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Comparison of sediment transport formulae 2DH simulation of several storms on a sandy beach

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This paper discusses the abilities of numerical models to predict the morphodynamics over loose and rigid beds. In the first part the sediment transport model is presented which solves the bed evolution equation in conjunction with sediment transport formulas. The flow field and the water depth are calculated using the depth-averaged hydrodynamic model TELEMAC-2D developed by Électricité de France

The work consisted in setting up the methodology of calculation (De Vriend and Stive (1987). The principle is to make an external coupling of three codes. This coupling consists in enchained Artemis for swells, Telemac2d for the currents and Sisyphe for the morpho-dynamic evolution (Hervouet J.M .,2007). The basic principle of this external coupling is to make this loop on the codes with a step of morpho-dynamic time depending essentially on weather conditions and on the hydrodynamic forcing of the studied beach. These models were used in the framework of a simulated meteorological cycle describing the seasonal evolution of hydrodynamic factors.

The objectives which we want to reach during this study are multiple. First, we are going to set up a procedure of linking of three codes to be able to simulate realistic climates. This procedure is validated from the point of view of the hydrodynamics and morpho-dynamic evolution (Larroudé, 2008). This technique of simulation will then use to compare and studied the contribution of the various formulae of sedimentary transport (as in Camenen and Larroudé (2003) on the site of Sète during two specific storm (Certain and Barusseau (2006)). We improve this methodology to simulate the Rising-Apex-Waning of a Storm event. We also present a comparison of the velocity at these different periods of the storm.

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