# 3-dimensional mapping of a landslide in Nablus City, Palestine:

# a preliminary risk assessment

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## Abstract

The complex nature of many landslides necessitates the need for investigating their characteristics. It becomes important that the internal structure of the landslide and its surrounding environment be determined in order to facilitate reliable stability analyses and risk mitigation. Models of landslide structure have traditionally been constructed based on geomorphic observations with the aid of subsurface data obtained by boreholes, excavations and when possible by geophysical surveys. A landslide located on the White Mountain in Nablus city, Palestine is used as a case study to demonstrate the utility of a geophysical approach to subsurface mapping of unstable slopes. A total of 960 m profiles were collected using Seismic refraction method. Seismic data were interpreted based on stratigraphic and geomorphologic observations, and then integrated into a 3-dimentional model constrained with geologic data from 10 boreholes penetrated the landslide and adjacent terrain. Surfaces of rupture and separation were successfully identified by seismic refraction techniques which was effective for resolving stratigraphic relationships between units to a maximum depth of 35 m. The landslide is also analyzed using PCTANI & GALENA V3 software to put the various classes of parameters in order of its significance to the process of landsliding (landslide susceptibility mapping) and weigh the impact of one parameter against another. The results of this study describe the slop-instability processes and geological hazards affecting the housing on the White Mountain and the surrounding urban areas.