



## **Methodology for evaluation of flood risk in Port areas. Application to the Port of Praia da Vitória**

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This paper illustrates the methodology developed at the National Civil Engineering Laboratory (LNEC), Portugal with the partnership of the Sciences and Environmental Engineering Department of the New University of Lisbon (UNL) to evaluate the flood risk areas in the Port of Praia da Vitória (Terceira island, Archipelago of Azores), especially in storm conditions.

Such a methodology is based on four key stages: a) division of the study area into sub-areas of similar characteristics; b) definition of the qualitative factors associated with the consequences, when pre-defined flood limits are exceeded; c) determination of the probability of the flooding levels surpassing the pre-defined limits, for each study area; d) assessing the flood risk of the port area.

For the determination of the flooding levels the method described in Raposeiro et al. (2009) was used, based on the wave buoy data collected in storm conditions. These data are propagated to the Port of Praia da Vitória by using wave propagation numerical models, included in the geographical information system (GIS), GUIOMAR, (Neves et al. 2009). Then, the determination of run-up and flooding levels is performed by using empirical formulae for port protection structures. Especial emphasis is placed on the automation of this process in the GUIOMAR system to make it an efficient tool to produce flood levels and risk maps in the Port of Praia da Vitória.

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