



## Comparison of land cover image classification methods

Osei, Kingsley Nana<sup>1</sup>, Osei, Edward Matthew Jnr<sup>2</sup>, Adjapong, Adwoa Sarpong<sup>3</sup>

<sup>1</sup>Geography and Regional Planning Dept., University of Cape Coast, Ghana

<sup>2</sup>Geomatic Eng. Dept., Kwame Nkrumah University of Science and Technology, Ghana

<sup>3</sup>Department of Civil Engineering, Kumasi Polytechnic, Kumasi

Email: chief\_osei@yahoo.com

(Received: 3 June, 2011; in final form 25 January, 2012)

**Abstract:** In remote sensing, many methods have been developed for image classification. In this study, three of the methods namely Maximum Likelihood classification (MLC), Backpropagation Neural Network classification (BPNN), and Sub Pixel classification (SP) are used to classify a Landsat ETM+ image of the Ejisu-Juabeng district of Ghana into seven land cover classes and the results are compared. The seven classes identified were forest, forested wetland, open woodland, water, non-forested wetland, grassland and urban. In the comparison, the top 20 (80%-100% composition) per land cover class from the SP is used against the MLC and BPNN classification. The results show that of the two hard classifications (MLC & BPNN), BPNN gave a better result with an overall accuracy of 92.5 % compared with that of MLC with an accuracy of 78.95%. The SP classification however, gave mixed results although for land cover classes such as forest and forested wetland that are homogeneous in nature, the representations were good. Over all the BPNN classification gave the best representation of the land cover classes in the study area.

**Keywords:** Land cover classification, Maximum Likelihood classification, Backpropagation Neural Network classification, Subpixel classification