

Abstract

The study to determine the impacts of land use/land cover change and rainfall variability on river discharge was undertaken in the Thika river basin in Central Kenya highlands. The study used data on rainfall, river discharges as and landuse/ land cover change for the period 2000-2015 to determine hydrologic changes in the basin. Landsat images were analyzed using ENVI 4.7 to determine land cover/landuse changes in the period 2000 and 2015. The result of the study showed that natural forest cover has decreased by 1% while planted forest cover has increased by 22% due to implementation of reforestation programmes and soil conservation measures in the basin. Area under coffee plantations decreased by 38% while the area under tea plantations, urban areas (towns) and agriculture slightly increased by 4%, 5% and 100%, respectively. Although the relationship between rainfall and river discharges in the basin is complex, there is evidence of an increase in the frequency of occurrence of above normal rainfall and river discharges. However, there has been a reduction of the peak river discharges. The study concluded that increasing trends in river discharges can be attributed to increasing trend in forest cover and rainfall in the basin. The increasing trend in rainfall can be attributed to climate change. This study recommends intensification of reforestation programme to attain a 60% forest cover. This would lead to tremendous hydrological benefits in terms of flow of the river