



## **A GIS-based method for flood risk assessment**

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### **Abstract**

Floods are physical global hazards with negative environmental and socio-economic impacts on local and regional scale. The technological evolution during the last decades, especially in the field of geoinformatics, has offered new advantages in hydrological modelling. This study seeks to use this technology in order to quantify flood risk assessment. The study area which was used is an ungauged catchment and by using mostly GIS hydrological and geomorphological analysis together with a GIS-based distributed Unit Hydrograph model, a series of outcomes have risen. More specifically, this paper examined the behaviour of the Kladeos basin (Peloponnese, Greece) using real rainfall data, as well hypothetical storms. The hydrological analysis held using a Digital Elevation Model of 5x5m pixel size, while the quantitative drainage basin characteristics were calculated and were studied in terms of stream order and its contribution to the flood. Unit Hydrographs are, as it known, useful when there is lack of data and in this work, based on time-area method, a sequences of flood risk assessments have been made using the GIS technology. Essentially, the proposed methodology estimates parameters such as discharge, flow velocity equations etc. in order to quantify flood risk assessment.

### **Keywords**

Flood Risk Assessment Quantification; GIS; hydrological analysis; geomorphological analysis.