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Climate change and indicator of vulnerability with a 2DH model on four French beaches

Philippe Larroudé
UJF, LEGI, Grenoble, France (larroude@hmg.inpg.fr)

Abstract

In a context of vulnerability to climate change, we will present the methodology of the modeling approach to analyze the vulnerability of several beaches on the French coast. All these studies have been done within the ANR research project called VULSACO.

The goals we have achieved during this program are numerous. First, we established a procedure for binding three codes to simulate realistic or idealized climates. This procedure is validated in terms of hydrodynamics and morphodynamic evolution (Larroudé, 2008).

One of the aim is to asses vulnerability indicators of sandy beaches against the climate change predictions for 2030. To reach this purpose, models have been used as part of a cycle of meteorological simulations describing the evolution of monthly events or hydrodynamic factors. Simulation results show a reasonable fit with the data obtained on the beaches.

Then, the vulnerability can be studied: the vulnerability of the coast will be defined and studied on the basis of in situ observations and model results will come from a set of simulations based on different scenarios (actual and hypothetical future). We will present for four French sites the vulnerability of certain parameters (cross shore profile, sediment flow direction ...) to this set of scenarios (Idier et al. 2010).

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