



Connectivity of overland flow in a rainforest catchment: implications for erosion processes

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The runoff behavior of the Lutz Creek catchment, which is entirely covered by undisturbed tropical rainforest, is dominated by overland flow as reflected in the 'flashy' nature of Lutz Creek. This prevalence of surface flow also accounts for the catchment's high erosion rates. Overland flow occurs mainly in concentrated-flow lines, which drain into the channel network. Moreover, during large storms overland flow originates even close to the catchment divide.

We equipped seven flow lines in a 3.2-ha subcatchment with overland flow detectors placed along 5-m intervals, which were monitored on an event basis for three consecutive years. The data set comprises more than 100 rain events, which cover the whole spectrum of prevailing rainfall characteristics. The experimental design allowed us to determine the event-dependent active length of each flow line, i.e. the part of the flow line delivering overland flow to the channel network. Upscaling to the entire system of the monitored flow lines gives the overall connectivity, which can reach 100 percent for particular rain events. In addition, we sampled suspended sediment at several locations within the subcatchment and determined the contribution of overland flow to the overall sediment load. On the basis of these data, the presentation seeks answers to the following questions:

- 1) Which rainfall parameters influence the overall connectivity of overland flow?
- 2) How frequent are high-connectivity events?
- 3) Do high-connectivity events trigger particularly high erosion rates?