



USING HISTORICAL ESTUARINE FLOOD DATA: A CONCEPTUAL APPROACH

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ABSTRACT

Estuarine margins are complex areas where different triggers interact in an often-occupied territorial fringe, thus estuarine flood risk is still a challenge for coastal managers due to the need of combining the river and the sea dimensions. The use of historical data is widely used to obtain this information requiring a reliable approach to coherently organize and extract information and perform adequate statistical analysis. This work presents a conceptual approach already tested in previous works to deal with diverse typologies of qualitative historical sources.

Keywords: estuaries; floods; historical sources; methodologies

1. INTRODUCTION

Estuaries are complex areas lying between the river and the sea, where different flood triggers interact along with diverse human occupation. These facts create a challenge to coastal managers since it is critical to understand and characterize how triggers and damages interact to better inform management. Historical information has proved its usefulness due to the low-cost and easy access. Newspapers are a relevant source due to its ability of consistently covering a continuous temporal range, along with its richness on damages information while scientific articles are better sources to extract triggers information. To extract information from this type of sources is crucial to set up an approach that assures coherence and replicable results. The use of statistical methods is frequent since it provides an unbiased approach to obtain results (Wolkers and Kuenzer, 2015) Nevertheless, statistical methods selection should consider the objective of the study and the type of data (*e.g.*, nominal, categorical etc).

2. METHODOLOGICAL APPROACH

Based on earlier works (Rilo *et al*, 2017; Rilo *et al*, 2022) a conceptual approach to use qualitative historical estuarine flood data is presented (Figure 1). The approach starts with compilation and organization of a representative collection of documents (historical data) that fits the purpose of the study, followed by the coding table design to set up the rules to extract the information from the sources and to categorize into thematic groups (Bardin, 2020). The information is stored in a database whose structure is based on the thematic groups obtained. Data typology is often nominal (binary) since this type of sources describes at most the presence or absence of a certain trigger or damage. This fact together with the objective of the study (*e.g* to extract the most relevant indicators that characterize estuarine flood risk) should guide the choice of the statistical method to be applied (Marôco, 2014; Carvalho, 2017).

3. MAIN ACHIEVEMENTS

The framework presented was tested first with a single case study (Tagus estuary, Portugal) where the main typology of historical data were newspapers (Rilo *et al*, 2017), and later with two case

studies (Tagus estuary, Portugal and Shannon estuary, Ireland) where diverse historical sources were used including newspapers, minute meetings or photographs (Rilo *et al*, 2022). The presented approach proved its usefulness to deal with qualitative historical flood data thus contributing to improve estuarine flood risk appraisal.

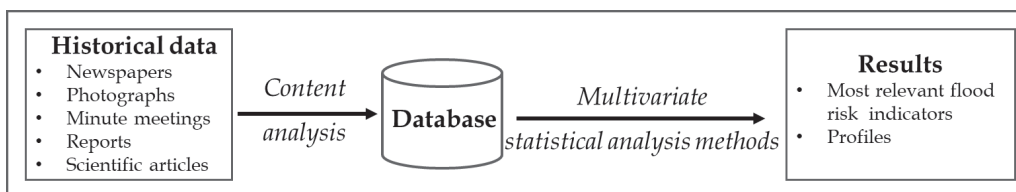


Figure 1. Conceptual approach to use historical estuarine flood data.

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