



The **Water Management** Consultants.

Morphodynamic Modeling with Mohid Water

Challenges and Solutions

hidromod.com



Overview

1	Hidromod integration in ABL Group
2	Sediment transport: time scales vs models
3	MOHID (Module Sand vs Module Sediment)
4	MOHID - Add value
5	MOHID - Challenges
6	MOHID - Solutions

Global Partner. Local Expert.



43
Countries

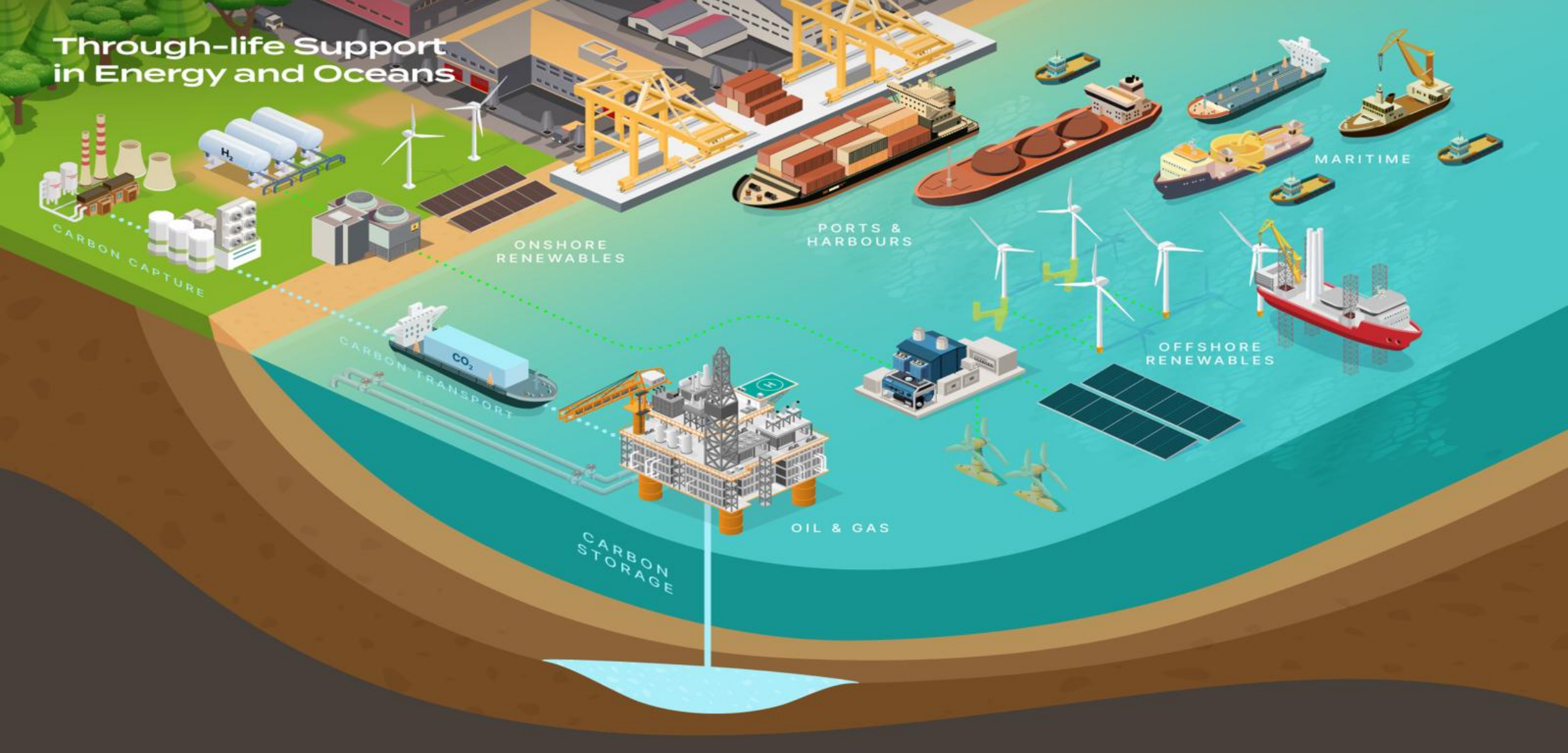


77
Offices



>1800
People

Through-life Support in Energy and Oceans



ABLGroup

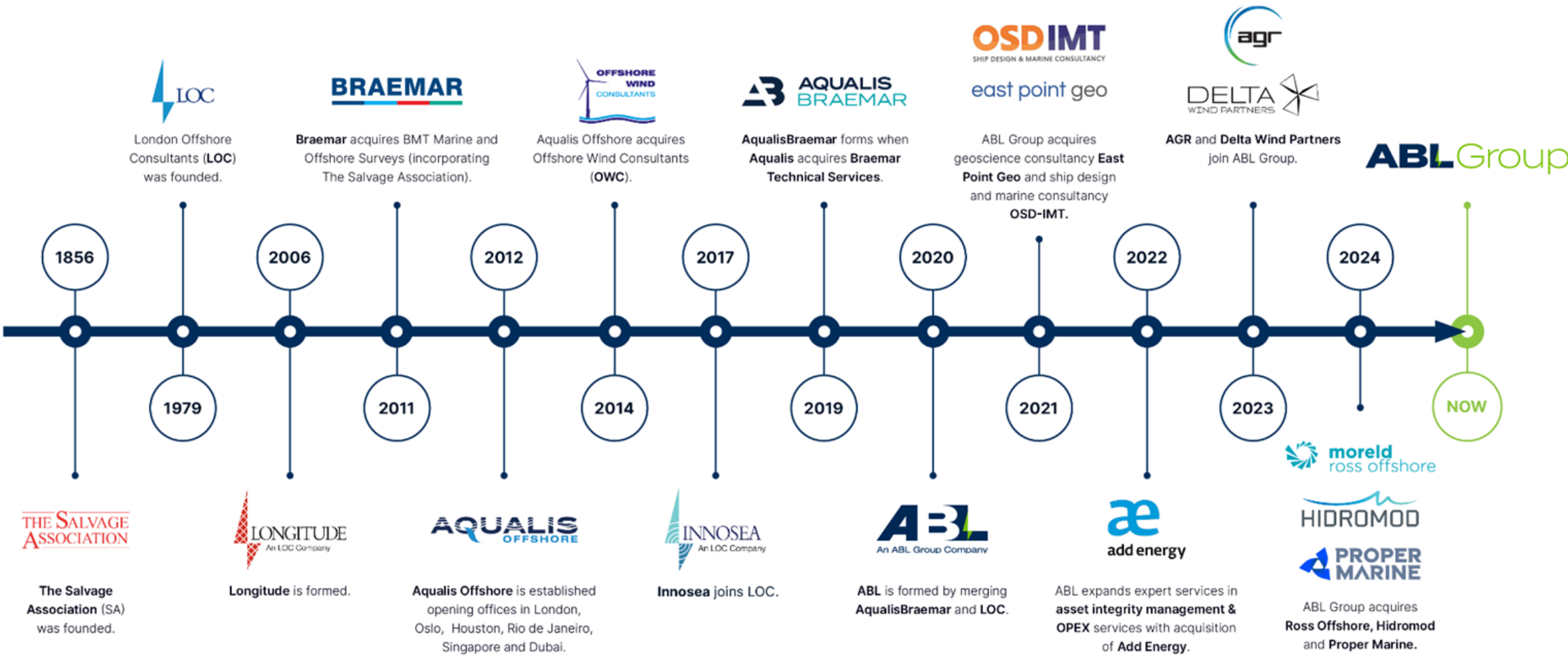
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Our history



