

Interactive
Comment

***Interactive comment on* “Temporal variations in microbial activities and carbon turnover in subtidal sandy sediments” by S. I. Böer et al.**

Anonymous Referee #4

Received and published: 8 May 2009

This ms contains an excellently executed work on microbial processes from the little investigated sandy coastal ecosystem. The outcome of this detailed work bears an impact on our efforts of budgeting the carbon in marine ecosystems. Admirably this research has come up with many insights that are essential for a fuller appreciation of the carbon fluxes, turnover and inventories from the thus-far understudied ecosystem. The results are succinctly described and discussed rather in a great detail. The ms is well written and, reads very smooth.

This ms containing a comprehensive and very relevant study of the microbial ecological processes in the shelf region can be accepted for publication in Biogeosciences.

The following suggestions are for the authors to address.

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Specific Comments

Pg 2 Line 6 CHANGE... 'change, but also to changes' ... to ... change and to changes

Line 7 CHANGE ... patterns in activity... to ... patterns in enzymatic activity

Line 13 CHANGE ... bacterial abundances, bacterial carbon production... to... bacterial abundances, carbon production

Pg3 Ln 8 CHANGE ... biological, geological, and economic perspectives ... to ... biological and geological perspectives.

Lines 23-26 This sentence unclear. Separate the EPS production event from its flux.

Pg4 Lines 8-12: This needs to be stated in the form of a hypothesis. The main focus of this work being quantification of bacterial biomass and activities, a question posed is to be reflected at this stage in the ms.

Pg 5 Line 1-3: This statement needs to undergo modification. As photoautotrophic processes are the fundamental controls on the consequent biological processes in all of the global ecosystems, this is too general to be a hypothesis for this interesting study.

Pg5 Lines 2-5: Pl move this part to the end of this paragraph where the experimental steps for laminarin incubations are described. Also a mention be made as to why laminarin was a preferred substrate for this study...

Pg5 Lines 6-7: CHANGE cores only included the ... to... cores included only the...

Pg8 Line 10: Pl consider rephrasing 'cell-specific' to 'per cell' and through the ms

Pg8 Line 16-17: Pl rephrase this sentence for clarity. For eg., FLA is time consuming technique but can help restrict the number of analyses that need to be performed to measure endoenzyme activities.

Pg 10 Line 3-5: Revise this sentence. 'samples' repeated twice in it... does not sound

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accurate

Pg12 Line 16: CHANGE ... principle component... to... principal component

Pg 12 Line 24: What is the weight equivalent for this?? And, for other expressions throughout the ms??

Pg13 Line 19: CHANGE ...chitobiase and lipase activity... to... chitobiase and lipase activities

Pg 18 line 5: ... Even assuming... to ... Assuming even...

Pg 19 Lines 12-14: Why do you link the higher fluxes of DIC to anaerobic respiration? It could well be due to temperature controlled or lowered turnover by the bacteria in the top 5 cm... PI examine. Also it does not go well with the rapid turn over rate you are discussing in 4.2 lines 22-26.

Pg24 line 12: CHANGE ... Investigating apparent temperature to... Apparent temperature

Pg 25 Line 6: CHANGE ... the nano- and meiofauna plays to... the nano- and meiofauna play

Table 4: What is this growth about?? Also, bold fonts not seen in the Table. PI underline the values that you want to show differently.

Fig 2: Why are the units of benthic respiration shown negative?

Fig 3: D not labeled on the graph

Fig. 4. CHANGE ... Depth-related and temporal changes in **(A)** benthic chlorophyll-*a* concentrations; **(B)** total carbohydrate concentrations and **(C)** EDTA-extractable carbohydrate concentrations... to... Depth-related and temporal changes in **(A)** benthic chlorophyll-*a*; **(B)** total carbohydrate and **(C)** EDTA-extractable carbohydrate concentrations.

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Fig 6 CHANGE... 'transformation method that transforms a number

of potentially correlated variables into a smaller number of independent variables, the so-called principal components.' ... to... transformation method. The deleted portion appears in the main body of the ms.

Interactive comment on Biogeosciences Discuss., 5, 4271, 2008.

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