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## ***Interactive comment on “A huge deep-seated ancient rock landslide: recognition, mechanism and stability” by M. G. Tang et al.***

**M. G. Tang et al.**

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Thank you very much for your critical and constructive comments. and also must thank you for the fact that you spent precious time in conducting this reviewing process. Below we firstly reply to reviewer's comments and suggestions in detail:

General comments: The article focuses on a dormant deep-seated landslide at the Three Gorges Reservoir in China. The topic of the paper is interesting and useful for the rock and soil mechanics community and especially for geotechnical engineers and engineering geologist who are working in the field of slope stabilities or embankments near reservoirs. Furthermore, the high number of large buildings on the landslide require a comprehensive hazard and risk assessment. Thus, the reviewer likes

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the study/problem and encourage the authors to publish. Given that, the manuscript is now at a draft stage, considerable improvements and supplements are required to make the manuscript clear, comprehensible and traceable for readers, with that ready for publication. Reply: We would like to say that we deeply appreciate the reviewers' efforts to evaluate the manuscript. We will edit the next version of the manuscript as such that this becomes clearer and more proper.

1. It was surprising that the article shows a remarkable similarity with a published article at the IAEG 2014 in Torino, but was not cited: Mingguo Tang, Qiang Xu, Xuebin Huang, Kaixiang Xu, Wenming Cheng, and Kai Wang, 2014: Recognition and Genetic Mechanism of Sanmashan Deep-Seated Landslide, Three Gorges Reservoir Area, China. In.: G. Lollino et al. (eds.), Engineering Geology for Society and Territory – Volume 2, p. 571-575. September 19th 2014, Torino, Italy. 8 Figures were included into the manuscript but without any or only very small changes and without citing to the IAEG paper: Fig. 2 (=Fig. 97.1), Fig. 3 (=Fig. 97.3), Fig. 15 (=Fig. 97.5), Fig. 17 (=Fig. 97.7), Fig. 29 (=Fig. 97.8), Fig. 30 (=Fig. 97.9), Fig. 31. (=Fig. 97.10) and Fig. 32 (=Fig. 97.11). This has to be changed for publication! Given that the total number of figures is rather high, some figures can be deleted and cited to the IAEG 2014 article. Reply: This will be modified. We will remove it from the next version of the manuscript and cite to the IAEG 2014 article.

2. What's about the activity of the landslide? Are there any deformation measurements (monitoring) available showing that there is no actual slope activity? Please include some sentences about this topic. Reply: There are several deformation monitoring points. And the results show that Houzishi secondary landslide at the foot of Sanmashan landslide once appeared some signs of deformation, but the deformation is very small and no development in recent years. Overall now the landslide is inactive. Above information will be described in the next version of the manuscript.

3. Please include, if possible, information from boreholes (e.g. borehole logs, inclinometer measurements, piezometric measurements, borehole geophysics, : : ).

Reply: There are a lot of boreholes and several piezometric measurements. We will supply the information in "4.2 Structural evidence". This will be emphasized in the text.

4. The wording requires some improvement. Thus proof reading, ideally by an English native speaker, is suggested after revision of the manuscript. Reply: We will invite an English native expert to polish language.

5. Terms concerning structural and tectonic features and process are frequently unclear. For example, what do you mean with "conjugate shear joint". The term "joint" usually is used for discontinuities without any shear displacement. And, what did you mean with the term "tension fault"? The term "fault" usually is used for structures formed by shear displacement. Which nomenclature for structures did you used? Please include a reference and try to be consistent to internationally used technical terms. Reply: This is very good point. We should add a more detailed explanation of the purpose of paper. Once some people thought the Sanmashan landslide (we call) is not a landslide. Li et al. (2002) put forward the hypothesis that it was caused by tectonic activity, and all around it is cut by four normal faults (F8, F20, F19, and F26), that is to say it is a local fault graben (Fig. 4), and this idea was supported by Wang et al. (2006). Generally the normal fault forms under the background of tensional tectonic stress, so it is considered "tension fault". So in order to prove it is a landslide not a local fault graben, we collect regional geological structure and investigate the local structure setting. We investigate the conjugate shear joint (Fig. 10) in the Zhuyi anticline. Studies shows this region is the background of a N-S compressive tectonic stress. Then the four normal faults, F8, F20, F19, and F26 (Li et al., 2002), did not form in this local region. Please see "3 Fault graben can not form". These terms "conjugate shear joint" or "tension fault" may not be appropriate. Now we understand, it must be a landslide when the characterisation (including geologic setting, geomorphic and structural evidence, sliding marks, et al. ) and mechanism of landslide is clearly described. So the section "3 Fault graben can not form" is redundant. According to the reviewer's comments and suggestions, we will reorganise and shall be structured more properly.

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6. So far, it is difficult to see the relevance of centrifuge modeling. Generally, most suggestions done by the reviewer are included directly in the pdf using the software Adobe Professional. Reply: we know substantial modifications in the paper, it is very helpful. we will supply the materials as far as possible to show the relevance of centrifuge modeling and geological modeling.

7. Title: The reviewer suggests to use the term “dormant” instead of “ancient”. Dormant is a term defined by the WP/WLI 1993. Please change the title too: A dormant deep-seated landslide: characterisation, mechanism and stability Reply: We understand this reviewer’s idea. A dormant landslide is an inactive landslide which can be reactivated by its original causes or by other causes. However, initially taking into account proving against a local fault graben, we will change the title: A huge deep-seated dormant landslide: recognition, mechanism and stability.

8. Figures: Generally, figure captions are often very short and may not be very informative. The labeling of the figures are often very small and nearly unreadable. Please change and improve. Reply: The unreadable or unclear figures will be redrawn. And we will add the description words in the figure captions in order to facilitate the readers to understand.

9. References: Please check the reference list carefully; For example, Huang, R. Q.: Mechanisms of large-scale landslides in China, B. Eng. Geol. Environ., 71, 161–170, 2012 is not cited in the text. Reply: We will check it carefully.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 6791, 2015.

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