EGU21-15041
https://doi.org/10.5194/egusphere-egu21-15041
EGU General Assembly 2021

Modelling the disastrous Flash Flood of November 2017 in Mandra (Attica, Greece)

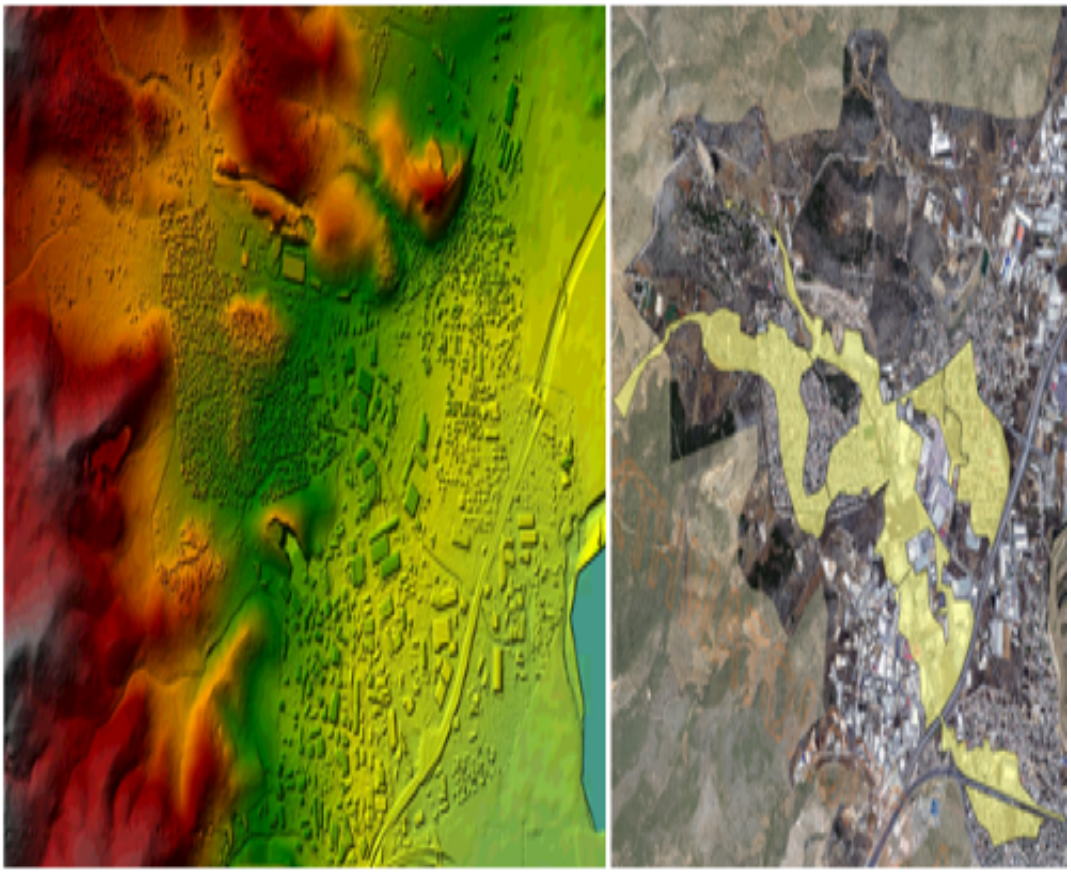
Konstantinos Tsokanis, George Mitsopoulos, Aristides Bloutsos, and Anastasios I. Stamou
National Technical University of Athens , School of Civil Engineering , Department of Water Resources and Environmental Engineering, Chalkida, Greece (tso-ko@hotmail.com)

The region of Attica is characterized by a relatively large number of floods over a long period of time. The flash flood in Mandra on the 15th of November 2017 was the third most disastrous "November" flood in Attica; most of the population was affected by the flood (23 deaths and 24 people injured), while basements and ground floors of buildings in the town were seriously impacted.

The two main streams that pass through the town of Mandra are Soures and Agia Aikaterini, whose catchment area is equal to 23.0 and 22.0 km^2, respectively. These streams are characterized by significant morphological changes due to the intensive construction activities in the greater area that resulted in a dramatic decrease of their available cross-sectional areas and the occurrence of floods even at low flow rates.

We applied the HEC-RAS 1D/2D to model the flash flood using a high resolution Digital Surface Model (DSM) and topographic survey data, to obtain the most accurate representation of the area of Mandra. Moreover, we imported to the model all technical works, such as culverts and bridges that affect the flow. For the model calibration, we employed (a) videos, photographs, information from the local population and satellite images to determine the inundation area and (b) in situ measurements of the flood water depth, in various locations within the town of Mandra. The results of the model were compared with calculations performed within a previous Thesis in 2018 using TELEMAC-2D.

The present paper is based on the Master Thesis of the first author; it was performed within the project "National Network on Climate Change and its Impacts (CLIMPACT)" of the General Secretariat of Research and Technology.



(a) (b)

Figure 1. The greater area of Mandra (a) DSM (b) satellite image with the inundation area