

Determination of the interstitial velocity field in the swash zone by Ultrasonic Doppler Velocimetry (UDV)

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Description

The experimental study of the hydrodynamics of the sediments and the physical analysis of the process of exchange at the water-sediment interface in a zone of swash are essential for the understanding of the sedimentary transport processes in coastal environments, in particular to control and forecast the evolution of the coastline. The objective of this study was to exploit the technique of Ultrasonic Doppler Velocimetry (UDV) to examine the evolution of the velocity field at the water-sediment interface in a zone of swash in various conditions of incidental regular waves in a wave flume. The velocities were measured in different conditions of the swash within the sediment bed, and in the fluid vein at the swash edge. These measurements show: an exponential distribution of velocities inside the sediment bed; a difference in the velocity gradient at the water-sediment interface, between the velocity in the water vein at ...