



## **Evidence of hydrological extremes primarily driven by human land use changes in tropical African basins**

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The sensitivity of basins to human alterations on land and their associated hydrological impacts is a subject of on-going research and is particularly poorly understood especially in tropical African basins. Oftentimes observed extremes in hydrological changes are attributed to seasonal variations in rainfall; however, climate is only one among several drivers. Using three case studies spanning across East and Southern Africa (Lake Naivasha Basin (Kenya), Mara Basin (Kenya) and Lake Chilwa Basin (Malawi)), we investigated hydrological changes in flow regimes attributable to both human activities and climatic influences. We used flow duration curves to analyze streamflow data from the basins covering the period before intensive human land use changes and post intensive human land use changes. Our findings indicate increased peak flows (floods) during periods that followed intensive land use changes. On the other hand a reduction in baseflow regimes has been observed during the post change period. These observed changes occurred independently of the rainfall regime which remained fairly unchanged suggesting that land use change, environmental degradation and human water abstractions contributed to the observed changes in basin hydrology. Based on these findings it can be concluded that under increased rainfall in these parts of Africa as predicted by climate projection models, the severity of both floods and drought during the rainy and dry seasons respectively will be intensified primarily due to intensifying anthropogenic activities.