Technical corrections Review1:

P1-L19: "present day" instead of "nowadays"

P1-L19: "Particular" deleted

P1-L20: "were" instead of "ruled"

P1-L21: "be substantially improved" instead of "improve substantially"

P1-L21: "would" instead of "were"

P1-L24: "to model "instead of "for the modelling of"

P2-L9: "essential" deleted

P2-L10: "20$^{th}$ century" instead of "last century"

P15-L1: ", which is next to the process understanding the motivation for our model development" deleted

P15-L6-8: "There are no measurement data to validate it but hopefully will be collected in the near future (see future tasks). Legacy data in form of maps also do not exist, point measurements for other mapping projects (soil mapping campaigns) are only of limited use. Nevertheless," deleted

P18-L2: "(and hopefully soon into the nearest future)" deleted

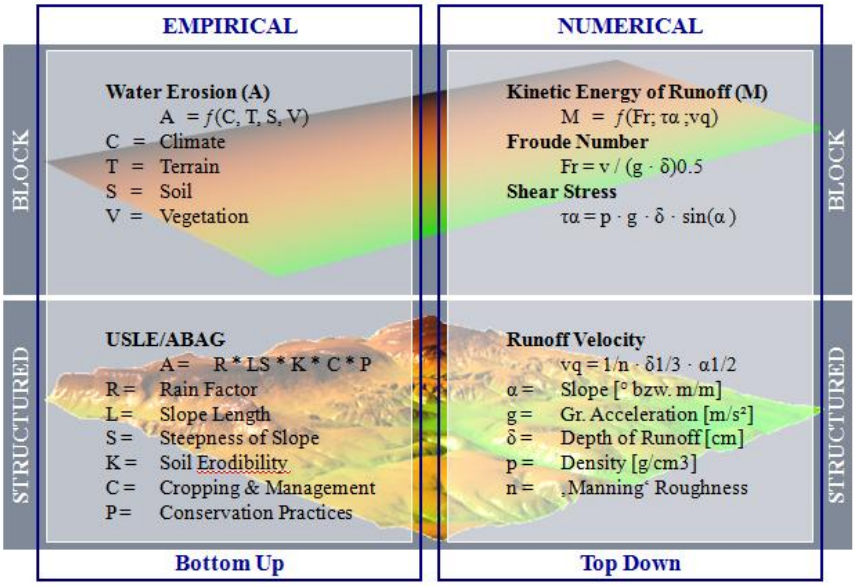
Your comments in the supplement of review 1:

*Sticky note R1"why are you introducing this tool then?to answer this question? This needs to be made much clearer*"
AR: should be clear now after restructuring

*Sticky note R1: "why is it only applicable to this area? Is this a suggestion of the models weakness or a lack of confidence? Its not really clear why this is said here.*"
AR: the sentence in question was deleted

*Sticky note R1: "OK - but you've already said that your model is site specific! so...."*
AR:

*Sticky note R1: "this sentence is weak and needs clarification - what do you mean by deductive models here? As in induction/vs deduction or a different definition?"*
AR: Exactly, it's meant as in induction/deduction. In deductive models according to Boehner (2006) dynamic processes are represented by physical laws resp. physical analogies whereas inductive models point out relations by statistically analyzing empirical data.
I provide the translation of a figure of one of Boehners publications. Here he uses empirical (for inductive) and numerical (instead of deductive).




*Sticky note R1: "in what sense? Clearly define what the model aims to solve"*
AR: See next one

*Sticky note R1: "as a general comment on the introduction: All the main parts are there - but the order and structure needs work. There is a mixture of descriptions of previous work and processes with descriptions of what the model will do. This would be much clearer if the issue/problem to be adressed were clearly described - then looking at previous work/models that have looked at pedogenesis in LEM's - and then on to why there is a niche/gap for this model. Then finally what you plan to do in the paper etc..*
AR: I restructured the introduction according to your suggestions and added some recent works to complete the framework of soil-landscape models I mention here.

*Sticky note R1: "This sentence needs re-working its not clear whether you are talkign about world records, or global data.. also needs a reference."*
AR: I limited it to the modeling of global paleo data and added Kageyama (2016) as a reference.

*Sticky note R1: So salem is over predicting regolith depth by c.3m? Could this not be calibrated out by altering parameters in the rock>soil components? It would appear that the relationship between summit, slope and bottom is correct (e.g. the dynamics of the model are correct) but the amounts are wrong...*
AR: In my opinion the model prediction of estimated values up to 3m in valley floors is plausible. Only the validation data does not reflect this due to the limitations of that data source. No one has drilled manually deep enough that he reached the bedrock. 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 site: 4426GE0049, 4426GE0050, 4426GE0051, 4426GE0055, 4426GE0056, 426GE0059, 4426GE0061, 4426GE0062, 4426GE0103, 4426GE0104. When you click "further information" you get the depth values of each.
My idea is to carry on with SaLEM by calibrating the model especially the composition of the unconsolidated layer reflected in the tracer by means of this new data source.

*Sticky note R1: what did Perron do/say? You need to explain!*

AR: Added half of a sentence to make clear that Perron follows a more comprehensive approach of landscape evolution simulating the branches of river networks.

*Sticky note R1: I'm not sure what this section adds to the paper... I would consider removing it unless the point is a central one of the model reporting (which I don;t think it is...?)*
AR: Removed