

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

### **Anonymous Referee #1**

Received and published: 25 June 2012

Movellan A, Schiebel R, Zubkov MV, Smyth A, Howa H Quantification of protein biomass of individual foraminifers using nano-spectrophotometry

Referee Comment A number of marine metazoans are reported to graze selectively or mainly on foraminifera (scaphopods, echinoderms, fish etc.). The imprint on food webs, however, is rather unknown, as largely differing oppositions on foraminiferal biomass and turnover occur in biological and neontological publications. This paper presents a rapid and easy to use methodology for biomass detection in foraminifera, and provides hints for the lab procedures appropriate for their specific demands. Lab treatments and facilities in need are clearly presented and pros and cons of several procedures are discussed. Impressive low level detectability allows the biomass detection of a single specimen, and thus the detection of growth in individuals and populations, seasonal

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undulations, and even anthropogenic influences derived from eutrophication and pollution. Similar to the vast impact of planktic foraminifera on open marine alkalinity recognised during the last decade, this methodology might boost our knowledge on the share of foraminifera in trophic webs and their plasticity in environmental perturbations. All in all a highly welcomed contribution, valuable for ecologists, field biologists, meiofauna researchers and palaeontologists.

Only a few technical corrections of minor relevance are to consider:

page 6655, line 4 and line 18: definition of FSS should occur only once; the statement in parentheses on line 18-19 is an unclear extension?/repetition?

page 6655, line 29: allometric functions are typically in use for biological relationships between size, weight, metabolic measures, and other biometric measures. Is there any specific reason for choosing polynomial regressions?

page 6660, line 18: Pina-Ochoa et al. 2010 is not found within 'References'.

page 6663, line 12: minimum test size is used instead of maximum test size. Is this due to better correlation of the former measure with protein contents, or reliable to the discussed damage of last chambers in some lab procedures?

page 6663 to 6664: please provide units (mg,  $\mu\text{g}$ , micron,  $\mu\text{m}$  ...) and name the variables Y and X explicitly; rules for all equations presented.

page 6668, line 4 First author is Altenbach, A.V., thus this reference might move to line 17

page 6674, Table 4, first entry in column 'Comments': 'first' chamber would be the proloculus; 'guess you mean 'last' chamber as given in Fig. 1 ?

page 6681, Figure 5: 'estimated weight' (vertical axis) would refer to 'test weight' in sense of equation 2, but meant is 'total wet weight' as described on page 6655. 'test weight' was defined as 'calcite mass' in your text on page 6652, line 12. As mentioned

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above, explicitly naming units and variables makes figures and equations much more transparent for the reader.

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

**BGD**

9, C2100–C2102, 2012

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