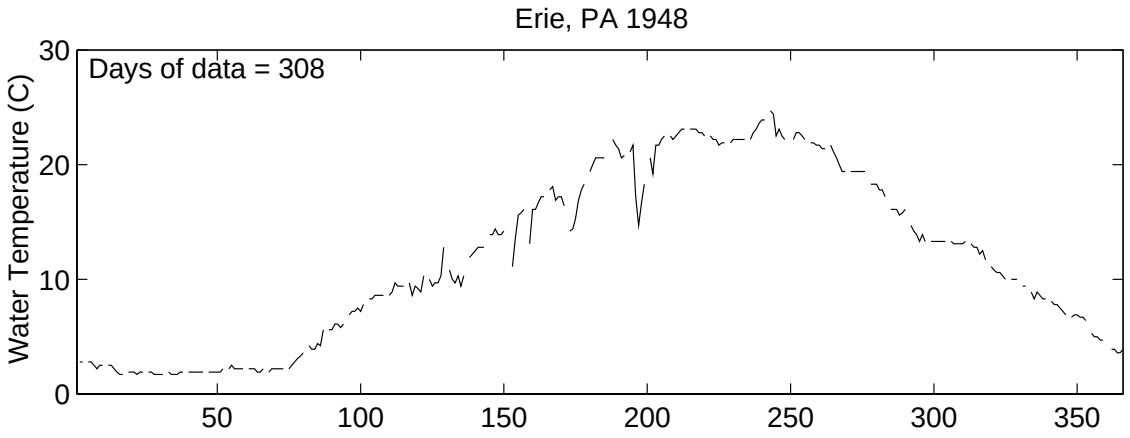

Erie, PA 1943
Days of data = 307
Water Temperature (C)
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10
20
30
50
100
150
200
250
300
350
Julian Day

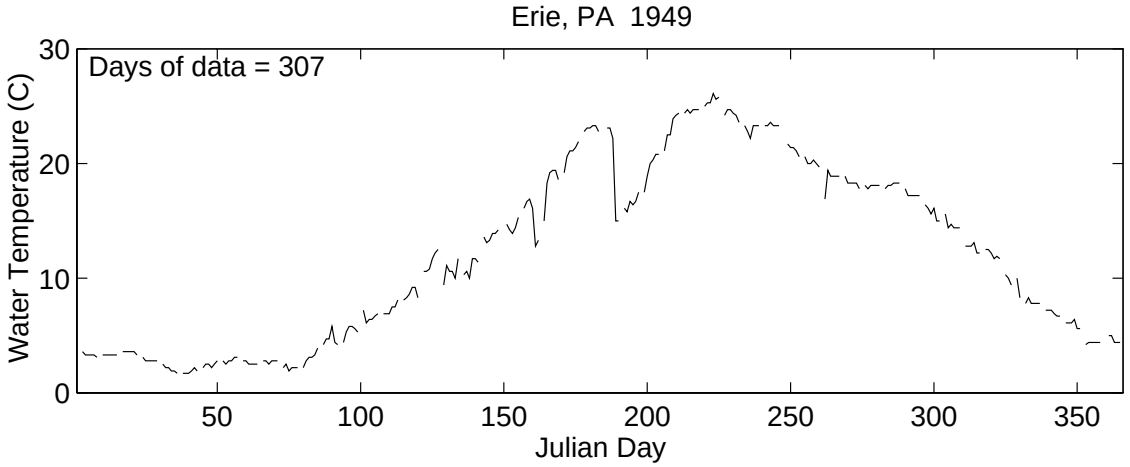

Erie, PA 1944
Days of data = 305
Water Temperature (C)
0
10
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30
50
100
150
200
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300
350

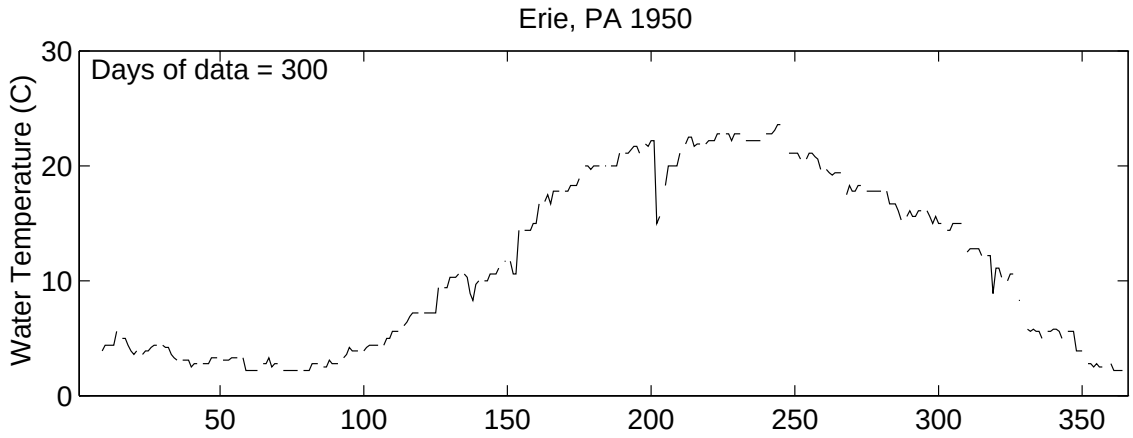

Erie, PA 1945
Days of data = 306
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

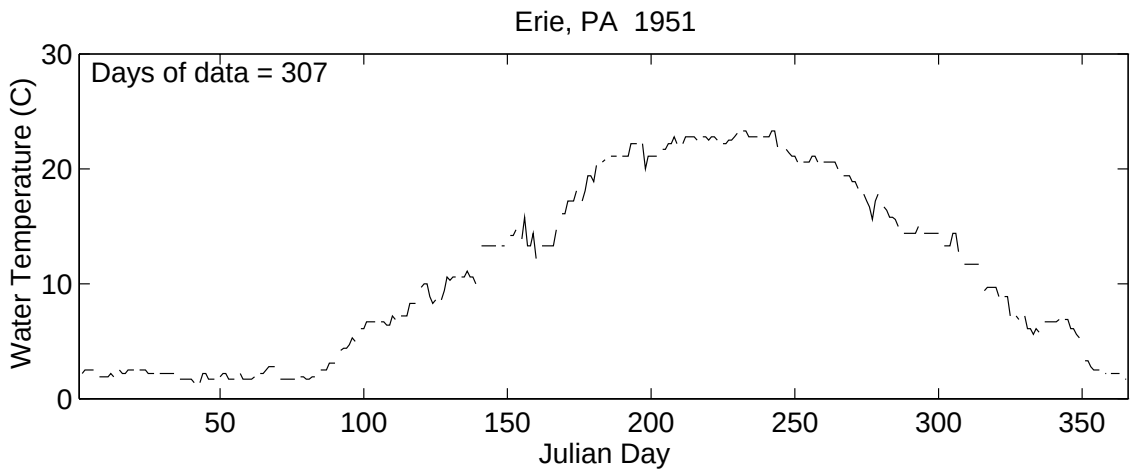

Erie, PA 1946
Days of data = 307
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

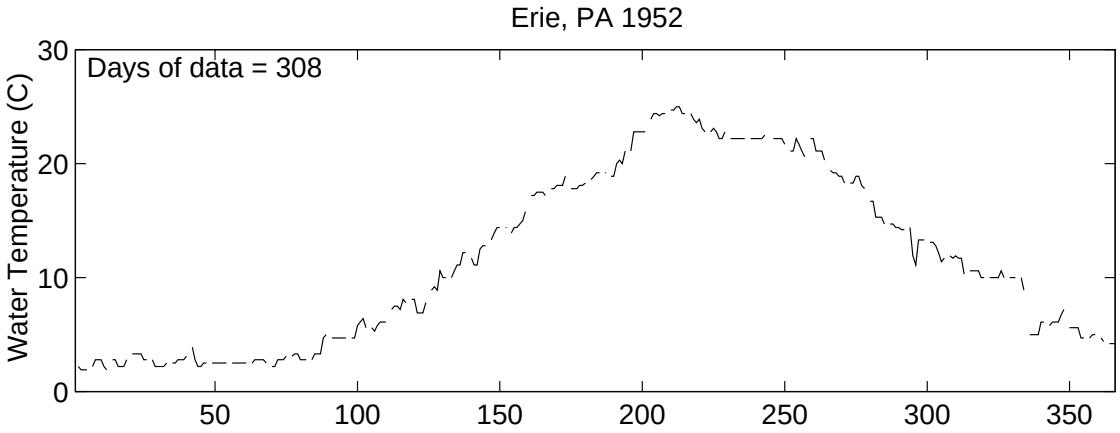

Erie, PA 1947
Days of data = 307
Water Temperature (C)
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10
20
30
50
100
150
200
250
300
350
Julian Day

