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Interactive comment on “Spring molybdenum enrichment in scallop shells: a potential tracer of diatom productivity in coastal temperate environments (Brittany, NW France)?” by A. Barats et al.

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Answer to Referee#1

As mentioned by the referee the large dataset that we obtained and especially the novelty of the results concerning Mo concentration profiles in bivalve shell has led us to a very intensive work to formally synthesize, clearly relate and discuss the results presented in this manuscript. At this stage we have followed during the last 3 years a very long process with all co-authors to improve the present manuscript. This manuscript

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is thus not at all in early stage writing, but most probably some of the last changes in the edition of the manuscript have not been correctly addressed and should have been properly corrected before submission. For example the results and discussion section should not be dissociated, and the final organization should include a “results and discussion” section in which the discussion of the results is properly addressed. This is the main reason why some inconsistencies were still remaining in the submitted manuscript. Both edition and English grammar are thus carefully revised by authors and a native English lecturer (Rosy Cox, University of Pau). We also do not believe that our interpretation of the proxy measurements obtained with Mo profiles on the shells is going too far. The last section was indeed a bit too long and is shortened in the revised version. But based on such new type of results, our scientific work was not to demonstrate which processes are responsible of the Mo spring enrichments, but rather to investigate different hypothetical pathways that would be responsible for such phenomenon. For instance, we demonstrate a recurrent spring Mo enrichment in the scallop shell, we establish that it is linked to pelagic biogeochemistry and finally we evidence (based on statistical relationship) that diatoms productivity could be related to this observation. We thus believe that there is some confusion between the elaboration of some hypothesis (aim of the discussion of our manuscript) and a speculative interpretation of our data. Our hypotheses are mostly based on validated, reproducible and ubiquitous observations and/or statistical relationships. Concerning other minor comments about the correlation “discussion”, phytoplankton species acronym and statistical integration period, appropriate changes will be performed. In addition, the constructive comments done by referee 3, has led us to significantly simplify the statistical investigation (keeping mostly simple statistical relationship, especially the one obtained with silicate concentration spring depletion), thus avoiding most of the misunderstandings related to the applied methodology (multiple regression analysis).

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