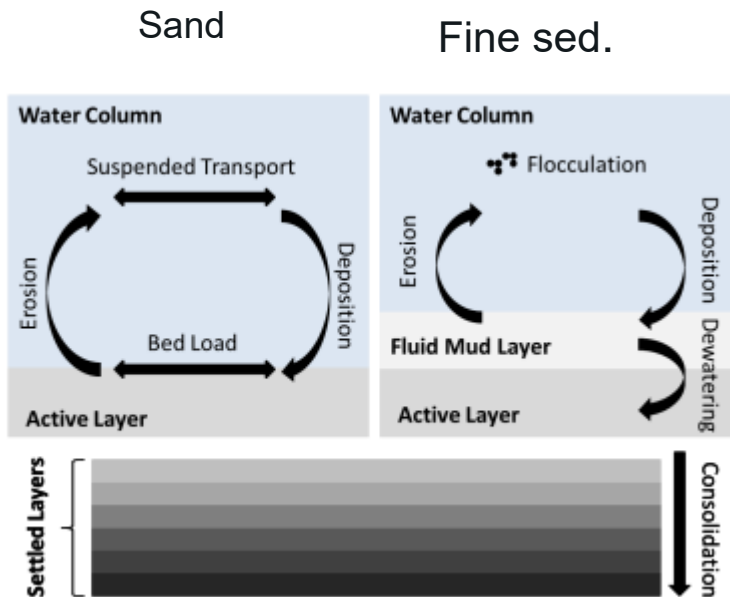
Sediment transport: time scales vs models

- Long term (years)
 - Approach: 1D shoreline models focus only on longshore transport:
 - Output: shoreline evolution
 - Models: GenCade, Genisis
- Medium term (days to months)
 - Approach: 2D/3D currents and/or waves focus on 2D transport
 - Output: bottom and granulometric evolution
 - Models: **MOHID**, HEC-RAS 2D, Delft3D
- Short term (hours to days)
 - Approach: 1D/2D focus on cross-shore transport under storms
 - Output: bottom evolution
 - Models: Xbeach, Sbeach

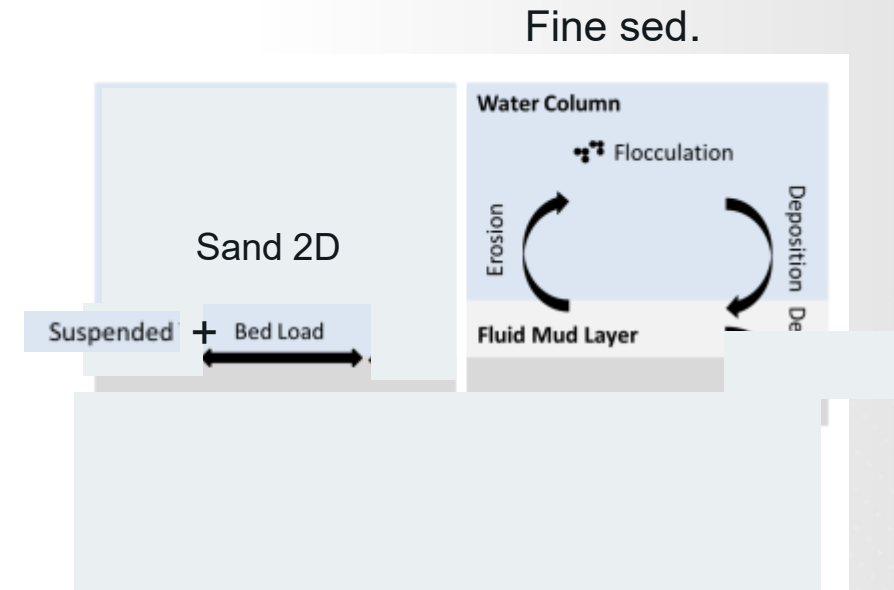
Module Sand vs Module Sediment

- Bulk formulas & only one sand fraction – Module Sand (Hidromod)
- Bed load + suspended load, multi sand fractions (D50 evolution) – Module Sediment (Franz, 2017, PhD)

