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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Potential Impact of Climate Change and Extreme Events on Slope Land Hazard – A Case Study of Xindian Watershed in Taiwan" *by* Shih-Chao Wei et al.

Anonymous Referee #2

Received and published: 14 August 2018

This manuscript describes an integrated approach to forecast the the economic impact of shallow landslides and debris flows in the framework of climate change scenarios. I personally think that the approach proposed is very interesting and useful since provides in quantitative terms the loss related to landslides and debris flows based on well-established literature methods. Anyway I think that the manuscript should be revised and improved before to be accepted for publication in the journal. In general the manuscript is well written but a revision of the manuscript structure and the clarification of some weak points would make the manuscript more clear and readable.

Here below my comments:

1. I suggest you to revise the Methodology section. I think there is no need to describe in detail (with equations) the TRIGRS and Debris-2D models. In this section I would suggest you to explain better why you have selected these methods among all the literature ones and then refer to the original papers for further information about the model equations. Furthermore, at the beginning of sections 2.1, 2.2, 2.3 and 2.4 you provide a description of the state of the art. This parts should be moved in the Introduction. In general I suggest to shorten the methodology description, moving the state of the art in the Introduction, avoiding the description of the models and the subdivision in sub chapters (2.1, 2.2 and so on)

2. In line1-2 of page 4 you state that the "spatial interpolation from 5 km to 40 m is made for the selected scenarios and used as inputs for landslide simulation." What do you mean for spatial interpolation? Please clarify and provide more information.

3. The sentence in line 13-14 of page 4 is not correct since TRIGRS is not an inventory of shallow landslides simulation but a physically-based model to forecast shallow landslides occurrence under rainfall events. Please rephrase

4. The reviewer suggests to revise the term landslide in the methodology section. The landslides simulated by the TRIGRS model are shallow landslides. I think you should use this term instead of the general term landslide which include all types of landslides.

5. In Fig. 3 historical landslide area from 2008 and 2015 are reported. Please provide more information about how the inventory has been realized.

6. In line 4 of page 5 I suggest you to replace the term during with at the beginning.

7. In section 3.3 you don't provide any detailed information about the soil parameters used in the simulation of TRIGRS. In general in physically-based models the selection of soil parameters is an important issue. I suggest you to provide a table with soil parameters values and to describe how you have measured these data or which is the source.

8. The sentence in line 11-14 at page 13 is not clear, please rephrase.

9. In my opinion the title of Figure 8 is uncorrect since the TRIGRS model provides factor of safety maps and not a map of soil depth. Please provide a figure with the results of the simulation and specify better what the figure 8 represents.

10. The results of loss assessment provided in section 4.2 are very interesting, anyway a clear explanation on how they have been obtained is missing. Please clarify better this point, providing clear description of calculation procedure.

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