Earth Surface Dynamics Discussions

Earth Surf. Dynam. Discuss., editor comment EC1
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Editorial Comment on esurf-2021-16

Jens Turowski (Editor)

Editor comment on "Examining the transport of sediment mixtures with coupled transfer functions inspired by a birth-death model" by Shawn M. Chartrand and David Jon Furbish, Earth Surf. Dynam. Discuss., https://doi.org/10.5194/esurf-2021-16-EC1, 2021

Dear authors,

the two reviewers provided a number of comments, which are constructive and detailed. Reviewer #1 (An) asks for clarifications on most parts of the manuscript. These should be fairly straight-forward to address. The comments by Reviewer #2 (Ancey), seem substantial to me. He developed the original birth-death Markov model, which serves as a basis for the present work, and identifies a number of problems with the theoretical set up.

I agree that the theoretical treatment would benefit from some clearer and more detailed explanations. In addition, I think the motivation / reasoning for choosing the particular line of analysis can be better communicated, and the relevant background should be explained. The Fourier transform analysis is introduced with a brief technical sentence (page 7, line 9), without providing any background information on the objectives of this step and on the mathematical details. While most researchers will have heard about Fourier transforms, not many geomorphologists will be familiar with the relevant details, let alone having used it.

Finally, it seems to me that there is some relevant literature that has been overlooked and I encourage the authors to amend that. Two particularly relevant publications are by Ghilardi et al., WRR 2014 (doi:10.1002/2013WR014449) and by Radice et al., WRR 2009 (doi:10.1029/2008WR007192), as well as chapter 5 in the thesis of Florian Heimann, ETH 2015 (https://www.research-collection.ethz.ch/handle/20.500.11850/99779). There may be others; it has been a while since I worked on this topic.

Together with the revised manuscript, please provide a detailed rebuttal with answers to the comments and explanations of the chagnes you have implemented.

Looking forward to reading the revised paper!

Best wishes, Jens Turowski