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Lakes at risk: A bottom-up approach to rock slide hazard assessment

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In this study we describe a methodology that was developed for an initial topographic evaluation of rock slide threat to a set of lakes. Analysing the potential intersection between rock slides and water bodies is important for the assessment of tsunami hazard. The method relies on two input datasets only: a digital elevation model (DEM) and a map of target features (lakes). An intermediate result of the analysis is a surface where the value at each point is the mobility required for a slide released at that point to reach its candidate lake. Given a known relationhip between rock slide mobility and volume this surface can be converted to a surface of the minimum required slide volume in order to reach a lake from any point. This can again be used to generate indices for topographic rock slide potential, for each lake, based on the frequency-magnitude distribution of known rock slides. The mobility surface and its derivatives may serve as useful tools for further analysis of rock slide hazard to lakes in a given area. For example they can be used for definition of additional data needs and as a guide during planning and carrying out field campaigns.