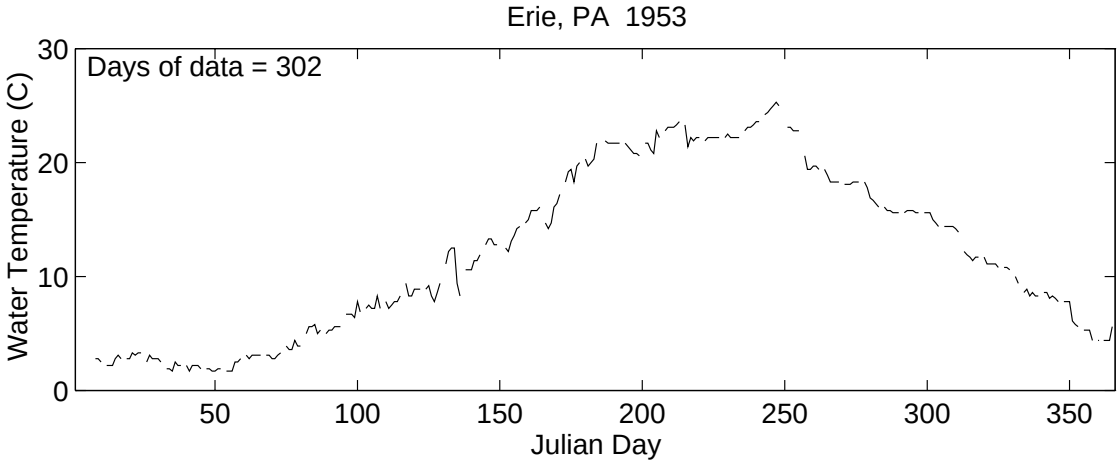

Erie, PA 1948
Days of data = 308
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

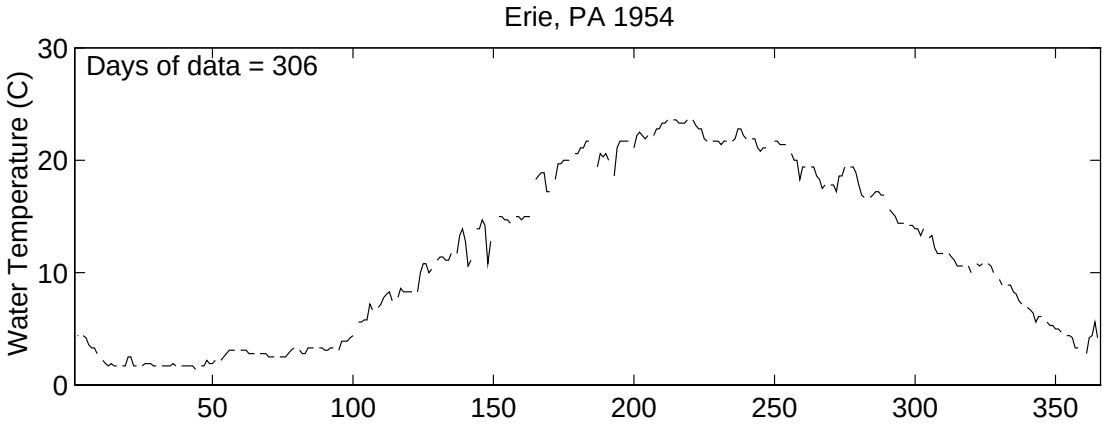

Erie, PA 1949
Days of data = 307
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

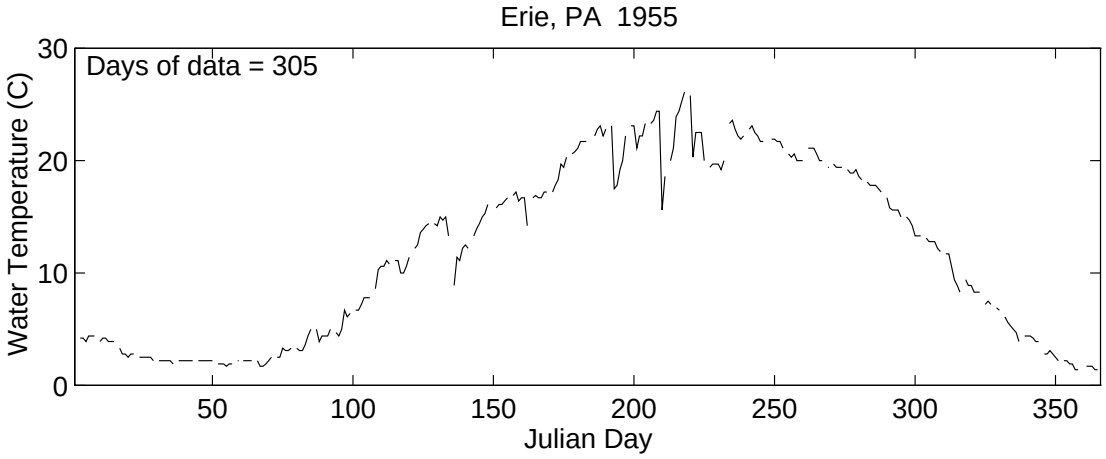

Erie, PA 1950
Days of data = 300
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

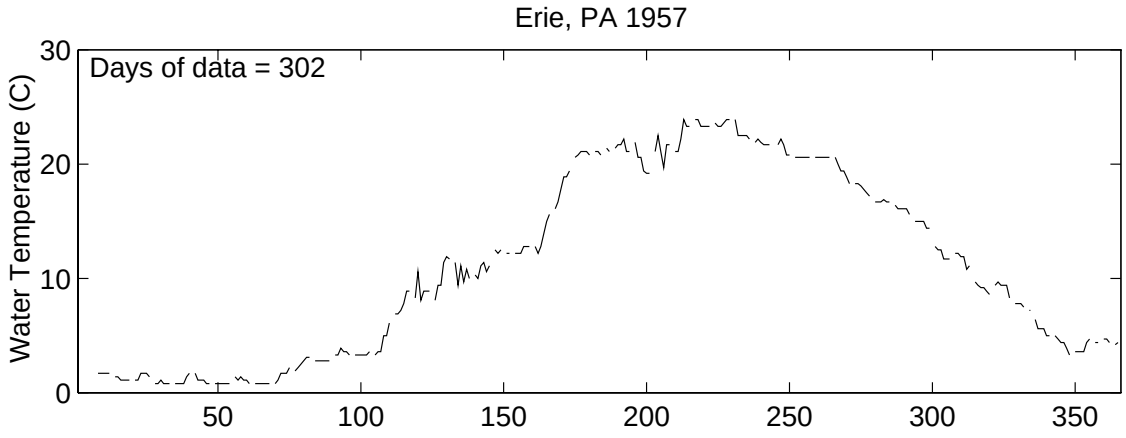

Erie, PA 1951
Days of data = 307
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

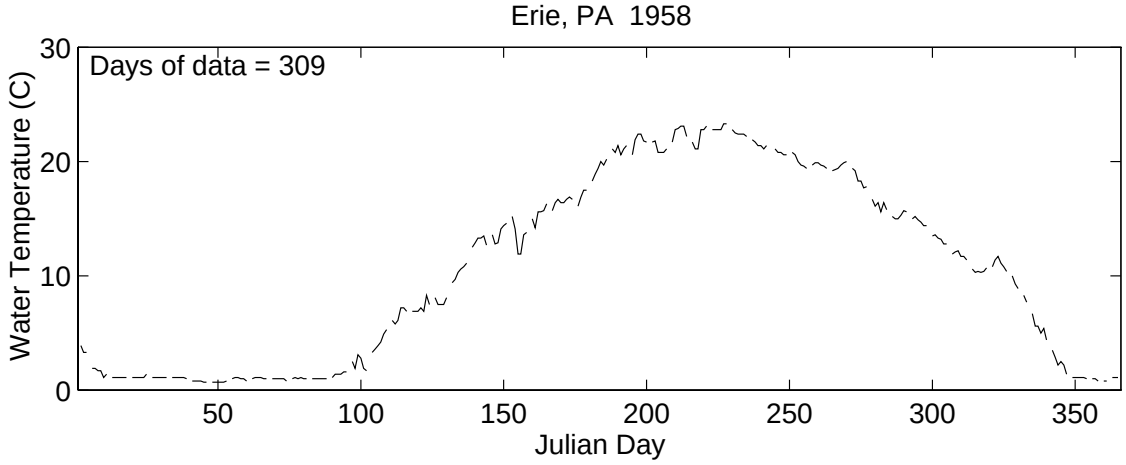

Erie, PA 1952
Days of data = 308
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

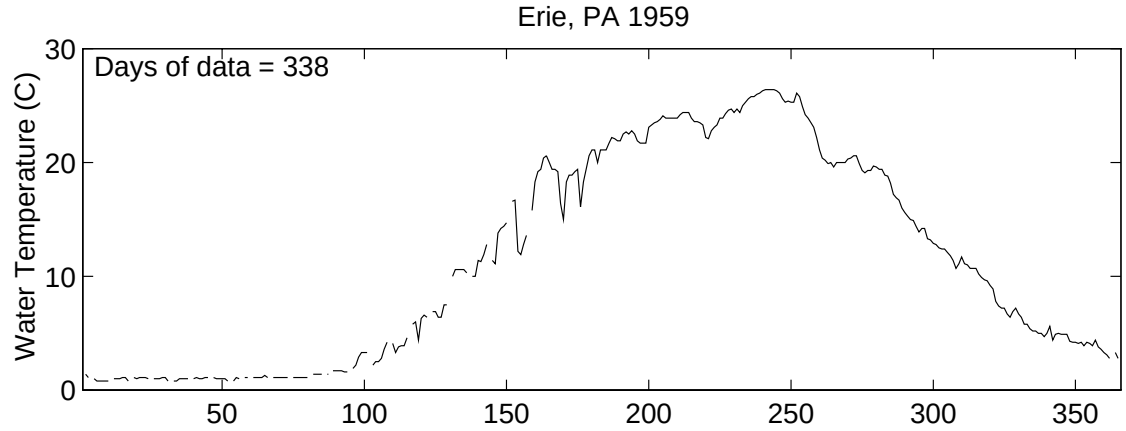

Erie, PA 1953
Days of data = 302
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

