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The role of climatic and terrain attributes in esti baseflow recession in tropical catchments

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Abstract. The understanding of low flows in rivers is paramount m ever as demand for water increases on a global scale. At the same limited streamflow data to investigate this phenomenon, particular tropics, makes the provision of accurate estimations in ungauged a ongoing research need. This paper analysed the potential of climat terrain attributes of 167 tropical and sub-tropical unregulated catc to predict baseflow recession rates. Daily streamflow data (m^3 s^{-1} the Global River Discharge Center (GRDC) and a linear reservoir m were used to obtain baseflow recession coefficients (k_{bf}) for these catchments. Climatic attributes included annual and seasonal indic rainfall and potential evapotranspiration. Terrain attributes include indicators of catchment shape, morphology, land cover, soils and g Stepwise regression was used to identify the best predictors for b recession coefficients. Mean annual rainfall (MAR) and aridity index were found to explain 49% of the spatial variation of k_{bf}. The rest climatic indices and the terrain indices average catchment slope (S tree cover were also good predictors, but co-correlated with MAR. Catchment elongation (CE), a measure of catchment shape, was a found to be statistically significant, although weakly correlated. An of clusters of catchments of smaller size, showed that in these are presumably with some similarity of soils and geology due to proxim residuals of the regression could be explained by SLO and CE. The approach used provides a potential alternative for k_{bf} parameteris ungauged catchments.

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