



Dispersal and transport of river sediment on the Catalan Shelf (NW Mediterranean Sea).

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A three-dimensional coupled hydrodynamics-sediment transport model for the Catalan shelf (NW Mediterranean Sea) is implemented and used to represent the fluvial sediment transport and depositional patterns. The modelling system COAWST (Warner et al., 2010) allows to exchange field from the water circulation model ROMS and the wave model SWAN including combined wave-current bed stress and both sediment transport mechanisms: bed and suspended load. Two rivers surrounding Barcelona harbour are considered in the numerical experiments. Different temporal and spatial scales are modelled in order to evaluate physical mechanisms such as: fine deposits formation in the inner-shelf, harbour siltation or sediment exporting to the outer shelf. Short-time simulations in a high-resolution mesh have been used to reproduce the initial stages of the sediment dispersal. In this case, sediment accumulation occurs confined in an area attached to the coastline. A subsequent reworking is observed due to the wave-induced bottom stresses which resuspend fine material exported then towards the mid-shelf by seawards fluxes. The long-term water circulation simulations explains the observed fine deposits over the shelf. The results provide knowledge of sediment transport processes in the near-shore area of a micro-tidal domain.

REFERENCES:

Warner, J.C., Armstrong, B., He, R., and Zambon, J.B., 2010, Development of a Coupled Ocean-Atmosphere-Wave-Sediment Transport (COAWST) modeling system: *Ocean Modeling*, v. 35, no. 3, p. 230-244.