

# ***Interactive comment on “Cold-water corals and hydrocarbon-rich seepage in the Pompeia Province (Gulf of Cádiz) – living on the edge” by Blanca Rincón-Tomás et al.***

## **Anonymous Referee #1**

Received and published: 3 September 2018

BG-2018-372

Title: Cold-water corals and hydrocarbon-rich seepage in the Pompeia Province (Gulf of Cádiz) - living on the edge

Author(s): Blanca Rincón-Tomás et al.

## General Comments

The study examines relationships between cold water corals and fluid seepages from the sediment in a portion of the Gulf of Cadiz. The study addresses an interesting question and is fairly straightforward.

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My concerns deal with the description of the experimental design. The four samples are mentioned. However, it is not clear to me how they were selected, i.e., whether by convenience, haphazardly, or with a design to test whether metabolism is fueled by fluids or sediment. Thus, it is not clear to me whether the data presented in the paper confirm the conclusions.

I am not saying that the study design was inappropriate. Rather it is not described well.

Also, the paper is a tough read, since much of the data are given as the author's collection codes rather than describing the sample. Thus, it is necessary to have two to three figures and the table placed side-by-side to understand what a value means.

### Specific Comments

1) The abstract reads well.

2) The introduction reads well. One question is whether you have a testable hypothesis. Are you trying to ask whether the corals are fueled by fluids versus scavenging from currents. How are you going to distinguish between mechanisms?

3) In the methods please add section in which you describe the Experimental Design. How many samples were collected and from where? The descriptions of the laboratory methods are okay. However, I have no idea if you sampled thoroughly enough.

4) In Table 2, will readers know what Identifier means? I realize that the numbers correspond to pictures in the figures. However, it is very confusing to have to put the figure next to the table to interpret the data in the table. There must be a better way to present the data.

5) Rather than using code numbers for the sampling sites, it would help readers if you used descriptive names, such as 'active seep', etc.

6) Although amplicon sampling for microbial group is okay. Do you have evidence for microbial growth and activity? Perhaps in the discussion indicate which samples come

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from fresh material and are likely to have fresh DNA versus samples in which the DNA could be old and preserved. I realized this is inferred by looking at the pictures, but again this is a convoluted way to present a story.

7) I suppose the model is okay. However, again a better presentation of the data might lead readers to the conclusion rather than relying on the author's story.

#### Technical Comments

1) Line 19: consider saying, 'rate a seepage via focused, scattered, diffused, etc.'

2) Line 34: change 'which' to 'that'.

3) Line 36: change to 'typically, they thrive, etc.'

4) Line 45: change 'ecological' to 'environmental' and 'are discussed to control' to 'influence'.

5) Line 51: delete 'e.g.'.

6) Line 53: change 'e.g.' to 'for example'.

7) Line 65: delete 'i.e.' and the parentheses. The text is not an example rather it is the description of 'coral graveyards.'

This is an okay study, and I suppose the conclusion is correct. However, the data presentation is convoluted. I do not have specific ways to present the data more clearly, but the author should be encouraged to try.

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2018-372>, 2018.

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