**Reconstruction of the historic sea level observations at Saint-Malo/Saint-Servan (French Brittany coast): changes of extreme coastal water levels since the 19th century**

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**Abstract**

In coastal areas, the characterization of sea-level rise and variations of sea level due to extreme weather events (e.g. storm surges) remains a strong societal concern. The analysis of historical water level records has proven to be an ideal means of assessing long-term changes in sea-level. In addition, these datasets also allow the quantification of historical storm surges, which improves the estimation and prediction of extreme coastal water levels.

In France, many systematic sea level observations performed by mechanical tide gauge were carried out since the mid-1800s. Despite this rich heritage, the availability of numerical long sea-level data sets is still scarce: historical water level measurements need to be rescued. In the last decades, many data rescue projects have been initiated in the framework of dedicated research projects or to support public policies for the prevention of marine submersion in the context of Flood Action Programs. The reconstruction of the historical sea level time series of Saint-Malo/Saint-Servan (Brittany, France) has been carried out in the framework of these programs and has added over 1.2 million water level values over the period from 1835-1997.

This recently extended sea level dataset completes the data acquired since 2003[[1]](#footnote-1) at the permanent tidal observatory in Saint-Malo. The whole set will be presented with respect to the evolution of mean sea levels, extremes and surges throughout the 19th and 20th century.

1. <https://data.shom.fr/donnees/refmar/SAINT-MALO> [↑](#footnote-ref-1)