

SOIL Discuss., referee comment RC1
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Comment on soil-2021-85

Pedro Batista (Referee)

Referee comment on "Can the models keep up with the data? Possibilities of soil and soil surface assessment techniques in the context of process-based soil erosion models – A Review" by Lea Epple et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-85-RC1>, 2021

Dear authors,

Your manuscript presents a timely and relevant discussion on the capacity of soil erosion models to keep up with new sources of data, which can be used for parametrisation and model testing. I find the premise of the manuscript very interesting, and I appreciate the large effort that went into writing this review article. However, in my opinion, the manuscript still needs substantial improvements before it is ready for publication.

For instance, I had a very difficult time reading the paper. Sentences are often long, inadequately punctuated, and disconnected between themselves. The exaggerated number of superfluous citations makes the text convoluted, and demonstrates an excessive reliance on previous review papers (e.g. Pandey et al., 2016 gets cited over 20 times). Ultimately, there is a lot of repetitive information without sufficient reflection and interpretation. I suggest summarising each section more concisely and then focusing on your actual hypothesis. In particular, there could a section where you explain why, after analysing models, processes, and new measurement techniques, you corroborated your initial hypothesis about models not keeping up with the data.

I would also recommend trying to answer why models cannot keep up with the data. Is it a software issue, a programming issue, a process description issue? Or is it a problem with the modellers and the science? I think these questions are crucial for advancing the discussion and bridging the gap between models and data.

On a more specific topic, I would like to strongly encourage the authors to reflect upon their notions of models and realism. A good starting point would be Chapter 2 (A philosophical diversion) of Environmental modelling: Un uncertain future? (2009), by Keith Beven.

I see a lot of potential here and I look forward to seeing the authors exploring it accordingly. Hence, I would be glad to review this again if i) the manuscript goes through a thorough language and style revision; ii) repetitive or superfluous content is removed and the main findings from previous research are concisely summarised; iii) the authors deepen their discussion and make justice to their interesting and novel research idea.

Several detailed comments on style and content are provided in the attached file.

All the best,

Pedro

Please also note the supplement to this comment:

<https://soil.copernicus.org/preprints/soil-2021-85/soil-2021-85-RC1-supplement.pdf>