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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Minimum forest cover for sustainable water flow regulation in a watershed under rapid expansion of oil palm and rubber plantations" *by* Suria Tarigan et al.

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The damage of hydrological conditions of watersheds as a result of uncontrolled expansion of cultivated land and residential areas without applying land and water conservation principles are often the causes of erosion, sedimentation, low land productivity, land degradation and flood in Indonesia.

The efforts to harmonize the needs of land, agricultural development and regional development regards on environmental carrying capacity have been established by the Republic Government of Indonesia through making and the review of Provincial and District Spatial Plans (RTRWP/K). However this has been not able yet to address the

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optimal need for forest to maintain and conserve water flow from watershed.

This study shows that 30% of minimum forest proportion is capable to produce a flow coefficient value less than 0.28. The use of SWAT hydrology method to calculate the minimum forest cover requirement in watershed is a new technology application in Indonesia. This innovation will be useful for the Ministry of the Environment and Forestry and other government agencies to determine the proportion of land uses for forests, plantations, build up areas and others in watershed area.

The minimum adequacy proportion for forest land cover in Indonesia has been regulated in Law no. 41 of 1999 on Forestry, Law no. 26 of 2007 on Regional Planning, Government Regulation of the Republic of Indonesia No. 44 of 2004 on Forestry Planning, and Minister of Home Affairs Regulation no. 67 of 2012 on Guidelines for Implementation of Strategic Environmental Assessment in the preparation or evaluation of regional development plans. This research can reinforce the legislation by recommending a minimum proportion for forest cover at 30% and a maximum closure for plantations at 40% within the watershed.

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