

Interactive comment on “Anatomical structure overrides temperature controls on magnesium uptake – calcification in the Arctic/subarctic coralline algae *Leptophytum laeve* and *Kvaleyia epilaeve* (Rhodophyta; Corallinales)” by Merinda C. Nash and Walter Adey

L.J. de Nooijer (Editor)

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Dear Mrs Nash and Mr Adey,

I have seen your replies to the reviewers, whose comments I think you have adequately addressed. Therefore, I think your manuscript is fit for publication in Biogeosciences. Upon reading your revised version, I came across a number of (minor) issues that I ask you to incorporate in your final version.

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Sincerely,

Lennart de Nooijer

Abstract The last sentence is not relevant for this manuscript and I therefore suggest to remove it.

Introduction Lines 63-65: aren't there also studies reporting minor/ no effects of OA on coralline algal functioning? E.g. Cox et al., 2017. Mar Biol 164. Please include this nuance. Lines 87-90: I don't think it is desirable to use unpublished data as evidence for –in this case- continuous growth during day and night. Please include a reference to published results or remove this statement. Lines 97-102: this information belongs in the Methods section rather than the Introduction. Line 111: '(to one mm' should become '(up to one mm'.

Methods Line 131: unclear phrasing. Line 137: salinity is a unitless quantity. Line 148: I assume 'WHA' refers to one of the authors, but I don't see the relevance of mentioning this. Line 167: consider replacing 'enough' by 'sufficient' Lines 212-213: I think this can be removed here.

Results Line 218 and onwards: replace 'microns' by ' μm '. Line 267: there should probably be an 'are' after 'these'

Discussion Line 457: elevated temperature in what? Do you mean differences in temperature through the year? Line 484-485: unclear phrasing. What is a 'magnesium perspective'? Line 527: do the authors mean that light could influence the Mg-content of the CCA? If so what exactly do they refer to? Light intensity? Day length? And are there references for such a suggestion? Line 550: should be 'ultrastructures'.

Figures Figure 2, 3 and 5 should have the species names italicized within the figures. Figure 2: 'L. laeve' is difficult to read. Consider changing the color to white or include a white background. Figure 2: the white arrows in panels B, D and E refer to a CaCO_3 layer, rather than a single spot. Consider adding a line or band to indicate where these

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layers begin and end. It is also not clear where the 'Meristem' in panel C refers to. Please also check for the other figures. Figure 3: the black circles in panel B are a bit difficult to see. Perhaps they are better visible as white circles. The caption does not mention what the white circles represent in panel C. For various names in the different panels, it is not clear to what part of the tissue they refer to exactly (see also previous comment). Figure 4: similar as to the comment to figure 3; are the black circles referring to the EDS sites? Figure 5: could you place the labels for the vertical axis next to the axis?

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2017-180>, 2017.