



117 years of near-surface sea temperature in the harbor of Trieste, Italy in the northern Adriatic Sea (1899-2015)

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An interrupted and quasi-homogeneous 117-year-long record of near-surface sea temperature from Trieste (Italy) harbor is presented. Historical documents archived at the Marine Science Institute in Trieste allowed detailed descriptions of instruments and the different monitoring sites. Two different datasets were built. The first (1899-1923 and 1934-2008) consists of daily data obtained by means of thermometers and thermographs and the second (1986-2015) of digital hourly data collected by thermistors. Although in different periods the nominal depth at which the probe was used possibly changed and sea level variations could have affected some measurements, a quasi-homogeneous time series of daily temperature at 2-m depth was built merging the two aforementioned datasets. When not available from direct measurements, the 2-m temperature was estimated from measurements collected at different depths. The composite 1899-2015 temperature record, affected by missing data in 1923-1933, shows a linear trend of $1.1 \pm 0.3^\circ\text{C}$ 100 yr⁻¹ (95% confidence level), characterized by fluctuations on decadal time scales. The more robust 1946-2015 linear trend, obtained from the continuous 1946-2015 time series, is $1.3 \pm 0.3^\circ\text{C}$ 100 yr⁻¹. Although the data accuracy is of course lower than the modern standards for ocean temperature measurements, the data set represents a valuable source to study sea-temperature variability from decadal to centennial time scales. The search for still undiscovered data will continue to possibly fill the existing gaps.

References:

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