

## ***Interactive comment on “Accumulation of DOC in Low Phosphate Low Chlorophyll (LPLC) area: is it related to higher production under high N:P ratio?” by R. Mauriac et al.***

**Anonymous Referee #2**

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This ms is a modelling approach to the question of C,N,P coupling in the Mediterranean. The issue is important, not only in order to understand the biogeochemistry of the Mediterranean, but also because the data available indicate that there are features that probably have a wider interest. Examples include the indications of P-limited bacteria (i.e. the system has a store of easily accessible organic-C) and a seasonal shift from one with free nitrate to one without measurable nitrate but still an excess of bioavailable nitrogen, but an apparent co-limitation of phytoplankton by N and P (i.e. the bioavailable N seems unavailable to the phytoplankton).

The model includes a flexible C:N:P stoichiometry in the phytoplankton and bacteria,

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as is needed to resolve the issue to any depth. The complexity usually arising from this is counteracted by avoiding any explicit representation of the grazers and by only considering steady state.

I am all in favor of simplifying assumptions to be able to approach complex problems. But I expected a deeper discussion of the consequences of the somewhat untraditional lack of explicit zooplankton pool since this probably(?) is crucial for the results. In a model with grazers, there will be a connection between the total amount of limiting nutrients and the balance between grazers and osmotrophs. It seems to me that this would affect almost all the results presented, in particular when exploring the response to TN and TP. Since this issue to me seems crucial for interpreting the results, I expected an extensive discussion of the issue or (better) a potential reference to data indicating a constancy of osmotroph abundance for variable TN and TP. I could not find this

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Interactive comment on Biogeosciences Discuss., 7, 7091, 2010.

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