

Interactive comment on “Brief communication: Accuracy of the fallen blocks volume-frequency law” by Valerio De Biagi

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The paper deals with the important problem of the accuracy of the fallen blocks volume-frequency law, referring to a method presented in a former paper of the author (De Biagi et al., 2017). The block volumes distribution is analyzed from measurement of the size of the blocks fallen in a representative area, at any time. A Pareto distribution is used to fit the data. The error due to a reduced number of measured blocks is analyzed. The temporal occurrence of the block falls is obtained from a survey of the slope during an observation period. A Poisson law is used to describe the temporal occurrence of the block falls. The epistemic error due to missed recorded events is analyzed, but THE ALEATORIC ERROR DUE TO THE STOCHASTIC NATURE OF THE POISSON PROCESS IS IGNORED although it may be bigger than the epistemic one. For exam-

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ple, in the case history of Buisson in De Biagi et al. (2017), the temporal frequency is obtained by dividing the observed number of block falls (5) by the observation period (25 years) giving a value of 0.2 block falls per year corresponding to a mean number of events (defined here as the Poisson parameter) equal to 5 for a period of 25 years. But the probability for observing 5 events with a Poisson parameter equal to 6 (0.16) is almost as high as the probability for observing 5 events with a Poisson parameter equal to 5 (0.18). So the probability for the Poisson parameter (corresponding to 25 years) to be 6 instead of 5 is far to be negligible (the same goes for Poisson parameters of 4 or 7). So a confidence interval should be determined for the Poisson parameter. In conclusion, the paper should be completed with a section analyzing the aleatoric error due to the stochastic nature of the Poisson process.

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