

Landuse and Land Cover Mapping of the Simiyu Catchment (Tanzania) Using Remote Sensing Techniques

Justus RWETABULA and Florimond DE SMEDT (Belgium)

Key words: Simiyu catchment, Satellite images, Landuse/land cover, GIS

SUMMARY

A process of integrating remote sensing techniques and field data to accurately map landuse and land cover of the Simiyu catchment is described. Satellite images of LANDSAT 7 ETM+ of 3/4/2001 and 12/5/2001 were processed and registered using Idrisi32 release 2 image processing software and topographical maps, and enhanced for better interpretation. Images were interpreted using frequency histograms of each band, colour composite images, principal component images, and prior knowledge of land cover. Additionally, training data for supervised classification were collected in the study area in the year 2002 and 2003. Signature development was carried out and evaluated. Training sites were re-defined such that significant separability was obtained for all six bands of LANDSAT 7 EMT+. Finally, a maximum likelihood classifier was applied to classify the satellite images. Six major landuse classes were identified and mapped for the Simiyu catchment. These are: mixed short grasses with/or bare land, dense tall grassland, bush land, cultivated land, medium size grassland, and surface water.