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OBJECT-BASED ANALYSIS OF AERIAL PHOTOGRAMMETRIC POINT CLOUD AND SPECTRAL DATA FOR LAND COVER MAPPING

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Abstract. The acquisition of 3D point data with the use of both aerial laser scanning (ALS) and matching of aerial stereo images coupled with advances in image processing algorithms in the past years provide opportunities to map land cover types with better precision than before. The present study applies Object-Based Image Analysis (OBIA) to 3D point cloud data obtained from matching of stereo aerial images together with spectral data to map land cover types of the Nord-Trøndelag county of Norway. The multi-resolution segmentation algorithm of the Definiens eCognition[™] software is used to segment the scenes into homogenous objects. The objects are then classified into different land cover types using rules created based on the definitions given for each land cover type by the Norwegian Forest and Landscape Institute. The quality of the land cover map was evaluated using data collected in the field as part of the Norwegian National Forest Inventory. The results show that the classification has an overall accuracy of about 80% and a kappa index of about 0.65. OBIA is found to be a suitable method for utilizing 3D remote sensing data for land cover mapping in an effort to replace manual delineation methods.

Conference Paper (PDF, 1234 KB)

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