

Prediction of Land Use/Cover Change in the Congo Nile Ridge Region of Rwanda

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Abstract: Simulation and mapping the changes of LULC became the major apprehension to the environmental planners. In this research, we explored LULC dynamics in the Congo Nile Ridge Region of Rwanda, from 1990 to 2010 and simulate future LULC in 2020 and 2030 with Land Change Modeler (LCM), MLP Neural network, Markov Chain (MC), and GIS approaches. To map LULC changes and assess spatial trend, Landsat (TM and ETM+) imageries of 1990, 2000, and 2010 were classified using supervised with likelihood classification techniques in six classes. Kappa Statistics and overall accuracy for all LULC (1990, 2000 and 2010) classification maps were over 94% and 93% respectively. Prediction revealed that in 2020 and 2030, future LULC would expand for built-up 80 ha and 8,950 ha for cropland, whereas grassland and forestland will decrease approximately to 2,550 ha and 6,480 ha, respectively; water bodies and wetland will remain constant. The findings from this research can inform decision-making process concerning environmental protection.

Keywords: *land use/cover; prediction; remote sensing; Rwanda*