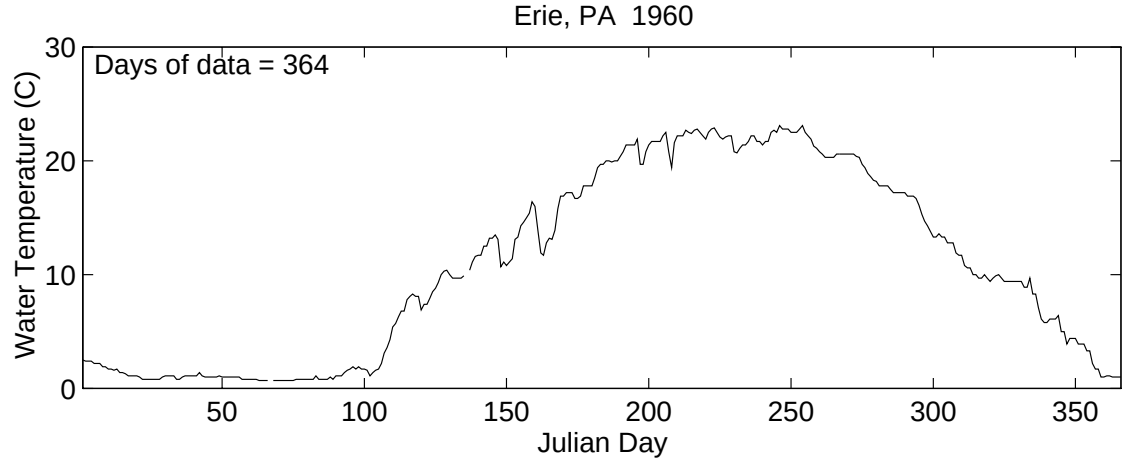

Erie, PA 1954
Days of data = 306
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

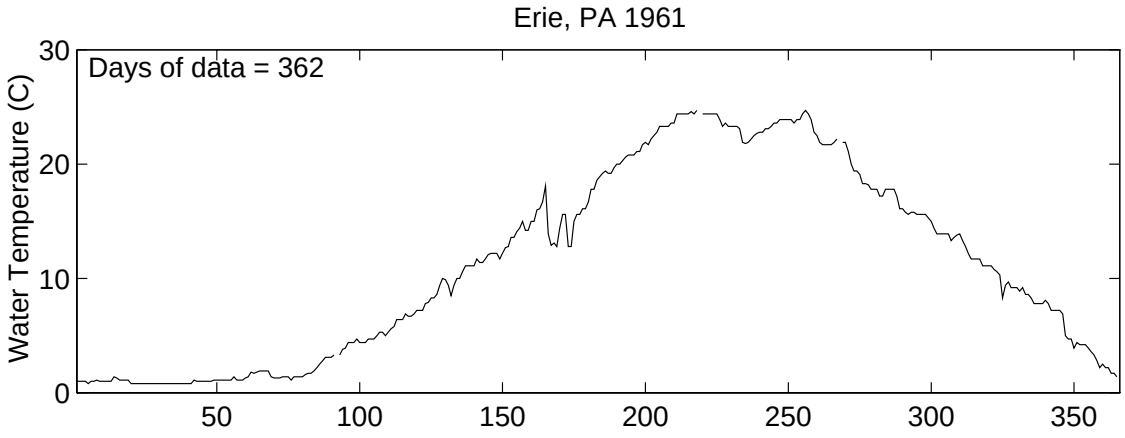

Erie, PA 1955
Days of data = 305
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

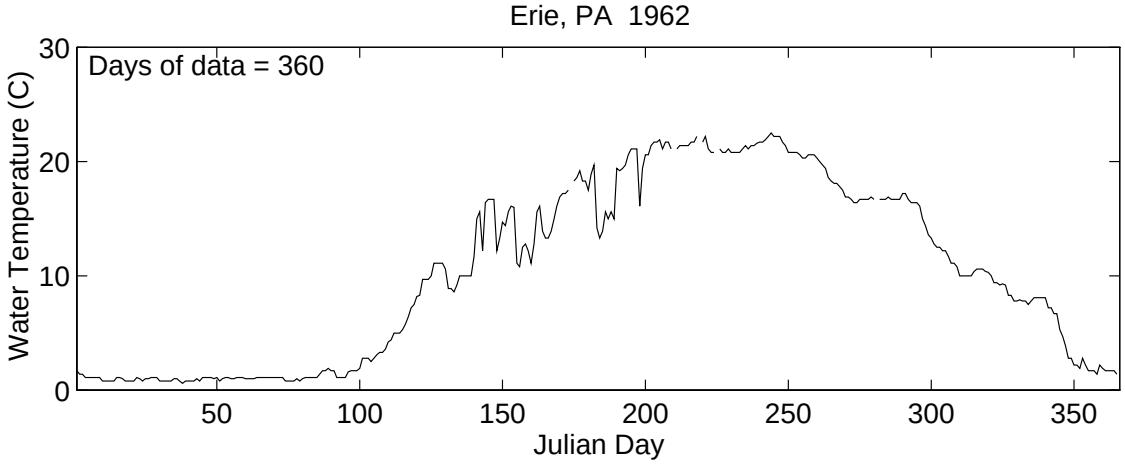

Erie, PA 1957
Days of data = 302
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

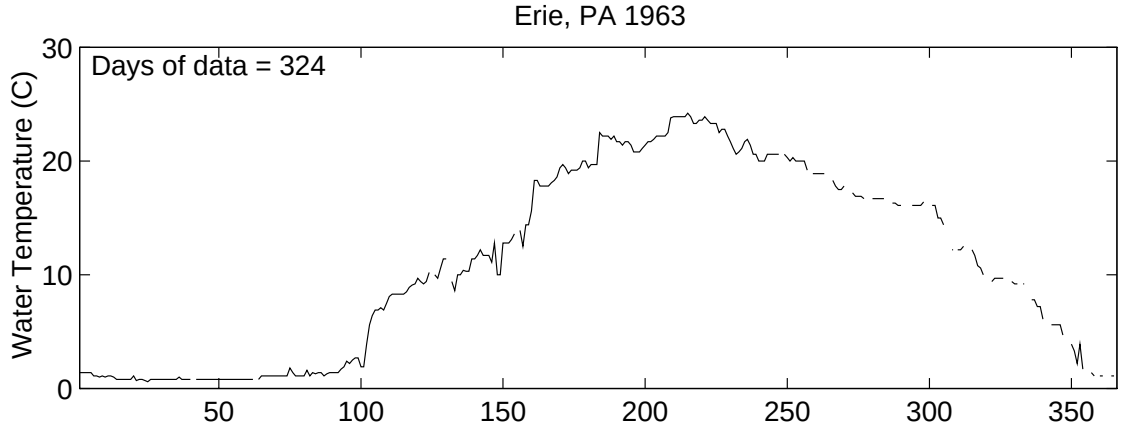

Erie, PA 1958
Days of data = 309
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

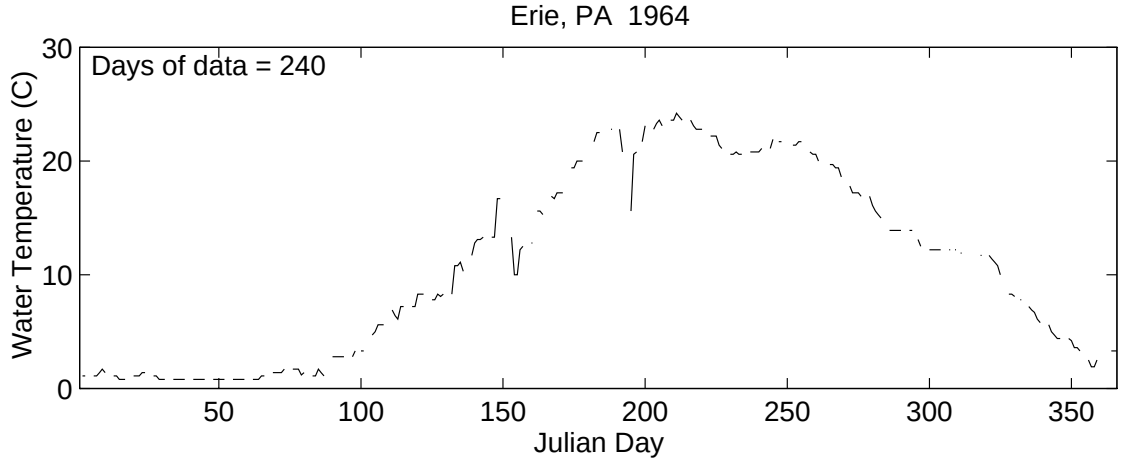

Erie, PA 1959
Days of data = 338
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

