Biogeosciences Discussions

Biogeosciences Discuss., referee comment RC3
https://doi.org/10.5194/bg-2021-284-RC3, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on bg-2021-284

Anonymous Referee #3

Referee comment on "Deposit-feeding of *Nonionellina labradorica* (foraminifera) from an Arctic methane seep site and possible association with a methanotroph" by Christiane Schmidt et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2021-284-RC3, 2021

The manuscript „ Deposit feeding of a foraminifera from an Arctic methane seep…" by Christiane Schmidt and co-authors describes a feeding experiment with Nonionellina l. from a seep site with cultured methanotrophs (Methyloprofundus s.).
The methods are described clearly and great care has been taken to ensure the viability of the foraminifers. Impressive photos of the foraminifera are presented.

The experimental set-up seems to me (as a non-expert for foraminifera) a bit weak:
- There were 5 specimens in each set up, but results for only 4 are reported
- The incubation time and/or incubation temperature was too short or too low, as hardly any feeding (bacteria in vacuoles or near the aperture) was observed. Unfortunately, an extended incubation or slightly warmer temperatures, with an extension or repetition of the experiment is not possible....
- The presence of storage granulas and of gram-negative cell walls in the observed bacteria is not specific for methanotrophs, only the ICMs are characteristic for methanotrophs

In the discussion, the relation of the study to porewater chemistry is a bit superficial and not necessary for the experiment.
Also, the discussion on the SMTZ and anaerobic methane oxidation is miss-leading, as the foraminifera have been sampled from the sediment surface, and also Methyloprofundus is an aerobic methane oxidizer, presumable from the sediment surface.
As so few bacteria have been found in or in front of the foraminifera the conclusion that they can feed on them is not justified.