

Variations in Suspended Sediment Yield and Dynamics in Catchments of Differing Land-use in Sabah

ABSTRACT

Variations in suspended sediment dynamics in different land-use were observed over the period of 2011 to 2014 in the SAFE Project area (www.safeproject.net). Five catchments of different land-use namely primary forest (PF), old regrowth-virgin jungle reserve (VJR), twicelogs regenerating forest (LFE), thrice-logged regenerating forest (0 m) and oil palm (OP) were instrumented with Campbell data loggers and sensors to record at five-minute intervals water level, turbidity, electrical conductivity and water temperature. Turbidity is converted to suspended sediment concentration (SSC) using algorithms derived from calibration experiments. This paper focuses mainly on duration of high discharge, peak SSC, duration of high SSC and sediment yield during selected storm events. It was found that the primary forest has longer duration of high discharge which points to good infiltration and better water-holding capacity. The oil palm has a short duration of peak flow. The highest peak SSC and duration of high SSC was almost always found in the oil palm. The peak SSC and duration of high SSC of the thrice-logged forest is lower than that of the primary forest in medium to large storms indicating the important role of understory vegetation for erosion protection. Sediment yield is the highest in the oil palm catchment and the lowest in the thrice-logged forest therefore highlighting the role of forests (even disturbed forests) in the regulation of sediment export.