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COMPARISON OF LOCAL INFILTRATION EXCESS, OVERLAND FLOW AND ASSOCIATED EROSION BEHAVIOR WITH RIVER BEHAVIOR AT THE CATCHMENT SCALE

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ABSTRACT
Modeling overland flow and erosion behavior is a very important scientific task today to prevent environmental impacts from human activities, as well as physical disasters such as floods and desertification. This project has identified the impacts from selective logging in Malaysia by comparing hydrological parameters, both at a local and a catchment scale. Measurements of rainfall, overland flow, and suspended sediment flux were recorded for a year with a resolution of five minutes. A Data Based Mechanistic (DBM) modeling approach was applied to facilitate physical interpretation of the results, which provided credible conclusions. The significant alteration of the area担 hydrologic regime, due to human interventions, is apparent. The extreme nonlinearity of the rainfall-suspended sediment flux relationship reduced the efficiency of the models, and did not allow reliable forecasting. Nevertheless, useful conclusions have been drawn from the comparison of hydrologic parameters at different scales. The DBM models described the physical processes well and provided satisfactory results.

Reference: Dimitriou, E.; Comparison of Local Infiltration Excess, Overland Flow and Associated Erosion Behavior with River Behavior at the Catchment Scale, Journal of Environmental Hydrology, Vol. 11, Paper 7, July 2003.

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