

Abstract

Nuu/Mutaitho springs in the arid and semi-arid Kitui County in Eastern Kenya are important sources of water for communities and livestock. In the recent past, there has been significant reduction in the discharges of springs in the area. The deforestation of Nuu/Mutaitho hills is thought to be main cause of this reduction. Therefore, this study sought to determine the main causes of decline in spring discharges in Nuu and Mutaitho Hills. Attempt was made in the study to establish the relationship between spring discharges, rate of deforestation and rainfall variability. The study also involved determination of the impacts of decreasing spring discharges and examination of the perceptions of the local communities on the causes of decline in spring discharges. The data was analyzed using the Statistical Package for the Social Sciences (SPSS), Geographical Information system (GIS) and various Microsoft Excel statistical tools. The results of the study show that annual rainfall in the Nuu hills is exhibiting significant seasonal and inter-seasonal variations and the spring discharges have decreased by 30%. The annual total rainfall amount has also decreased from 800mm to around 700mm per annum. The analysis of land use/land cover change using Moderate Resolution Imaging Spectroradiometer (MODIS) showed that the dry lands forest cover has decreased by almost 40% with the current forest cover in the area being about 6%. The main cause of the decrease in the forest cover is mainly anthropogenic activities particularly burning and opening land for various purposes, illegal harvesting of trees for timber and charcoal production and high rates of livestock grazing. The study recommends implementation of a comprehensive awareness creation campaign focusing on conservation of the Nuu/Mutaitho hill forests. There is also a need for enforcement of forest regulations in order to protect the forests. This will ensure sustained spring flows in the area.