Land degradation and hydrological effects in the Mau Forest Complex of Kenya.

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ABSTRACT

The Mau Forest Complex is the largest riverine water tower in East Africa. The area is one of the main sources of the major rivers in Kenya. However, in the recent past, the ecological sustenance of the complex has been under severe threat due to massive deforestation and human induced socio-economic activities. There is thus the urgent need for comprehensive and consistent environmental change analysis to support management. In this study, the spatio-temporal land cover changes within the Mau Complex region was assessed through consistent classification of selected multispectral Landsat satellite images. A post-classification procedure employing the maximum-likelihood classifier was employed to discern the changes, and the accuracy of the classifications assessed from ground based information integrating indigenous knowledge obtained through participatory mapping techniques. Preliminary results of the study indicate significant land degradation, especially within the Eastern part of the Mau Forest Complex. Before 1986, the dominant pre-change land cover types were about 75% of forests, 12% of woodlands and 13% of farms. By 1989, the landscape had changed tremendously to about 60 % of forest and woodland and 40 % of agriculture and built-up area. Hydrologically, these changes have not only impaired the ability of the area to cleanse runoff based processes, but also amplified soil erosion and flooding processes leading to degradation of streams, lakes and other water bodies served by the complex. From the existing signatures, the Mau Forest Complex can be classified as highly vulnerable, considering the long term consequences of the degradation on the sustainability of the existing and important water resources.

Keywords: Mau Complex, land cover change, satellite images, indigenous knowledge