

Numerical study on wave-induced filtration flow across the beach face and its effects on swash zone sediment transport

Abstract

A numerical model, coupling an analysis of beach groundwater flow with an analysis of swash wave motion over a uniform slope, is presented. Model calculations are performed to investigate the variations of swash-induced filtration flows across the beach face for different input parameters. Swash zone sediment transport under the influence of such filtration flow across the beach face is investigated through modification of effective weight of sediment particle and modification of swash boundary layer thickness. These effects are quantified based on a bed load transport model with a modified Shields parameter. © 2007 Elsevier Ltd. All rights reserved.