

Burial and scour of cylinder shaped objects at the bottom of the ocean

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14 January 2016

Abstract

The burial and scour of objects at the bottom of the ocean poses a problem in various disciplines, such as for example in the fishing industry, during the building of offshore wind farms or for the maintenance of marine pipelines. This issue is also especially important when it becomes essential to rediscover certain objects, such as old munition or waste barrels, due to safety reasons. In this context, we are currently studying the burial and scour of cylinder shaped objects. So far, several experiments have been conducted in both a water channel and a wind tunnel at the Chair of Fluid Mechanics at the University of Rostock. These experiments have provided insight into the dominating flow structures and the resulting burial and scour of cylinder shaped objects. In order to obtain large-scale predictions though, numerical simulations are needed that can first reproduce the experiments. For this, the Lattice Boltzmann Method is considered an ideal approach, although the combination of high Reynolds number flows ($Re > 17000$), sediment transport, erosion, sedimentation and the subsequent movement of the object provides a significant challenge. The talk will present the current status of making such simulations possible.