

Interactive comment on “Benthic C fixation and cycling in diffuse hydrothermal and background sediments in the Bransfield Strait, Antarctica” by Clare Woulds et al.

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Received and published: 24 July 2019

We thank the reviewer for a supportive review.

The reviewer feels that the methods section could provide more detail, and this will be added in line with this and other reviews.

In particular, the reviewer asks for further detail of the dual labelled phytodetritus that was added to the ‘algae’ treatment, and this will be provided. In addition we will add acknowledgement and discussion of the fact that the phytodetritus used was fresher and more reactive than the particulate organic matter that usually reaches the depth

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of our study sites. This is a common feature of most previous experiments of this type, and we acknowledge that it means that the processing rates we report for algal are likely to be maximum rates. Other revisions to our discussion will include accommodating the reviewer’s comment on how we discuss the potential impact of experimental temperature on our measured rates. The reviewer also makes a helpful point about potential reasons for the spatial heterogeneity we observed (potentially sporadic nature of venting, and consequent adaptability of benthic communities), and this will be added to the discussion. We will also add discussion as to whether the duration of our experiments limited our ability to observe transfer of fixed ^{13}C to some C pools.

Other details, clarification, and changes to figure formatting that the reviewer requests, for example the proportion of annual flux that algae addition represented, and a brief description of the macrofaunal community, will be added/changed.

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-198>, 2019.

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