This manuscript reports an interesting attempt to define a model to predict area affected by earthquake-induced landslides, outlining distance from earthquake source, within which major effects are expected, on the basis of seismological parameters. While the basic ideas developed to simplify the calculation of such distance appear smart, some aspects of model implementation seem to me unclear or questionable and should be better justified or reconsidered.

A first problem concerns the equation (3) used to define the relation between the seismic moment *Mo* and the fault rupture length *L*, i.e.:

[R1],

where *μ* is the rigidity modulus of the faulted rocks and *C1,C2* are empirically determined coefficients.

The authors declare to have derived it from the paper by Leonard (2010). However the cited paper does not report a relation *L*(*Mo*) in this form, and, if equation (3) was derived from the results presented by Leonard, it is incorrectly written.

Indeed Leonard, starting from the well known general equation

[R2],

where *W* is the fault rupture width and is the mean dislocation along the rupture fault, proposes two equations relating *W* and to *L*, in the forms

[R3],

[R4],

from which one can obtain

[R5].

Leonard found that, for almost all kinds of fault, *β* can be set to 2/3, which implies

[R6],

with the exception of strike-slip faults exceeding a length of 45 km, for which *β* should be set to 0 and consequently.

[R7].

From these equations, one can derive that, for most of faults,

[R8],

(which differs from [R11]) and, for strike-slip faults longer than 45 km,

[R9].

Additionally, Leonard derived different values of *C1* and *C2*, for different type of faults, i.e., *C1* = 17.5 and *C2*, = 3.8∙10-5 for dip-slip inter-plate faults, *C1* = 15.0 and *C2*, = 3.7∙10-5 for strike-slip inter-plate faults and *C1* = 13.5 and *C2*, = 7.3∙10-5 for intra-plate earthquake (stable continental regions). The value assumed for *C1* in the present manuscript (16.5) does not correspond to none of the values proposed by Leonard and also the value assumed for *μ* (3.3 GPa) is incorrect (it should be 33 GPa). If the errors in equation form and in parameters were due to misprints, they should be corrected, but if these formulae were actually used in calculations, the results would be totally inconsistent with the seismological model and should be recalculated.

Another puzzling question is relative to the equations (4), i.e.

(for *MW* ≤ *Mh*) [R10]

(for *MW* > *Mh*),

which were used to define the peak ground acceleration (PGA) expected at a distance of 1 km for an event of magnitude *MW*. This acceleration value, in turn, is used to derive the distance *RHMAX* within which the ground acceleration is not less than *ac* (assuming that ground motion attenuation depends only on geometrical spreading), according to the equation

[R11].

The authors declares to have based their calculations on the ground motion prediction equation (GMPE) proposed by Boore & Atkinson (2008), but they adopt an arbitrary value of 4000 m for *bsat*, which properly should be defined as the acceleration at a distance of 1 km for an event of magnitude *MW* equal to the magnitude “hinge value” *Mh* = 6.75. Preliminarily, I observe that it is quite puzzling to propose, for an acceleration, a value measured in meters. Probably the misunderstanding about the meaning of *bsat* derives by the fact that *b* is used to calculate the distance where acceleration is reduced to *ac*, exploiting the inverse proportionality between wave amplitude and distance. Actually, following the GMPE model by Boore & Atkinson, *bsat* should be defined as the acceleration expected for *MW* = *Mh* at a reference distance *Rref*, which Boore & Atkinson set to 1 km. Indeed, the complete expression of Boore & Atkinson’s GMPE would include a factor depending on distance *R* which becomes equak to 1 when *R* = *Rref*. Thus, to avoid a dimensional inconsistence, [R11] should be written as

[R12].

Numerically [R12] gives the same result as [R11] only if distances are expressed in km, but in any case the equation [R12] is dimensionally correct, assuming that both *b* and *ac* represent accelerations. It is however unclear while, adopting the Boore & Atkinson’s GMPE, the authors did not simply derives *bsat* from it. Indeed, this GMPE provides the element to calculate *bsat* for different type of faults, in terms of expressions like exp(*e1*) for unknown type, exp(*e2*) for strike-slip, exp(*e3*) for normal faults and exp(*e4*) for reverse faults, where the coefficients *e1*, *e2*, *e3* and *e4* are reported in Table 7 of the cited paper.

Furthermore, the author, using equation (4) ([R11] in the present comments), report to have set coefficients *e5* = 0.6728, *e6* = −0.1826 and *e7* = 0.054, assuming that these provide ground acceleration at 1 Hz. Actually, these coefficient values appear derived from those reported by Boore & Atkinson for 5% damped pseudo-spectral accelerations at a period of 1 s (apart from a slight error in *e5* which actually is 0.6788: see Table 7 in Boore & Atkinson, 2008). These coefficients are relative to GMPE that does not predict ground motion, but the response of a one degree-of-freedom oscillator whose base is fixed to soil and forced to move by seismic ground motion. This shaking parameter is used to evaluate the response of engineering structures (which can be assimilate to an oscillator of given eigen-frequency and damping) in terms of maximum acceleration induced by seismic shaking to the oscillator. It seems to me hardly justifiable to assimilate slope material behaviour to an oscillator with eigen-frequency of 1 Hz and damping equal to 5% of the critical values (which is typical for quite elastic engineering structures). Thus, I wonder why it was not simply used the coefficients provided for PGA in the same Table 7 (which, actually, predict a saturation for *MW* ≥ *Mh* as resulting from being *e7* =0)?

Other minor comments relative to specific points of the manuscript can be found highlighted in the enclosed pdf copy.