Study of “far field” effects of arrays of WECs using a linear coupled model

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This work refers to my recently finished doctorate research at the Civil Engineering department of Ghent University (Belgium) focusing on the numerical modelling of “far field” effects of Wave Energy Converter (WEC) arrays [1]. During this research a numerical coupled model has been developed between the wave propagation model MILDwave [2] and the wave-structure interaction solver NEMOH [3] using the generic coupling methodology introduced by [4,5].

The aforementioned coupled model combines the advantages of both wave-structure interaction solvers and wave propagation models in order to simulate the “far field” effects of WEC arrays with precision and with an efficient computational time over large domains. The coupled model has been implemented as a one way coupling, and is used for regular, long-crested and short-crested irregular waves, and for different types of WECs operating under linear waves,. having been validated for all these wave types. Therefore, the performed work fits in **Working Group 1**: Numerical hydrodynamic modelling of WECs, and more specifically in the topic that focuses on coupling between codes for WEC simulation.

The next steps for extending the capabilities of the numerical coupled model are to validate a recently implemented new wave generation technique for short crested irregular waves, the introduction of a direct simulation of irregular waves by means of Inverse Fast Fourier Transforms (IFFT) and to provide the numerical coupled model with a Graphical User Interface (GUI). The release of this updated coupled model Is expected soon in 2019-2020.

References

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