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Interactive comment on "Evaluation of digital soil mapping approaches with large sets of environmental covariates" *by* Madlene Nussbaum et al.

Anonymous Referee #1

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Review of Evaluation of digital soil mapping approaches with large sets of environmental covariates (soil-2017-14). This manuscript compares six modeling approaches (including a model average approach) to predict a variety of continuous soil properties in three different regions of Switzerland for four depth increments. There is a considerable amount of data presented and discussed which makes it somewhat difficult to glean the main points and findings of the paper. That said, Random Forest models and model averaged predictions produced the best results. Having spatial estimates of model performance is an important aspect of DSM. Even though the authors note the computational demands as the reason for not including these, I think it is possible to create at least one map of performance. I have computed similar

model performance for larger study areas than those presented here with a smaller pixel size using a PC with 32 GB of RAM. The modeling resolution should be more clearly stated in the methods. The caption of Figure 8 is the only place that I found the model resolution mentioned (20 m). One of the most interesting findings in this paper was the successful implementation of the legacy data correction for the timing of sample collection. While this is noted in the conclusions, I think it should be more prominent throughout the paper, as this is a common issue of using legacy data and most papers do not address it. Also, the model averaging of DSM models is relatively a new addition to the literature. It seems like a lot of supplemental material is included with this paper. Not sure if there is a limit to the amount included for a given paper. Detailed comments are included in the attached pdf document. I have no comments for the supplementary material and I did not double check references to verify they match citations.

Please also note the supplement to this comment:
https://www.soil-discuss.net/soil-2017-14/soil-2017-14-RC1-supplement.pdf

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