Module Sediment

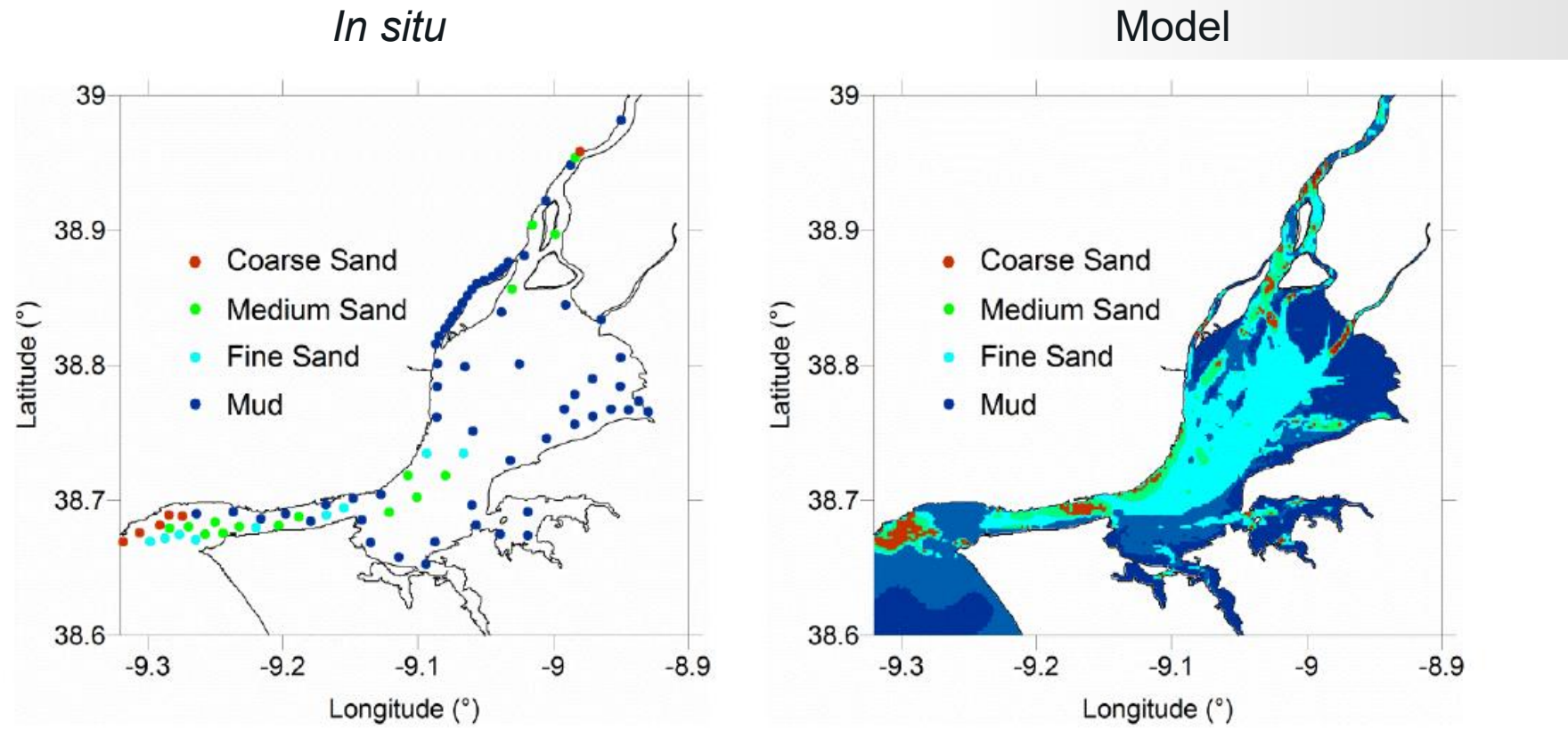


Module Sand



Module Sediment allows D50 evolution (Franz et al., 2017)