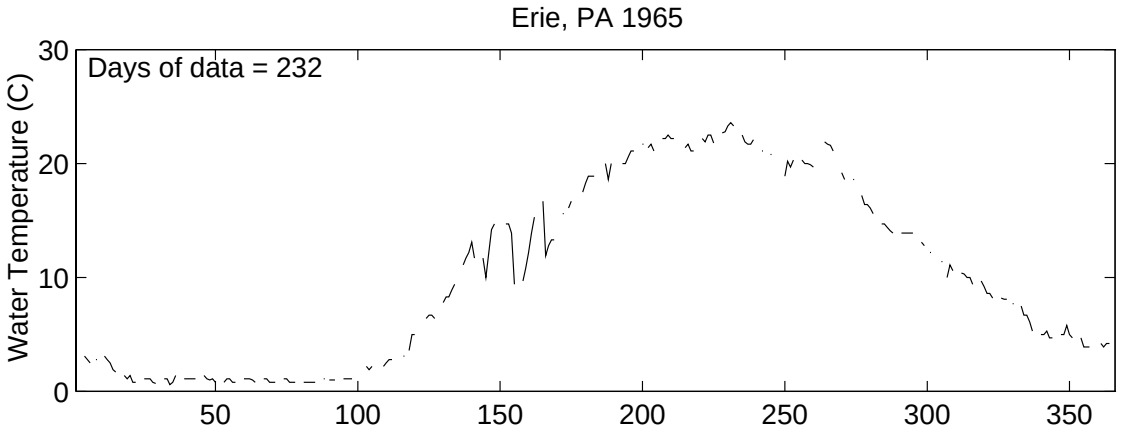

Erie, PA 1960
Days of data = 364
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

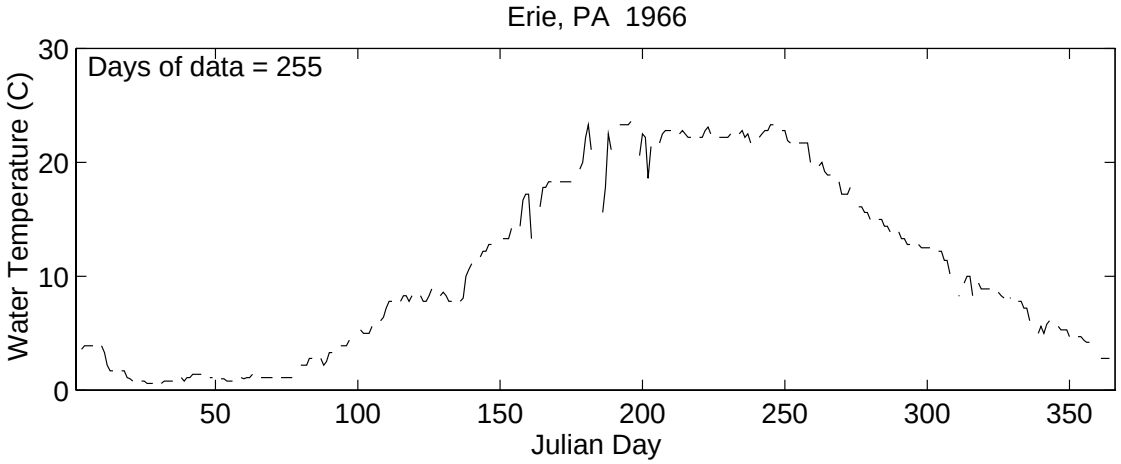

Erie, PA 1961
Days of data = 362
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

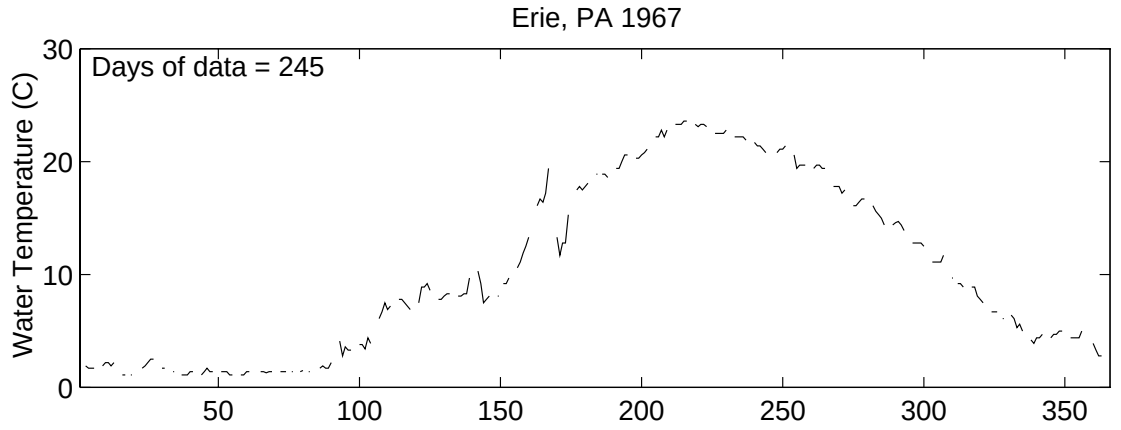

Erie, PA 1962
Days of data = 360
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

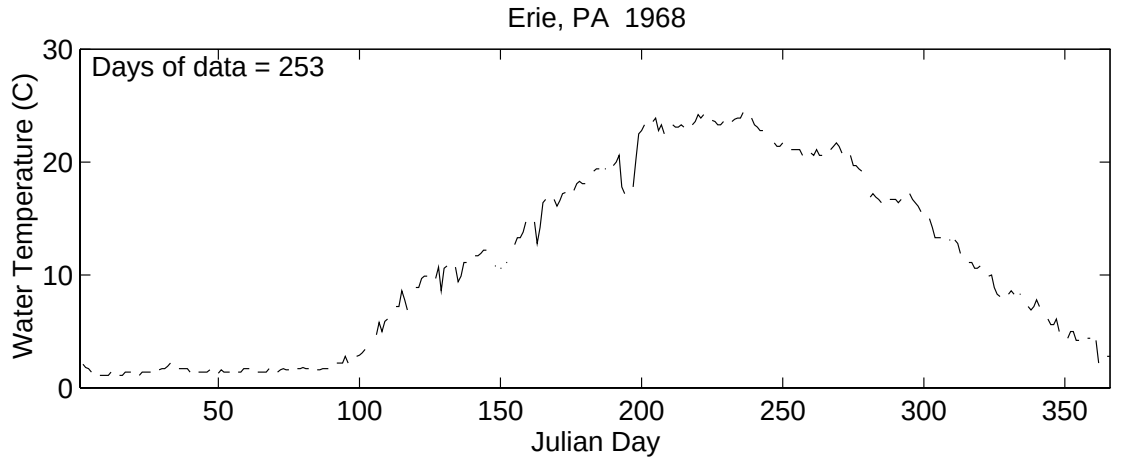

Erie, PA 1963
Days of data = 324
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

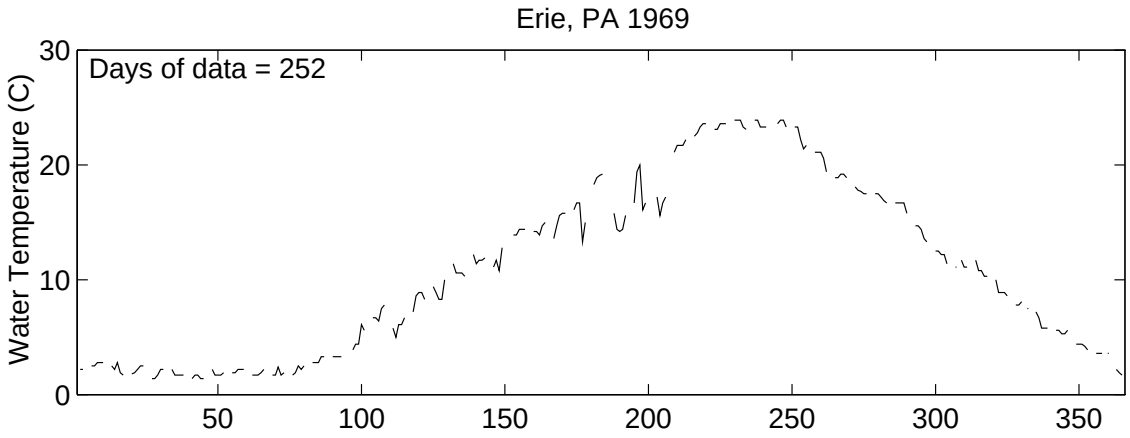

Erie, PA 1964
Days of data = 240
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

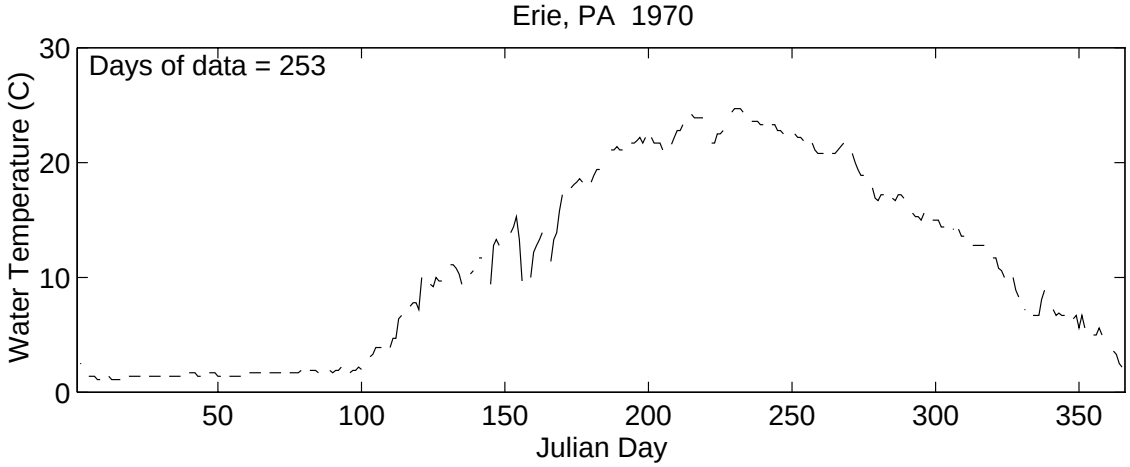

Erie, PA 1965
Days of data = 232
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

