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Landslide Hazard Analysis with Multidisciplinary Approach: İstanbul example

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There are several methods that can be utilized for describing the landslide mechanisms. While some of them are commonly used, there are relatively new methods that have been proven to be useful. Obviously, each method has its own limitations and thus integrated use of these methods contributes to obtaining a realistic landslide model. The slopes of Küçükçekmece and Büyükçekmece Lagoons located at the Marmara Sea coast of İstanbul, Turkey, are among most specific examples of complex type landslides. The landslides in the area started developing at low sea level, and appears to ceased or at least slowed down to be at minimum after the sea level rise, as oppose to the still-active landslides that continue to cause damage especially in the valley slopes above the recent sea level between the two lagoons.
To clarify the characteristics of these slope movements and classify them in most accurate way, Directorate of Earthquake and Ground Research of Istanbul Metropolitan Municipality launched a project in cooperation with Marmara Research Center of The Scientific and Technological Research Council of Turkey (TÜBİTAK).
The project benefits the utility of the techniques of different disciplines such as geology, geophysics, geomorphology, hydrogeology, geotechnics, geodesy, remote sensing and meteorology. The observations include detailed mapping of topography by airborne LIDAR, deformation monitoring with more than 80 GPS stations, Ground Based Synthetic Aperture Radar measurements in 8 critical zones, 81 geological drills and more than 20 km of geophysical measurements. With three years of monitoring, the acquired data, and the results such as landslide hazard map, were integrated in GIS database for the purpose of easing tasks for the urban planners and the decision makers.