

## **Change-detection of watershed impervious surface using multi-temporal remotely-sensed data**

**YOUJING ZHANG<sup>1</sup>, XUEMEI MA<sup>2</sup> & LIANG CHEN<sup>1</sup>**

*1 State Key Laboratory of Hydrology, Water Resource and Hydraulic Engineering, Hohai Univ., Nanjing 210098, China*  
[zhangyj\\_hhu@263.net](mailto:zhangyj_hhu@263.net)

*2 College of Civil Engineering, Hohai Univ., Nanjing 210098, China*

**Abstract** An estimation approach for the change-detection of watershed impervious surface is proposed in which a hybrid detection method was employed using Landsat TM data of 1988, 1994 and 2002 for the same season. The feature subset was first constructed with the characters of the spectral and spatial information of the impervious surface and its change. The decision tree classifier based on data learning was used to extract the impervious surface for the data of 2002. The change feature subset was then built with the differential indexes and change characters. The change detection was performed with the hybrid detection for the data of 1994–2002 and 1988–1994, and the change information was verified by overlay analysis from GIS. The results show that the classification accuracy of impervious surface area is 88.1% for six watershed underlying types in 2002, and about 90% for five change types between 1994–2002 and 1988–1994. The research has demonstrated that the proposed approach is capable of the change-detection and can achieve better accuracy using medium spatial resolution remotely-sensed data.

**Key words** watershed impervious surface; change detection; decision tree classifier; remotely sensed data

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