Reply to editor

Dear editor，

Many thanks for your great and careful comments, and we thank you for giving us an opportunity to revise this manuscript. According to your comments and requirements, we have checked the manuscript and correct mistakes, and delete some repeats.

With help of an English-speaking expert, we focus on revise structure and language of the manuscript, to meet international standards, especially in introduction, landslide location in section 1.1, data analysis in section 2, model calculation in section 3.1, discussion in section4 and conclusions in section 5. And the Figs. 2, 11 and 12 have been remade and revised according to your comments, we merge Figs. 4 and 5 in previous version into one figure for brevity, and we merge Figs. 6 and 7 in previous version into one figure to show the relationship between the monitoring data. And we add a new figure to show the installation schematic of water pressure gauge, rain gauge and crack meter in Fig. 5. And we have changed “pore-water level” to “accumulated water level in crack”, changed “crack slippage” to “Opening width of crack” in the new version.

Please see the detailed revision for point-by-point reply, and the modified parts are marked in red in the revised manuscript. We believe that the quality of the paper has been greatly improved after this revision, and we look forward to hearing from you.

Best regards,
Yimin Liu, Chenghu Wang, Guiyun Gao, and Pu Wang, et al.

Detailed revision for editor's comments

1. *Page 2, 3, 4*

Explanation and modification:

The modified parts are marked in red according to comments in line 35, 37 and 39, and we delete the reference (Guzzetti et al., 2004) in line 42.

Our study belongs to the first category in line 43, and we elaborate our viewpoint in the conclusions.

We add some references from line 54 to 56, and we reconstructed the sentences in red from line 60 to 67.

The modified parts are marked in red in line 70, 75, 84, 85 and 87.

The sentences about the study focuses on have been reconstructed and optimized from line 79 to 89. And we revise it as "we found just a few field surveys and monitoring data for this type of landslide" in line 85.

2. *Page 5, 6, 7 and 8*

Explanation and modification:

The paragraph about landslide location in section 1.1 have been reconstructed and optimized. We explain the Shilong river is the second grade tributary of the Ba river in line 108. We add references to explain red beds in China in line 110.

We adjust the map scale in Fig 1, and the location of the landslide that is not so small in Fig 1, meanwhile the Fig 1 presents the elevation information, geographical position, and longitude and latitude data of the landslide. Therefore, we believe that Fig 1 should be preserved after revision. We also add a geographic map in Fig 1 to show the specific location of the landslide here, whether it can be added to Fig 1 in your opinion.

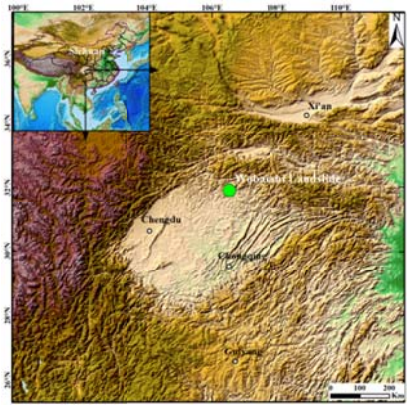

Fig. 1 Geographic map of the Wobaoshi landslide

The paragraph about landslide characteristics in section 1.2 have been reconstructed and optimized. We simplify headline of section 1.2, and delete subchapter in line 128 in previous version. We delete the sentence in line 125 in previous version because the dynamic change of groundwater has little relation with our analysis. We add information of the remote sensing data and the reference in line

122. We add references to explain Nanyangchang anticline in Daba mountain in line 129 in Fig.2.

And the Figs. 2 has been remade and revised according to the comments, mainly enlarge the map and reduce the space of legend to meet the comments, and revise the title of Fig.2.

We simplify headline of chapter 2.

3. *Page 9, 10, 11, and 12*

Explanation and modification:

The paragraph about monitoring scheme in section 2.1 have been reconstructed and optimized.

