

***Interactive comment on “Chemical
characterization of Punta de Fuencaliente CO₂
seeps system (La Palma Island, NE Atlantic
Ocean): a new natural laboratory for ocean
acidification studies” by
Sara González-Delgado et al.***

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Thank you for your revision of our manuscript. Your comments have been essential in guiding our revision and we hope that we have satisfactorily dealt with the errors and clarify any point that was originally confusing. We very much appreciate your effort in refining our research and to improve our text. We also thanks that you have found the subject of the review manuscript interesting, as you state: “This study provides a novel

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and comprehensive description of a location resembling future water chemistry conditions, as expected under ocean acidification scenarios. The authors provide a valuable dataset of measured and estimated parameters in seven sites, along the south of La Palma island, located in the North Atlantic Ocean. It is very interesting the explanation the authors provided about the origin/source of these acidified waters, also the discussion of the community assemblages inside the lagoons, where conditions behave different from coastal waters.”

Responses to Referee’s comments:

SPECIFIC COMMENTS (individual scientific questions/issues)

Referee #1; comment 1: “Abstract: in the same way the authors presented the CO₂ emission flux range in this section, it is advised to include the general range of measured and calculated parameters. This provides the reader with a general overview of the chemistry conditions in this location. - Please specify whether omega aragonite and calcite were measured or calculated.”

- Response: We agree with the comment and we have made the changes. Please see sentences between Line 18 and 21.

Referee #1; comment 2: “Keywords: consider removing the word “area”. Also, including the word “groundwater” to the list.”

- Response: We agree with you and we have made the changes. Check Line 28.

Referee #1; comment 3: “Material and methods:- Was the VINDTA a 3C? If yes, please specify. - Authors are advice to include further details regarding water sampling and handling: sampling procedure (Niskin, SCUBA, etc), sampling containers for AT, CT and salinity (type of bottles), total number of samples (N per site, period, etc, consider present a summary of this information in a table as Supplementary material), samples fixed with HgCl₂?, storing conditions. - There is no mentioned in this section of how they obtained the atmospheric CO₂ values. This should be clarified.”

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- Response: We agree with your comments and we have added more details about the sampling and handling methods. Please go to Lines 105 - 109 and Lines 113 -115, 119 and Lines 123 - 124. Also, we now include a table with your suggestion (please see supplementary material 2 - Table SM2).

Referee #1; comment 4: “Results: - The authors indicated they found important differences between tides. This is an important finding, in agreement with results previously reported by Manzello (2010) in a shallow tropical coral reef, therefore, the authors could include an additional graphic representation of it as supplementary material (box plot, scatter plot or other). – The authors indicated that “Los Potreros, is a continuation of Playa del Faro”, however, according to Fig.1 Los Barqueros is located between these locations.”

- Response: We agree with your suggestion and we have included a line graph with the tidal fluctuation of the minimum pH (see supplementary material 2 – Figure SM2). We apologize for the confusion between “Los Porretos” and “Los Barqueros” both are the same site. We have made the correction in Figure 1.

Referee #1; comment 5: “ Figures: - It’s unclear, what it is the purpose of the dashed-line square in the figures? In Figs.2, 4, 5 is used as division for different sites but in Fig. 3 represents a tide difference. The authors should try to standardize the use of this element among all figures and also be clearly indicated in the caption. - Fig.1: caption must include a description of the figures in each panel. - Fig.1: in order to facilitate reader’s interpretation, ID letters from panel b and c should coincide. Currently, there is no clear whether the authors tried to make these panels complement of each other. For example, when interpreting the left map from panel c based in color/letter code (using yellow mark as reference to Playa Echentive), it seems there is a mixed up (the stars should be Lagoon1 and Lagoon 2, but currently are marked as Playa del Faro + Lagoon 2). Authors should carefully review the ID letters/colors from panels b and c. Another suggestion it’s to merge both legends, by including the color code next to the letter in the legend from panel b. - Fig.1, Fig.5: it’s unclear to which sampling period

corresponds the panel “High tide”. The authors should consider including tide initials (LT, HT) in all the panels/figures, maybe next to the sampling period title, and indicate it in the caption description. - Fig4: low and high tide labels are missing in the figure panels. - I would rather to see the order of the figures arranged by parameters. For example, move up Fig.5 after Fig.2, so all pH figures are shown together. This would facilitate following the figures, specially considering that arrangement per site does not follow the same order in all figures (Fig. 2 = Playa del Faro + Los Potreros but Fig. 3 = Los Potreros + Echentive Lagoon 1, etc). - Fig. 8: caption requires minor modifications. “Selected” instead of “Select” and “Purpose” or “proposal” instead of “purpose”.

- Response: We agree with your comment and we hope that we have satisfactorily clarify this confusion. Figure 1 has been modified; the identification letters now match between panel a and b, and high and low tide are marked as HT and LT respectively. Figures 2, 3 and 4 have been modified in line with your comments: now Figure 2 has all pH interpolation graph. In Figures 3 and 4 we have added the initials LT and HT in the titles of each graph. Also, the dashed line has only one purpose, to separate each sampling site. Finally, we have corrected the caption of Figure 8 in Line 293.

