

Interactive comment on “Paleo-environmental imprint on microbiology and biogeochemistry of coastal quaternary sediments” by M. Beck et al.

Anonymous Referee #2

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General comments:

In this paper, Beck et al. report microbiological and biogeochemical characteristics of two different tidal flat sediment cores down to approximately 20 meters below the seafloor. The sedimentological characteristics and depositional sequences (i.e., paleo-environmental imprint) at two coring sites, JS-A and JS-B, are very different, consistently representing different microbiological and (bio-)geochemical characteristics. The data set demonstrates that sedimentation process controls not only the physical properties such as grain size and porosity, also impact modern fluid flow system and the indigenous microbial activities. Although it has still been not clear how the past microbial activities and relicts including molecular and bio-marker signals are preserved in geologically old sediments and linked to the modern microbial community composition,

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population and (bio-)geochemical processes, the multi-disciplinary data set present how the past sediment-formation processes and the modern geophysical and hydrological characteristics are significant to the modern sedimentary biosphere. Although I don't think the title is translating what the authors exactly discussed in this paper, the authors present a good microbiological and geochemical data set of standard analyses from two comparative sedimentary sequences at the same tidal flat field, and hence worth reporting in Biogeosciences. I have just a few specific comments as described below:

Specific comments:

p. 5465, line 24: “5 ms below the sea floor” should be “5 meters below the seafloor”.

p. 5475, line 24: “the very early diagenetic sulfur cycle was responsible for sulfide retention”. It seems to me somewhat important aspects in this study. Please provide a bit more explanations/ discussions in this regard. Why neither sulfide nor AVS/CRS was detected from the lower AOM zone at JS-1?

Fig. 4. Can be removed, with some additional statements in the text.

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