

An experimental and modelling investigation of macropore dominated subsurface stormflow in vegetated hillslopes of northeast India

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Abstract In northeast India, where the hillslopes are characterized by high degree of soil macroporosity and the area receives extreme rainfall events frequently during the monsoon season, rapid lateral preferential flow is the major source of storm runoff. Such rapid movement of storm water from the adjacent hilly areas either in the form of old or fresh water, often triggers soil erosion, landslides and flash floods in the rivers. However, due to lack of experimental data or reliable empirical models for these watersheds, very little seems to be known about infiltration behaviour, macropore connectivity, and subsurface flow pattern through soil macropores. Therefore, as a prerequisite to developing any rainfall-runoff model it is essential to characterize both surface and subsurface flow behaviour with good understanding of the critical hydrological processes prevailing in the region. The present investigation aims at characterizing the macropore flow for the region through *in situ* experiments and modelling.

Key words macropores; hillslope; hydrology; experiments; modelling; northeast India