TYPING ERRORS, ETC.

Referee #1; comment 6: “General: values <10 must be written in letters. - Line 20: start new sentence with “This”. - Line 30: move “Since the last decade” to the beginning of the paragraph. Otherwise, it seems that you are referring to the effects exclusively taking place during the last decade. - Paragraph 50: replace “are” by a “,” and move “are” in front of “an oceanic”. - Paragraph 55: add “,” before “which”. - Paragraph 70: last sentence, add “,” before “what”, and close the sentence with “?”. - Paragraph 80: “were” instead of “where”. - Study area: figures within the text are not mentioned in sequential order (1c comes prior 1b). Authors must either a) modify the order of the sentences in the text or b) exchange the panels order in the figure (swap 1b by 1c). - Line 100: “culometric” is missing an “o” after the “c” (typo). Tittle of Dickson’s manual is incorrect. – Paragraph 105: remove “with” after “data using”. - Paragraph 115: “during

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the last eruption” instead of “of the last eruption”. - Paragraph 130, 240: use the same amount of decimal positions when reporting values (pH 8.0, omega calcite 5.0). - Paragraph 160: add “up” before “to”. - Paragraph 165: “data only from” instead of “data from only”. – Paragraph 190: add “,” after “therefore”. Remove “was” after “water”? - Paragraph 230: replace “a” by “an” before “unique”. - Paragraph 240: remove “the” before “shore”. – Paragraph 285: remove “s” in “predicts”.

- Response: We thank you very much for providing these text corrections. We have corrected the errors in Lines 22, 31, 51, 58, 77 - 78, 83, 92 – 96, 113, 115, 117, 121, 130, 136 – 253, 171, 174, 204, 205, 244 - 245, 252, 300.

Please also note the supplement to this comment:

<https://bg.copernicus.org/preprints/bg-2020-232/bg-2020-232-AC1-supplement.pdf>

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2020-232>, 2020.

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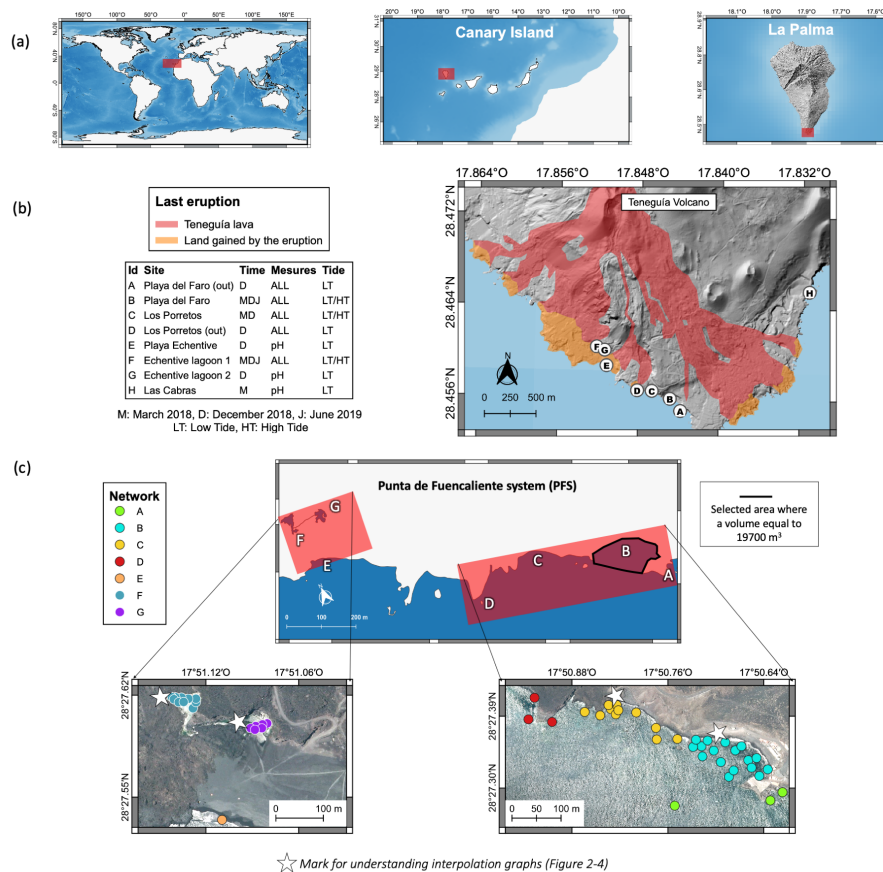


Fig. 1.

