

Biogeosciences Discuss., referee comment RC2
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Review of the manuscript 'An analysis of the macroalgal $\delta^{13}\text{C}$ variability in the Gulf of California' by Velázquez-Ochoa et al.

Anonymous Referee #2

Referee comment on "An analysis of the variability in $\delta^{13}\text{C}$ in macroalgae from the Gulf of California: indicative of carbon concentration mechanisms and isotope discrimination during carbon assimilation" by Roberto Velázquez-Ochoa et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-50-RC2>, 2021

Authors have collected and measured an impressive number of samples to establish the relationship between $\delta^{13}\text{C}$ -microalgal and biological as well as environmental parameters. The statistical analyses are robust and helps to understand the correlation. However, one of the major flaws of this work is that authors only focused on describing the numbers, but do not go beyond the dataset. The underlying processes behind the observed relationships are required to be explained to gain a bigger picture. I believe that the manuscript has a scope to improve and can provide useful concepts related to this field. Thereby, I suggest to accept the manuscript after moderate revision if authors agree to incorporate the given suggestion. The minor comments are listed below:

Specific comments

Abstract

Line 18: Replace 'C' by carbon

Line 22 and throughout the text: The stable isotopic composition should be referred up to one decimal point.

Line 22 or 26: Kindly mention the environmental parameters included in this work.

Line 36: The ending of the abstract seems very abrupt.

Introduction

Line 42: The information should be substantiated by appropriate references.

Line 60: closing bracket is missing.

Line 71: The information should be substantiated by appropriate references.

Line 87: The information should be substantiated by appropriate references.

Line 88: The comparison between microalgal and terrestrial plant $d^{13}C$ is useless unless the authors describe the later with facts and references.

Line 96-102: This section must come before the previous to justify the study site selection.

Study area

Line 111: Please mention a few of the endemic specimens to lure broader audience.

Line 158: Please maintain a consistency referring GC

Methods

Authors have performed the statistical analyses in detail. Such great length of description actually helps to understand the work. Impressive! Just a soft suggestion, please refer the relationship only in terms of adjusted R^2 , else it would be difficult to follow at places.

Section 4.2

Line 552-554: Weird sentence construction. Please re-phrase the lines.

Just don't mention the correlation coefficient. Dig deeper to explain why does pH have a weaker relation with the measured $\delta^{13}\text{C}$ values.

Figures

Most of the figures are very difficult to follow. Authors must improve the representations in graphical format.

Figure 6. Replace $\delta^{13}\text{C}$ by $\delta^{13}\text{C}$ in the y-axis legend.

Figure 6 and 7: It is not understandable why does the authors provide trendline for a near-zero correlation ($R^2=0.04$ to 0.07). Kindly, remove them. Also, the inset texts are not readable.