



Measurement of erosion and deposition processes induced by the passage of a gravity current reproduced in laboratory

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Gravity currents, while traveling close to the bottom, may exchange particles with this in the form of deposition and erosion. These geophysical flows may involve into rapid gravity-driven mass movements of solid particles. Snow avalanches, volcanic eruptions and lava flows, turbidity currents and dust storms are examples of these in nature. The evaluation of eroded and deposited material is important to investigate the entrainment capacity of density currents. A high resolution, non-intrusive and low cost technique to measure volumes of erosion and deposition of fine sediments is here presented. It combines two techniques, photography and laser, giving the advantage to have simultaneously a quantitative estimation of erosion and deposition and the visualization of deposition patterns. The combined use of both instrumentation is tested and proved to provide good results on the description of the geomorphic work done by the passage of an erosive gravity current over a mobile-bed channel reach. The combination of both techniques can be used for multi-purpose applications where measuring erosion and deposition is required. Results regarding the deposition patterns, created by the highly turbulent flow field of the gravity currents, are discussed, showing the potential of these techniques for studying bed structures resulting from the turbulence forcing near the bottom.