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Ocean Science Discussions

Interactive comment on "Impact of naval traffic on the sediment transport of the Port of Genoa – a modelling study" *by* Antonio Guarnieri et al.

Anonymous Referee #1

Received and published: 19 October 2020

The manuscript ' Impact of naval traffic on the sediment transport of the Port of Genoa – a modelling study' addresses the effects of vessel propellers jets on hydrodynamics and sediment transport in a passengers harbour (Port of Genoa), by means of a well-known widely used hydrodynamics and sediment transport model (MIKE). Model results are qualitatively compared with real measurements.

The manuscript presents an interesting methodology that can potentially be used as a science-based port management and decision making tool and be further scaled-up to other locations. However, there are some lacks in the analysis methods as well as in the number of datasets/results shown.

The manuscript can be reconsidered for publication, if major comments are addressed.

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The current review is assessed by following the key questions of the OS review-criteria (https://www.ocean-science.net/peer_review/review_criteria.html):

1. Does the paper address relevant scientific questions within the scope of OS? Within the scope of OS Special Issue 'Advances in interdisciplinary studies at multiple scales in the Mediterranean Sea' and the general scope of OS, the manuscript stands for a new methodology, that potentially can be the seed for a new operational system to a science-based harbour management.

2. Does the paper present novel concepts, ideas, tools, or data? As aforementioned, the paper presents a potential new methodology that can be upscaled to an operational tool, but it is still in an early stage of development.

3. Are substantial conclusions reached? Manuscript conclusions are interesting, but further analysis should be addressed (commented in the following points).

4. Are the scientific methods and assumptions valid and clearly outlined? Most of the assumptions are clearly presented. However, some questions have risen regarding some assumptions: - Why did authors considered the specified three layers scheme? Is this scheme characteristic of the study area? Is it supported by previous similar works? - Are there relevant differences on considering a three layers bed versus considering a single layer? - Since it is stated that the method can be potentially used in a daily operational system for harbour management, which is the computational time of simulations?

5. Are the results sufficient to support the interpretations and conclusions? No. In the manuscript it is stated that 24 scenarios have been simulated, however only the results from 2 scenarios are shown. It is highly recommended to show the results of the rest of scenarios in some way (a common way is by using a matrix of plots).

6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Similarly to

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previous question, despite methodology is well described, the lack of results of the rest of scenarios will make difficult to reproduce the modelling results.

7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Yes, authors do indicate the novelty of the method, however, as aforementioned, it should be further proven.

8. Does the title clearly reflect the contents of the paper? No, title should reflect that the manuscript presents a new method, not directly the physics underlying sediment transport processes forced by propeller jets, since it is not addressed.

9. Does the abstract provide a concise and complete summary? The abstract contains the main points addressed in the manuscript, however it states that 'In the present work we study the erosion and sediment transport induced by...', while a relevant part of the manuscript addresses hydrodynamics. Moreover, more than 'erosion and sediment transport', it stands for erosion/deposition patterns.

10. Is the overall presentation well structured and clear? The manuscript structure is appropriate, however the fluency of the discourse along the sections should be revised (see next point comments).

11. Is the language fluent and precise? - No. Language should be reviewed in depth and be more precise. Along the manuscript, language is redundant and not focused to the point of the results or discussion. Some concepts are repeated within consecutive paragraphs.

- It is advised to use shorter and concrete sentences along the manuscript.

- Furthermore, there are basic mistakes on the formal format on literature citation within the manuscript that must be revised along the whole document. For instance: Line 344: '. . . settling according to Winterwerp (Winterwerp and Van Kesteren, 2004). . .' should be replaced by '. . . settling according Winterwerp and Van Kesteren (2004). . .' Idem at lines 324, 345, 348, 383, and lot more along the manuscript and Appendices.

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- Review the sentence in lines 553-555. What is it supporting to the overall discussion and conclusions?

12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? As aforementioned, citations of formulae should be properly written.

13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? A high quality scientific paper should be concise in terms of the objectives to be addressed. While the objectives are more or less stated in the abstract, they are not present in the Introduction, where they should appear clearly stated. Results and discussion are together in the Results section. It is recommended to change Results section name.

14. Are the number and quality of references appropriate? Yes.

15. Is the amount and quality of supplementary material appropriate? Yes.

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