

Response to Reviewers' comments on "A model for interpreting the deformation mechanism of reservoir landslides in the Three Gorges Reservoir area, China" (nhess-2019-432)

Dear Editor and Reviewers,

Thank you for editor's efforts on dealing our manuscript and the comments from the reviewers. In this revised version, we made point-by-point corrections after carefully studying the third and fourth reviewer's comments. The revised portions are marked in RED in new manuscript (MS).

Below we list every comment received (in *italics*), followed by our response in regular font.

Response to Reviewer 3 comments

General comment

The paper represents a methodological work based on monitoring activity of rainfall and displacements and on stability calculations of a case study at Shuping area, China. The paper is well written and clearly explain how the seepage force works during the water rising and drop level the considered reservoir. Nonetheless, some minor revisions could improve some points.

Response: Thanks for reviewer's kind comments and suggestions.

Specific comments:

1. Figure 1: the landslide examples should be better characterized by adding the friction angle and cohesion values, if possible.

Response: Thanks for suggestion. The friction angle and cohesion values were added for the presented landslide cases in Figure 1. The friction value of the slip surface of the Vajont landslide was back-analyzed in many literatures according to its failure process, but the cohesion value was not presented. Therefore, only friction value was presented for Vajont landslide in Figure 1 (Line 84).

2. Pag. 9, line 141-142: the internal friction angle range of values must be related to specific formations set in the studied area and the Vajont landslide must be considered separately.

Response: The statistic results show that the internal friction of the Vajont landslide (Figure 1, Line 84) is in the range of the internal friction angle of the landslides in the

studied area; therefore, Vajont landslide was not considered separately.

3. *Fig. 10: the caption refers to 2013 and 2016 years, but in the abscissa it is written the beginning of 2017.*

Response: OK, we removed the date of the 2017 from the abscissa in the new version. Please see Figure 9 (Line 265) in new manuscript.

4. *pag. 25, line 373-376: why were these boundary conditions assigned?*

Response: Thanks for suggestion; the expression of the boundary conditions were simplified (Lines: 372-373).

Response to Reviewer 4 comments

General comment

I found this manuscript is important and understandable. However, it has concerns in particular, the discussion part is too short for a scientific paper. The authors can compare other studies citing literatures. If it is a lack of profound discussion, the manuscript would be inappropriate as a scientific paper of natural hazards. For example, how does the authors consider the effect of frictional property on sliding plane. The sliding plane they showed in the profile of Shuping landslide moved on jaggy rock surface, and that asperity surely affect the mass balance of landslide. Any way I hope the authors will add fulfilling discussions with comparing other study cases, so I would recommend it to be the major revision.

Response: Thanks for reviewer's kind comments and suggestions. We extended the discussion and compared the results with the references, see Lines 505-519.

Specific comments:

1. *Line 39-40, The authors wrote about the government expense of mitigation work, but I think it is inappropriate for the scientific paper.*

Response: Thanks for pointing this issue; we removed this sentence in the revised version (Lines 39-40).

2. *Fig.1 What indicates "degrees" on upper left upper of each figure? Explain in the caption. And, what means water levels?*

Response: "degrees" on upper left upper of each figure indicates the *section orientation*. We now add the legend in Figure 1. "water level" in Figure 1 indicates the *important reservoir level* for each landslide; we also add the legend in Figure 1.

3. *Line 141, How does the authors decide the empirical values? Please explain in*

detail.

Response: We decide the empirical values according to the range of the shear strength parameters of the slip zone soil presented in *Engineering Geology Manual* (Chang et al., 2007). We now add an explanation on lines 140-141.

4. *Line 167-169, Is it correct that the way the authors describe the citation.*

Response: OK, we wrote this sentence (see Lines 169-171).

5. *Fig.7 I do not think this figure is necessity.*

Response: OK, we removed this figure in the new version, and rearrange the number of the rest figures.

Thanks again for editor's and reviewer's effort on our manuscript!

Best regards,

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Yi Yuan

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