Nat. Hazards Earth Syst. Sci. Discuss.,
doi:10.5194/nhess-2017-72-RC1, 2017

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Measuring and Characterizing Community Recovery to Earthquake: the Case of 2008 Wenchuan Earthquake, China" *by* Jie Liu et al.

Anonymous Referee #1

Received and published: 28 February 2017

I have read the paper entitled: "Measuring and characterizing community recovery to earthquake: the case of 2008 Wenchuan Earthquake, China" by Liu et al. The paper focuses on the very important topic of recovery and reconstruction of communities affected by natural hazards which has not been adequately investigated until now. Unfortunately, although the authors provide a well-written introduction presenting the problem and giving an overview of definitions and background, they fail in convincing the reader that the method they use is adequate to reach their goal. The interpretation of the results is also not thorough and is limited to a raw description. Although the final discussion includes some interesting and powerful statements, they are out of place or come too late in the manuscript. It seems to me that the discussion chapter

is less about the results and their meaning and more about these general statements. In more detail, I do not recommend the present article for publication in the NHESS Journal mainly due to the following concerns: 1. The authors develop a methodology for the "quantitative" measurement of community recovery. However, the method they present is not quantitative since the assessment or quantification of recovery is expressed through an abstract "score" and not a tangible value such as time, monetary value, number of people etc. 2. The authors do not demonstrate the usefulness and potential application of this method. Who are the potential end users and how can they make use of the method or the results? 3. The presentation of the method is rather confusing. Inconsistency in using some terms is contributing to this confusion. For example, in Figure 3 recovery is represented by curve. Later on in page 10 recovery equals the tan of angle a. Why "Area 1" equals "Area 2" in page 10, line 279? It is not clear which area is area 1 and which is area 2 in Figure 5. 4. The use of some terms have been also unclear throughout the text. According to the authors, (page 9, lines 259-267) extent of damage, robustness and system functionality is the same thing. ("Robustness (. . .) is considered to be the extent of damage of the community"). 5. Figures 7, 9, 10, 11 should be better explained: What is the dotted red line? What is the difference with the blue one? What are the blue dots? What do the colors mean (light blue, pink, grey etc.)? Why in some figures time starts before 2008? 6. The recovery scores presented in page 10, line 289 are rather unclear. What are the values in brackets? The tan of the angle? If this is the case how do you say that the Rpopulation=98.46 belongs to the high recovery level? 7. What do you mean with maximum and minimum recovery (p.10, line 291)? Minimum recovery should be 0! 8. Figure 6 makes no sense to me. How can we put all the different dimensions together starting with a system function 0? System function is not the same for the different dimension. (By the way system infrastructure is missing from the figure) 9. More discussion about the X (extend of damage) is needed. How can this be expressed? If it is a percentage how can we measure the percentage of functionality loss of e.g. infrastructure? Is this extend of damage the same for each dimension (population,

economic, building, infrastructure)? Certainly not. If this is the case why do all Figures (7,9,10,11) start from system functionality 0? The dimensions are not comparable also because apart from the “extend of damage” also “time” is different. It is not possible to recover the buildings in one month, however, a successful recovery of population the way this is defined by the authors (recovery of injured people) should last less. 10. Why do the time in Figures 9 extends to 2018? Is there some prediction for the future in there that is not described thoroughly in the text? 11. Why do Figures 7, 9, 10, 11 start with from 0? Do you assume that from the time of the event the functionality fell so low? 12. Finally, the authors do not list their assumption and uncertainties related to their research. It would be a good idea to list all the assumptions or aspects that although they were important they were impossible to be implemented in the present research. They should also include some possible future developments of the present study.

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2017-72/nhess-2017-72-RC1-supplement.pdf

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