

PHYSED laboratory (Coastal waters and sediment dynamics laboratory) at IFREMER (French Research Institute for the exploitation of the Sea) invites applications for a one year post-doctoral position to work on hydrodynamics and sediment modelling of the Seine estuary (France):

"Simulation and analysis of hydrodynamics and sediment transport patterns in the Seine estuary during the period 1950-2000."

This post-doctoral research is funded by the Seine-Aval Research Programme as part of AQUAREL project. It aims to analyse the responses of the Seine estuary system to major morphological changes and evolutions of the whole watershed over the past 50 years: harbours development and channel deepening, building of freshwater reservoirs upstream and changes in soil use.

The research will be devoted to the simulation of hydrodynamics and sediment transport processes for several configurations of the estuary by using a 3D sediment transport model that accounts for sand and mud mixtures and morphodynamic coupling (Le Hir et al., 2001; Waeles et al., 2007). 4 stages are planned: (1) selection of various scenarios, in relation with sediment and water quality processes, (2) modelling set up and validation for each configuration, (3) simulation of tide and wave propagation (with SiAM and SWAN models), salinity distribution, sand-mud and turbidity patterns, (4) synthetic characterization of hydrodynamics and sediment dynamics through computation of existing or newly-developed indicators, aiming to analyse the "trajectory" of the physical system over the past 50 years, as a function of various forcing parameters.

Key-words: Seine estuary, hydrodynamics modelling, sediment transport modelling, sediment and morphological indicators

The work will be done at Ifremer, Brest (France). A six-month extension to the initial one-year contract can be sought.

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Candidates should have a PhD in the field of hydrodynamics and sediment transport in coastal or estuarine environments. A good experience in numerical modelling is also required.