

## ***Interactive comment on “Loss assessment of building and content damages from potential earthquake risk in Seoul, Korea” by Wooil Choi et al.***

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1. In Abstract, there are no general findings from this study.

We added the following to abstract.

“The results of this study show that loss amounts due to potential earthquakes are significantly less than previous study. This is why the earthquake response spectrum and asset value of each building are applied as actual data from Korea.”

2. In Introduction, challenge of this study should be added. In Introduction, addition of literature review is required to emphasize the challenge of this study. Numerate past

C1

research outcomes and their limitations.

We added the following to introduction.

“This study differs from the previous studies in that it applies the actual building and insurance data and the observed seismic characteristics in Korea.”

3. The results from this study is much different from those from the previous reports written in the Introduction. Please compare their results and explain the reasons of the difference.

We added the following to the result part.

“Nonetheless, the loss from the Mw 7.0 earthquake is only 4% compared to result of MPSS (2015) and the main reasons are as follows; 1) the duration of strong motion is applied as 0.6 second in the standard response spectrum in previous study, however 0.2 second reflected the recent earthquake characteristics in the Korean peninsula is applied in this study. 2) The replacement cost of each building is applied statistically to the actual insured data, but previous study was applied the replacement cost published in Square Foot Costs (RS Means, 2002) in USA. 3) This study don't consider indirect loss such as relocation expenses, income loss, rental income loss et al.”

4. (Page 1 Line 31 and thereafter) Indicate specific magnitude scale in the manuscript with brief explanation of physics. (example: Richter local magnitude...)

We added the following to the text.

“The Richter magnitude scale (ML) is a unit based on logarithms calculated from the largest amplitude observed in the seismometer but it is difficult to measure accurately. In this study, the moment magnitude scale (Mw) is used, which it used by the United States Geological Survey (USGS) to calculate and report magnitudes for all modern large earthquakes is used.”

5. (Page 2 Line 23) Do not use ambiguous expression in referencing figures and tables

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(replace "As shown in the above figure" with "As shown in Fig. 2")

The problematic expression was corrected. (As shown in in Fig. 2)

6. (Page2 Line 30) Replace "36 the structure types" with "36 structure types"; Classification of structure types, occupancies, and seismic codes are not clearly explained.

We added the following to the text.

"The extracted data are classified into 36 structure types and 33 occupancies as same as the building type of HAZUS-MH, and divided into 3 seismic codes estimated based on comprehensive consideration of the construction year, total building area and occupancy."

7. (Table 1) In addition to Distribution, add frequencies corresponding to each distribution.

Table 1 was revised. In the text, the number of buildings is described as 6.3 million, This is a miswrite of about 630,000. This part was also revised.

8. (Table 2) There are three formulas in Table 2. It is necessary to either provide the other two formulas or erase contents of formulas I and II.

We revised it in consideration of the points indicated.

9. (Page 3 Line 21) Indicate the reference time of building statistics of 6.3 million.

We added a reference time in the text. (Seoul city as of 2016 database of building registration records.)

10. (Page 3 Line 30) Replace "each building" with "each building damaged by earthquake." Reference is required for information provided by Korea Appraisal Board.

We added a reference (Korea Appraisal Board (KAB): Construction Cost Table, 2016. (in Korean))

11. (Page 4 Line 7) "Korea has been" should be "Korea has been considered as."

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Replace "neighboring countries" with "neighboring countries, such as Japan, China, and Taiwan." We revised it in consideration of the points indicated.

12. Abbreviation should be spelled out at its first appearance. "PGA" should be "Peak Ground Acceleration (PGA)." We revised it in consideration of the points indicated.

13. [Eq. (1)] To use minimum number of symbols, replace symbol S with PGA in Eq. (1). We revised it in consideration of the points indicated.

14. (Page 4 Line 27) Replace "the values of the coefficients" with "the values of the coefficients of C0, C1, C2, and C3." We revised it in consideration of the points indicated.

15. (Page 5 Line 26) "as shown table 3" should be "as shown in Table 3" We revised it in consideration of the points indicated.

16. (Page 6 Line 11) "zones: Zone I which includes Seoul area and Zone II" We revised it in consideration of the points indicated.

17. (Page 7 Line 4) "four 5 states;" should be "four 5 states:" We revised it in consideration of the points indicated.

18. (Page 7 Line 8) Subscription is required for "Sd" and symbols in Eq. (3) We revised it in consideration of the points indicated.

19. (Page 7 Line 13) "is median value" should be "is the median value" We revised it in consideration of the points indicated.

20. (Page 7 Line 31) "Table 5 and 6" should be "Tables 5 and 6" We revised it in consideration of the points indicated.

21. (Page 8 Line 3) "isn't" should be "is not" We revised it in consideration of the points indicated.

22. (Page 8 Line 4) "higher" should be "larger" We revised it in consideration of the points indicated.

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23. (Page 8 Line 5) "like" should be "such as" We revised it in consideration of the points indicated.

24. (Page 8 Line 6) Unified expression of dash use: "low-rise" and "low rise" are mixed. We revised it in consideration of the points indicated.

25. [Eq. (4)] There are mis fonts in subscription in Symbols in Eq. (4). We revised it in consideration of the points indicated.

26. (Page 9 Line 7) "% 15" should be "15%" We revised it in consideration of the points indicated.

27. (Tables 5, 6, and 7) "Km" should be "km" We revised it in consideration of the points indicated.

Thank you for your careful attention

Please also note the supplement to this comment:

<https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2018-281/nhess-2018-281-SC1-supplement.pdf>

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2018-281>, 2018.