

Interactive comment on “Rarefied particle motions on hillslopes: 3. Entropy” by David Jon Furbish et al.

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The third paper has been the hardest for me to follow, because it touches concepts from statistical physics, that are less frequent in the earth science research community. For what I understood, the author claim to generalize the maximum entropy principle to several energy-based physical constraints. With this approach, they find similar Pareto distributions as with the varying deposition probability framework developed in companion paper 1. I believe this is an important result that goes far beyond particle motion on hillslopes, so that I am not convinced that associating this study as a companion paper is a judicious choice. In my opinion, proposing this study to a more physically sound readership journal than *esurf* would have a greater impact (Physical review ?). However, I rely on the editor's and other reviewers point of view for this.

C1

Other comments: p1 l15 “. . . that is heavy-tailed for net cooling and light tailed for net heating” Isn't it the other way around ?! (3) precise that A can be between -B and infinity ? (16) What is notation $E[]$ for ? You have already used it for energy. . . p19 l 7: What is Occam's razor ?

Please also note the supplement to this comment:

<https://esurf.copernicus.org/preprints/esurf-2020-100/esurf-2020-100-RC1-supplement.pdf>

Interactive comment on Earth Surf. Dynam. Discuss., <https://doi.org/10.5194/esurf-2020-100>, 2020.

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