



Rockfall Hazard Analysis based on UAV photogrammetry procedures: A case study in the region of Evritania, Greece

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Remote sensing techniques have become increasingly popular within the engineering geological field. Nowadays, the incorporation of “State-of-the-Art” aerial platforms, the so called Unmanned Aerial Vehicles (UAVs) in the procedure of hazard assessment enabled the enhancement of national concrete disaster geo-information management and emergency preparedness planning according to Hyogo framework. The acquisition of detailed 3D data from aerial view implies a large number of advantages in compared with the terrestrial one, as the user can collect information from areas with no or difficult accessibility or even during the catastrophic event and at the same time it enables real-time decision-making. In the current study, a detailed rockfall investigation has been conducted in area of Proussos Monastery, in Evritania region in Central Greece, where a large rockfall event took place and the road network was interrupted for several days. The “hotspot” area is located in one of the most landslide prone regions in Greece due to climate and unfavorable geological factors. The kinematic analysis of unstable surfaces is conducted based on the acquired 3D point cloud from a mini-UAV platform. In addition, volume estimation has been conducted in order to proceed with the quantitative analysis of magnitude-frequency rockfall distribution. The resulted precision and accuracy results of the system were evaluated against a detailed LiDAR investigation. The current study aims to provide a detailed geotechnical assessment of the rockfall failure based on UAV imagery and propose an extended variety of possible planning strategies and remediation measures to avoid further rockfall events in future.