

Interactive comment on “The impact of topography on seismic amplification during the 2005 Kashmir Earthquake” by Saad Khan et al.

Anonymous Referee #2

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This is a review on the paper entitled "The impact of topography on seismic amplification during the 2005 Kashmir earthquake" by Saad Khan et al. The paper is interesting, valuable, and well organized. Although I am tending to accept the paper, the following points should be addressed before publication. 1- Authors calculated the topographic effect using 3-D model once with topographic effect and once without topographic effect. The topographic effect should include the effects due to the present valleys on the ground motion, thus the selected plain surface should be free of the valleys' effects. Authors should provide the characteristics of their selected datum. 2- The paper lacks the description of both depth of the earthquake and depth of the valleys to be sure that these valleys are really shadow zones preventing seismic waves from reaching high areas on the other sides. Detailed description of low areas is required 3- Many factors

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can amplify ground motion. To have accurate correlation between the topography and the observed damage in the region, all other factors should be neutralized in advance to be sure about the effectiveness of topographical contribution. This is not clear in the current manuscript. 4- It seems that authors modeled the seismic source as a point, which is totally unreliable, as the rupture direction could be an effective parameter at short distances. Details on the fault rupture direction, rupture length, and observed surface displacement should be provided. 5- As the earthquake is relatively recent, field observations of such earthquake should be available. Therefore, verification of the calculated values with the recorded observation should be provided to be sure about the accuracy of the used model (including input uncertainty) and the results. Numerical modelling alone is not enough. Minor comments a) Use the past tense in the abstract section. b) Rewrite line No. 10 in page 1, modifying the position of the word "and" and removing the word regolith as it is a part of the site specific geology. c) Line 20 page 1. Seismic risk cannot be mitigated. Use risk instead. d) Page 3, line 9, elastic waves. e) Page 3, lines 30 and 31, use velocity instead of speed. f) Title of section 4 should be Results. g) Page 5, lines 12 and 13, give possible reasons. h) Page 6, line 18, found instead of find.

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