

Interactive comment on “Response of <i>Nodularia spumigena</i> to <i>p</i>CO₂ – Part 2: Exudation and extracellular enzyme activities” by S. Endres et al.

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Dear Sonja, I read your recent paper in BG Discussions on the response of *Nodularia* on varying pCO₂ levels in the ocean. I also saw the comments from reviewer 1 (and your response to that), and I absolutely agree with the reviewer that your paper/research is novel, well designed and written, and therefore deserves publication in the Biogeosciences journal. As you know, I am very interested in heterotrophic bacterial activities in the ocean myself. I read the parts about the role of heterotrophic bacteria in your experiment very carefully, and I do agree with reviewer 1: I suggest you discuss your results on patterns of enzyme activities a bit more carefully, especially

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the patterns/nature of aminopeptidase activity. I am actually not sure that all of the peptidase activity in the later stage of the experiment can be attributed to *Nodularia* itself. I suggest you also discuss a possible role of heterotrophic bacteria that were likely attached to *Nodularia*. If I understand correctly, your *Nodularia* culture wasn't axenic, right? Although at one point in the paper (p.5130, l.11-13) you are saying that you tried to exclude heterotrophic bacteria – it is unclear to me how you were trying that - please explain. The relatively low cell counts (10⁵ L⁻¹) most likely represent the 'free-living' bacteria in your culture medium, but again, what about the ones that were likely attached to the *Nodularia* filaments? Are those included in the 10⁵ L⁻¹? I don't think so, because you do not say in the methods section that you treated the samples in a specific way to detach the cells prior to counting. I would speculate that the attached communities may significantly contribute to the degradation of macromolecules in *Nodularia* cultures. In this regard, I wanted to draw your attention to a recent paper from Van Mooy et al. (2012) published in the ISME journal (6, p. 422). They looked at the activities of *Trichodesmium*-attached heterotrophic bacterial communities. You may want to cite this paper. One more suggestion: I think your conclusion paragraph starts on p. 5130, l. 23. You are commenting on the possible role of temperature – but what about CO₂? What do we really learn from your experiments? What are possible consequences for the ecosystem Baltic Sea? You mention in the Intro the important ecological impact of *Nodularia*; what are the possible consequences on food web interactions in the Baltic? By the way, 'Nodularia is of high biogeochemical importance ...' (p. 5111, l. 13) sound a bit awkward and is not powerful enough; I would say: "Therefore, *Nodularia* is highly important for ecosystem functions in the Baltic Sea." Good luck, I wish you all the best with the paper and I am looking forward to seeing it being published soon!!!

Interactive comment on Biogeosciences Discuss., 9, 5109, 2012.

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