Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2017-116-AC2, 2017

Hydrology and Earth System Sciences
Discussions
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EGU

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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Received and published: 12 July 2017

It is true that besides the land cover, the waterflow regulation in a watershed is also influenced by other factors such as soil type. Soils in our study area are dominated (80%) by two soil types, namely Tropodult and Dystropept (see Figure 1). In term of soil physical input parameter for SWAT model, both soils are rather similar. Therefore, impact of soil variability can be neglected in the study area.

In terms of rainfall variability, it is true that Indonesia has different rainfall patterns across the country. The western part of Indonesia, including Sumatra and Kalimantan are characterized by high annual rainfall. Meanwhile, the eastern part like Sulawesi,

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East and West Java have less annual rainfall. Oil palm plantations are normally developed in areas with high amounts of annual rainfall like Sumatra and Kalimantan. Our study represents this type of bio-physical environment as stated in the title.

We agree to the comment that the evapotranspiration of similar tree species in several locations are not exactly the same. But the influence of this variability on the waterflow regulation of a watershed is relatively minor. The reason is that the potential evapotranspiration especially in the western part of Indonesia rarely deviates much from 4 - 6 mm day-1 due to the high humidity. In our study, the influence of reduced soil water infiltration is far more important than that of the evapotranspiration variability.

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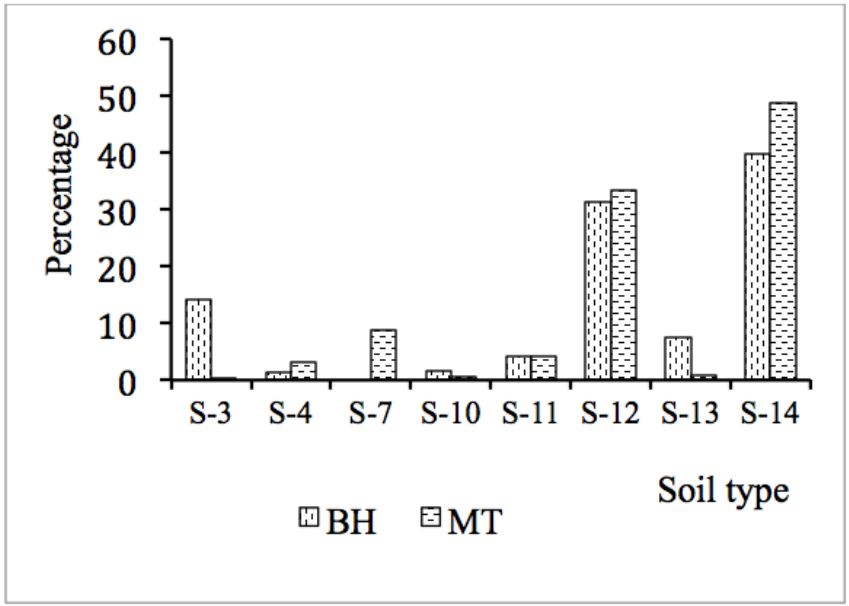

Figure 1. Soil type in BH and MT watersheds. Soil types respresent Fluvaquents (S-3), Humitropepts (S-4), Paleudults (S-7), Tropofluvents (S-10), Troposaprist (S-11), Tropodults (S-12), Dystrandepts (S-13), Dystropepts (S-14).

Fig. 1.

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