

Interactive comment on “Pore-water in marine sediments associated to gas hydrate dissociation offshore Lebu, Chile” by Carolina Cárcamo et al.

Carolina Cárcamo et al.

lucia.villar@gmail.com

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Reviewer comment: Introduction is too short Answer: We added new sentences, in which relationships between fluid escapes and positive relief are better explained in order to clarify the main challenge of our study.

Reviewer comment: Moreover, it seems that no new methodology regarding these question is proposed and that rather classical approaches were used. In this context, it is hard to state if the research presented is worth being published as it is. Answer: The methodology novelty is the multi- and interdisciplinary approach to characterize completely the system, by using field and laboratory data, theory and modeling. We underline this approach adding a new sentence in Methods.

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Reviewer comment: Methods and the results are too short Answer: In methods and results we include new sentences in order to improve the quality and understanding of the text

Reviewer comment: Foraminiferal analysis in methods are not explained Answer: In methods we include a sentence to explain the foraminiferal extraction and identification analysis.

Reviewer comment: The text and figures are not always in agreement (see specific comments below). Answer: The text and figures were edited by specific comments as suggested. Reviewer comment: The conclusions drawn from the measurements of the isotopic composition of pore-water is not clear enough and should be discussed in greater details (see specific comment below) Answer: We included more detailed and additional information to sections 2, 3 and 4 that support of our observations and discussion. Within this section, we now better highlight the analysis methodology (and acceptance criteria of the data), as well as, why we conclude that the results are not related to oceanic waters and most likely related to gas hydrate dissociation.

Reviewer comment: The authors also state that the delta 180 reaches a value of 6. Answer: We think that our formulation was not completely clear in the text, and that the reviewer misinterpreted our results. We stated that the maximum value for d18O was +1.8, the value close to 6 (5.6 exactly) refers to dD. We improve this sentence, to make this fact more explicit in the revised version.

Reviewer comment: This is more than questionable as (i) only the last point reaches this value Answer: This is true, this point is the most extreme one. However, we run the analysis of each sample at least twice, and in different days to avoid any analytical interference of the instrument. For each measurements, each sample is analyzed 5 consecutive times. For each run we accept a standard deviation less than 0.8 ‰ for Hydrogen and less than 0.1 ‰ for Oxygen. Than, the average of at least 2 different measurements should have the save standard deviation as before explained. In this

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particular case we repeated 2 times. The first measurement was $+5.9 (\pm 0.26) \text{ ‰}$ while the second one was $+5.32 (\pm 0.56) \text{ ‰}$. We included this information in the text, to make sure the reader also understand, how we performed the analysis and why we don't exclude this value from the results.

Reviewer comment: Line 261-271: These concluding remarks should be improved. check the quality of the measurements. (ii) this point is clearly out of the trend. This point needs to be discussed thoroughly. Answer: We consider that this point is indeed an extreme value, however as explained before a valid one. Moreover, if the value is excluded from the co-isotope correlation, the slope of the linear regression and its intercept only deviates slightly. With the point included the slope of the linear regression is 2.55 and the intercept is of +0.65, when this point is excluded the new slope is of 2.33 and the intercepts is +0.74. Therefore, we consider this point is not to be off-trend.

Reviewer comment: Line 261-271: These concluding remarks should be improved. Answer: We add new sentences in order to complete this part of conclusion by information regarding foraminifera and isotope results.

Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2018-362/hess-2018-362-AC1-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-362>, 2018.

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