



Use of image classification in urban drainage modelling

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ABSTRACT

As a result of expansion of urban areas and an increase in paved areas the existing drainage systems are under enormous pressure. To meet these demands it is important to have a good estimation and documentation of the surfaces generating runoff. In this study a semi-automated method for surface type classification using a combination of spectral analysis of orthophotos, near infrared imagery and technical maps were developed. The method is used to document which surface types there are present in a sub-basin at a given time. The highest uncertainties in classification were found to be shaded areas in the orthophoto. To classify these areas red, green and blue bands from the orthophotos and near infrared imagery were used. The method was tested against a manual classification of surface types and against measured water levels and flows in the sewage system. The automated classification of the surface differed just 4 % from the manually detection. The calculated flow was within a 10 % difference of the measured flow and water levels were satisfactory simulated. This validation of the method ensured that the result can be used for urban drainage modelling purposes.

KEYWORDS

Impervious area estimation, urban drainage modelling, spectral analysis, image classification, GIS