

Interactive comment on “First-order estimate of the planktic foraminifer biomass in the modern global oceans” by R. Schiebel and A. Movellan

T. Toyofuku (Referee)

toyofuku@jamstec.go.jp

Received and published: 14 June 2012

The study focus to quantify global planktonic foraminiferal productivity with newly applied Bicinchoninic Acid Method (BAM) method. The topic is really interested from broad field of earth science like geology, biology, climatology, biogeochemistry, oceanography and paleoceanography.

This study show the clear relationship between foraminiferal shell size and protein amount by field work at many different oceanic settings for long time. Then, the relation extrapolate to global foraminiferal database. The applied method is newly customized in other work by same authors (Movellan et al., prep). Even the work is still under preparation/review, the basic theory and methodology has been developed in 1985. Further, part of evaluation of methodology are shown in this study, too. I think the method itself

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



is already enough reliable.

I have some questions and comments through the manuscript.

In the study protein amount is treated as a proxy of biomass. How much parts are occupied as protein in total organic content of foraminiferal soft tissue? (P250L2, P255L14)

The relationships between test size and protein, weight and silhouette are indicated with three species. I guess the relationships are different among species. I would like to see species-specific plots of these parameters. (P250L26, P255L14)

Both "BAM" and "BCA method" are used in the manuscript. They will be united. (P252L10)

I think it is nice finding that "The small size bins contribute more to the PFAB (Table 3) because of a much higher frequency of small than large specimens 10 to the overall standing stocks (Peeters et al., 1999; Schiebel and Hemleben, 2000)". (P253L8).

Acronym of planktic-foraminifer assemblage-biomass (PFAB) will be explained much earlier part e.g. L9. (P253L12)

This is also a key finding of the study for me.»>The average global individual planktic foraminifer protein-biomass is calculated at $0.845 \mu\text{g}$ (Table 3). The importance of the result can be much emphasized. (P253L14)

The protein amount would show variability among the seasons even the test size same? (P254L7)

Even though the interested area size (km^2) used for extrapolation, isn't volume (km^3) better to calculate?

I think the southern hemisphere part can be omitted in Fig.1. How about 30° , 45° and 60° instead of 20, 40, 60, 80?

What is meaning of curve fit on exponential plot in Fig4a?

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

