Object-Based Image Analysis Technique in e-Cognition Environment -A Paradigm for Sustainable Resource Inventory.

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SUMMARY

Accurate information about land use and land cover is essential for the change detection studies and monitoring of the urban space. Over the past decade, a significant amount of research has been conducted concerning the application of different remote sensing image classifiers. Land use and land cover being an important concept of developing with remote sensing, has become a crucial item of basic tasks in order to carry out a series of important tasks, such as prediction of Landuse changes, prediction of nature of disaster, protection of the environment and many other complex environmental scenarios. Satellite images are constituted by a set of measures of electromagnetic radiation. Each individual measures corresponds to an area unit (pixel) and a certain interval of wavelength (channel). Therefore, image classification technique and accuracies are important in any land use and cover studies. Hence, this work is aimed at carrying out comparative study of pixel-based and object-based image classifications in land use and land cover mapping of Aba Urban using two epochs (2007 and 2012) of (Quick bird imageries) high resolution satellite imageries of Aba Urban, and classifying them using pixel-based and object-based classifiers respectively. Analysis of the results obtained from the study showed that the object-based images classifications achieved higher overall accuracies in eCognition and ENVI software (high producer's and user's accuracy for most of the land cover classes) than the ones obtained by using pixel-based classification in ILWIS and ENVI software environments respectively. These results, however, were validated using test statistics (kappas) from the derived and computed data based on established hypothesis tests. The results in both methods showed phenomenal increase in built-up features and also phenomenal decrease in vegetal features, water body and bare surfaces. This research, however, does not suggest that the pixel-based method should be thrown away, rather more researches should be carried out on ways of improving pixel-based image classification. The observed limitation of the object-based method is in the high cost of acquiring High Resolution Multispectral Satellite Imageries and also the high cost of object-based proprietary software like eCognition

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