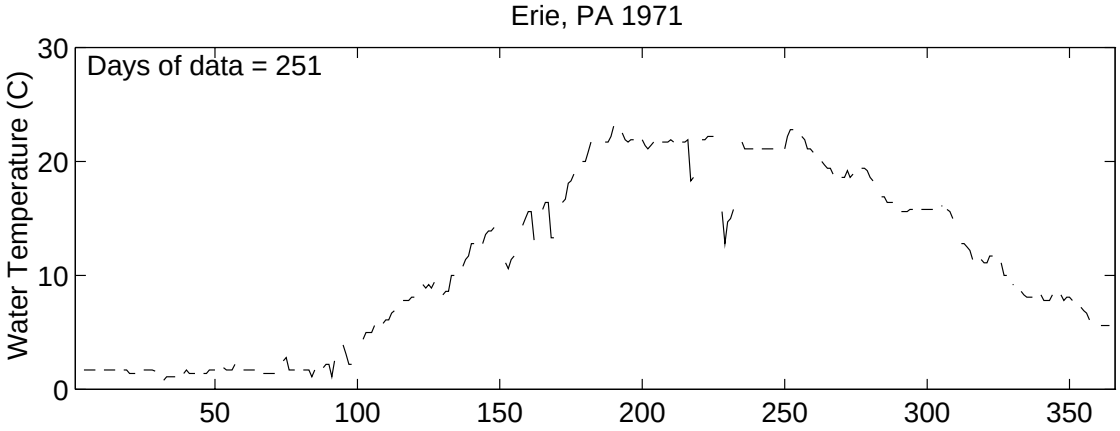

Erie, PA 1966
Days of data = 255
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

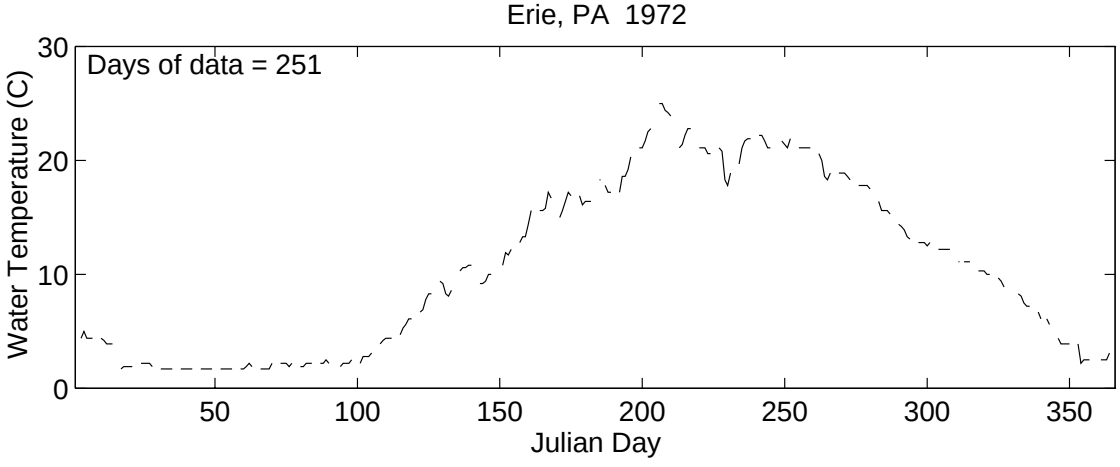

Erie, PA 1967
Days of data = 245
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

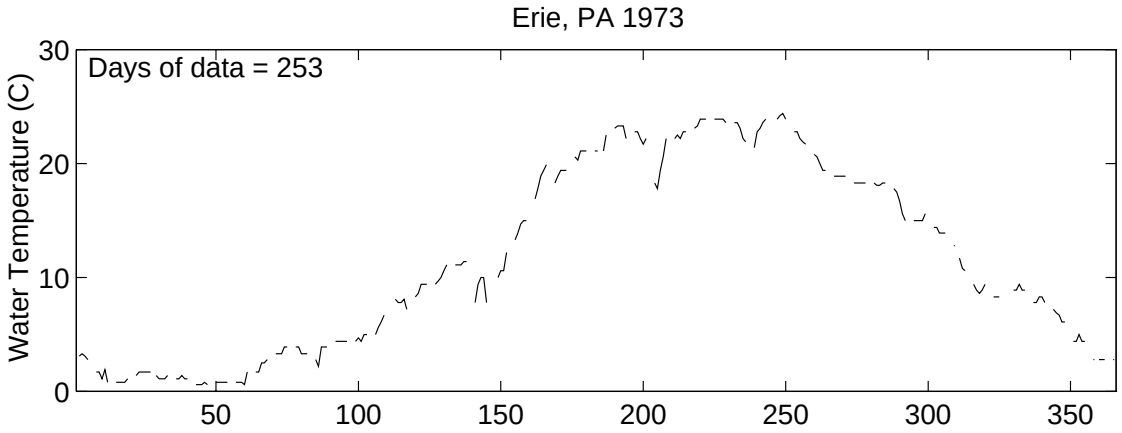

Erie, PA 1968
Days of data = 253
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

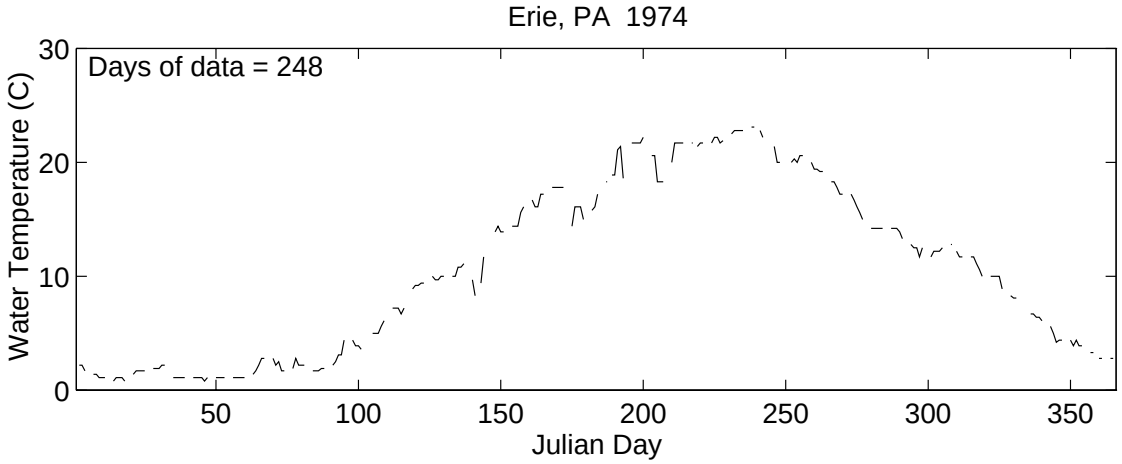

Erie, PA 1969
Days of data = 252
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

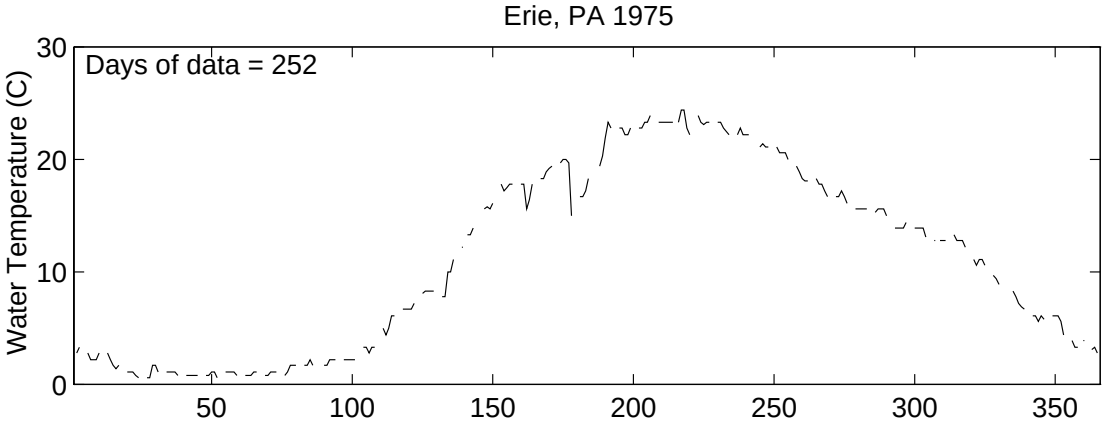

Erie, PA 1970
Days of data = 253
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

