

Robust Computational Models for Water Waves

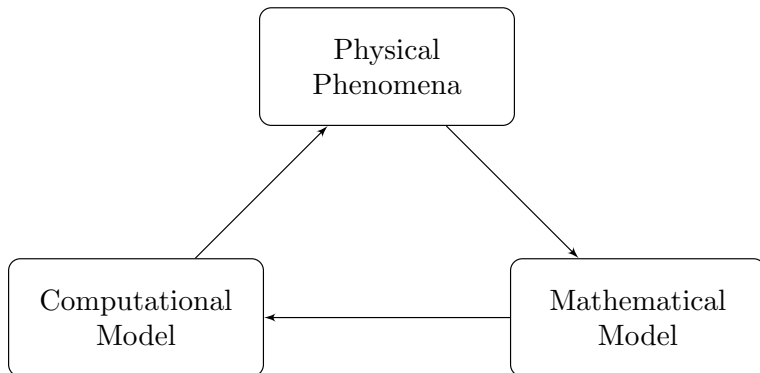
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Australian National University

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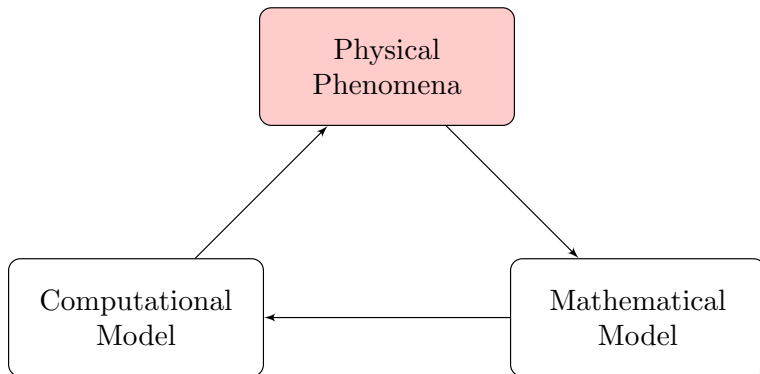
Outline of the Presentation

- ▶ Water Wave Modelling
- ▶ Robust Computational Models

Modelling



Physical Phenomena





Physical Phenomena: Water Waves

Water wave hazards:

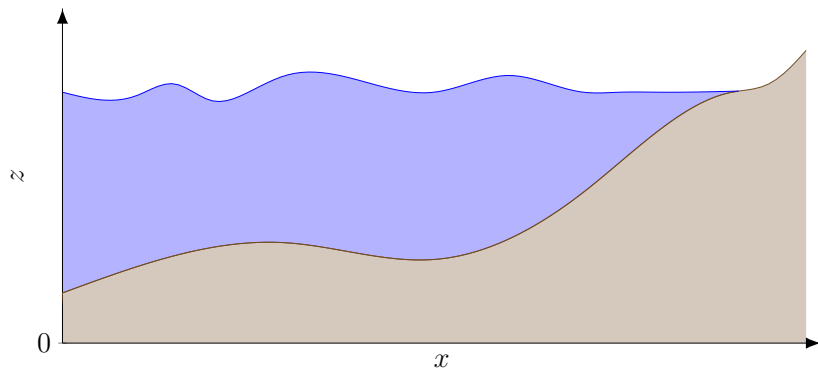
- ▶ Tsunamis
- ▶ Storm Surges
- ▶ Rogue Waves

Phenomena caused by water waves:

