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Interactive comment on "Game theory interpretation of digital soil mapping convolutional neural networks" *by* José Padarian et al.

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Response to reviewers

Thanks both reviewers for their prompt responses. We will include your suggestions in the revised version of the manuscript.

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Discussion paper

General comments

Reading both reviews, the common thread is that more details are required in Section 3.1 (Model and data description). In this publication, we aim to introduce the use of SHAP to interpret a convolutional neural network (CNN) in the context of digital soil mapping. We used a model that was trained for a previous publication (Padarian et al., 2019) where we describe in detail all the rational, model training and validation. We agree with the reviewers and we will add more details to this manuscript, trying to strike a good balance between giving the reader relevant details (to this manuscript) and avoiding repetition. Note that both publications are open-access, hence the reader can reproduce the training and the interpretation without being limited by paywalls.

Response to Anonymous Referee 1

I just wonder why you did not directly input land cover/land use data in the model giving the important influence of this parameter on SOC content?

We agree on the great influence of land cover/use on SOC content but, sadly, the model was trained using legacy data which were collected during the 60s-90s and they do not have landcover information associated with them. Additionally, the profiles do not have a description/sampling date record. Chilean scientists are in the process of collating a more detailed soil database which will be eventually used to generate new national models which will be re-interpreted.

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