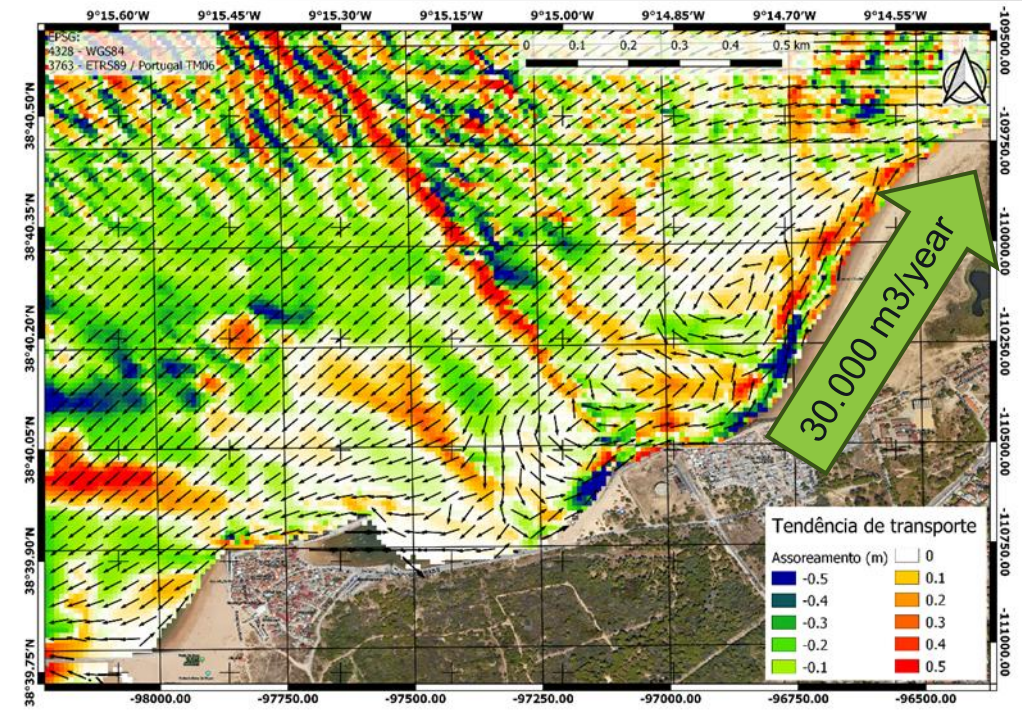
Initial condition - homogeneous sediment distribution in the entire estuary



MOHID - Add value

- Downscaling
 - Highly tested methodology allowing downscale to the beach scale in accurate and robust way
- Flexibility
 - Processes overlap using several approaches. Agnostic from the forcing point of view
- Bulk or Multi-fraction approach
 - Bulk (module Sand) – first simulations, very robust
 - Multi-fraction approach (Module sediment) - when there are more data

