

Interactive comment on “Is the content and potential preservation of soil organic carbon reflected by cation exchange capacity? A case study in Swiss forest soils” by Emily F. Solly et al.

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Received and published: 4 March 2019

Solly et al. (2019) argue that the effective cation exchange capacity (CEC_{eff}) could be used as a proxy for the potential preservation of SOC. They further argue that the derived preservation potential of SOC could be beneficial for SOM modelling and replace the commonly used clay or clay + silt proxies for the preservation of SOM related to mineral association.

The authors correctly mention that CEC is directly influenced by the amount of organic matter in soils (line 102 and line 378). To my mind it could make sense to try to distinguish between the CEC (CEC_{clay}) that is provided by clay size minerals and the CEC

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provided by organic matter (CEC_OM). However, if I understood the Methods sections correctly, the CEC measured for this paper is indeed the overall CEC. Compare for example with Klamt and Sombroek (1988) and how they tried to distinguish between CEC_clay and CEC_OM.

Therefore, it should not come as a surprise that SOC and CEC are highly correlated in the topsoil, since CEC is determined to a large part by the presence of SOC. In my opinion, the use of CEC as proxy for the preservation potential of SOC in soils is circular and empirical relationships of SOC with CEC should not be used in modelling to parameterize a preservation capacity.

References

Klamt E, Sombroek W (1988) Contribution of organic matter to exchange properties of Oxisols.

Solly EF, Weber V, Zimmermann S, Walthert L, Hagedorn F, Schmidt MWI (2019) Is the content and potential preservation of soil organic carbon reflected by cation exchange capacity? A case study in Swiss forest soils. Biogeosciences Discussions, 1-32.

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-33>, 2019.

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