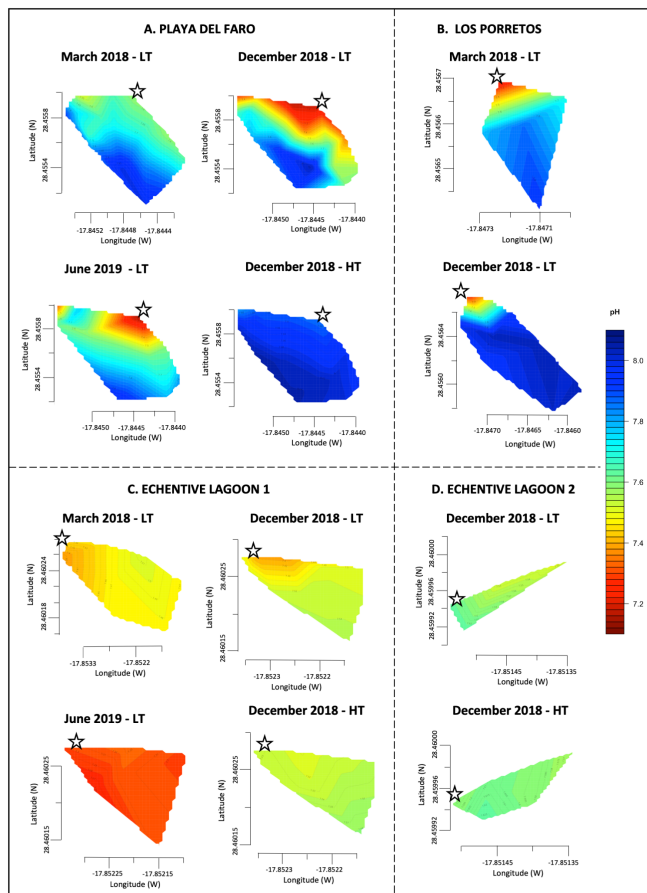


Fig. 2.

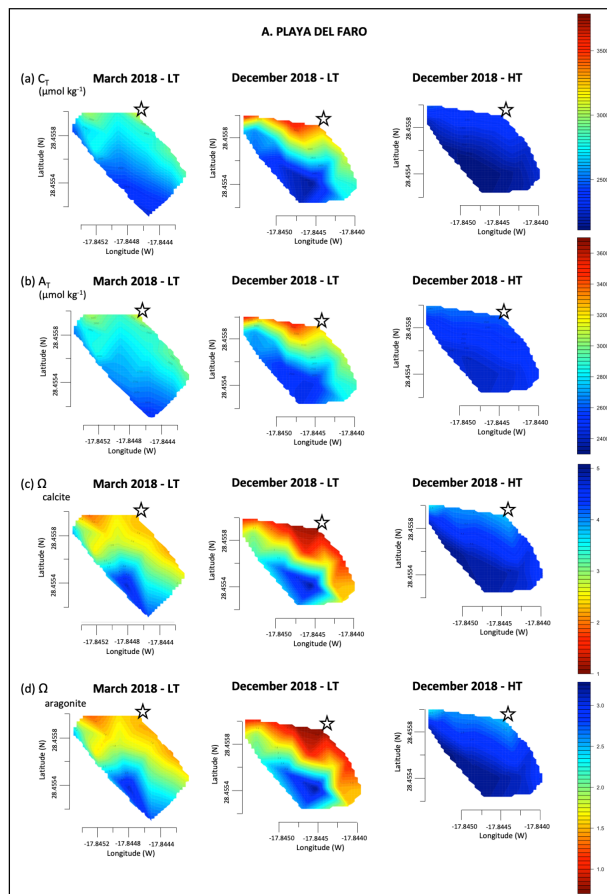


Fig. 3.

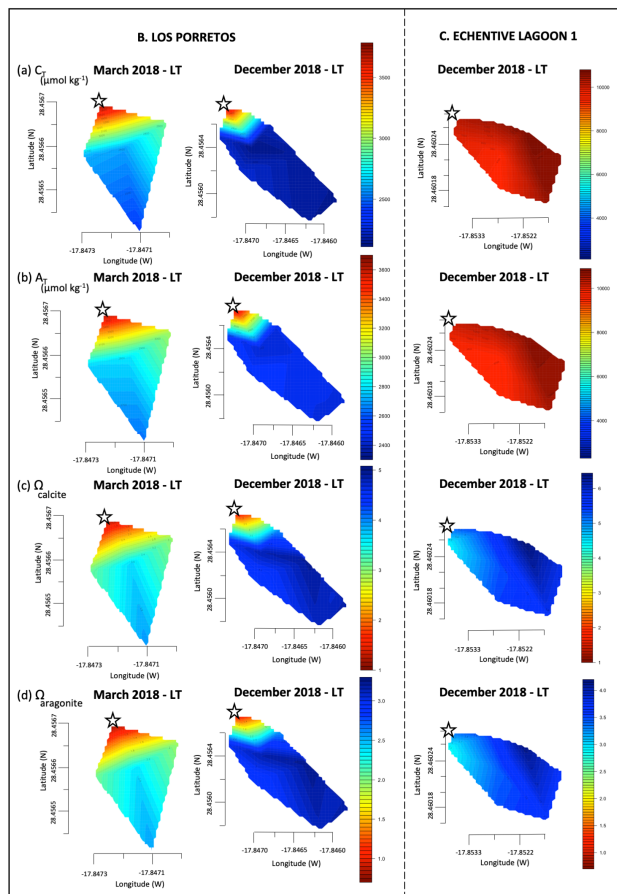


Fig. 4.