

Interactive comment on “Dimensional analysis of a landscape evolution model with incision threshold” by Nikos Theodoratos and James W. Kirchner

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Nikos Theodoratos and James Kirchner conduct a dimensional analysis of the stream power incision model that includes an incision threshold that defines zones of zero incision below a defined stream power threshold. The dimensional analysis reveals that the incision threshold number remains the only parameter that governs the evolution of landscapes simulated by the stream power incision model. Their analysis expands on and complements a previous paper, that the authors also published in ESURF.

Overall, the paper is very well written and illustrated. I like the comprehensive explanation which allows readers to follow the steps taken by the authors. The results are well

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illustrated by the figures and tables, but the text could be abbreviated. The discussion places the results in the context of stochastic stream power incision models, and the choice of characteristic scales. In my opinion, the discussion could also revisit some of the assumption behind the study (in particular uniform uplift).

All in all, I think that the paper is already in a very good shape and ready to be published in ESURF after minor revisions.

Specific comments:

7-17 While referring the reader to Theodoratos et al. (2018), you may nevertheless provide some more details on the numeric simulations here, e.g. resolution or the nr of vertices used in the TIN. 13-19 Given Eq. 1, this should rather read that points with any given stream power above the threshold value experience a stream power greater than zero, ...

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