

Interactive comment on “Fluid–rock interactions in the shallow Mariana forearc: carbon cycling and redox conditions” by Elmar Albers et al.

Elmar Albers et al.

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Received and published: 27 March 2019

Dear referee,

Thank you for your feedback.

We understand your concerns about the trace elemental compositions of phases co-existing with the carbonates. In our study we used carbonate REE compositions to (i) distinguish these from carbonates in veins of the Pacific plate’s seafloor, (ii) distinguish between deep and shallow carbonates, (iii) highlight oxidizing conditions during carbonate formation. The fact, that carbonate REE patterns are alike across the different samples from two mud volcanoes that are >150 km apart (irrespective of the coexisting phases within the individual veins) led us to the conclusion that these compositions

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indeed are representative for the fluid from which the veins formed. From our perspective, the analyses of trace elemental compositions of the other phases would not add significant value to the study, in particular since these would not strengthen or weaken one of the three points mentioned above. Nevertheless, we are aware of the fact that phases such as lawsonite can incorporate large quantities of REEs under blueschist facies conditions (e.g., John et al., 2008, Lithos); but lawsonite only occurs in one of our samples, the carbonate REE patterns of which do not differ from those of the other samples.

We'll deal with the comments in your supplement during the full revision of our manuscript.

Kind regards,

E. Albers

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2019-51>, 2019.

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