

Interactive comment on “Hydrodynamic modeling of coastal seas: the role of tidal dynamics in the Messina Strait, Western Mediterranean Sea” by A. Cucco et al.

Anonymous Referee #1

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The manuscript of the article “Hydrodynamic modeling of coastal seas: the role of tidal dynamics in the Messina Strait, Western Mediterranean Sea” by Cucco et al., presents an interesting case study on how tides contribute to the alteration of the circulation regimes at narrow straits and the connected seas. Although case-specific, the study’s conclusions apply by extension to relevant modelling attempts and are deemed to present potential permanent value for literature regarding operational oceanography modelling systems.

The content of this work falls within the scopes of the Journal. The manuscript is well-structured, succeeding into not turning its length to a disadvantage; the use of English being at a high level certainly helps towards that. Materials and methods are

C1

adequately presented; results are comprehensible and clearly laid out; discussion and conclusions are coherent to the presented results.

My recommendation is to accept the manuscript for publication in NHSS pending a few minor revisions, as noted in the following comments.

[Content]

-Given the different vertical discretization schemes of TSCRM and SHYFEM (sigma levels vs zeta levels, respectively), it would be worth commenting on how any eventual discrepancies during the model nesting were overcome.

-The authors could elaborate a bit more on the “linear combination” (mentioned in Page 7 / Line 30) that resulted into the water level open boundary conditions.

-Is there any suggestion as to why Station 10 - Messina appears to give the highest relative discrepancies in observed and computed harmonics’ amplitudes?

[Presentation]

-General remark: There appears to be a general issue with the manuscript page-scaling (this also indicated by the positioning of the page numbers), which probably occurred during the discussion paper’s production. This has resulted into some of the Figures not being clearly legible (especially those in which the identification of circulation patterns is needed). I would expect this to be resolved during the final production of the paper.

-General remark: In-text references to Figures and Tables are usually made with these words’ first letters in capital; the same applies to the beginning of Figure/Table captions.

-General remark: The phrase “in correspondence of” is repeated throughout the text; “in correspondence to” would be grammatically correct. However, and since the meaning of the phrase with “to” does not seem to fit, I am under the impression that this could be a misinterpretation of a phrase in the authors’ native language that needs to

C2

be revised.

-General remark: The discussion on several of the Figures presenting the model's results includes references to the locations of the stations and/or the sections presented in Fig. 1. It would be beneficial for the readers if notations about these locations were included in the respective Figures as well.

-Page 1 / Lines 11-14: This sentence could be rephrased; the repetition of connecting words and the absence of punctuation make it difficult to comprehend at first.

-Page 2 / Line 3: "literature" seems more proper; consider revising.

-Page 2 / Line 19: "water current, salinity and temperature" could be replaced by "aforementioned" in order to avoid repetition; consider revising.

-Page 2 / Line 25: "based on the use" could be replaced by "using" in order to avoid repetition; consider revising.

-Page 2 / Lines 33-34: The last sentence should be rephrased (maybe adding "...are presented").

-Page 4 / Caption of Fig.1: There is a double reference to "panel b"; the second one should probably be "panel c".

-Page 5 / Line 13: "in high detail" seems more proper; consider revising.

-Page 7 / Line 4: "extent" seems more proper; consider revising.

-Page 8 / Line 4: "Results and Discussion".

-Page 8 / Line 14: "was" or "computations were".

-Page 15 / Caption of Fig.4: "Vertically" seems more proper; consider revising.

-Page 16 / Line 3: "who" seems more proper (instead of "which"); consider revising.

-Page 15 / Lines 28-30: The first sentence needs rephrasing (and/or punctuation), as

C3

it is difficult to comprehend at first.

-Page 20 / Line 10: "we" could be omitted; consider revising.

-Page 20 / Line 30: There's a reference to "blue" lines in Figs. 7a and 7b, but - at least at the discussion paper - these lines appear as magenta; revision/adaptation needed.

-Page 23 / Line 10: Should it be "...along section AB"?

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C4