

Interactive comment on “Single-block rockfall dynamics inferred from seismic signal analysis” by Clément Hibert et al.

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Received and published: 16 January 2017

The manuscript “Single-block rockfall dynamics inferred from seismic signal analysis” by Hibert et al. is interesting and contains innovative information about seismic radiation due to rockfall. Below some comments that I hope help the authors in improving the manuscript.

Although I am not an English mother-tongue, at times I found some sentences difficult to follow. In my opinion, the authors should improve the English language.

In the Introduction, few lines should be added on the importance of rockfalls characterization, through seismic method (but not only). See for instance: Burjanek J., Moore J.R., Yugsi-Molina F.X., Fah D. (2012) Instrumental evidence of normal mode rock slope vibration. *Geophys. J. Int.*, 188, 559–569. F. Panzera, S. D’Amico, A. Lot-

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teri, P. Galea, G. Lombardo (2012) Seismic site response of unstable steep slope using noise measurements: the case study of Xemxija bay area, Malta. *Nat. Hazard Earth Sci. Syst.*, 12, 3421–3431 doi: 10.5194/nhess-12-3421-2012 P. Galea, S. D’Amico, D. Farrugia (2014) Dynamic characteristics of an active coastal spreading area using ambient noise measurements – (Anchor Bay, Malta). *Geophys. J. Int.*, 199, 1166–1175 doi: 10.1093/gji/ggu318

In Figure 1a and b, what do the authors indicate with blue points? Which is the meaning of coloured points in Figure 1c?

In Figure 1c, I understand that CMG1 is the broadband seismometer, but it is unclear which is the 3D short-period seismometer between K1, K2, K3 and K4. The authors should add a legend in map or some description in the figure caption.

The authors assume that seismic wavefield, generated by rockfalls, is composed mainly by surficial waves and consequently that the contribution of body waves is negligible. They must support this hypothesis through observations or by quoting references.

The authors assume that seismic wave velocity in black-marls is 300 m/s quoting as references Hibert et al. (2012) and Gance et al. (2012). Are the quoted studies performed in the same formations near Rioux Bourdoux? The sentence must be re-written as follows: “The average velocity of surface waves in black-marls in the area of Rioux Bourdoux is approximately 300 m/s (Hibert et al., 2012; Gance et al., 2012).” or “The average velocity of surface waves in black-marls, considering information coming from literature, is approximately 300 m/s (Hibert et al., 2012; Gance et al., 2012).”

I suppose that the propagation depth is obtained by considering $\lambda_{mpda} = V/f$. This assumption should be quoted in the text and the authors must specify why they chose 20 Hz as central frequency for their computation.

The authors used a linear regression to interpolate their data. Did they try to use a

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power or logarithm law using a lin-lin graph? The R2 for each linear regression curve should be visible in the graphs of Figures 4.

Probably in the case of x and y having uncertainties a Generalized Orthogonal Regression is need instead than standard least-squares.

The term “proportional” used in the manuscript is not correct, because the authors use a linear regression ($y=ax+b$) with a non-zero “b”.

The authors should better highlight which are the application fields of their study and the novelty with respect to the previous studies.

Interactive comment on Earth Surf. Dynam. Discuss., doi:10.5194/esurf-2016-64, 2017.

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