ICG2022-625
https://doi.org/10.5194/icg2022-625
10th International Conference on Geomorphology

Assessing exposure changes to landsliding in Lisbon Metropolitan Area

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The Lisbon Metropolitan Area (LMA) is a Portuguese administrative region that encompasses 18 municipalities and is characterized by a high risk of landsliding as a consequence of the high susceptibility and exposure of people and assets. Therefore, this work aimed to assess the evolution of exposure levels to landsliding in each municipality of LMA, based on three timesteps (1995, 2011 and 2018), through the following summarized steps: 1) Landslide susceptibility modelling for LMA using an inventory that contains 1268 landslides, mostly rotational and translational slides; 2) Assessment of the relationship between the number of existing buildings and the urban area represented in the official land use map in 2011; 3) Assessment of the population exposed to landslides in 2011 (using Census data) within and outside the urban areas, based on the dasymetric distribution approach; 4) Backward and forward projection of population exposure to landsliding in the years of 1995 and 2018, for which official land use maps are available. Projections are based on relations found in 2) and 3). Overall, the results show that population exposure to landsliding has increased over time in LMA, but differently depending on the municipality considered. The relations found allow to estimate future population and assets exposure based on scenarios of urban expansion and population growth.

S.C. Oliveira was financed by the Portuguese Foundation for Science and Technology, I.P., under the framework of the project BeSafeSlide Landslide Early Warning soft technology prototype to improve community resilience and adaptation to environmental change (PTDC/GES-AMB/30052/2017). Ricardo A. C. Garcia was financed by the project Riskcoast - Development of tools to prevent and manage geological risks on the coast linked to climate change (SOE3/P4/EO868, Interreg Sudoe). CEG Research Unit UID/GEO/00295/2019.