



Some parameters of bedload transport of Capesterre river (Guadeloupe, France) estimated from series of images

Pascal Allemand (1), Eric Lajeunesse (2), Vincent Robert (3), Thierry Kitou (3), Philippe Grandjean (1), Christophe Delacourt (4), and Emmanuel Augereau (4)

(1) Univ Lyon 1, LGL - TPE, villeurbanne, France (allemand@univ-lyon1.fr, grandjean@univ-lyon1.fr), (2) IPGP, Paris, France, (lajeunes@ipgp.fr), (3) IPGP - OVSG, Le Houelmont, France, (kitou@ipgp.fr, robertv@ipgp.fr), (4) Geosciences Ocean, Université de Brest, Plouzane, France (delacourt@univ-brest.fr, augereau@univ-brest.fr)

Physical parameters of bedload transport are difficult to measure in natural conditions. Bedload is activated when the flow is above a given threshold. Thus, transport occurs during short period of time in flood conditions during which sampling and measurements are difficult or impossible to realize. Moreover, volume and characteristics of transported pebbles depend of their availability upstream that can evolve with time. In order to estimate the threshold of transport, a camera and water level gauge have been installed on the Capesterre river (Guadeloupe, France), at transition from bedrock to alluvial. The camera takes a one-minute movie of a 30m width portion of the river each hours. The water level is estimated every 30 minutes in non-flooding conditions and every 5 minutes during floods. Images are denoised in order to remove the effect of waves and to increase the visibility trough water. In calm condition water depth is around 0.3m in average and the bed is visible. During floods, water thickness can exceed 1 meter. In that case, the bottom of the river is not visible due to water turbidity. Pebbles have been mapped on the clear images. The size and number of pebbles that were deposited or exported from the study area were estimated and reported according to water elevation for data spanning on one year including two major storms that hit Guadeloupe in September 2017. These results are discussed in terms of threshold of transport and pebbles availability.