

***Interactive comment on* “Fluctuations of sulfate, S-bearing amino acids and magnesium in a giant clam shell” by T. Yoshimura et al.**

Anonymous Referee #2

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General Comments

This study examines S and Mg element profiles from the shells of the giant clam *Hippopus hippopus*, which were collected in Ishigaki-Jima, Japan. The main goal of the study was to document ontogenetic trends, with the ultimate goal of understanding elemental partitioning during biomineralization. The authors document elemental concentrations in both organic and inorganic phases from a single specimen. Several specific hypotheses regarding the mechanisms and controls on S and Mg variations are proposed. These ideas will likely serve to motivate more detailed future experiments/monitoring studies. Because the data presented here are from a single specimen, it is difficult to evaluate the reproducibility of the patterns presented here (i.e., ontogenetic changes in elemental concentrations).

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Specific Comments

P. 1614, L. 25: This sentence should probably have a reference.

P. 1615, L. 14: Why is insolation singled out here? Is there preexisting evidence that insolation per se is relevant, or are the authors essentially implicating seasonality? If the latter is the case, I suggest revising this sentence.

P. 1616, L. 25: A locality map would be a valuable addition to the manuscript.

P. 1617, L. 2-3: This statement should be referenced.

P. 1617, P. 5: The authors should provide more detail regarding polishing?

P. 1619, L. 13-14: These references should be mentioned earlier (see comment above).

P. 1619, L. 26-27: While I understand what the authors are inferring about growth rates, this information is not explicitly showed in Figure 4. Perhaps this can be developed more completely.

P. 1620, L. 1-12: This is somewhat speculative. Can additional support (experimental or literature) be provided that would bolster this hypothesis?

Interactive comment on Biogeosciences Discuss., 11, 1613, 2014.

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