

Interactive comment on “Impact of wave physics on ocean–wave coupling in CMEMS-IBI Part B: Validation study” by Romain Rainaud et al.

Anonymous Referee #3

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The manuscript is focused on a validation analysis of a coupled ocean and wave model system in reproducing the surface water currents, the SST and the SSS in the North East Atlantic. NEMO ocean model and two different version of the WAM wave model have been considered as modelling systems for a set of numerical experiments focused on reproducing the main hydrodynamics during the year 2014. Simulations results have been compared with ocean data collected from both satellite and buoys. The accuracies of the numerical experiments have been estimated at both yearly scale considering the whole 2014, and for two specific extreme storm events occurred in the same year.

The topic is very promising and interesting, however, the manuscript is missing in several fundamental aspects and cannot be published in this form. I suggest to rejecting

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the manuscript in the present form.

The methodological section is weak and not sufficient to sustain a deepened discussion of the results, which, by the way, is absent. The wave-current coupling procedure should be detailed including the adopted set of equations and model parameterizations.

The results section is more similar to a chapter of a technical report, with a sequence of information often redundant and not adequately analysed. Specifically, the use of maps to describe the model accuracy is not an efficient approach. I suggest Taylor diagrams (Taylor, 2004) or similar to reduce the number of figures and to synthesize the results.

Since the results are often contradictory and a clear trend of increase or decrease in the simulations accuracies was not found, the discussion section should be fundamental to allow the reader to understand the role of wave forcing in this context. However, in the manuscript, the discussion of the results is not adequate and missing the connection between the adopted model parameterizations and the obtained results. A hint of discussion is given by the sensitivity analysis that could be considered as a good starting point to deepen the analysis of the links between the three main wave forcing components and the experiments results.

Finally, being part A duplicating the Introduction and part of Methods section and, being the results section on the wave model accuracy quite small, I suggest to unify part A and B in a single paper, eventually moving redundant information and figures in Appendix or Supplementary materials.

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