

REMOTE SENSING AND FOREST RESOURCES IN SUB-SAHARAN AFRICA

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Abstract

Forests, which in this paper include rangelands in arid and semi-arid lands have a significant role in the livelihoods of a large population in Sub-Saharan Africa, providing energy up to 80% or more of the total energy consumed in some countries. They play an important role in regulating the supply of fresh water; meeting medicinal, hygienic and cosmetic needs and supplementing and complimenting food outputs from conventional agriculture. Estimates show that forest loss in Africa was at 4 million ha per year between 2000 and 2005. Clearing land for cultivation, fuel wood harvesting, fires and land degradation are the main factors in this loss. Management of forests is an important component of climate change adaptation and mitigation in Africa. The UNFCCC programme on Reducing Emissions from Deforestation and Forest Degradation (REDD) offers developing countries a potential to access new ways of supporting sustainable forest management and livelihoods needs and hence help offset over dependence on forest products. The pivotal role of forests in Africa highlights the need for up to date forest inventories, monitoring and evaluation. Remote sensing, when integrated with other spatial information technologies such as GIS provide vital tools for assessing the status of forest resources under all forest management systems whether the aim is to meet requirements for conventional forest conservation needs, community livelihood support systems, and or for carbon accounting. Increased accessibility in Africa of satellite data combined with a slow but steady growth in skilled manpower in spatial technologies is making it possible to track influential factors in forest resources such as deforestation, fires, land degradation, regeneration and the effect on these on off-site services such as provision of fresh water.

This paper will present results based on a number of case studies on the applications of satellite data (Landsat MSS, TM, ETM+ and SPOT), aerial photography and ground based data to assess the interactive effects of land use pressure and climate on woody rangeland vegetation in Botswana and also report on the Southern Africa Fire Network (SAFNet) regional initiative on the use of remote sensing for fire management. The case studies will include i. Use of remote sensing to assess land degradation and land use land cover change on the western Okavango Delta, North West of Botswana over a period of 51 years ii. Assessment of woody biomass resources for fuel wood supply on the Limpopo basin in eastern Botswana and iii. Assessment of a combination of climatic variability and change in rangeland vegetation due to land use on runoff from the Limpopo basin catchment. While the SAFNet presentation will highlight the potential for a regional initiative to develop manpower, institutional and other key resources required for incorporation of spatial information technologies in national and regional forest management plans that would among others feed into the REDD initiative. The overall aim of the presentation will be to highlight opportunities, gaps and challenges in the utilization of remote sensing and other spatial technologies in forest resource management in Africa.

References

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