



## **The Limiting Nature of Free Digital Elevation Models in Hydrogeomorphology and Fluvial Floods**

Ricardo Tavares da Costa (1,2), Paolo Mazzoli (2), and Stefano Bagli (2)

(1) University of Bologna, Department of Civil, Chemical, Environmental and Materials Engineering, Bologna, Italy (ricardotavarescosta@gmail.com), (2) Gecosistema Srl, Cesena, Italy

Topography is a critical element in the hydrological response of a drainage basin. Its availability in the form of free Digital Elevation Models (DEM) instantly produced a shift in the modelling of hydrological and hydraulic processes. However, progress may be stalled by vertical accuracy, pixel size and areal coverage of currently available products, and not less by the filtering and hydrological conditioning decisions taken in their processing. In this work, the limiting nature of free DEMs is briefly explored in the context of fluvial floods. In particular, we discuss the influence of vertical accuracy, pixel size and digital terrain processing decisions in the delineation of flood extents and reflect on their practical implications. This work is being developed under the System-Risk project ([www.system-risk.eu](http://www.system-risk.eu)) that received funding from the European Union's Framework Programme for Research and Innovation Horizon 2020 under the Marie Skłodowska-Curie Grant Agreement No. 676027.