



## **Sediment dynamics in an overland flow-prone forest catchment**

Alexander Zimmermann (1) and Helmut Elsenbeer (1,2)

(1) Institute of Earth and Environmental Sciences, University of Potsdam, Potsdam, Germany (zimmermann.alex@yahoo.de),

(2) Smithsonian Tropical Research Institute, Balboa, Ancón, Panama

Vegetation controls erosion in many respects, and it is assumed that forest cover is an effective control. Currently, most literature on erosion processes in forest ecosystems support this impression and estimates of sediment export from forested catchments serve as benchmarks to evaluate erosion processes under different land uses. Where soil properties favor near-surface flow paths, however, vegetation may not mitigate surface erosion. In the forested portion of the Panama Canal watershed overland flow is widespread and occurs frequently, and indications of active sediment transport are hard to overlook. In this area we selected a 9.7 ha catchment for a high-resolution study of suspended sediment dynamics. We equipped five nested catchments to elucidate sources, drivers, magnitude and timing of suspended sediment export by continuous monitoring of overland flow and stream flow and by simultaneous, event-based sediment sampling. The support program included monitoring throughfall, splash erosion, overland-flow connectivity and a survey of infiltrability, permeability, and aggregate stability. This dataset allowed a comprehensive view on erosion processes. We found that overland flow controls the suspended-sediment dynamics in channels. Particularly, rainfalls of high intensity at the end of the rainy season have a superior impact on the overall sediment export. During these events, overland flow occurs catchment-wide up to the divide and so does erosion. With our contribution we seek to provide evidence that forest cover and large sediment yields are no contradiction in terms even in the absence of mass movements.