VALIDATION OF A SEMI-AUTOMATIC CLASSIFICATION APPROACH FOR URBAN GREEN STRUCTURE

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ABSTRACT:

Municipalities in Norway need to develop a plan for green structure in urban areas. Traditional mapping has its limitation, since the land use is in focus and not the actual land cover. This study evaluated the appropriateness of using multispectral Quickbird images for the semi-automated mapping of green structures in urban and suburban areas. A Quickbird image of Oslo from 2 June 2008 was used. A classification algorithm was implemented in Defininens' eCognition Developers toolkit. The algorithm was applied to the whole image, and tested on six randomly selected subsets. The validation was performed by manual editing of the classification result. The main focus of the editing process was to detect misclassifications between grey areas (such as roads and buildings) and green areas (trees, grass, and sparse vegetation). The most striking problem with the automated method was that the object borders were very rugged. However, these segmentation problems were to some extent ignored in the evaluation process, concentrating on correcting major parts of objects being misclassified rather than correcting all minor segmentation inaccuracies. The classification step had approximately 9% misclassification rate in the two-class problem grey area versus green area. This is a very good basis for further improvement. The obvious segmentation problems are clearly the first things to address when further improving the method. Another problem is to what extent the automated method can be used on another image with different light conditions, e.g., with the presence of clouds or light haze and another solar elevation. Will a simple retraining of the classification rules be sufficient, or will the rules have to be redesigned? It could even happen that redesigning the rules is not sufficient, so that other methods have to be developed.