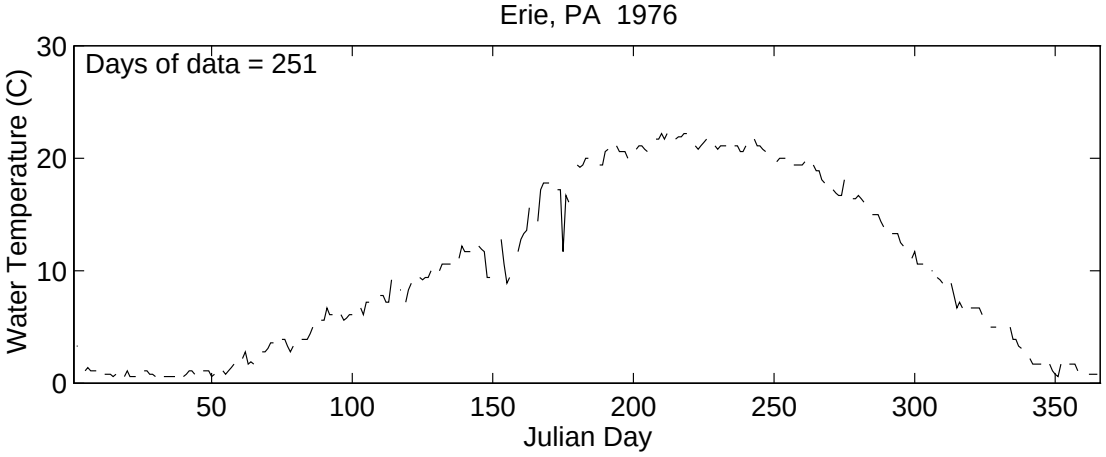

Erie, PA 1971
Days of data = 251
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

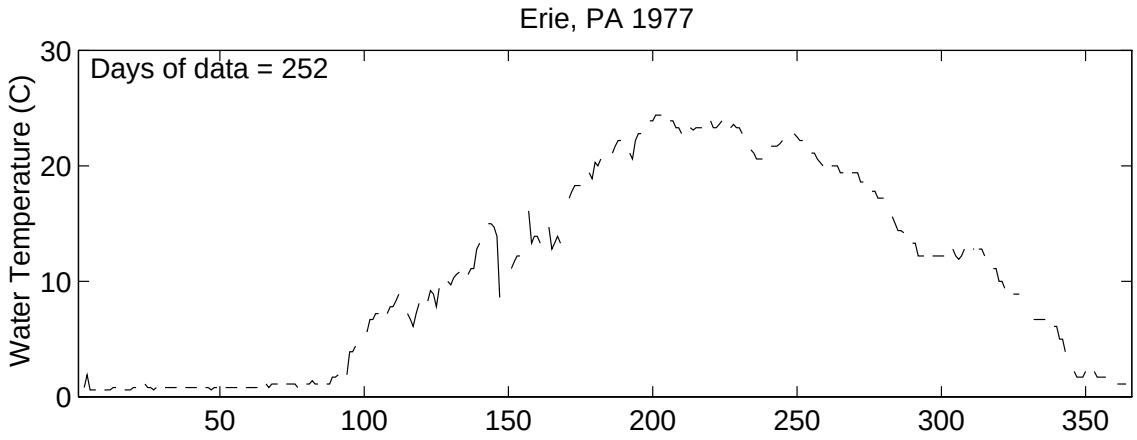

Erie, PA 1972
Days of data = 251
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

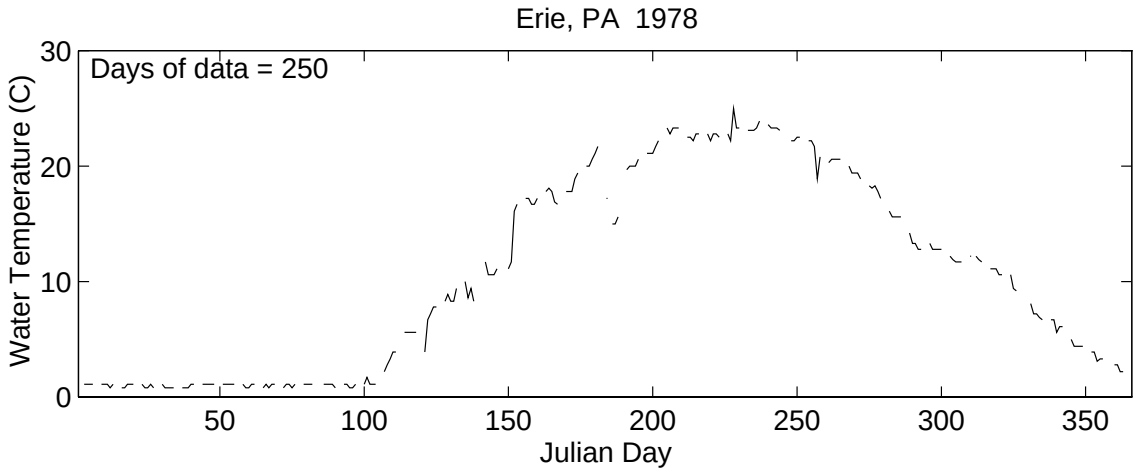

Erie, PA 1973
Days of data = 253
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

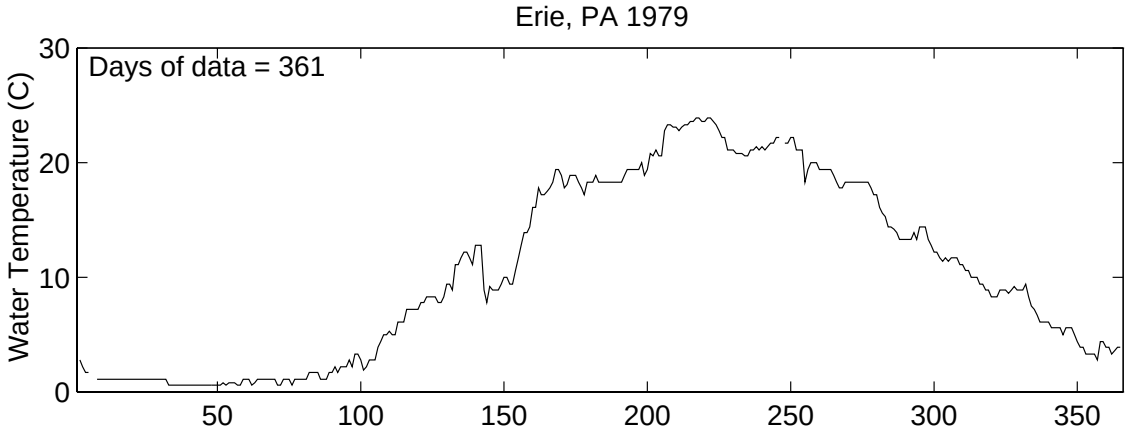

Erie, PA 1974
Days of data = 248
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

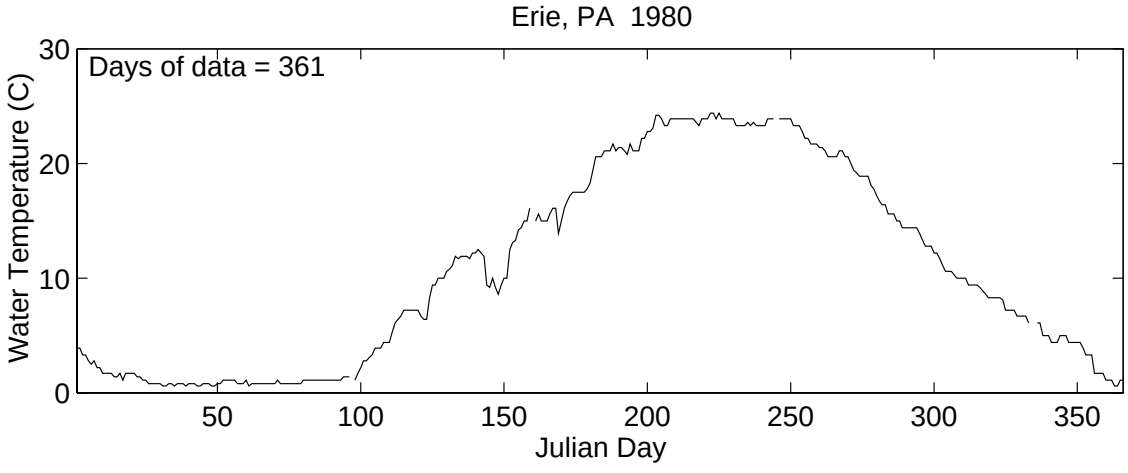

Erie, PA 1975
Days of data = 252
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

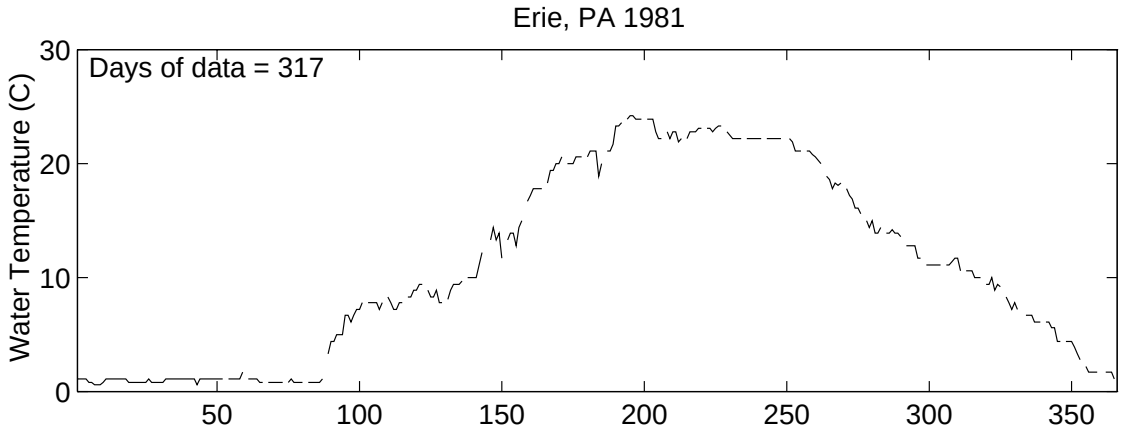

Erie, PA 1976
Days of data = 251
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

