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Editorial

Spatially Distributed Sea Wave Measurements

Filippo Bergamasco [1,*] and Alvise Benetazzo [2,*]

[1] Department of Environmental Sciences, Informatics and Statistics, Ca'Foscari University of Venice, 30172 Venice, Italy
[2] Istituto di Scienze Marine (ISMAR), Consiglio Nazionale delle Ricerche (CNR), 40129 Bologna, Italy
* Correspondence: filippo.bergamasco@unive.it (F.B.); alvise.benetazzo@ismar.cnr.it or alvise.benetazzo@ve.ismar.cnr.it (A.B.)

In recent years, there has been growing interest in remote and proximal observation of sea surface waves. This has been partially driven by new technologies allowing the characterization of wave fields in both their spatial and temporal aspects. Typical examples are radar systems and stereo-imaging that permit remote monitoring of oceanic waves (from satellites, platforms, or vessels) with remarkable accuracy and range of use.

These new exciting possibilities usually come at the price of being relatively harder to master with respect to traditional "point-like" approaches providing measurements limited to a temporal perspective. This difficulty is not restricted to the technology itself (see, for example, the delicate camera-calibration process required in stereo-imaging) but also on how to properly process, analyze, and assimilate spatio-temporal data. Therefore, in this Special Issue, we decided to embrace a wide range of topics that have led a multitude of multi-disciplinary works in the recent past, including:

- Wave mechanics and sea surface dynamics;
- Analysis of the wave climate and its extremes;
- Data fusion and signal processing;
- Statistical and probabilistic methods;
- Assessment of wave models.

We did our best to propose recent advancements, not only on the technological aspect of spatially distributed sea waves acquisition but also on the characterization of wave statistics from measured and assimilated data.

For the former aspect, we included the work of Vieira et al. [1], proposing the first cheap and simple stereo-based technique to estimate the 3D sea surface elevation from inexpensive smartphones. For the latter, the paper of Serebryany et al. [2] investigates internal waves on a narrow steep shelf of the northeastern coast of the Black Sea using the spatial antenna of line temperature sensors. We also included a discussion on space-time wave extremes in the paper of Benetazzo et al. [3] and a comparison of assimilated coastal wave data by Yukiharu Hisaki [4]. Finally, the work of Ciurana and Aguilar [5] provides an overview of how an ensemble of meteorological buoys and citizen science data can help economic activities to achieve optimal performances (in a case study, to predict optimal surfing days in the Iberian Peninsula).

We hope that these works will be interesting both for researchers already working on this topic and for those who want to embrace the new possibilities offered by modern sea wave acquisition techniques.

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