Interactive comment on “Monitoring of the reconstruction process in a high mountainous area affected by a large earthquake and subsequent debris flows” by Chenxiao Tang et al.

Chenxiao Tang et al.
c.tang@imde.ac.cn

Received and published: 7 November 2019

Dear referee 1
Thank you for your comments. I will reply your comments on behalf of all the authors of this manuscript.

I agree there is not much innovation in the method, as they are just mapping and statistics, though the result was interesting. I believe science is not only about innovation in method, but also discovering new knowledge and passing it to the society. Our manuscript has shown the necessity of careful planning when recovering from a major earthquake, instead of rushing to reconstruction as China did. We hope this work will provide knowledge to international communities that are threatened by earthquakes and post-earthquake hazards. From the aspect of sciences this is part of our plan towards the risk quantification method framework in post-earthquake environment, which is poorly studied.

Sincerely
Chenxiao Tang

Specific comments:

Your comment: Line 68: “The increased debris flow activity lasted for five years”. Do you have an explanation for that (maybe I missed it)?

Reply: The sentence means: The Wenchuan earthquake created large amount of mass wasting and loss of vegetation, which amplified the debris flow activities. As this part was not well-explained, I deleted “The increased debris flow activity lasted for five years” and merged it the upper paragraph. The original lower paragraph was revised (removed descriptions about vegetation recover as it is not so relevant) to explain the enhanced landslides after the earthquake:

The catastrophic debris flows were the result of landslide activities amplified by the destabilized environment. In the epicentral area of the 2008 Wenchuan earthquake, the total active landslides was and has decreased largely in the first five to eight years (Tang et al., 2016; Yang et al., 2017; Yang et al., 2018; Zhang et al., 2016). Similar recovery patterns of co-seismic landslide surface were also observed in the Mianyuanhe area of the Wenchuan earthquake affected region (Li et al., 2016). On Aug 20 2019, several debris flows severely damaged the reconstructed settlements and roads in the Wenchuan area.
In this study we generated seven inventories of elements-at-risk covering a period of 13 years (2005 - 2018) to study the recovery of Longchi valley, located close to the epicenter of the Wenchuan earthquake. Image interpretation was carried out based on a series of satellite images collected between 2005 and 2018 and several field surveys were conducted. The study aims to demonstrate and analyze the process of post-disaster recovery in an unstable geo-environment disrupted by a major earthquake.

Shortly after we finished the first version of the element-at-risk inventory we acquired a Landover map of 2014 from the government. We carefully checked and edited our data based on the official map to minimize error.

Technical corrections:

Your comment: Line 265: First sentence. What is the reason for that? It is caused by large numbers of the destroyed 1-floor WB buildings, which itself was more than all 2-floor buildings combined. This was a careless description.
Reply: This sentence is rewritten: Overall the significance in damage ratio could only be observed in damage level 1. There were relatively more 1-floor buildings survived (22%) than 2-floor buildings (11%). This pattern could be observed from all building types. A difference related with different construction types was observed, as the survive rate of the RCM, WB, W types were 23%, 17%, and 9%. There were only 4 RCF buildings and half of them were repairable. The damage ratios of the three major types (RCM, WB and W), are shown in Figure 5 A.

C4
several typing errors need to be improved, partly formatting (chapter 1.3) should be adapted.

Reply: We did spell and format check.

Your comment: Table 4: The text “Sum: : :” is not readable.

Reply: This was caused by an error when converting .docx file to .pdf file. I adjusted the line spacing of the table to make it visible.