

Interactive comment on “Understanding groundwater/surface-water interactions through hydrogeological interpretation of soil distribution patterns” by Johan van Tol

Anonymous Referee #2

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This paper studies 21 South-African catchments to explore the correlation between three attributes of the catchment streamflow and some soil hydrological classes. Catchment stream flow attributes were retrieved by a previous study (Ebrahim and Villholth, 2016). Soil hydrological classes were instead identified following van Tol et al. (2013). Section material and methods is quite unclear. It is very difficult to understand what is the actual contribution of this paper with respect to the previous studies. It seems that the key contribution from a methodological approach is the Pearson correlation analysis between three streamflow attributes and the soil hydrological classes (e.g. Table 3). The choice of the stream flow attributes should be better motivated. The method employed for estimating the drainage time scale should be illustrated, since it

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includes some parameter such as drainable porosity, hydraulic conductivity and aquifer depth which are not easily identifiable at catchment scale. How are these local properties upscaled at catchment scale? How are these related with soil classes mentioned in the paper? CVB includes BFI. Why including both in the correlation analysis? By looking at correlation matrix in Table 3, it seems that CVB does not add information with respect to BFI, since BFI and CVB are inversely correlated due to the definition of CVB. The statistical significance of the correlation should be clarified. Expressions like “good correlation” or “significant correlation” should be motivated. The paper title does not reflect the content of the study. I do not see any analysis of the interaction between groundwater and surface water. The conceptualisation of the “perceptual response models” are not supported by the data and the analyses presented in the paper. Lines 1-8 at page 7 are unclear. The text should be revised, especially the conjugation of the verbs.

[Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-640, 2016.](#)

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