

Interactive comment on “Movement of the Donglingxin landslide, China, induced by reservoir inundation and rainfall” by J. Yu et al.

Anonymous Referee #2

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The paper entitled Movement of the Donglingxin landslide, China, induced by reservoir inundation and rainfall, by J. Yu et al., attempts to demonstrate the effect of the fluctuation of the water level as well as the rainfall on the Donglingxin landslide. It shows the difficulty to establish some mitigation systems due to the shape of the valley. However some piezometers (mentioned as boreholes in the text) and a total station (mentioned as geodetic detection in the text?) were installed in order to have a better knowledge of the sliding processes. General comments (Overall quality): The above-mentioned paper addresses a relevant study of a landslide process with the scope of NHES but from my perspective, the content of the paper need a major revision to reach the international scientific standards. The English level is poor (e.g. use of “great” or “big”) which may induce a lack of precision or unclear sentences. In my opinion, an ex-

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tensive shortening and concise rephrasing of text passages as well as a “merging” of figures might further increase the quality of the paper. Moreover some determinants are often missing. The figures are not well prepared or with lack of information (e.g. no North direction, no scale bar, no boundaries, no precise location, no a. b. c... symbols indicated). The figure captions should include more details to understand the content of the figures. The abstract could include more precise information, such as: the degree of order of the increasing pore water pressure or level fluctuation. The introduction needs more scientific references about the ground-based technique used and the studies already done on the same area (or comparable areas in term of geology, morphometry of the valley or landslide type). Moreover, it should include consistent description of the objectives of the paper. Considering the headings, I advise a renaming of some of them which are unclear or not appropriate to their content (e.g. stabilization measures, movement tendency). There is too few information about the accuracy of the measurements. A discussion about the results and the perspectives that offer this preliminary study is missing. The conclusion requires quantitative information. Specific comments: Even if some parts require a complete rewriting because of the poor language level, the propositions of rephrasing are detailed for each pages of the manuscript as followed: P2537, line 14: correct geomorphological conditions instead of geomorphological condition. P2538, lines 16-20: Unclear. Rewrite. Lines 25: “According to Qi (2006), the deformation characteristics . . .”. Add more references and information from other previous studies. P2539, lines 1: space required between the reference and the next sentence. Line 3: project instead of probject. Line 7: what do you mean by “pool level 475 m”? Line 11: state the number of inhabitants or houses. Line 14: correct supports and protections measures by support and protection measurements. Line 15: How many inhabitants are going to be affected. Line 18-20: To rephrase and complete. Line 23: add “the” before landslide. Line 25-26: Do not cut “secondary” in this way. P2540, lines 7-8: Rewrite locating the different thickness of the landslide. Lines 10-11: what is the link with previous sentence? What do you want to show/prove? Are the houses already affected by the instability? In this section the land

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use need to be described. P2541: Change “layer landslide’ into “landslide layer” in the whole section. Line 17: the verb is not singular. Line 19: speak in term of granulometry. P2542: I would change the heading into: “Deformation features, mitigation and monitoring systems”. Line 7: Rewrite the sentence. Lines 9-10: OK for the situation in 2008 even it requires a rephrasing but what about the present situation? Line 21: slide mode are not the proper words to use. And, how much deep is the other? This part is important to understand the complex sliding processes and should be better explained. Is there one internal slide (or more) in the translational slide? P2543, lines 4-5: Rephrase into “.. some support and protection measures are difficult to establish. According to Fleming et al. (1989) and Iverson et al. (1997), the increase of water pressure induces the decrease of shear strength so that a drainage is the only mitigation system which can be adopted. Lines 8-11: Unclear. Line 13. Be consistent and write Figure in the text and Fig. into brackets. Line 21: Explain better what is the ground-based measurement system used for your mentioned ‘geodetic detection’, it requires more information in my point of view. P2544: the 5.1. heading should include the rainfalls. Lines 3-4: Rewrite. Lines 13-14: how much the groundwater is affected? Lines 19-22: the sentence is too long. The end of the last sentence is not clear and need a rephrasing. Line 23-24: Rephrase and add information. Line 25: It means you installed piezometers, is that right ? P2545, line 5: Would prefer “reached” instead of “fell”. Line 14: modify “2 years” instead of “2 year”. Lines 16-17: Rephrase. Line 20: add “the” before reservoir. Replace “biggest” by “largest”. P2546, line 13-14: the period considered is unclear. Please, modify and simplify the sentence. Lines 17-18: improve the sentence, using “has been proved” for instance and move the complement at the end. Line 19-22: the points are not well enumerated. E.g. A creep deformation occurring before April 2010 (see Fig. 11). Lines 22-13: Saying ‘instantaneous’ means ‘one shot’ and not continuous, is it what you wanted to say? Do you mean new constructions? Human activity? Which type of rainfalls (intense and/or prolonged)? P2547, line 3: Rephrase into “the increase of the pore water pressure and the shear strength of the sliding zone characterized by the cohesion c and the friction angle φ (see Tab. 1; Hy-

