

Interactive comment on “Saturated CO₂ inhibits microbial processes in CO₂-vented deep-sea sediments” by D. de Beer et al.

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Received and published: 2 February 2013

The authors describe in this article new biogeochemical data in a deep hydrothermal vent with a high CO₂ plume in its liquid state.

There is no doubt that this work will help all the scientific community in that research field in which there is little in situ data.

The authors emphasize also that this site could also be considered as a natural analogue for geological CO₂ storage in deep-sea sediments and they used the data of this hydrothermal site in order to describe the potential high toxicity of high CO₂ concentration for the marine eco-systems of a potential CO₂ storage site.

This point, however, must be revised or at least better argued and the differences of

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physical conditions between the hydrothermal vent and a potential CO₂ storage in deep sea-sediments should be discussed:

1/ High temperature in this hydrothermal site vs. low temperature (between 2°C and 20°C), i.e. below the supercritical temperature (31°C), in the CO₂ Hydrate Formation Zone (HFZ)

2/ Pressure corresponding to a sea water depth around 1400 m at this site vs. two or four times more in the self-sealing sedimentary strata for a CO₂ storage (3000m-5500m)

3/ Lower density of CO₂ liquid than the marine porewater at this site vs. higher density of CO₂ liquid in the the CO₂ Negative Buoyancy Zone (NBZ)

Finally, I would like to draw the attention of the authors on the recent article in Geophysical Research Letters from Eccles et al. (2012) "Global CO₂ Storage Potential of Self-Sealing Marine Sedimentary Strata".

Interactive comment on Biogeosciences Discuss., 10, 1899, 2013.

BGD

10, C38–C39, 2013

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