

Interactive comment on “On giant shoulders: How a seamount affects the microbial community composition of seawater and sponges” by Kathrin Busch et al.

Anonymous Referee #1

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Overall comments:

This manuscript brings to bear physical oceanographic, biogeochemical, and microbiological data on the question of whether seamounts impact the microbial community composition of the water column and benthic organisms like sponges. I was skeptical of water column impacts, imagining that a given water mass would have a microbial signature irrespective of the seamount. However, the data in this paper convinced me of the unexpected findings that not only do seamounts exert an effect on the bacterial community composition up to 200 meters above their summit, but also a more subtle effect on the bacterial community composition of sponges growing at various depths

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on the seamount.

The scientific methods are clearly described and appropriate for the work. CTD data were collected at stations both on and off the seamount, so there are appropriate mid-water and near-bottom water controls to assess the influence of the seamount. A sufficient number of sponge samples were collected for each species, which is not a small matter for deep-sea work. Moreover, the authors have put a tremendous amount of work into creating excellent visualizations of the data that clearly show how the results support their conclusions (particularly Figures 3 and 6). It takes real effort to combine such large amounts of information into figures and still have them clearly and cleanly illustrate the narrative points you are making in the discussion.

The discussion is very concise and logically structured. The conclusions are well supported by the results. The references are appropriate in scope, including very recent findings (2018-2019) as well as citing classic papers from multiple decades (centuries). All of the references cited in the text are listed in the bibliography.

I don't often have the pleasure of reviewing a paper that is so articulate and well organized and makes such surprising findings. This manuscript is excellent.

Typographic issues:

Abstract: Line 17: 'extend' should be 'extent' Line 19: 'which extend' should be 'what extent' Line 21: amplicon does not need to be capitalized Lines 38 and 42: remove the comma after 'both' Lines 40-41: You do not define HMA or LMA prior to usage

Introduction: Lines 65-66: 'Rix, De Goeij et al. 2016' should be either Rix et al. 2016a or Rix et al. 2016b Line 71: 'Intimate sponge-microbe associations have been observed...' Line 85: '...interactivity are still lacking'

Results: Line 242: 'The dominant microbial phylum in *S. rosea* and *L. complicate* was Proteobacteria'

Throughout: There is inconsistency of the in-text citations throughout the manuscript.

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Some citations italicize 'et al.' while others do not. Please check the journal's preference and then make all of them the same.

References: Line 463: Van Haren is listed under 'H' instead of 'V' Lines 452-457: two De Goeij references are listed under 'G' instead of under 'D' Line 569: Isme should be ISME

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2020-15>, 2020.

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