

Interactive comment on “Operative and reliable landslide forecasting and influence of geology to predictability” by E. Intrieri and G. Gigli

Anonymous Referee #2

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Dear Editor, Please find here below my review of the paper nhess-2016-221:

Operative and reliable landslide forecasting and influence of geology to predictability
By Emanuele Intrieri, Giovanni Gigli

This paper is related to new ways of forecasting the time of failure of landslides. It is based on the displacements interpretation by three time to failure existing approaches. The used of the variability of the three methods is proposed to assess the time of failure. The method is applied to several case study. In addition, more general consideration are made about the processes involved.

General comments

The method presented is innovative and interesting, but it seems that too much con-

C1

clusions are from this research. First the title, is probably too pretentious, I do not see that this method is more operative than others, despite the fact it is interesting and deserves to be published. It is the same for the term used geology, I do not see how it is possible to extract the impact on forecasts.

It is also unclear to know to understand in the paper, what is an a priori or an a posteriori information. The way the variability is presented appears to be estimated a posteriori knowing T_f . Maybe I am wrong, but then it means that it is not well explained in the text.

My proposal is to remove the interpretation part and the argument stating that the geomechanics is not the main controlling parameter. But this is obvious from the usual confusion made about creep which is related to a material, and the landslide failure which is related to a complex body that is controlled by several variables. The creeping does not apply to landslide except in particular cases, this is a general mistake. That is why you can say something about geomechanics, it does not come from your results, and it can be criticized on fundamental aspects. Then, if you would keep this point, you need to expand the discussion. . .

The oscillation of the values are interesting, but how do you know that you converge to T_f . In the probability index in the criterion include T_f , which you do not know a priori. Please clarify. You need also to discuss the limitations of the method.

Your work deserves to be published because it is an interesting study, but please clarify the points above and avoid over interpretations. I propose that you present a figure that explain synthetically your process.

Specific comments

Line 21: define what you mean by geomechanics? In the text also.

Line 46: instead of “is usually” use “can be”

Line 48: you can add reference to the work of Blikra on Aknes rockslide.

C2

Line 49: what do you mean appropriately monitored. In fact, displacements are usually points that often do not represent the global landslide behaviour. . .

Line 56: 1994 and not 19940

Lines 67-83: references to the works of Dick et al., 2014 (Can Geotech. J., 52, 515–529) and Crosta and Agliardi Can. Geotech. J. 40: 176–191 (2003) and Manconi and Giordan 2015 NHESS.

Line 108: I do not see any probabilistic approach in the paper. . . There is only stdev of the forecast figure 3.

Line 111-113: this is the heart of the paper. I think you need to develop this and make a small flow chart with graphs to explain you procedure.

Line 124- 133: you need to give more information about the assumption of these three equations, which will be helpful for the discussion.

Table 1: for the mechanisms, you must probably refer to a classification Hungr et al., 2015 or Varnes and Cruden (1996).

Figure 2: improve the quality of graphs not simply from excel. . .

Figure 3: improve quality remove the second box.

Lines 190-197: unclear if Tf must be known?

Line 199: use PI for predictable Index instead of Pi which give the impression of a probability.

Lines 249-251: this is not an argument because with an oscillating process it will always have something very close to the Tf which can be better before collapse.

Line 262-263: as it is presented the predictability index need the knowledge of Tf (see lines 190-197)

C3

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C4