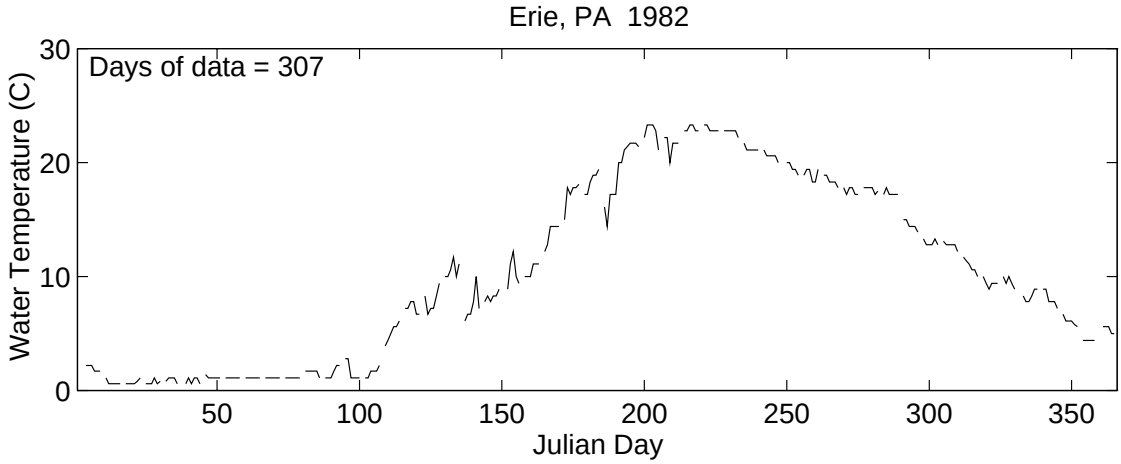

Erie, PA 1977
Days of data = 252
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

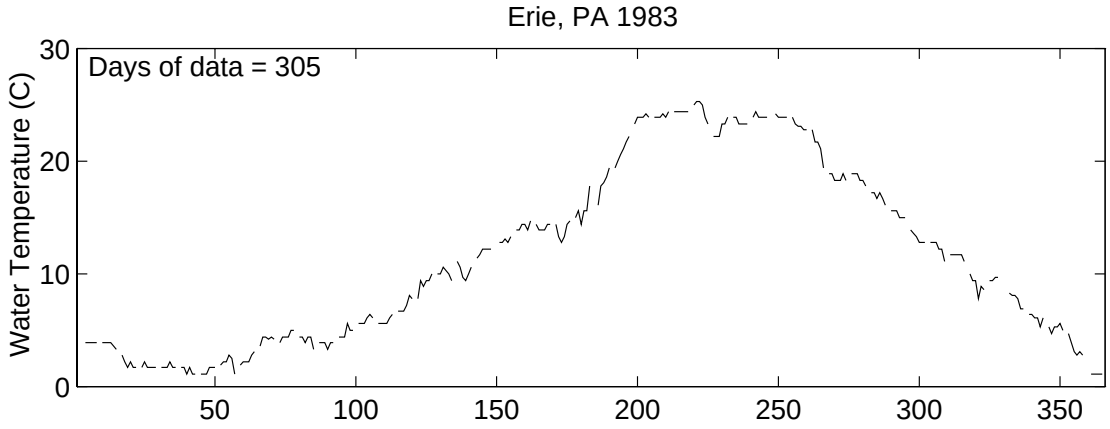

Erie, PA 1978
Days of data = 250
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

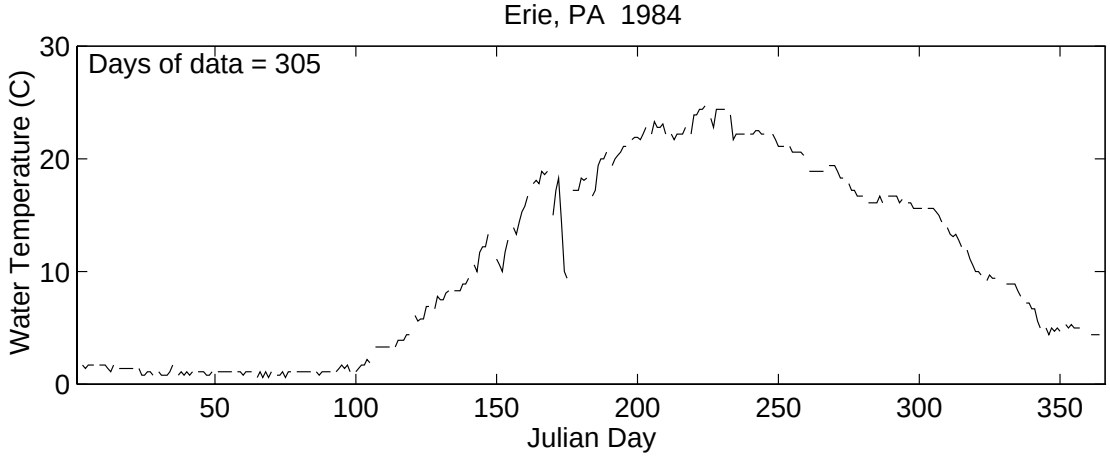

Erie, PA 1979
Days of data = 361
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

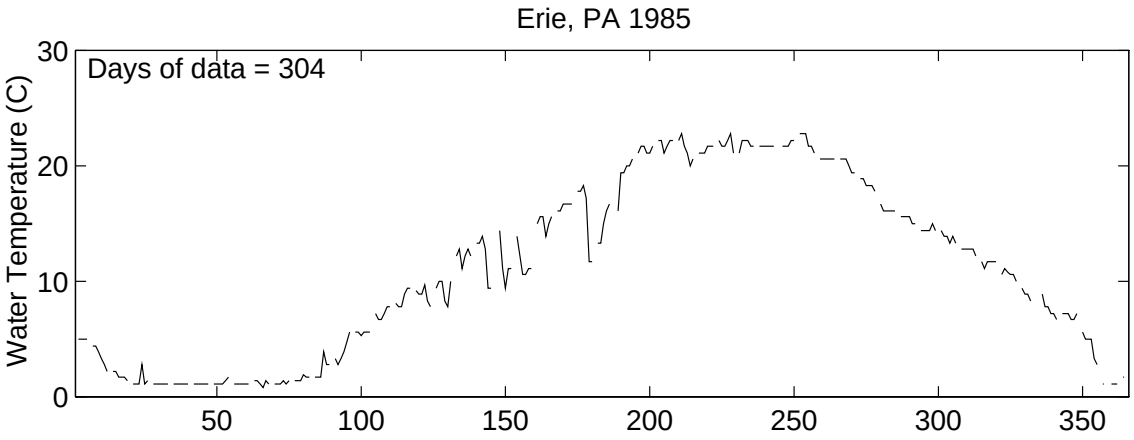

Erie, PA 1980
Days of data = 361
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

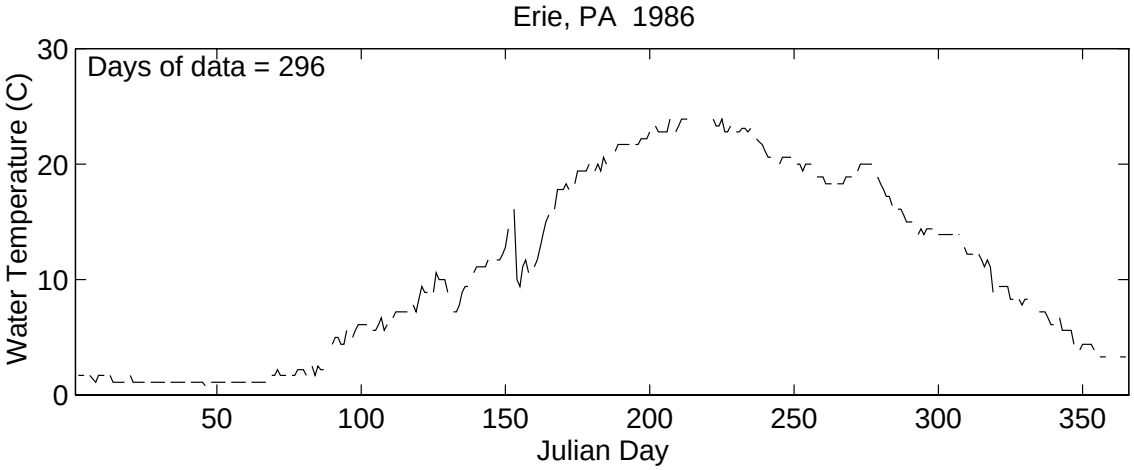

Erie, PA 1981
Days of data = 317
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

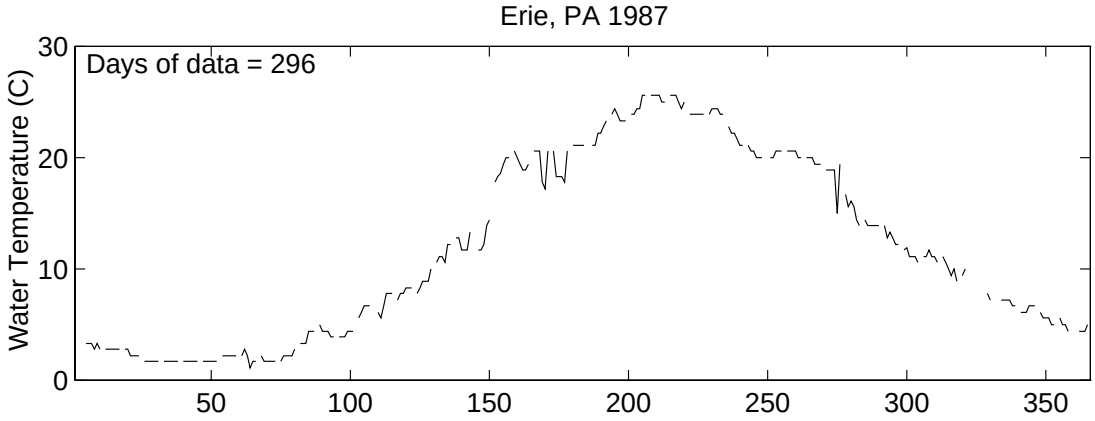

Erie, PA 1982
Days of data = 307
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

