Interactive comment on "Assessment of rockfall hazard on the steep-high slopes: Ermenek (Karaman, Turkey)" *by* Hidayet Taga and Kıvanç Zorlu

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REPLY OF THE AUTHORS TO ANONYMOUS REVIEWER'S COMMENTS

Reviewer Comment:

This paper presents a case study of rockfall analysis. The content of the paper should be considered as a technical report for a given case study not as a research paper. The authors did not succeeded in exposing novel modelling techniques, field investigations, or hazard zonation and management techniques.

Reply of the Authors:

C1

Assessment of natural hazards such as rockfall, landslides, debris flow etc. are needed to be in a certain area. Therefore this study were carried out a serious rockfall prone area. If the researchers need to developed new techniques or parameters, rockfall studies to get out of a case study and working in a particular region. All these reason, we think that the manuscript is appropriate as a research paper.

In this manuscript we used existing rockfall techniques on a selected area. Determination and explanation of rockfall mechanism and affecting structural feature for rockfall events on the settlement area are main goal of this study. Developing novel modeling techniques, field investigation or hazard zonation and management techniques were not goal of this study. Furthermore, every research paper is not need to succeed to develop new techniques.

Reviewer Comment:

From line 146 to line 199, detailed field investigations are done by authors using "state of the art" techniques. These investigations may be interesting. However, in the context of the study, they are only used to determine the location of the potential release zone. I have the feeling that was not worth doing such detailed investigations. The authors should absolutely clarify the aim of these investigations.

Reply of the Authors:

Detailed field investigations are necessary for this study because the author's aim to understand of rockfall mechanism, relevant with lithological features. Moreover, all these parameters determining field study and laboratory tests are used rockfall analysis. From line 249 to line 252 rockfall mechanism in the study area was explain.

The aim of these investigations are clarified from line 16 to line 25.

Reviewer Comment:

The rockfall analysis presented is very classical. The modelling approach used is based on 2D numerical classical models. The values of the different parameters of

the model used are generally not well justified. In particular, the authors use restitution coefficients calibrated from back-analysis that is not detailed at all (what was the experimental or survey protocol? is it relevant for all materials, rock size, topographical configurations : : :?).

Reply of the Authors:

There are similar research papers that they have been refered many reserchers existing in literature using 2D numerical models to simulate and modeling rockfall events. (Hoek 1987; Pfeiffer and Bowen 1989; Azzoni et al. 1995; Jones et al. 2000; Guzetti et al. 2002, Guzetti et al, 2003; Agliardi and Crosta 2003; Schweigl et al 2003; Perret et al 2004; Yilmaz et al. 2008, Tunusluoglu and Zorlu 2009, Binal and Ercanoglu 2010; Zorlu et. al 2011; Katz et al 201175 ;Topal et al 2012; Chen et al. 1994; Keskin 2013, etc. ...). In this context, many researcers think that using 2D modelling for interprete rockfall events is not a classical model so, it is just a commonly prefered method. One of important parameter for rockfall anaysis are coefficient restitutions. These parameters were determined in the field via back analysis. While back analysis carried out topographical feature, size of rolling blocks, slope properties, were considered for each profile. The results of the coefficient restitutions value given a table (Table 5 added in the manuscript). Authors used to average value of the coefficient restitutions in rockfall analysis.

Reviewer Comment:

The results from the rockfall analysis are used to build a hazard map considering "maximum runout distance". The methodology for the building of the hazard map from the simulation results is not detailed and seems to be very rough (what does the maximum runout distance mean? why not combining rock energy with passing frequency? how do the authors used results along profiles to build a 3D map?)

Reply of the Authors:

C3

The 2D rockfall danger zone map was produced by using ArcGIS 9.3 software ESRI 2009) from 10 profile. (the results obtained from rockfall analyses considering maximum runout distance of falling blocks.

ESRI (2009) ArcGIS version 9.3. 380 New York Street, Redlands, CA 92373-8100 USA.

Reviewer Comment:

The results from the analysis are also used to derive recommendations. The authors state that the hazard level is too high for protection measures to be efficient. This conclusion is not proven and not discussed.

Reply of the Authors:

Results and conclusion part of the manuscript revised as requested by the reviewer (from line 294 to line 297)

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2015-337/nhess-2015-337-AC1-supplement.zip