

## ***Interactive comment on “Assessment of rockfall hazards using databases and considering triggering meteorological events” by A. Delonca et al.***

### **Anonymous Referee #2**

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This paper presents a method for correlating rock-fall databases with meteorological conditions (primarily rainfall). I think the paper will be a valuable contribution to NHESS, but it needs some work so that readers fully understand the authors reasoning and approaches. I have made specific suggestions for improvement below. I consider my most important suggestions to be numbers 1, 2, 6, 13, 14, 15, and 19. Overall, I think a moderate revision is needed for the manuscript to be acceptable.

1) General comment about English grammar: The English grammar could use some additional revision by a native English speaker. The grammar is generally understandable, but sometimes causes confusion in the readers' ability to understand the intended

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meaning of the authors' words and sentences.

A few examples of awkward wording include: “Heavy” rainfall – I suggest using “long-duration” or “intense” to specifically describe rainfall; and “Rainfalls” – “rainfall” should be used when describing all types of rain. No “s” is needed.

2) Title: I like the title “Statistical correlation between rock fall and meteorological databases” better than the title currently being used. I think this shorter title is cleaner and easier for the reader to quickly read and understand.

3) Many locations in the manuscript need additional explanation so that readers fully understand the authors reasoning. Specific suggestions are given below.

4) p. 1335, line 15. I suggest giving a reference or specific example of a classical approach that has been used to analyze rock fall in the past. Same suggestion for p. 1336, line 102.

5) p. 1335, line 26-27, why are these items not considered? Please explain. Also, it seems that you should use the term “volume” here instead of intensity, so not to confuse the meaning with rainfall intensity.

6) p. 1336, lines 8-9, I think what you mean here is that the geology and geotech characteristics in each individual area is consistent. But, what it sounds like you are saying is that the geology in all of the areas is the same, which is definitely not true. Please revise this paragraph to more accurately reflect the true meaning.

7) p. 1337, line 10, unclear what you mean here. You completed the study for Durville and Rat? I don't think this is true. Please revise.

8) p. 1338, line 3, how can a railroad present a hazard?

9) p. 1338, line 11, please define “several days”.

10) p. 1339, line 14-17. I don't understand what you mean here. Please add an example or additional explanatory text to make your meaning more clear.

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11) p. 1340, line 6. What is a “sector”? Do you mean “study sites”? Please be consistent in your usage of terms. Also, if the other two sites didn't show satisfactory results, then why bother to show Figure 3B?

12) p. 1340, line 20, which proposed method are you referring to here? This sentence seems out of place. Also, a delay in time is shown in Figure 3, and it seems to work very nicely.

13) p. 1341, lines 3-6, this paragraph is awkwardly written and difficult to understand. Please add additional explanation so the meaning is clear. This is a very important paragraph for the paper, but it is currently very difficult to follow.

14) p. 1341, line 14, “triggering factor intensity”, please try to be consistent with your usage of “intensity”. I think you are using the term here to mean “cumulative daily rainfall”.

15) p. 1341, lines 19-22. This paragraph needs more explanation so the reader knows exactly why an analysis of virtual rock fall and rainfall databases is needed. Why bother with virtual databases, when you have real databases? I'm sure that you have a good reason, but it is definitely not clear from the current text. If you don't really need to do the analysis of the virtual databases, then this could eliminate pages 1342 and 1343 and some tables and figures.

16) P. 1343, lines 4-8, This paragraph belongs in the Results section.

17) p. 1343, line 26-27, Figures 4 and 5 seem to be mixed up. You cite Fig. 4, but results for the Bourgogne region are shown in Fig. 5.

18) p. 1344, I don't see a citation to Figure 8 in the text.

19) p. 1345, Discussion section. I think this section needs a sub-section where you provide an interpretation of why the different correlations exist for the 3 different regions. In other words, what are the underlying physical processes that would explain the different correlations? This would be very helpful to readers studying rock fall in

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other areas.

20) p. 1345, line 13-15. You should really add that the manager would need to make a decision based on a rainfall forecast (a rainfall prediction provided at least a day in advance) in order for such a decision to be useful.

21) p. 1346, line 5-7, this is part of what you need to say on p. 1341, lines 19-22.

22) Table 1. Too many significant digits for 0.0027?

23) Table 3. This should be a figure, not a table.

24) Table 4. Please define “very close”.

25) Figure 1. I suggest listing the regions in the same order as you discuss them in the text. That is A) La-Reunion, B) Bourgogne, and C) Auvergne

26) Figure 3. Each figure needs a label (i.e., A and B). What is the solid horizontal line in A and B? Please add this explanation to the caption.

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