

RULE-BASED INTERPRETATION OF HIGH-RESOLUTION SAR IMAGES FOR MAP UPDATING

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ABSTRACT

Automatic interpretation of high-resolution airborne E-SAR data (pixel size 1 m × 1 m, L band data with four polarizations, X band data with two polarizations) for map updating was studied. The image data were segmented into homogeneous regions and classified into a few classes using rules defined on the basis of reference data (eCognition software used). The main idea in the classification was to first use image-derived attributes (e.g. mean values and textural features) to classify 'certain' segments (i.e. segments with the typical characteristics of a class) and then to complete the result by also using contextual information on the classes of the neighbouring segments. An overall classification accuracy of 92% was achieved in the agricultural area of Sjäkulla. The overall accuracy in the suburban area of Espoonlahti was 78%. The results of the study indicate that the images are well suited for automatic mapping of water, forest and open areas. Mapping of built-up areas is also possible but it is a more demanding task. Change detection between old topographic map data and the classification result was tested in the Sjäkulla area. The results of the test demonstrate automated change detection in practice, but the usefulness of the results is limited by different class definitions in the available map data and classification result.