Nat. Hazards Earth Syst. Sci. Discuss.,
doi:10.5194/nhess-2016-391-RC2, 2017

Natural Hazards and Earth System Sciences
Discussions
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Interactive comment on "Hazard Assessment Comparison of Tazhiping Landslide Before and After Treatment" *by* Dong Huang et al.

Anonymous Referee #2

Received and published: 14 March 2017

The manuscript presented a fluid mechanics based method for landslide/debris flow modeling, and was further applied to a real landslide case for hazard zones mapping. The topic is scientifically significant for nature hazard mitigations. The manuscript was logically organized and the results were well described and reasonably discussed. The authors provided sufficient evidence that the proposed method could be used as a promising tool for landslide modelling and hazard mapping. The knowledge obtained from the study would benefit civil engineering society for landslide investigation assessment. This paper can be accepted for publication by considering all the points given below.

1. The main contribution of this paper seems to be the computational model proposed. It is desired to add related descriptions to the title of this paper.

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Discussion paper

2. Previous study on landslide/debris flow issues using the fluid mechanics based method had faced the problem that it predicts higher mobility of the moving body while using the same fluid parameters throughout the whole flowing process. For example, less obvious fluid property is expected when the flow body is approaching stop point. It is stated in this manuscript that a changed frictional resistance is used (L78). However, the details are not clear in the text. Relevant descriptions on this issue should be strengthened.

3. It is not clear in the text that how the free surface of the landslide/debris flow is treated or reconstructed. An additional figure is need to describe the details.

4. Fig.4 showed the geological profile of Taziping Landslide and a slide surface is clearly indicated. Is this slide surface comparable with the simulation result? It would be interesting to show their comparison.

5. In Tab.3, Various hazard zone levels were cataloged. What is the criterial to assign a specific damage situation to a certain zone level? Is there any standard code to follow?

Other specific comments are given below. 1. The quotations in the manuscript are not in the same format, for example, Line 44, Costa, 1984; VS Line 50, Zhang. Y, 2013. Usually only family name is preferred, please refer to the journal's instructions and make necessary changes throughout the text.

2. Fig.1 needs proper citation.

3. In Fig.6, Fig.7, what moment of flow does these figures represent? Different moment should have different deposit thickness, flow velocity and pressure. Please confirm.

4. L276 "The middle and lower deposits had a thickness of 277 about 5-10m", confusing here, what does "the middle and lower deposits" mean? Similar as "the middle and lower movement speed", please check throughout the text.

5. L289. What technique is used for searching the sliding plane?

6. L305, Fig.4 should be Fig.7.

7. Tab.3. How is the “Building damage probability” evaluated?

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