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Interactive comment on “Boron incorporation in the foraminifer *Amphistegina lessonii* under a decoupled carbonate chemistry” by K. Kaczmarek et al.

Anonymous Referee #2

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This paper reports $\delta^{11}\text{B}$ values and B/Ca ratios determined for skeletal carbonate samples of *A. lessonii* cultured under strict control of pH and $[\text{CO}_3^{2-}]$. The authors' data clearly show that the $\delta^{11}\text{B}$ values of *A. lessonii* solely depend on pH and are independent of $[\text{CO}_3^{2-}]$ while the B/Ca ratios seem to be controlled by $\text{B}(\text{OH})_4^-/\text{HCO}_3^-$ ratio of culture media. These results are important for understanding the carbonate $\delta^{11}\text{B}$ and B/Ca as proxies of seawater carbonate system. This paper also includes the application of a new technique for simultaneous determination of $\delta^{11}\text{B}$ and B/Ca by using LA-MC-ICP-MS+OES, which can contribute significantly to the researches of this field in terms of analytical methodology. Thus I recommend that this paper is suitable for publication in Biogeosciences. Although the cause of an offset from theoretically

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expected value and a strong inter-specimen variation observed for foraminiferal $\delta^{11}\text{B}$ is not specified here, the authors' conclusion that these observations cannot be explained solely by sample size, vital effects, etc. is important. The authors may discuss the possible reason why the $\delta^{11}\text{B}$ offset from the theoretically expected value seems to vary with pH.

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