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# Modelling overland flow generation on a rough hillslope

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Prior modelling work has shown the cumulative effect of infiltration excess overland flow generated on a fractally roughened model hillslope of uniform average gradient, with randomly distributed Green-Ampt infiltration parameters. Previously, drainage areas and flow directions have been defined by a single steepest descent flow path, forcing a dendritic network. Here this constraint is relaxed, allowing multiple flow paths with discharge split in proportion to a power of gradient. The distribution of drainage areas along the lower edge of the modelled region is then much narrower, and relationships of runoff and sediment transport with slope length less clear. Over time, and even within storms, erosion modifies the topography, creating an increasingly dendritic network downslope so that the form of the relationships reflect both the overall topography and the progressive evolution of the hillslope through erosion.