



Alternatives methods in floodplain hydraulic simulation - Experiences and perspectives

Vasiliki Pagana (1), Aristoteles Tegos (1,2), Panayiotis Dimitriadis (1), Antonis Koukouvinos (1), Panayiotis-Dionisios Panagopoulos (2), and Nikolaos Mamassis (1)

(1) National Technical University of Athens, Civil Engineering, Water Resources and Environmental Engineering, Greece (pandim@itia.ntua.gr), (2) ECOS Consulting S.A.

Floods can simply be defined as the physical phenomena, during which an initially dry land area is covered by water. Floods are normally caused by extreme weather conditions, while their evolution depends mainly on geomorphologic factors, such as soil stability, vegetation cover, as well as the geometrical characteristics of the river basin. To prevent floods' consequences, we have to study the hydraulic behavior of all the basins. Here, the study is focused on the upstream part of the Rafina basin, located in the east of Athens (Greece). Particularly, a hydraulic simulation is accomplished via the one-dimensional HEC-RAS and the quasi-two-dimensional LISFLOOD-FP and FLO-2D models. Additionally, a sensitivity analysis is carried out to investigate the effects of the floodplain and river roughness coefficients on the flood inundation in conjunction with a modern probabilistic view. Finally, a comparison between the three models is made regarding the simulated maximum water depth and maximum flow velocity.