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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Analysing the relationship between rainfalls and landslides to define a mosaic of triggering thresholds for regional scale warning systems" *by* S. Segoni et al.

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We express our gratitude to the referee for his insightful comments and we apologize because his two main concerns are based on two misunderstandings generated by some inappropriate terms we used. We think we have addressed these comments appropriately and we hope these issues could now be considered clarified with the revised text. However, the additional elaborations we performed following the referee's suggestions brought us more numeric data and strengthened the manuscript.

1.1 We think to have found a more straightforward and robust method to prove our statement, which at the same time needs to be rephrased. It was not our intention to let the reader think that the quality of the results is completely independent from the dataset, it is not a conclusion of our work and we are well aware of the importance of collecting as much basic data as possible to devise statistically robust thresholds. What we meant is that we obtained satisfactory results in the case of AZs with abundance of landslide data and in the case of AZs with fewer landslide data as well. This proves the robustness of the approach used and it is NOT meant to diminish the importance of the quantity/quality of the dataset. The manuscript was rephrased and we hope it is now more clear on that. To prove the quality of the results, we performed additional elaborations. Table 2 was modified and the count of errors and correct predictions was completed with the calculation of numerical indexes commonly used for objective evaluation of model performances (e.g. Martelloni et al., 2012): sensitivity, specificity, likelihood ratio, positive predictive power, negative predictive power and efficiency. These indexes were used also in section 4.1 for the evaluation of the overall performance of the methodology at regional scale. We verified that none of these validation statistics can be put in close relation with the number of landslides or with the number of events (which are reported in table 1 of the manuscript). The correlation "number of rainfall events" \ "positive predictive power" produced the best outcome in terms of coefficient of determination of linear regression (R2=0.1), which however is rather low. A graph is shown in Fig. 1. We interpret this outcome as an evidence of the robustness of the approach used.

1.2 We fully agree with the comment of the referee and again we apologize for the poor choice of words we used. We rephrased and we wrote that the prevailing lithology influences the no rain gap value.

2.1 The threshold equations have been re-written using two decimal digits for β. The previous version of the manuscript had a variable number of decimal digits because values were copy-pasted from spreadsheets with different settings. We agree that

three decimal digits could be considered unnecessary.

2.2 The legend of the figure was edited as suggested.

2.3 Figure captions have been checked and modified.

Cited references:

Martelloni G, Segoni S, Fanti R, Catani F (2012) Rainfall thresholds for the forecasting of landslide occurrence at regional scale. Landslides 9(4):485–495

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 2185, 2014.

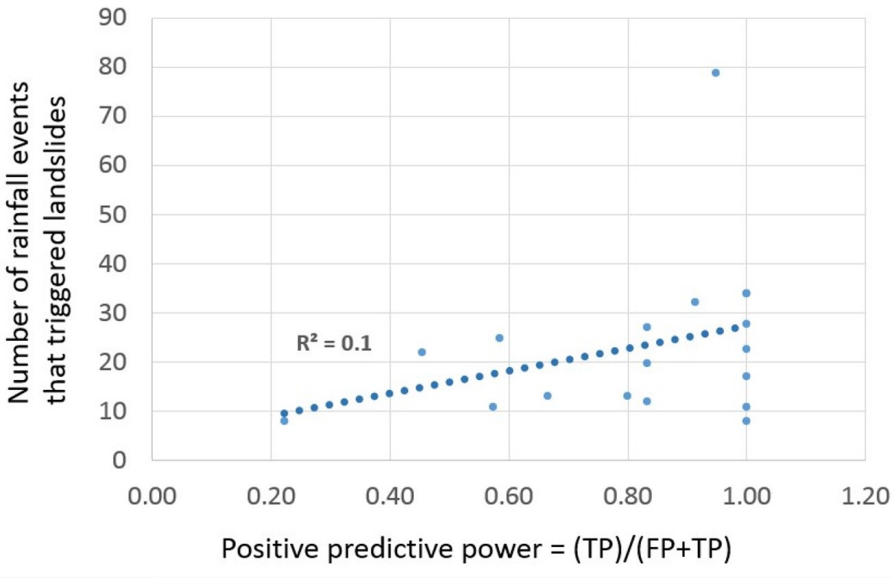

Fig. 1. Correlation between number of rainfall events and positive predictive power