



BGD

5, S2013-S2015, 2008

Interactive Comment

## Interactive comment on "High frequency Barium profiles in shells of the Great Scallop *Pecten maximus*: a methodical long-term and multi-site survey in Western Europe" by A. Barats et al.

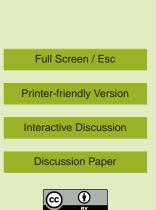
## Anonymous Referee #2

Received and published: 19 October 2008

Review of the ms: bgd-2008-0113; High frequency Barium profiles in shells of the Great Scallop Pecten maximus: a methodical long-term and multi-site survey in Western Europe; authors: A. Barats, D. Amouroux, L. Chauvaud, C. Pécheyran, A. Lorrain, J. Thébault, T. M. Church, O.F.X. Donard

General: This study focuses on [Ba]/[Ca] profiles in Pecten shells and aims at clarifying the biogeochemical processes influencing the episodic sharp peaks of ([Ba]/[Ca]) ratios, a feature that has been reported in the literature for different other bivalve species.

While this study highlights that a biogenic process related with phytoplankton development initiates the enhanced uptake of Ba in shells, the exact process remains obscure.



The work is interesting and important by the extent of the data set (several years, different sites) confirming the ubiquitous occurrence of brief high Ba/Ca excursions in Pecten shells, rather than by improving our understanding of the process ongoing.

My main concern is the poor style of the writing. The paper looks like written in a haste and the English overall is poor. There really is need to improve style and grammar; in its present form the paper should not be published. I have not systematically highlighted poor style and grammar but some examples are included in my specific comments below.

Specific comments: Abstract: 1st sentence .. (2year old; 3shells/year) move underlined info to next sentence

Introduction: Line 15: SWI: seawater interface define differently, e.g. as sediment water column interface

Lines 5 to 10: Ba in estuaries is high not only because of release from particles and ground water input, but also simply because rivers have more dissolved Ba than the ocean. Also: it would be appropriate to cite also Fritz et al. (1990) here. (Fritz et al., 1990, Biomineralization of barite in the shell of the freshwater Asiatic clam Corbicula fluminea (Mollusca: Bivalvia), L&O, 35, 756-762.)

M&M Line 5: different ecological characteristics; .. such as ? specify

Section 2.2, page 3672 Line 25: it would be interesting to check the organic matter content of the shell.

Section 2.3, page 3673 Line 20: Ba, Mn in dissolved seawater ... ? Line 25: please provide more details about your method for dissolved barium Line 26: analysis of suspended matter .. the acknowledgements state this was done at RMCA, please mention this in text as well.

Page 3674 Line 8, correct NO2+

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Results & Discussion Page 3676 Line 15: Ba/Ca profiles were then compared to those previously reported in 2003 ... this sentence is unclear; which ones previously reported? by Gillikin 2008? Or is this redundant with previous sentence ?

Page 3677-3678 Line 28 continued next page: High Ba/Ca in mussels and clams; mussels have both calcite and aragonite; mention for these literature data in which layer Ba/Ca was measured; Gillikin et al. 2006, mention sampling of the calcitic layer ...

Page 3678 First line to line 15: you explain the high Ba/Ca ratio in mussels as possibly due to use of non-matrix matched standards. Gillikin et al. 2006 describe that a carbonate standard was used (MACS, USGS).

Page 3679: Lines 1 to 5: the background Ba/Ca ratio in dissolved seawater in 2000 is about 5.2  $\mu$ mol/I = example of uncareful writing

Page 3680 Line 1: Is particulate Ba = total Ba, or corrected for lithogenic Ba ? Lines 8 to 12: text does not make sense ..

Line 15: shell growth decrease due to lower SST in spring and summer .. ? explain these decreased SST in spring and summer

Page 3681 Line 8: For the other year which one ?

Page 3682, Table 3: This Table needs more discussion. The reason why a variable time window was selected for POC, PON, ChI when comparing with Ba/Ca peaks is barely discussed, and also the results shown in Table 3 need a more through discussion.

Table 1: the explanation associated with the \* underneath the table is unclear Figure 1: says map of the investigated area, but no map for Loire, Vigo Figure 2: Mo is mentioned in legend .. explain Figure 3: Clarify what is what Figure 4: two sharp peaks of dissolved barium (up to 100 nM); such concentrations are unusual except in deep ocean or river water; explain



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