

SOIL Discuss., author comment AC3  
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## Reply on RC2

Nicolás Riveras-Muñoz et al.

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Author comment on "Biocrust-linked changes in soil aggregate stability along a climatic gradient in the Chilean Coastal Range" by Nicolás Riveras-Muñoz et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-141-AC3>, 2022

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Dear reviewer,

We were delighted to see that our manuscript is an interesting topic for you, and we thank you so much for your valuable suggestions for improving our manuscript. We appreciate the time you took to review this preprint and for giving this evaluation with constructive comments.

Regarding the measurement of total carbon, we agree with your view about the origin of the carbon along the climatic gradient. Nevertheless, based in the experimental setup, the observations about biocrust effect in the content of carbon still valuable. In this sense, the discussion of those results is not balanced, giving little importance to the biocrust effect. To respond to this, we gave less emphasis to the climatic influences and more to biocrusts and the interaction of both factors.

Concerning the pure lichen biocrust (PA) versus a moss-containing or dominating biocrust (SG, LC, and NA), our study approach biocrusts from the point of view of their functionality along different biomes and not their taxonomy, where they may have different compositions, not even 100% covered in our study (we did not analyze archaea, fungi, bacteria, cyanobacteria, algae, etc.).

Aggregate sizes are arbitrary and partially cover the range of macroaggregates. The main contributors to macroaggregate formation are plant roots, mycorrhizae, and earthworms, relevant in terms of biocrusts. In this case, the more one subdivides, the more in detail one observes changes in aggregate stability, which is usually evaluated through indexes. So, the exact value of the divisions does not matter as long as they are done homogeneously. On the other hand, the increase in the number of aggregates at the smallest size is indeed due to a leftover effect due to the experimental setup.

All the tables have been replaced for figures, including mean, standard error/standard deviation, and letter-based display for significant differences. More recent references have been added to the topics that require it.

Best regards,

Nicolás Riveras-Muñoz