Special Issue

Advanced Numerical Modeling and Experimental Methods in Coastal Engineering

Message from the Guest Editors

Coastal and offshore environments face severe structural and environmental demands driven by accelerating climate change and extreme hydrodynamic actions. To ensure the resilience of vital infrastructure, the engineering community must rely on high-fidelity predictive frameworks. Historically, advanced laboratory experiments and Computational Fluid Dynamics (CFD) have been the pillars of coastal engineering. Today, the rapid maturation of data-driven methodolologies, such as physics-informed machine learning and digital twins, provides an unprecedented opportunity to unify these pillars, blending physical laboratory insights with computational frameworks. We invite high-quality original research articles and comprehensive reviews addressing themes including, but not limited to, the following:

- High-fidelity numerical modeling and multi-scale hydrodynamic simulations in coastal engineering.
- Laboratory measurements and innovative experimental testing protocols.
- Wave–structure–seabed interactions.
- Flow-induced structural responses.
- Digital twins for coastal infrastructure.

Guest Editors

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Prof. Dr. Muk Chen Ong

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About the Journal

Message from the Editor-in-Chief

Humans have an enduring love of the sea, a love that is expressed most fervently in a narrow strip where the oceans meet the land: our planet's coasts. Today's coasts face a formidable plethora of anthropogenic pressures that can, if unfettered, hollow out the very fabric and ecological resilience that feed humanity's 'appetite' for coasts in addition to the critical ecosystem services that they provide. Conserving, restoring, and managing the foibles of rapacious coastal love are not trivial tasks: they require us to truly understand how coastal systems work. This is the chief motivation of this journal.

Topics: field observations, manipulative field or laboratory experiments, modeling, theoretical advances, etc. *Coasts* encourages diversity and critical thinking in all forms.

Editor-in-Chief

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