

Interactive comment on “The effect of precipitation rate on Mg/Ca and Sr/Ca ratios in biogenic calcite as observed in a belemnite rostrum” by Clemens Vinzenz Ullmann

Anonymous Referee #2

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REVIEW: The effect of precipitation rate on Mg/Ca and Sr/Ca ratios in biogenic calcite as observed in a belemnite rostrum by Clemens Vinzenz Ullmann

Given the importance Mg/Ca and Sr/Ca ratios in biogenic carbonate as paleoenvironmental indicators, Ullmann investigates how skeletal precipitation rates influence incorporation of Mg and Sr in a belemnite rostrum. Ullmann observes that as precipitation rate increased Mg/Ca ratios decreased and Sr/Ca ratios increased. Additionally, Ullmann observed that elemental ratios covaried linearly with precipitation rate. However, since this relationship does not account for all of the geochemical variation seen in the skeleton, with careful sampling, obtaining reliable geochemical data that reflects past environmental conditions may be possible. This paper presents important find-

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ings on the importance of understanding how biology influences paleoenvironmental proxies archived in biogenic carbonate. The materials and methods are, for the most part, sound (but see below). The manuscript is clear and the writing is excellent. The references are appropriate and the figures are excellent. The most significant problem with this paper is that the findings are based on a single specimen. While that data and interpretations are consistent with the patterns in this belemnite. Without corroborating the pattern with data from additional individuals, then significance of this study is limited. I recommend that Ullmann replicate his findings with additional specimen(s) before publishing this study.

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