



## A vulnerability function for Mediterranean flash flood risk assessment

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Flood risk is a major type of environmental hazard jeopardizing human development, and is usually defined as a functional relation between the hazard, such as the physical and statistical aspects of flooding (e.g. return period of a certain flow height, spatial extend of inundation), and the associated vulnerability, i.e. the exposure of people and assets to floods and the susceptibility of the elements at risk to suffer from flood damage. The assessment of vulnerability –from the quantitative point of view– expresses vulnerability as the expected degree of loss for a given element at risk as a consequence of a certain event. It is ranges on a scale from 0 (no damage) to 1 (complete destruction) and focuses on direct flood loss which is estimated by damage or loss functions.

A methodology for the development of a vulnerability curve for Mediterranean flash flood risk assessment is presented. This curve is based on a relationship between the intensity of the process and the associated degree of loss of elements at risk. The computation procedure is based on a method combining spatially explicit loss data, data on the value of exposed elements at risk and data on flood intensities on an individual building scale (local scale). The developed methodology is applied for the district of East Attica in Greece, a Mediterranean region influenced by mountain and coastal characteristics of land development.

The aim of the study is to provide a valuable tool for the local authorities and the decision makers, a necessary implementation of flood risk management emerging from the requirements laid down in the European Flood Directive, as well as for an assessment of potential costs emerging from future flood events in order to protect individual households.