

## Modeling Flash Floods In Vouraikos River Mouth, Greece

Kleomenis Kalogeropoulos<sup>(1)</sup>, Sotiris Karalis<sup>(2)</sup>, Efthimios Karymbalis<sup>(1,3)</sup>, Christos Chalkias<sup>(1,4)</sup>  
and Petros Katsafados<sup>(1,5)</sup>

*(1) Harokopio University, 17671 Athens, Greece*

*Telephone: + 30-210-9549347 Email: kalogeropoulos@hua.gr*

*(2) Technological Educational Institute, 17671 Athens, Greece*

*Telephone: +30-210-5385731 Email: skaralis@teiath.gr*

*(3) Telephone: + 30-210-9549347 Email: karymbalis@hua.gr*

*(4) Telephone: + 30-210-9549347 Email: xalkias@hua.gr*

*(5) Telephone: + 30-210-9549384 Email: pkatsaf@hua.gr*

This study is a part of a bigger research concerning the evaluation of flash floods in the outlet of the torrential catchment of Vouraikos River, which is located in Northern Peloponnese. Vouraikos is an 8th order stream (according to Strahler), with a total main channel length of 42km., It drains an area of 240km<sup>2</sup> and discharges into the Gulf of Corinth, west of the coastal town of Diakofto. This work incorporates rainfall data (from the Weather Research and Forecasting limited area model with the embedded dynamical core of the Non-hydrostatic Mesoscale Model, WRF-NMM) and spatial data (such as Digital Elevation Model and land cover maps) in order to establish a GIS-based spatially distributed Unit Hydrograph. The main objective of this paper is the construction of a direct unit hydrograph for an excess rainfall happened on January 18th, 2013 by estimating the stream flow response at the outlet of Vouraikos catchment. The results of the model were validated with field measurements of runoff. The methodology applied here can be useful for several reasons. Initially, it may be used in order to predict coastal areas, which are susceptible to intense flood events. Consequently, such models could contribute to the economic and environmental protection of a potential affected area.

**Keywords:** Flood, modelling, GIS, torrential, Vouraikos River mouth