

## ***Interactive comment on “Assessing population exposure for landslide risk analysis using dasymetric cartography” by R. A. C. Garcia et al.***

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It is considered that the article is potentially relevant to NHES journal readers and can constitute a methodological standpoint article. But the way it is presented and discussed makes it a technical note, which reduces the potential relevance can achieve in studies about hazardous processes. The manuscript presents a good introduction, enumerating the importance of analyzing the impacts, with a good state of the art, in which however lacks recent publications made in the Lisbon metropolitan area where the methodology of territorial vulnerability and the risks, have been discussed. On the framework about the methodology for assessing the dasymetric exposure, and the related mapping, this is consistent, although limited in the discussion, which is reflected later in the discussion of the results, made on an incipient form, or based on the uncertainty related with people location inside buildings, which is a curiosity. It is considered

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that in relation to the structure the article it is unbalanced, with a long introduction. The presentation of results is scarce and the discussion is done in bullets through synthetic sentences, requiring a deeper discussion. In terms of the graphical elements presented, they have quality and are illustrative, although a summary table that show the comparative results of the two approaches (1 and 2) it was important. About the quality of the edited English, this is limited, with poor formal expressions, so it is suggested a review by a native speaker. We now present some considerations that the authors should note in reviewing the manuscript: 1 - The introduction is written considering multi-hazards concerns, and then the authors have evolved to the landslides exposed population, based on the landslide susceptibility map characteristics. This concerns about a single hazard could be better explained and supported. 2 - It is not clear that the added value resulting from this methodological development using dasymetric cartography, will be applied to the mapping for the emergency management, as suggested in some paragraphs, or will be applied to the risk prevention or spatial planning, as suggested in other sentences. 3 - There is a clear choice for the analysis of the Alenquer river basin. This choice is not discussed, nor its importance in relation to Lisbon. Urban sprawl appears to justify the choice of Alenquer municipality, and then devalued the functions and mobility regarding the centrality of Lisbon. The presentation of the data also highlights the high agricultural and forestry land use and occupation in certain areas, losing the relevance of the research. 4 - Resulting from the application of the methodology it is not clear the relationship between the two approaches and the type of movement, superficial or deep mass movements. It seems that this discussion could increase notably the cartographic results. The severity of the movements and the speed thereof could be also discussed on the basis of the two approaches. 5 - An important aspect to be pointed is that the population assigned to a BCU is only the resident population according to the values of the Census in Portugal. The buildings that are represented seem to include both those who have residential functions as the buildings with services and commercial functions. This disagreement must be discussed and presented their performance for both approaches. We consider

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the option using a simplification between residential building/not residential building areas may have conditioned the results. 6 - It makes sense discuss the evaluation of the dasymetric exposure due to the uncertainty, and this in relation to the susceptibility mapping. Still seems relevant explaining the added value with this approach in relation with low and moderate probability process, a logic of large disasters, or with exposure to the high probability events associated with small disasters. 7 - It makes sense to discuss the types of damages associated with buildings. However the cartographic analysis could also considered, not only the damage in the structure of buildings, but the access to buildings, the infrastructure damages, e.g. on sewerage, water or electricity supply, which requires complementary graphical representation. According to the above it is considered that the authors easily overcome these major suggested revisions, enabling a better understanding of the methodological contribution of the article and its application to other contexts.

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