Rainsplash erosion: A case study in Tekala River Catchment, East Selangor Malaysia

Sharifah Mastura SA¹, Sabry Al-Toum², Othman Jaafar³

¹School of Social, Development and Environmental Studies, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, ²Dept. of Geography, Islamic University of Gaza, Palestine, ³Dept. of Civil and Structural Engineering, Universiti Kebangsaan Malaysia

Correspondence: Sharifah Mastura SA (email: sharifah@eoc.ukm.my)

Abstract

This paper discusses rainsplash erosion in forest reserves. The study was carried out at a dipterocarp forest reserve area in the Tekala river catchment, Hulu Langat Selangor. It shows that even under forest cover, soil erosion still occurs. Most of the eroded material from the study sites enters the Langat river system as suspended sediments. Specifically, the results showed that the largest mass of soil splashed upslope was 7.5 g. The highest mean quantity splashed upslope was 2.25 g and that downslope 2.74 g, while the lowest mean quantities of soil splashed upslope and downslope were 0.28 g at station D and 0.97 g at station C. Overall, the mass splashed upslope was highest at profiles A and B on the lower slope. The maximum heights splashed downslope were 98 cm, 95 cm, 93 cm and 92 cm while maximum heights splashed upslope were much less at 93 cm, 91 cm, 90 cm and 80 cm. The rainfall parameters most significantly correlated with the quantity of soil splashed upslope and downslope were the amount of rainfall, kinetic energy with a maximum of 60 minutes intensity, and daily erosivity. A simple linear regression analysis showed that both upslope and downslope splashed soil had a direct relationship with six rainfall indices while a stepwise regression showed that both were directly related to MI, EI60, I60, EVd and API indices. Thus, these indices could be used as the best linear estimator in explaining soil splash erosion.

Keywords: best linear estimator, dipterocarp forest, erosivity, rainsplash erosion, river catchment, suspended sediments