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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Assessment of impact of mass movements on the upper Tayyah valley's bridge along Shear escarpment highway, Asir region (Saudi Arabia) using remote sensing data and field investigation" *by* A. M. Youssef et al.

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Mass movement mapping and their impact analysis on the upper Tayyah valley's bridge along Shear escarpment highway, Asir region (Saudi Arabia) using remote sensing data and field investigation

Anonymous Referee #1 Received and published: 23 February 2015

Dear Reviewers and Editor,

This paper is a basic description of some gravitational processes occurring over a 2km long road section in Saudi Arabia. However the site seems very prone to mass movements and the road potentially at risk, this contribution is only a very superficial report on the area.

1- No significant scientific or technical question is addressed.

Reply: Thank you for your comment. We have substantially revised the manuscript. We Fixed that and addressed some new points in the manuscript.

2- In particular, section 5 (Results and Discussion) is a mixture of generalities (definition of "dips" (509)

Reply: We have thoroughly revised the Results and Discussion section. We deleted the definitions of dip and dip direction.

3- or "circular failure") which have nothing to do here, with basic observations simply referring to pictures.

Reply: We have this information as important observations from the field investigation for the readers.

4- Some kinematic tests for planar failures have been done, but only data of one single discontinuity set are shown for each of the 3 sites.

Reply: Thank you. Only data of single discontinuity is shown because of the impact of this direction on the bridge.

5- There is no way to understand the fracturing of the rock, which looks much more complicated on the picture than it appears in the text.

Reply: Thank you for your comment. Yes, you are absolutely right. There are many sets of the discontinuities; however we considered only the set that has the main impact on the bridge and road where most of the failures detected in the area are related to planar failure that occurred towards the highway and bridge.

6- The authors claim that shear tests and many structural measurements have been done (p502), but these data do not appear anywhere.

Reply: We mentioned that the friction angle related to the shear test data shown in Table 2. Kindly refer to the revised manuscript.

7- It is question of a fault crossing the site, but it is not shown in any figures.

Reply: Thank you very much for this observation. We added some figures showing the Fault zone as in Fig 3b, 3c.

8- Presently, the data presented in this paper are much too patchy or superficial to support any interpretation.

Reply: We have rewritten the manuscript and some of the section have been thoroughly revised and explained in detail.

9- In its present state, this text is more a report about some observations done along this road section than a scientific contribution.

Reply: As said earlier, we have revised the manuscript to look it more as a scientific paper.

10- There is no original contribution in terms of methods, processes, susceptibility mapping, hazard or risk assessment.

Reply: We fixed the methodology and the revised manuscript clearly indicates the new contribution.

11- The quality of the text is very uneven, with numerous mistakes in basic slope stability terms (planner for planar for instance). Even though the area looks interesting for slope stability and risk assessment along roads, more work has to be done to get a significant contribution.

Reply: We fixed planner to be planar.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 497, 2015.