

## ***Interactive comment on “Landslide risk management analysis on expansive residential areas. Case study of La Marina (Alicante, Spain)” by Isidro Cantarino et al.***

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The manuscript concerns the landslide risk issue in relation with the diffusion of residential areas. The aim of the paper is to lay down objective criteria to find how suitable a specific local entity's risk management is by looking at the evolution of its urban development procedures. The authors applied their method in a case study on the Spanish Mediterranean coast as an example of “rural sprawl” generated by second homes and for residential tourism. The final goal of the authors is to determine which is the cause that most affects the increase of landslide risk considering the geomorphological dynamics, the inadequate land management or other random reasons. To evaluate the

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landslide risk, they applied the UNDRO general equation of the risk trying to define all the components, partially failing the attempt. To determine the evolution of the residential build-up area they used the annual Gross Floor Area data available for the case study from cadastral parcel data. They then analyzed the temporal distribution of the two elements. The paper addresses the problem of land regulations and possible restrictions in land use according to landslide risk assessment. Local and central administrations can take advantages from the results of their analysis to verify, whether or not, their land regulations are obtaining the right effects. From this perspective, the proposed tool has the right relevance, even if, in my opinion, it is not easily repeatable in other areas given the enormous amount of data (e.g. landslide inventories, landslide temporal series, exposure data, cadastral parcel data, annual data on buildings) needed to apply it, not always available for wide areas. Since the presented tool should be of interest for the scientific community, I would suggest the authors to increase the quality of the paper working both improving the paper structure and in treating some fundamental topics in detail and citing more references.

My individual scientific questions concerns: How do you model the landslide susceptibility? Can you give more details and stress the possible limitations or uncertainties, if they exist, that can affect the results? For the landslide hazard evaluation, you accounted for 8 landslide events. Do you consider the number completely representative of the landslide occurred in the 1,335 km<sup>2</sup> of the studied area? Do you account the landslide magnitude considering information on the landslide individual areas? It is not fully clear from the text. Concerning the building physical vulnerability indicators, the cited references refer to debris flows. Is this type of landslide of possible occurrence in the study area? Or do you apply the indicators to other type of landslide? In this case you should explain the reason that support your choice. The cluster analysis section, that in my opinion is relevant for the aim of the paper, should be improved as it is weakly explained and the results poorly described and discussed.

In addition to the comments in the pdf file attached, I add some suggestions to the

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paper structure:

Section 2, "General Methodology" needs a graphical schema to illustrate the different theoretical issues. In some cases you refer to results or questions discussed later in the text making difficult the comprehension to the reader. The section has too many sub-chapters and titles interrupting the reading. Section 3, "Case study". It should be better to highlight that you are assessing the specific risk. You are assessing the risk in terms of expected economic loss due to landslide damage to residential building and not the total risk. In my opinion there are some basic data that you missed. It could be useful to add and discuss maps of both the landslide inventory and of the landslide susceptibility model to help the reader to identify the place where the landslides occurred and where the landslide susceptibility give the highest values.

I would suggest a full revision of the English language.

Please also note the supplement to this comment:

<https://nhess.copernicus.org/preprints/nhess-2020-216/nhess-2020-216-RC1-supplement.pdf>

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