

Changes in the water circulation of the Nador lagoon, due to anthropogenic modifications of the inlets

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The lagoon of Nador, Morocco, has been subject to deep anthropogenic changes in the recent years. Since 2008, the public authorities decided to close the lagoon inlet and to open a new one, wider and deeper, with long lateral jetties. This decision was mainly driven by economical reasons, in order to enhance the water circulation, to decrease the renewal time of the lagoon's water and to make the passage easier for ships. Such a strong morphological modification had a deep impact on the water circulation and on the ecological parameters correlated to it. The present work wants to investigate such changes by means of a hydrodynamic model. The model, named SHYFEM, is based on a finite elements discretization technique and has been used in many lagoons in the past, included the Nador lagoon. Two computational grids have been made for the lagoon. The two grids differ just in a small area near the old inlet and the new one, in order to limit possible differences in the simulations due to the spatial representation. The two grids have been tested using sea level data, at the boundary, and wind forcing. The simulations show significant difference in the water dynamics and a relevant reduction of the water renewal time, consequence of the increased water fluxes across the new inlet.