

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.

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:  $L_H / v_v$  is denoted as temporal probability. However,  $L_H / v_v$  is the time a vehicle needs to cross a hazard zone.  $L_H / v_v \times f_v$  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 “ $W_E$  (is) largely superior to (please replace by: extremely larger than)  $L_V$ ” (line 13),  $P_S = W_E / L_H$  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 =  $L_V / L_H$  and formula (4).

p. 7315, line 27 to p. 7316, line 8:  $P_{ST}^*$  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.