We merge Fig.4 and 5 into one figure, and revise the title of Fig.4 in line 174 Fig.4 in this version shows the location and photos of the monitoring equipment.

We acquired the depth data of the cracks I and II from the investigation report of Wobaoshi landslide (Chen et al., 2015), and we measured and estimate H by laser range finder in field survey, and we add the reference about the depth of the cracks in line 195 and 196.

We add a new figure to show the installation schematic of water pressure gauge, rain gauge and crack meter in Fig. 5 in line 199.

The comment in line 210 in previous version is that the width of crack I don't seem to be 5m in Fig. 2(e). The reason is that the photo of crack I in Fig. 2(e) is not the widest position, we choose a wider position of crack I to monitor its width, in additional, as shown in Fig. 5, the initial width of crack I gauge is approximately 5m, which was measured by the gauge, the installation location of the sensing system and target also enlarge distance of the measurement result.

The specific data analysis in section 2.2 has been reconstructed and optimized from line 203 to 229, and we merge Figs. 6 and 7 in previous version into one figure to show the relationship between the monitoring data.

The sentences about the significance of chapter 3 have been reconstructed and optimized from line 232 to 239.

5. *Page 13 14, 15 and 16*

Modification:

The sentences about the ideal elastic-plastic model have been reconstructed and optimized from line 245 to 249.

The sentences in section 3.1 have been reconstructed and optimized from line 258 to 260. In line 263, h_{cr2} is the critical height of the pore-water levels in crack II when K_2 is set to 1 in Eq. (1). And we define h_{cr} as the critical pore water level.

The sentences about the internal friction angle of the surface have been reconstructed and revised from line 280 to 282.

The sentences about calculation results about the critical water level have been reconstructed and revised from line 283 to 289. , and explanation of the $h_{cr}^{'}$(measured)

close to h_{cr} (theoretical) can be seen in section 4.2 of discussion.

In line 303, the curves of the hc1-k1 and hc2-k2 in Fig. 10 represent Eqs. (3) and (1), respectively.

6. *Page 17 and 18*

Explanation and modification:

These are boundary conditions in the numerical model of left and right boundaries in line 315, and the lower boundary was located at sea level to eliminate the boundary effect in line 316.

According to the comments of Fig. 11, we have modified the legends by using the same scale, added Fig. 11 (d) to correspond to 5 steps in Table 5, added the description of in Fig. 11(d) and (e) from line 377 to 379, and added the X and Y directions in Fig. 11. And we also revise the title of Fig. 11.

7. *Page 19, 20, 21 and 22*

Explanation and modification:

We add significance of the discussion from line 362 to 364.

We have corrected the mistakes and imprecisions in line 370, 372 and 374.

According to the comments of Fig. 12, we add a figure into Fig. 12 to show the sequence of movement of bodies. The sequence is that the outermost body II slides firstly, then the balance of water pressure in cracks is broken, and then this condition causes the sliding of the body I. We add the description about Figs. 12(b) and 12(c), to describe failure mode of the Wobaoshi landslide.

We have reconstructed and simplified the sentence from line 396 to 401, because this sentence was too long before.

The description about internal friction angle has been reconstructed and revised from line 404 to 406, and the sentence about the relationship between $h_{cr}^{'}$ and h_{cr} also has been reconstructed from line 421 to 424.

We have revised the sentence about optimization monitoring methods from line 426 to 428.

8. *Page 23 and 24*

We have completely reconstructed and rephrased the conclusion in chapter 5, and marked in red from line 449 to 472.

9. *Page 32, 33 and 34*

We have revised the names of Figs. 1 and 2.

The lithology in Table 5 has been revised to consistent with the names in Fig. 3.

The comment in line 649 in previous version is that where did you get these numbers from, we think that the numbers of water level value are obtained from the

measured data in Table 3. Note these water levels are the absolute value (presented in elevation), while that in Table 3 are level value related to main bodies.