

Interactive comment on “Brief Communication: On direct impact probability of landslides on vehicles” by P. Nicolet et al.

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This brief communication gives an overview on methods used for calculating the spatio-temporal probability of a vehicle being in the path of a landslide, an avalanche, a rock fall or a debris flow. The authors also describe – the approach neglecting the vehicle dimension used in Switzerland for calculating the risk when a vehicle crosses a hazard zone, – the approaches taking into account the dimensions of the event as well as of the vehicles and – methods considering an impact on the side and front of a vehicle. Two examples of risk calculation using the different methods are given. However, according to my opinion, there are some ambiguities which I propose to clarify. Thus I recommend publication after major revisions.

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general: The approaches described assess the problem in a spatio-temporal context taking into account only geometric values and time. Thus “center of mass” should be replaced by “geometric center”. p. 7312, line 26: delete “that” p. 7314, line 11 to 13: LH / vv is denoted as temporal probability. However, LH / vv is the time a vehicle needs to cross a hazard zone. $LH / vv \times fv$ is – either a temporal probability, since it is the time a number of vehicles need to cross the hazard zone per time unit – or a number of endangered (from a temporal point of view) vehicles. p. 7316, line 4: If “WE (is) largely superior to (please replace by: extremely larger than) LV” (line 13), $PS = WE / LH$ is the spatial probability if the width of the event is assumed to be full of vehicles (worst case scenario?). Compare formula (2) spatial probability = LV / LH and formula (4). p. 7315, line 27 to p. 7316, line 8: PST^* is not a spatio-temporal probability. It is, however, – either a temporal probability, since it is the time a number of vehicles need to cross the hazard zone per time unit – or a number of endangered (from a temporal point of view) vehicles. p. 7316, line 11 to 20: This paragraph is hardly understandable. Please rephrase. p. 7317, line 23: hicker’s = hiker’s? p. 7321, line 20: rock fall debris I would appreciate the revised paper to be published.

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/3/C3221/2016/nhessd-3-C3221-2016-supplement.pdf>

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