APPLICATION OF IMAGE MERGING, SEGMENTATION AND REGION-CLASSIFICATION TECHNIQUES AS A NEW APPROACH FOR THE DETAILED THEMATIC MAPPER OF SOIL-VEGETATION ASSEMBLAGES

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Abstract
The paper discusses the combined use of image merging, segmentation and region-classification techniques, as a new approach in the semi-automatic mapping of land cover types. In the first step of the procedure, a digitalized panchromatic aerial photograph was co-registered with Landsat-TM images. A hybrid image set with high spatial resolution was then produced by merging the Landsat images and the aerial photograph, through intensity (I), hue (H), and saturation (S) color transform. Using segmentation techniques, hybrid images were portioned off into homogenous regions, and classified according to a region-based classification algorithm. The analysis of the hybrid HIS color composite supported by field data information, permitted to identify the classes on the classified image, so producing an accurate thematic mapping of different soil-vegetation assemblages in the study area. Enhanced precision and time saving are the main advantages of the approach, in comparison with conventional visual interpretation.

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