Biogeosciences Discuss., 9, C3217–C3218, 2012
www.biogeosciences-discuss.net/9/C3217/2012/

Biogeosciences Discussions

Interactive comment on "Quantification of protein biomass of individual foraminifers using nano-spectrophotometry" *by* A. Movellan et al.

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Received and published: 14 August 2012

We are grateful to Takashi Toyofuku's detailed comments and questions on our manuscript 'Quantification of protein biomass of individual foraminifers using nano-spectrophotometry'. We have taken into consideration and addressed all of the reviewer's comments.

Most importantly, we have changed the regressions to exponential fit, and have consequently changed Figures 3, 4, and 5.

Unfortunately, we could not make use of any color change of cytoplasm, but which could add useful information in future studies. All our individuals are from the same environment, and the cytoplasm color varied from light yellow to bright yellow, a color

difference that was not quantifyable, and which was not recorded when the individuals were processed. In addition, we observed that the last chamber was sometimes void of cytoplasm, but it was not taken into account in our experiments. However, filling of the final chamber could indeed explain variation in protein content of similar test sizes. We have now discussed this in section 4.2.

We have not cross-checked of data with other protein quantification methods, but the BCA method used here has been compared in detail with the Lowry method by Smith et al. (1987).

All specimens were frozen before protein measurement, and freezing may increase the yield of the protoplasm extraction, and which is now mentioned in section 2.2.3.

Finally, we believe that the non-destructive exposure methods given in our manuscript could be applied on the thinner test specimens with small aperture like Fursenkoinoidea, Chilostomella, Globobulimina, and others. This point is briefly discussed in sections 4.1 and 5. However, we can not answer this question with certainty for the time being, since we have no easy access to those thin-shelled medium to deep-water species. Consequently, a very interesting next step, not only in methodology but also in scientific terms, would be to test the method on foraminifers with different test shapes and apperture sizes.

Interactive comment on Biogeosciences Discuss., 9, 6651, 2012.