Sand transport



Currents : MOHID

Waves : Xbeach

Sand : MOHID - Module Sand

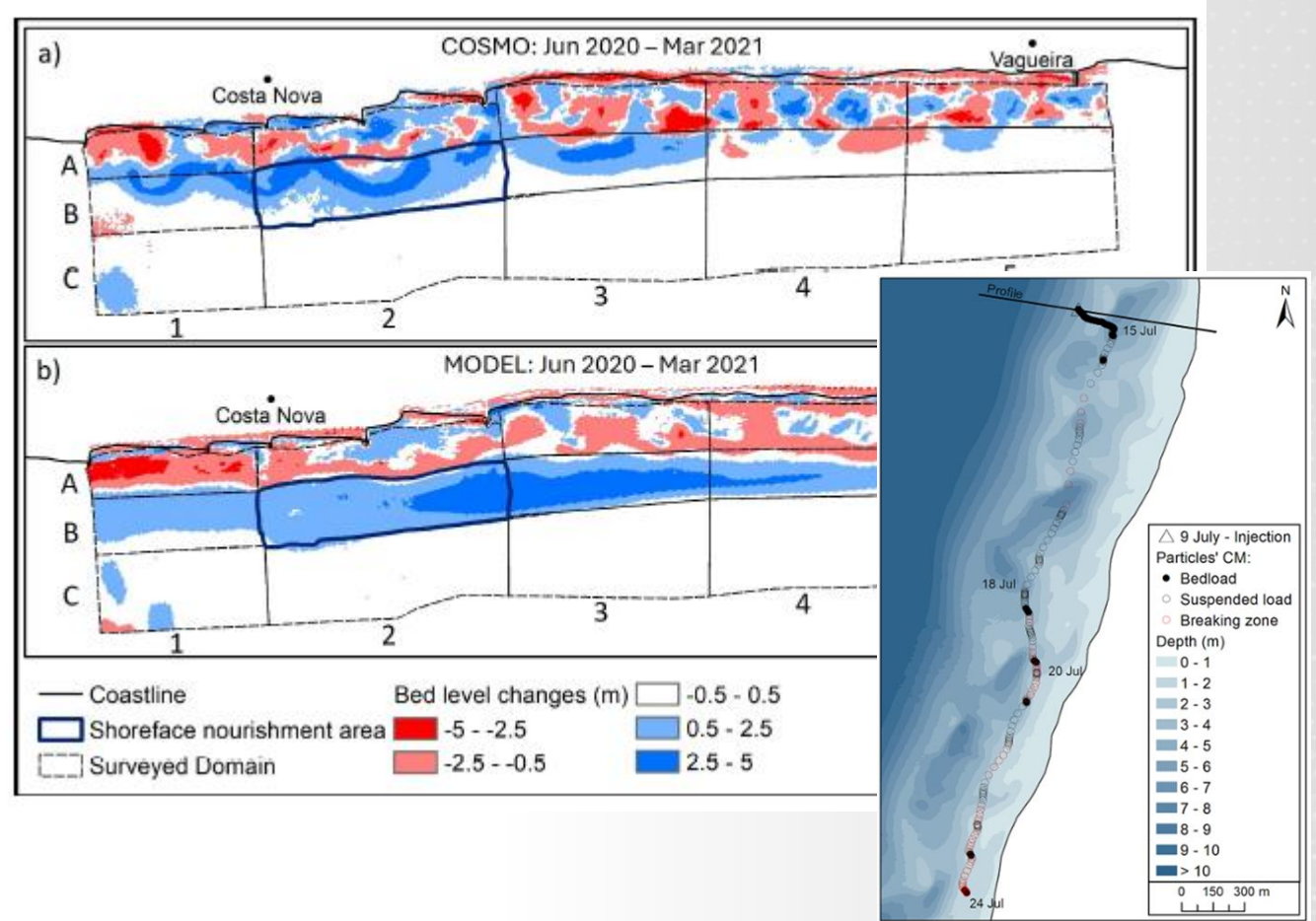
MOHID - Challenges

- Small user community
 - Sediment transport is a very small subset of MOHID implementations
- Waves transport
 - M. Delpey (PhD) (3D Waves) and G. Franz (PhD) (Module sediment) need a follow-up
 - Lacking some relevant processes (e.g. roller, streaming,...)

MOHID - Solutions

- Keep the development efforts
 - More options for the initial conditions
 - More validation in real case studies
- Intercomparison with Delft3D in coastal areas
 - S. Romão PhD, 2025
 - APA bathymetry monitoring programs (COSMO)
- Intercomparison with HEC-RAS 2D in rivers

S. Romão PhD, 2025 (9 months seabed evolution, Delft3D)





Driving Sustainability in Energy and Oceans.



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