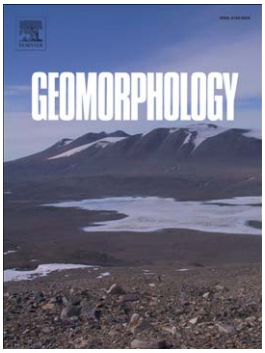

Composite mechanism of the Büyükçekmece (Turkey) landslide as conditioning factor for earthquake-induced mobility

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Composite mechanism of the Büyükçekmece (Turkey) landslide as conditioning factor for earthquake-induced mobility

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ABSTRACT

Earthquake-induced displacements of landslides are significantly conditioned by their 1D and 2D interactions with seismic waves, as currently proven by several studies. Nevertheless, the role of a more complex geological setting, responsible for a heterogeneous composition of the landslide mass, can significantly influence these phenomena. The heterogeneity can also depend on multiple phases of the landslide activity, responsible for dislodging the whole landslide mass into submasses, each one delimited by secondary scarps and characterized by individual mobility. Hence, in the framework of the European project "*MARSite – Marmara Supersite: new directions in seismic hazard assessment through focused Earth observation in the Marmara Supersite*", the Büyükçekmece landslide, located approximately 30 km W of Istanbul (Turkey), was considered as a case study. This landslide involves a large mass of approximately 140 million cubic metres, composed of silty clays, tuffs and sands ascribable to Cenozoic geological formations. The landslide is characterized by multiple phases of activity with a composite rototranslational mechanism, which created seven submasses delimited by