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Natural Hazards
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Discussions

Interactive comment on "Geomorphological surveys and software simulations for rock fall hazard assessment: a case study in the Italian Alps" *by* S. Devoto et al.

Anonymous Referee #1

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This paper investigates a rock-fall hazard in the eastern Italian Alps. It is a good case study, which integrates the outputs of computer simulations and the results of detailed geomorphological investigations. Furthermore, this work examines relationships between mass-wasting processes and triggering factors such as earthquakes and rainfalls It is readable, and the English is fine. Figure 1 needs to be improved whereas other figures need some modifications. I suggest adding a panoramic photo related to rock-fall transit area taken from Cimolais village, near the steeple. I suggest to insert a new reference. I see all comments as minor and I suggest the paper to be published.

List of minor comments: 7331 – 23: change "human facilities" because previously

repeated. 7335-3: (Fig. 2c). 7336-16: 4.2. Seismicity 7345-1-4: The sentence is too long and could be split. 7345-6: ….evident, as identified in the past by Borgatti and Soldati (2010) in the nearby Dolomites. 7345-15: 8000 kJ (Geobrugg produces this type of rock-fall barrier) 7345-19: Aperture variation of fracture, which isolates (it is crucial to recognize movement of the main discontinuity, which the Authors mentioned at 7334-23) 7345-21: ……operators. Furthermore, the displacements of the fracture recorded by fissurimeter can be correlate to daily rainfalls or earthquake accelerations, in order to investigate the role of external triggering factors on the variations of joint aperture.

Add this reference as: 7346-8: Borgatti, L. and Soldati, M.: Landslides as a geomorphological proxy for climate change: a record from the Dolomites (northern Italy), Geomorphology, 120, 56-64, 2010.

7351: Table 1: Volumes and rock fall hazard assessment of Crep Savath blocks. 7352: change the title Zone of maximum effects with Earthquake epicenter 7352: standardize the second column of the table 2 given that sometimes lists the locations, sometimes the area 7353: Table 3: Restitution coefficients used in the software simulations according to the different types of slope materials and vegetation. 7353: Piacentini and Soldati (2008) 7354: change notes with Unit 7355: Figure 1: - Change part A of Figure 1 with North Italy (insert locations mentioned in the text, as Alto Adige, Dolomites, etc.) and a map of Friuli Venezia Giulia. The Friuli Venezia Giulia Region has to be more clear (location of rain gauges are not visible. - add North to figure B. Some symbols are to be joined together, such as for example 2, 3, 4 and 12, 13 and 14. More over A lot of symbols are not clear. Cimolais village is not visible. Maybe insert a shaded relief as base map for part B.

Figure 1. Study area: (a) Friuli Venezia Giulia Region and location of rain gauges; (b) Geological map. The legend symbols are accompanied to numbers, which indicate: ……………... 7356: Figure 2: - in the text (7335-2) is written 14m in height, 6m wide and 5 m in length. The figure 2C indicates 4m. Modify it - Mont. Lodina to be indicate

in a) ??

Figure 2. Panoramic view of Cimolais Village and the overlying Crep Savath peak (a). The red circle indicates the overlying slab, source of possible rock falls. The oblique view from Fesena Valley (b) and the frontal view (c) highlight the hazardous position and the large dimensions of Block 1. 7357: Figure 3. -Texts of Axis x and Y difficult to read

Figure 3. Annual rainfall recorded during the period from 1998 to 2013. 2004 data are missing (source: Cimolais and Barcis rain gauges). 7358: Figure 4 - X axis texts are not visible. More over write the first day of the month on the X axis

Figure 4. Daily precipitation occurred in 2000 (source: Cimolais rain gauge). 7359: Figure 5: Different types of block motion related to variations of dip slope (modified from Dorren, 2003). 7360: Insert the north symbol in the figure 6 7363: Figure 9: - Use 100, 200, 300 for x axis if possible

Figure 9: Run-out distances of simulated blocks (a), bounce heights and kinetic energy distributions (b) along the CTR-derived profile. 7364: Figure 10: - Use 100, 200, 300 for x axis if possible

Figure 10: Run-out distances of simulated blocks (a), bounce heights and kinetic energy distributions (b) along the ALS-derived slope.

7365: Insert the north symbol in the figure 11

Figure 11: Actual positions of mitigation works and possible locations of new rock-fall barriers.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 7329, 2014.