



EGUsphere, referee comment RC1
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Comment on egusphere-2022-373

Carsten J. Schubert (Referee)

Referee comment on "High-resolution vertical biogeochemical profiles in the hyporheic zone reveal insights into microbial methane cycling" by Tamara Michaelis et al.,
EGUsphere, <https://doi.org/10.5194/egusphere-2022-373-RC1>, 2022

High-resolution vertical biogeochemical profiles in the hyporheic zone reveal insights into microbial methane cycling

The study shows high resolution depth-resolved geochemical profiles from different locations in the hyporheic zone of the river Mossach in southern Germany.

Pore-water concentrations and stable carbon isotopes ($\delta^{13}\text{C}$) of dissolved CH_4 as well as relevant electron acceptors for oxidation with a 1 cm vertical depth-resolution were measured.

The results were explained by modelling the data with PROFILE. Additionally, 16s RNA data was used to identify the microbial community responsible for different processes like methanogenesis, AOM, Anammox etc.

This is a very nice manuscript. I am impressed by all the data the authors are providing and the very thoroughly discussed results using different techniques. Finally, a manuscript showing that not everywhere where methane is depleted oxidation is responsible (proved by isotopic data). Results are also not over interpreted as seen often in the recent literature. I have put some suggestions directly in the file. I congratulate the authors and recommend publication with those slight changes.

Please also note the supplement to this comment:

<https://egusphere.copernicus.org/preprints/2022/egusphere-2022-373/egusphere-2022-373-RC1-supplement.pdf>