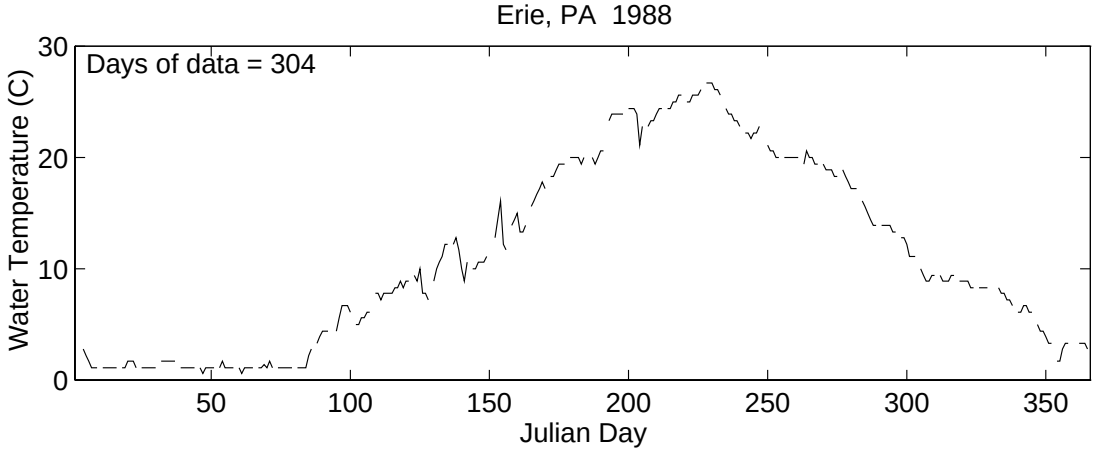

Erie, PA 1983
Days of data = 305
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

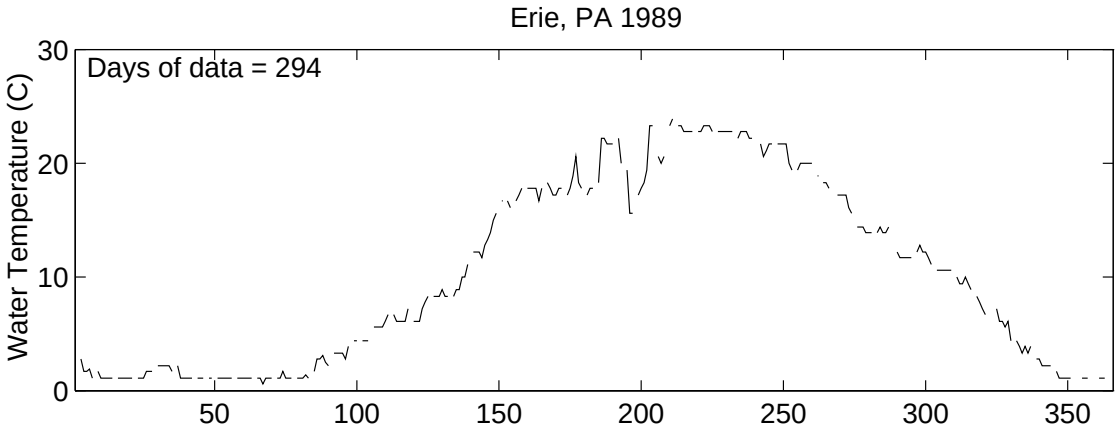

Erie, PA 1984
Days of data = 305
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

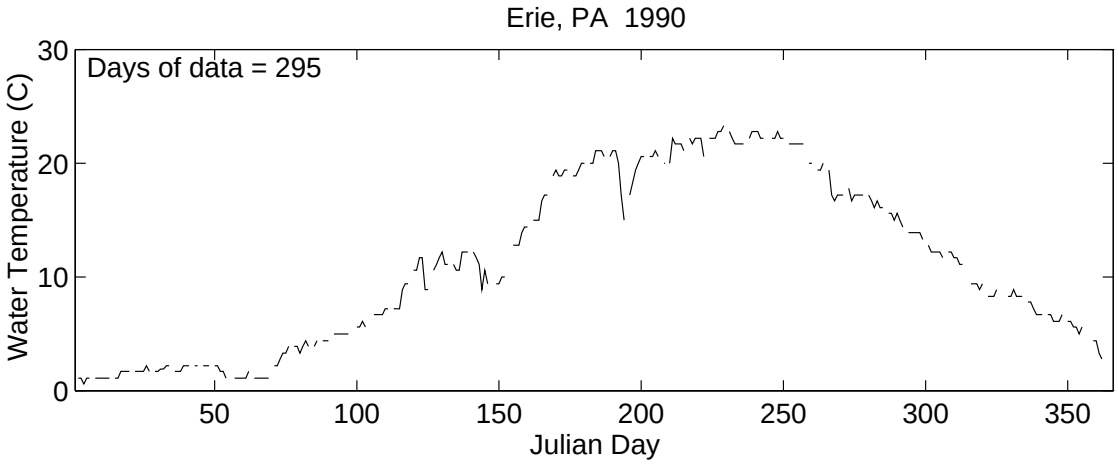

Erie, PA 1985
Days of data = 304
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350

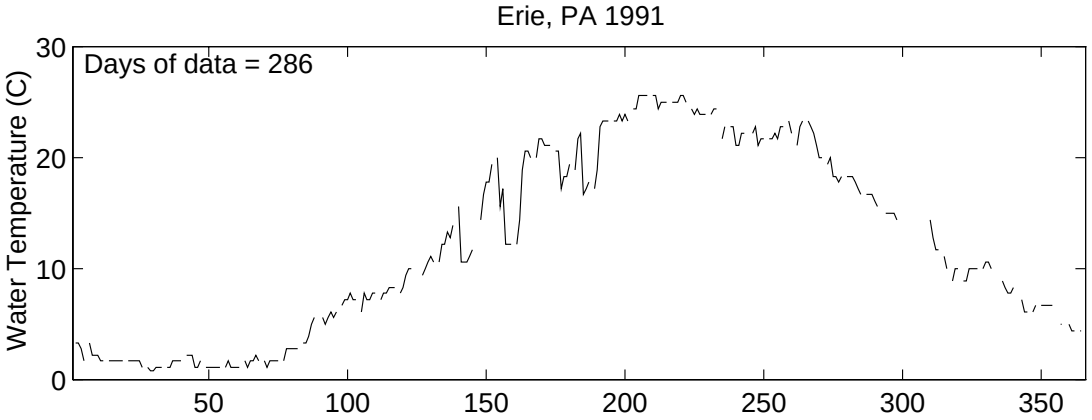

Erie, PA 1986
Days of data = 296
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day

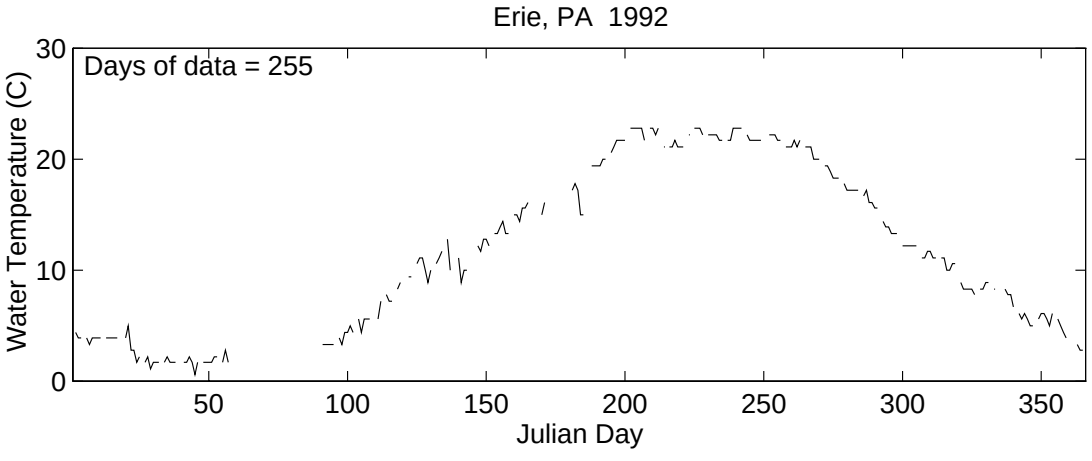

Erie, PA 1987
Days of data = 296
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350


Erie, PA 1988
Days of data = 304
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day


Erie, PA 1989
Days of data = 294
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350


Erie, PA 1990
Days of data = 295
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day


Erie, PA 1991
Days of data = 286
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350


Erie, PA 1992
Days of data = 255
Water Temperature (C)
0
10
20
30
50
100
150
200
250
300
350
Julian Day