

Department Environmental Science & Engineering, FCT-UNL

HIDRALERT - Flood forecast and alert system in coastal and port areas



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Objectives

- Development and implementation of coastal spatial analysis models under overtopping and flooding episodes;
- Analysis of Hazard, Vulnerability and Coastal Risk;
- Definition of scenarios of changing impacts on coastal systems and adaptation measures

Methodology

Based on WAVE Model (WAM) data and Simulation WAVes Nearshore (SWAN), we will link the past and present sea wave projections obtained from 1979 to 2013. The empirical formulations of run-up and structures overtopping will lead to determination of hazards zones by interpolation methods on the coast of Costa de Caparica. Crossing these information with coastal vulnerability of physical and geologic characteristics, and land use evolution by using the Coastal Vulnerability Index method (CVI) in which allows to differ coastal areas with relatively high or low exposure to erosion and inundation during extreme events, is achieved the coastal risk.

Expected Results

- We aim to achieve the coastal risk areas considering the extreme sea waves projections of flooding and overtopping during the last 35 years, crossing with land use transformation;
- Develop a *user-friendly* platform of flooding alert level in coastal zones and port structures with relevant information for online users and alert messages to the main authorities.



Fig 1. Hércules's consequences in São João da Caparica beach (January, 2014)

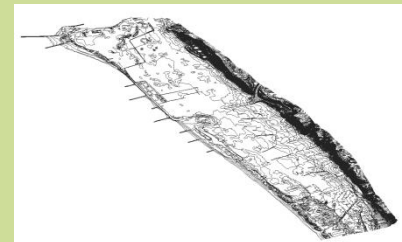


Fig 2. Study area topography analyses

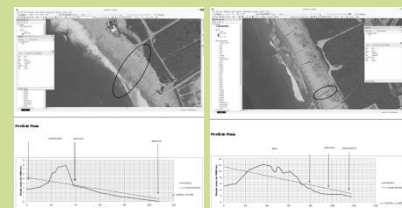


Fig 3. São João da Caparica (on the right) and Riviera (on the left) beach profiles (April, 2014)

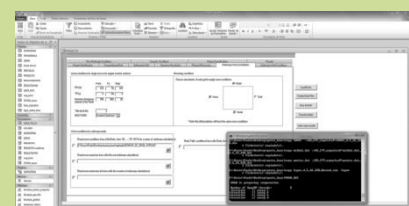


Fig 4. Development of transference matrixes in SWAN model