

Interactive comment on “Carbon isotopic evidence for microbial control of carbon supply to Orca Basin at the brine-seawater interface” by S. R. Shah et al.

Anonymous Referee #2

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The study presents new data on the ^{13}C and ^{14}C isotope composition of DIC and DOC measured in the water column of the Orca Basin. This is of general interest facing the application of the isotope approach to sources and transformations of carbon fractions and the potential role of microbial activities. It, therefore, is relevant for the international BG scientific community. Overall the results point to the importance of boundaries for microbial processes. Although based on the analytical data I have the impression that the oxidation of older methane originating from the sediments is an appropriate candidate for explaining the observed ^{13}C and ^{14}C results, modeling seems to indicate a more complex history.

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The methods applied are described in detail. From the analytical results it seems that ^{13}C -measurements on DIC based on 2 different methods gave results that differ exceeding the given analytical uncertainty. I would like to see some discussion about these differences and learn how the authors tried to resolve the reasons for this difference (e.g., cross measurements of standards with the same matrix?).

I would suggest to add the fundamental publications on the Orca system by Tribovillard et al. (Mar Geol, 2008) and Hurtgen et al. (Am J. Sci, 1999) into the ms and the reference list. From a technical point of view I suggest to shift the data source description in Fig.1 from 'B' to 'C' and remove the data signatures from Fig.2. The presentation of mathematics is clear, but parts of the text would profit from general editing.

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