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comment

Interactive comment on "SaLEM (v1.0) – A Soil and Landscape Evolution Model for simulation of regolith depth in periglacial environments" *by* Michael Bock et al.

Michael Bock et al.

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Dear anonymous referee #2,

thank you very much for your comments and suggestions, . I've incorporated these into the manuscript as best as I could.

To answer your comments first: It is definitely right to say that SaLEM "is a first step on the way to a complex model, which needs to include at least more calibration parameters and especially more precise validation data during further research." That's want we want to do in the future! The 'problem' of SaLEM predicting regolith depth values

more than 1m which is not reflected by the validation data is starting to get slightly better: In the meantime a drilling campaign with heavy equipment was carried out by the federal state agency LBEG. The results showed even deeper values (1.5m to 13.4m) in the valley floors. This new data source contains ten boreholes in the site Ebergoetzen, but only two in the validation rectangle. To avoid confusion I did not mix this data with the manually drilled data source I analyzed in this paper. The new data source is publically available so you may have a look at https://nibis.lbeg.de/cardomap3/?lang=en# and type in one of these numbers into the search window of the website: 4426GE0049, 4426GE0050, 4426GE0051, 4426GE0055, 4426GE0056, 426GE0059, 4426GE0061, 4426GE0062, 4426GE0103, 4426GE0104. When you click "further information" you get the depth values of each. You'll see that the SaLEM prediction of valley filling was really conservative!

We are aware of the sequences of different times of loess input and reworking and mixing this allochthonous material with weathered in situ material from the bedrock. We also have in mind the classification concept of four different stratigraphic layers of periglacial material you mentioned. This concept is not part of the modeling via SaLEM. When SaLEM will be able to predict different layers of material composition it will be time to proof whether the model can meet the differentiation known as 'Deckschichten'. At the moment this is too early. But we're working on that: the tracer concept we introduced here puts us in the position to follow the pathways of material and derive the prediction of material composition for every grid cell. So I'm quite sure that we can reach that goal soon!

Thanks again for the time and effort you spend.

Michael

Please also note the supplement to this comment:
https://www.geosci-model-dev-discuss.net/gmd-2017-218/gmd-2017-218-AC2-supplement.pdf

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Discussion paper