



Rockfall travel distances theoretical distributions

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The probability of propagation of rockfalls is a key part of hazard assessment, because it permits to extrapolate the probability of propagation of rockfall either based on partial data or simply theoretically. The propagation can be assumed frictional which permits to describe on average the propagation by a line of kinetic energy which corresponds to the loss of energy along the path. But loss of energy can also be assumed as a multiplicative process or a purely random process. The distributions of the rockfall block stop points can be deduced from such simple models, they lead to Gaussian, Inverse-Gaussian, Log-normal or exponential negative distributions.

The theoretical background is presented, and the comparisons of some of these models with existing data indicate that these assumptions are relevant. The results are either based on theoretical considerations or by fitting results. They are potentially very useful for rockfall hazard zoning and risk assessment. This approach will need further investigations.