- ▶ Nutrient Transport
- ▶ Beach Erosion
- ▶ Breakup of Sea Ice

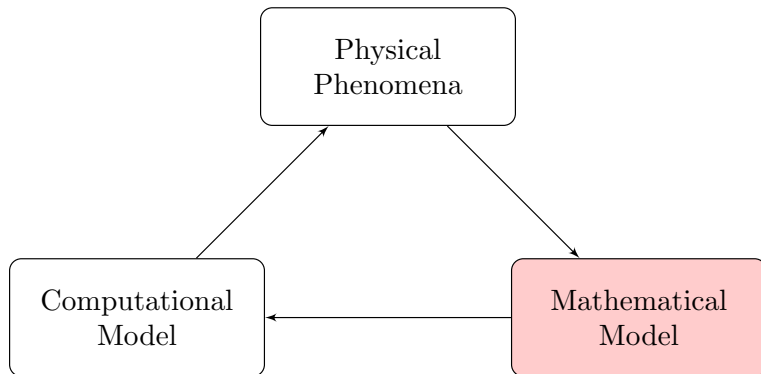


Typical Scenario



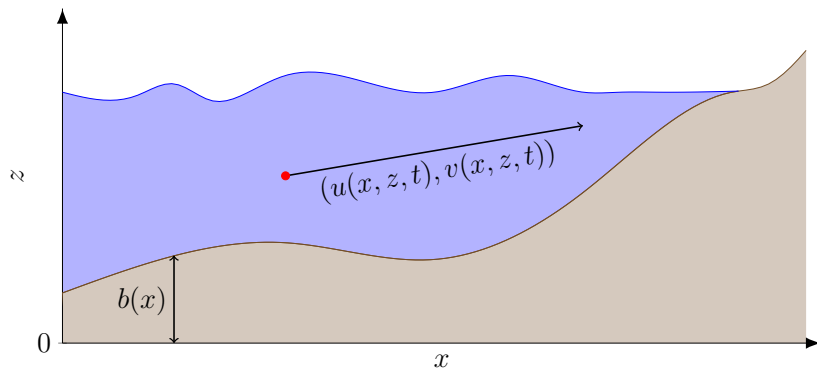


Mathematical Model





Navier Stokes Model

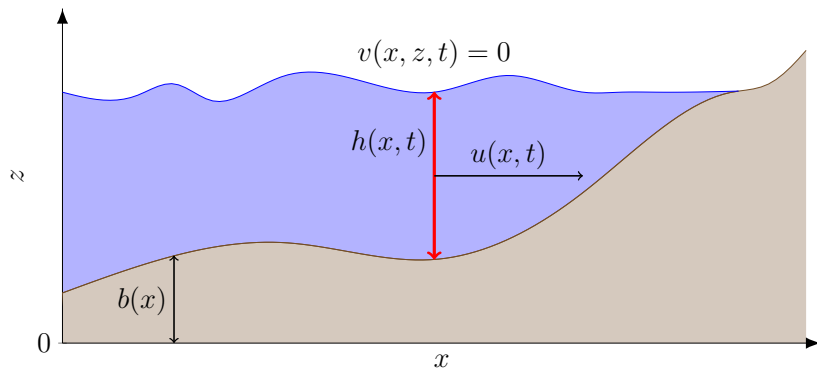




Pros and Cons



Shallow Water Wave Model





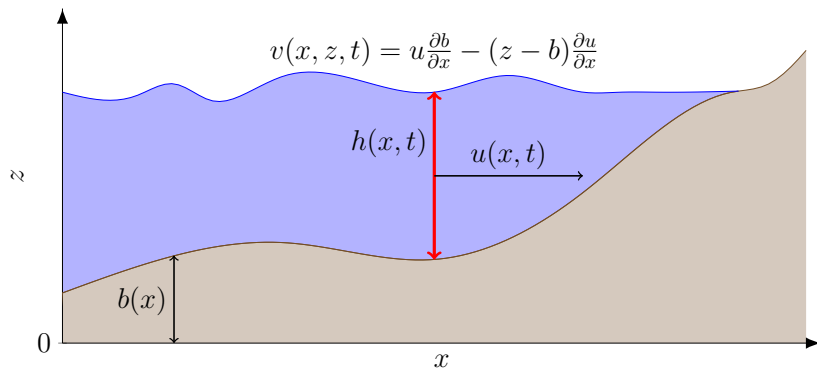
Pros and Cons



Previous Work



Serre Model



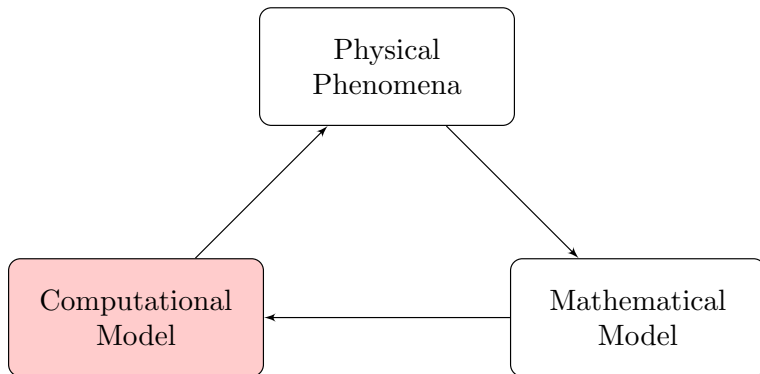


Pros and Cons



Previous Work

Computational Model





Steep Gradients in the Flow

