

Interactive comment on “A GIS-based three-dimensional landslide generated waves height calculation method” by Guo Yu et al.

Anonymous Referee #1

Received and published: 26 September 2019

General comments

In the present paper a new method is presented to calculate the height of waves generated by 3D landslides. This method has been implemented and integrated in a geographic information system (ArcGIS).

This is an interesting topic which fits with the scope of the journal. Moreover, the paper is generally well organized, clearly written and easy to read.

However, the article is a bit superficial in many aspects, and a major revision is needed before it can be considered for publication.

Specific comments

C1

Line 36. The waves height calculation method by Noda (1970) should be better presented and explained.

Lines 80-82. In my opinion, this sentence is obvious for scientists and engineers, who work with GIS.

Figure 2. The figure is not clear. Too many small arrows, too many symbols. Please, enlarge the figure or the arrows, to make single contributions more understandable.

Line 97. What are “the external loads”? This must be better explained.

Lines 98, 102 and 139. “centre” and “centroid” are the same? If so, please unify.

Line 103. Please, specify that u is directed as σ .

Lines 104-112. It is not clear what the authors mean with “left and right sides”. It would be better to refer to the coordinate system of Fig.2. In this way “left and right sides” becomes “vertical face at $y = 0$ ” and “vertical face at $y = Dy$ ”, being Dy the size of the grid column along Y . Moreover, usually the stress is associated to the side at $y = 0$ and its increment to the side $y = Dy$ (for example T at the vertical face at $y = 0$ and $T+DT$ at the vertical face at $y = Dy$): in Fig.2 it is the opposite.

Line 138. u is declared as a pressure, so it should be a force per unit area and not a distance as D is. Moreover, symbol D is very similar to symbol DD and it should be changed to avoid misunderstanding.

Line 144. In the literature there is some variability in the choice of the value for the viscous resistance coefficient. The choice of the authors must be better motivated.

Paragraph 2.4. This paragraph is obvious and banal and therefore it can be removed. Suffice it to keep Fig.4 and to say that the analysis of each column was done with respect to a coordinate system $X'CY'$, being X' the sliding direction of the landslide.

Lines 180-183. These two phrases are basically a repetition of concepts already mentioned before.

C2

Paragraph 2.7. The wave height is not evaluated in a new and original way, but it descends from the application of a literature formula (Zhong et al., 2007). The title of the paper is misleading, because it makes you think of a new technique to evaluate waves height. Instead, as far as I understand, the authors present a new technique to evaluate landslide velocity and they apply a literature formula to calculate waves height. This must be better clarified in the title and in the Introduction. Moreover, the formula by Zhong et al. (2007) should be better presented and discussed, as it becomes part of the final GIS.

Paragraph 4. In the case study, the presented method has been applied together with Pan Jiazheng method.

To compare them, Pan Jiazheng method should be better presented and explained. What are the main differences between the two approaches, besides the fact that one is 2D and the other one is 3D?

Moreover, the results are presented, but it is not clear to the reader why this new method is better than the previous one. What are the benefits?

Which terms are here considered, which have been previously neglected?

And how can this new approach still be improved?

Almost 25% of the cited references are in Chinese. NHESS is an international journal, with readers from all over the world. In my opinion, it would be preferable to refer to papers written in English, as far as this is possible. Please, try to find some alternative references in English, even by the same authors.

Moreover, the reference list should be extended.

Technical corrections

Please, check all the references:

Line 28. Is this "Xu and Zhou, 2015" as it appears in the text or perhaps "Xu et al.,

C3

2015" as it appears in the References?

Lines 31 and 46. Is this "Di et al., 2008" as it appears in the text or perhaps "Di and Sammarco, 2008" as it appears in the References?

Line 31 and 380. "Silvia and Marco" sound as given names, please check the correct reference.

Line 36. Please, change in "Noda".

Line 51. Please, change in "Hu (1995)".

Line 62. Is this "Mergili (2014)" as it appears in the text or perhaps "Mergili et al. (2014)" as it appears in the References?

Please, check the character size of the references, which seems to be smaller than the rest of the text (in particular lines 30-33).

Please, check the alphabetical order: Mergili et al. (2014) should come before Miao et al. (2011); Zhang (2016) should come before Zhong et al. (2007).

Lines 346-349. Please, change the text to impersonal form.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-230>, 2019.