Biogeosciences Discussions

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Comment on bg-2021-140

Anonymous Referee #2

Referee comment on "A stable ultrastructural pattern despite variable cell size in *Lithothamnion corallioides*" by Valentina Alice Bracchi et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2021-140-RC1, 2021

The paper contains a detailed and well-illustrated description of the structure of calcified cell walls in specimens of *L. corallioides* from different settings. The paper shows that skeletal ultrastructure of *L. corallioides* does not change in environments substantially different in terms of illumination (depth), temperature, and salinity. Based on the maintenance of the same ultrastructural patterns in different environmental conditions the authors conclude that 'the calcification process of CCA seems to be biologically-controlled rather than induced'. As suggested in the introduction, the aim of the paper is to contribute to the debate about the nature of calcification in coralline algae. Its results support that calcification is biologically controlled and, therefore, refute the conclusion of Nash et al. (2019) that mineral formation in corallines is biologically induced. The latter authors, however, based their interpretation on a detailed discussion of several features of calcification of corallines and any rebuttal of their conclusion should address the same features on the light of the new findings. I believe that a discussion of features that according to Nash et al. (2019) are key to decide whether the mineral formation is induced or controlled has to be included in the paper.

Minor points:

Check species names are in italics