

Interactive comment on “Mineralogical response of the Mediterranean crustose coralline alga *Lithophyllum cabiochae* to near-future ocean acidification and warming” by Merinda C. Nash et al.

Anonymous Referee #2

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The manuscript of Nash et al. reports interesting results of a study combining culturing (under varying T and pCO₂ conditions) and dissolution experiments on dead thalli of CCA species *L. cabiochae*. It is well-structured and written to the point. The data are of good quality and the statistics sound. I consider the manuscript publishable after minor revision.

Specific comments: While I am not familiar with the technique used for the MgCO₃ concentration determination I feel the whole approach would benefit from additional analyses providing spatially resolved data on Mg distribution (e.g. EMPA, LA-ICPMS,

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SIMS). I am aware this might not be practical for the current work but would like to encourage the authors to extend the work into that direction. Without such information we can hardly evaluate any effects (e.g. seasonal changes, internal and interindividual variation) which until now could be hidden by pooling the sample amount needed for the respective analyses. In the discussion I do miss details regarding the role of photosynthesis which could compensate for the changes in pH caused by the pCO₂ treatment. Respiration, photosynthesis and calcification rate data would be extremely helpful. I finally miss any reference to some recent papers (e.g. Ragazzola et al. 2013 and 2016). Those papers should be included into the discussion as they provide direct evidence for the CCA's response to OA (while carried out using a different species from a different habitat) on the microscale, chemically and structurally. As this topic directly relates to the use of Mg in CCA as environmental proxy for paleo temperature reconstruction the discussion could extend further into that particular direction. This is meant twofold: 1) with respect to the primary incorporation of Mg and 2) the preservation of the proxy signal in the fossil record.

technical comments: L78: (3) instead of 3/ L226: Rees et al. 2005 missing in reference list

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