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droChina Zhongnan Engineering source). Line 7: preflies?? Line 8: Need a reference after mentioning the Janbu method. Lines 11-12: Rephrase, poor English (e.g. Results presented in Tables 2 show that..). Line 13: Do not use “great” in this context. Modify into “whereas the inundation has the opposite effect”. Line 16-17: completely unclear to me. The heading 7 should be completely rewrite for more clarity. P2548, line 2-3: Rephrase using “recorded” and some punctuation. Line 4: modify into “old large-scale landslide”. Lines 6-8: Very unclear. Lines 9: modify into “landslide layer”, “stones and gravels”. Line 10: Better to say “high permeability” instead of “good permeability”. Line 11: what are the “they” that you mentioned? (i.e. water types or rock materials). What do you mean by strength reduction of the landslide? Please, explain better. Line 13: Would modify the sentence such as “Considering the presence of a narrow valley at the landslide toe, the support and protection measurements are difficult to settle down. The deformation process near the drainage tunnel may be more important after a few months of drainage. “ Is it what you mean? Lines 16-17: Rephrase “to water level changes in the..” into “to some changes into the water level of the..”. Lines 22-23: Do you mean both fluctuations are in agreement? Unclear. Line 24: Replace “great” by “high”. P2549, lines 1-2: suggestion of rephrasing “while the inundation has the opposite effect with a high influence on the stability of the deep sliding surfaces”. Lines 3-4: Rephrase. Could it block the river bed creating a lake and an outburst. Unclear. This conclusion is not enough robust, it requires some suggestion and perspectives or a discussion section need to be added. The reference list is definitely not sufficient (e.g. on similar catastrophes it can induce based on other case studies). In table caption 1: Add some precisions, e.g. “of the accumulated landslide layer (Q..)”. Most of the figures could also be improved to fit with the international scientific standards as mentioned in the general comments. Some suggestions are mentioned below. Fig. 1: Add a zoom of the area in a map covering the whole country. May be combined with the next fig. Fig. 2: Remove and replace by a proper morphological map of the sliding area with scale bar, legend, north, etc. Fig. 3: What to you want to show? Need North, approximate scale bar and draw what you want to show on the picture by drawing it.

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Fig. 4: what type of fault is it? (information which can be add into the text). Modify the figure to make it clearer by removing some contour lines and change into dotted lines. Some colors could also be added. Rephrase the figure caption into: "Topography of the Donglingxin landslide and location of the monitoring points. Fig. 5: the size of the legend and some inscriptions in the cross-sections are not readable. Need a., b. and c. and each of them should be described in the figure caption. I suggest you to have a look on some cross-sections created for international journal. Fig. 6: The pictures need to be located on the morphological map (in a., b. and c). Do you have a picture of the head scarp? As the size of them is different, an approximate scale bar is required. Are the pictures to the right are zoom of the one to the left? Moreover a complete description of all of them is required in the figure caption. Fig. 7: Add North, Scale bar, a. and b. Is the b. fig is a zoom of the a.? Where are they located? May be interesting to located them on a small map. Fig. 8: for a better understanding, same suggestions than for Fig. 4. Fig. 9: Why do you put (a) and (b) here and not for the other figures? Need space between the pictures and an approximate scale bar. Fig. 10: interesting figure but the axes are not readable. Remove graduations and increase the size. Fig. 11: I would suggest to combine Fig. 10 and 11 as the x-axis is the same. Fig. 12: Add orientation, scale. Indicating the location of geomorphological features and building areas/infrastructures

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