



## **Some bedload transport Characteristics of Vieux-Habitants River (Guadeloupe, France)**

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The physics of bedload transport has been investigated in artificial rivers, in natural rivers and by numerical simulations. These approaches demonstrated that bedload transport depends on diameter of pebbles and of the shear stress that acts on the river bed above a threshold stress. These parameters are difficult to estimate in natural rivers where the granulometry is spread out several tenths of centimeters and where the basal shear stress depends on parameter only roughly estimated. Three hundred meters of the alluvial portion of the Vieux Habitants River (Guadeloupe Island, French Antilles) have been imaged by drone once a year during 7 years. The hydrograph of the river was measured upstream at 2 km of the study area. An ortho-image at a resolution around 3 cm was computed from the images of each mission. The cobbles that were deposited or exported away between two acquisitions were mapped in a GIS. The volumetric density of deposited cobbles by classes of 10 cm for a diameter of 0.1 to 1m was reported against the maximum water flow of the river that occurred between two acquisitions. This volumetric density reflects the flow of transported cobble during the flood. The dataset shows that the volumetric density of deposited cobbles is very low when water flow is lower than 35m<sup>3</sup>/s. Above this value, the volumetric density of deposited pebble increases with the flow. During the years of study, the hydrograph shows that the threshold for significant displacement was reached less than 0.03% of the time. This study enlightens also the significance of the active layer of alluvial rivers.