

Interactive comment on “Technical Note: Erosion processes in black-marls at the millimetre scale, the input of an analogical model” by J. Bechet et al.

Anonymous Referee #2

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1 Overall comment

The research described in this article is very interesting because it addresses the question whether or not erosion/deposition processes can be quantified with TLS/LIDAR technology. The measurement undertaken by the authors is done according to an

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interesting set up, allowing them to study the behaviour of a soil surface under circumstances that are close to natural. Data analysis and interpretation however is not easy for this kind of measurement. According to me, the authors have not studied the observed changes at the soil surface in a structured/methodological way that would allow them to draw generic conclusions about the different processes. I have ordered my specific comments into questions according to the theme they address.

2 General remarks

- This article would benefit from a review by a native English speaker.
- Did you measure the weight of the box before and after? It would be interesting to compare this to the observed swelling rates.
- Please include a small description of the soil profile, at least a textural analysis.

3 Differentiating processes

- The study claims to have differentiated processes that influence soil surface morphology in different ways. This differentiation appears to have been performed by visual inspection of one or several instances of these processes. I strongly recommend that the processes are first described. E.g. the process labeled as surface creep could also have been the result of particle detachment and deposition.
- The total swelling has been calculated rather precisely. Presumably, this is the average for the entire surface of the box. How can the swelling be differentiated

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from particle deposition if both processes result in the same observed change in the soil surface. /enditemize

4 DEM creation

- Why first the IDW and then getting the data into a grid?
- What was the resolution of the final DEM?
- What is the 'manual cleaning' in l. 10, p. 2266?
- Please motivate the threshold value for the definition of noise on l.22, p.2266.

5 Analogical model

The analogy between processes at the landscape and micro-topography scales is not self-evident. It would be very interesting to read about how the analogy between these spatial scales is utilised for process understanding/quantification.

6 Graphs and figures

- Table 1: How is the RMS calculated and can the increase over time be explained (depending on the resolution, this is contrary to the expected trend)?
- Fig.1 does not add any information to 2a/b.
- Fig.4: Is there no accumulation of sediments at the bottom of the box? So no erosion observed? Please give your interpretation or

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- Fig.5: Precipitation (not 'rain precipitation'): what is the 'total rain precipitation' if it is not cumulative or the intensity?
- Compression and creeping: what is the unit here?
- Swelling: is this cumulative?

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