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Interactive comment on “Physical forcing and physical/biochemical variability of the Mediterranean Sea: a review of unresolved issues and directions for future research” by P. Malanotte-Rizzoli et al.

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Answers to the comments by Reviewer 1- Reviewer's comments in quotes.

“The manuscript suffers from a number of defectives, of which the most are related to the structure of the manuscript which is obviously written by several authors and is not properly homogenized”

Considerable effort has been made to homogenize the different sub-sections presenting them according to the same format and organizational structure. Differences still

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remain and are unavoidable as the different sub-sections are written by 11 lead authors who have different writing styles and we do not believe that it is necessary for the sub-sections to have a unique style.

Specific comments

1)"The structure of subsection is heterogeneous, for example section 2.1.1 is written in one form (short scientific questions), section 2.2.1 in other form (extended text on unresolved issues), section 2.3.1 with a title for separate unresolved issues, section 3.2.1 with additional text etc. Also some sections (e.g.3.4,3.7) contain scientific questions in an introductory text , aside the list of unresolved issues which are listed in separate subsections. "

All these differences have been eliminated. There are no more short scientific questions or scientific questions in an introductory text followed by a list of unresolved issues. Following one of the reviewer's later suggestion, now each sub-section contains two sub-titles: " Present knowledge" and " Unresolved issues". The latter ones are summarized in bullets each with a title that synthetizes the contents of the issue.

"Some of the sub-sections contain a long list of scientific questions/unresolved issues (e.g. sub- section 4.1.4 contains 11 bullets) while some others contain a very short list (e.g.sub-section 3.2.1 contains only 2 bullets). All of these have to be homogenized in the same manner"

We do not entirely agree with the reviewer. While now most of the sub-sections have from 3 to 5 bullets for unresolved issues, it is logical that the physical oceanographic sub-sections have a smaller number of "bullets" simply because the exploration of the physical properties of the basin has been ongoing for multiple decades. Much less known are the biochemical properties and it is also logical that the related sub-sections have a greater number of unresolved issues. For instance, the revised physical sub-section 2.1 (Scales of variability of the Mediterranean circulation) has only 3 bullets. On the other hand, sub-sections 2.3 (Forcings and variability in the stock of nutri-

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ents in the Eastern and Western Mediterranean) and 2.4 (Modeling and assessing ecosystems in the Mediterranean Sea) have 7 and 8 bullets respectively, as much less is known about these issues . We think that this difference is justified and appropriate.

2)"There is overlapping between some sub-sections in the text. E.g. shelf dense water generation and cascading is mentioned in sub-sections 2.1, 3.2 and 4.2 with some repetition of the text."

Again, we do not entirely agree with the reviewer. While we have in general tried to eliminate repetitions of the same concept in different sub-sections, they however may be necessary when they relate to different concepts. For the specific concept of shelf water cascading, it is still mentioned in both sections 4.2 and 4.3, but the context is different (role and importance of surface forcing as compared to shelf-slope interactions).

3)"Sub-section 3.2 "Interactions between the shelf-slope circulation and open sea in the Mediterranean" is more appropriate to be placed under section 4 " Shelf/deep sea interactions and exchanges of physical/biogeochemical properties and how they affect the sub-basin circulation and property distribution" than in section 3. Btw, the titles of some sections are pretty long and should be shortened"

Sub-section 3.2 has been moved to section 4 as recommended. Titles have been shortened.

4)"Also, the subtitles " Specific issues" are not appropriate. I suggest that every sub-section has the subtitles " Present knowledge" (or similar) and "Unresolved issues".

The recommendation has been followed. See also the answer to comment 1.

5)"Why only sub-section 4.1 is divided regionally (Alboran Basin, Balearic basin, Eastern Mediterranean and Levantine basin)? Aside that such division is strange itself, it is not necessary and should be removed and the text should be unified"

The division has been removed and the text unified.

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6)"The authors should mention in conclusions (and/or introduction)that the listed work and unresolved issues are just their selection but the real list of unresolved issues which may be placed under physical forcing and physical/biochemical variability of the Mediterranean is much wider and cannot be listed in an article but only in a thick book"

A paragraph has been added to the (new) introduction and in the conclusions expressing these concepts.

7)"The provided abstract is not really an abstract (except the last sentence) but an introduction to the manuscript and should be therefore placed in the introduction"

Both the abstract and the introduction have been rewritten.

8)"Some strange text may be found e.g. page 1210" we may reproduce a couple of figures from the above mentioned papers"(?). the text should be checked and polished"

All the sub-sections have been completely re-written and the "strange texts" do not exist any longer.

9)"Regarding figures, it is quite strange that the review manuscript of such type contain not a single figure or table. I believe that 7-8 figures/table should be placed in the manuscript, supporting the most important parts, and questions posed in the text."

Figures have been added to most of the sub-sections. However, adding questions contradicts one of the reviewer's previous comments.

Interactive comment on Ocean Sci. Discuss., 10, 1205, 2013.

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