

Dear Dr. Guyennon,

Thank you for sending in your revised manuscript. I think this new version is better than the original one. However, some more improvements would be needed before sending it out again for another potential review round or considering it for potential acceptance.

A) The quota based approach needs a better description. What is the observational basis for it? How is it implemented in the model? What is the benefit of it? What can this approach do that other methods cannot? Please, put yourself into the position of a reader who is not familiar with the topic, and take your description from there.

B) The manuscript needs a comprehensive English language overhaul. Though you addressed this issue in response to referee#1, I think there are many awkward and difficult to understand phrases in this manuscript (some examples below). Please, let it be corrected by a different English language expert than before.

Further:

1. Abstract:

“We here propose a Mediterranean basin-scale view of the export of organic carbon, under its dissolved and particulate forms.”

This sentence does not really make sense to me. What information do you want to convey to the reader here?

2. P 2 , L 48-50.

“The pathway of organic carbon not only allows to estimate the total amount of fixed carbon, but it is also crucial to determining biological pump efficiency. Modeling was chosen to adress this question, taking into account the high heterogeneity of situations encountered in the Mediterranean Sea.”

It is not clear what question you address here.

3. P 5, L 113:

“...several biomasses...” sounds awkward. Perhaps the term *different biomass types* or *biomass categories* would be better?

4. P 5, L 115 and following:

The sentence starting with “If we denote...” is incomprehensible; please rephrase.

5. P 7, L 185-190:

The 2 m d^{-1} sinking velocity for POC needs to be better justified as requested also by referee#2. It should be discussed in terms of the degradation rates for particulate matter chosen. In principle, unrealistic sinking velocities can be compensated by unrealistic degradation rate constants in biogeochemical models.

6. In the discussion chapter 4, the subsection headings need numbering (4.1, 4.2, and so on).

The subsection heading “Discussion on results robustness” sounds strange. Better would be *Robustness of results*.

We look forward to receiving a further revised version. Please, make sure that there will be a step change relative to the present version concerning the tangibility of the text and standard of the English language.

Best regards, Christoph Heinze