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Interactive
comment

Interactive comment on "Magnitude correlations in a self-similar aftershock rates model of seismicity" *by* Andres F. Zambrano Moreno and Jörn Davidsen

Anonymous Referee #1

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Review of the manuscript *Magnitude correlations in a self-similar aftershock rates model of seismicity*
by

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1   General comments

The authors test the existence of magnitude correlations for a self-similar earthquake occurrence rate model. As a first observation I would like to remark that magnitude correlations are intrinsic to this kind of models simply because the occurrence probability cannot be factorized.

A second crucial observation is that this kind of model was firstly introduced by (; ; ; ; ;) and all these articles should be quoted.

2 Specific comments

As stated in the previous section this approach is not new. The only difference is in the introduction of two scaling exponents instead of only one. More precisely the previous model used an occurrence rate model described by

$$r(m_{as}, t|m', 0) = f\left(\frac{t}{c_{\Delta m}}\right) \tag{1}$$

with $c_{\Delta m} = c_0 10^{b\Delta m}$

Conversely the new self-similar model uses

$$r(m_{as}, t|m', 0) = \frac{1}{\tau_{\Delta m}} f\left(\frac{t}{c_{\Delta m}}\right) \tag{2}$$

with $\tau_{\Delta m} = \tau_0 10^{g\Delta m}$ and $c_{\Delta m} = c_0 10^{z\Delta m}$ where $b = g + z$

The authors should discuss the advantage of introducing the two exponents in respect of using only one.

The only novelty in the article is represented by the introduction of the sub-catalog randomizing. This aspect remain, however, obscure and should be better described and discussed. In particular, at my opinion, the differences between the sub-catalog randomizing and the full-catalog randomizing are not sufficiently enlightened. Moreover I suggest that the sub-catalog randomizing should be applied to real catalogs.

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