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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 #1

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In this manuscript, Kaczmarek et al. present new data (B/Ca and d11B) for benthic foraminifer A. lessonii cultured in a decoupled carbonate system. They found that shell B/Ca correlates positively with fluid B(OH)4-/HCO3-, and shell d11B increases with increasing seawater pH. The authors argue that the former observation is supported of the incorporation mechanisms originally hypothesized by Hemming & Hanson (1992), while the later is consistent with a control from pH. They also observe large and negative offsets between shell d11B and seawater borate d11B, suggesting acidification of the micro-environments surrounding the shells by respiration and calcification of symbionts. The findings could be useful, although it is uncertain at this stage to say how these findings would be applicable to other species. I am fine with the publication of the

work, but it would be nice the Editor also takes into account of comments from other reviewers as well.

Below are a few points for the authors.

1. Writing can be improved. For example, the first sentence in the Abstract should be deleted/revised, because it has been shown that, even we can get two parameters from d11B and B/Ca, it is still difficult to define the seawaterCO2 system. This has been well demonstrated previously by Yu et al. (2010) and Rae et al.(2011) both published in EPSL.

2. Another issue is that discussions of literature data are mixed for benthic and planktonic forams. It would be nice to make a clear separation of these two. Relevant publications should be cited, but are missing at present.

3. Line 332-334: the reason is not due to symbionts, it is due to the lower pH in deep waters.

4. Figures require some further work. For example,

Fig 2b & 5b, the unit for CO32- should be umol/kg;

Fig. 4. the positive deltad11B for pH of 8.6 demands some explanation;

Fig. 6b, c: add regression lines and R2 values.

Interactive comment on Biogeosciences Discuss., 11, 16743, 2014.