Measuring and Mapping Urban Sprawl in China: A MODIS-SVM Approach

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Abstracts

How to measure and map urban sprawl is one of key issues in urban and regional management in China. Sprawl can be recognized in terms of urban forms, land use pattern and the related movement patterns that are necessary for urban area to function. This contribution presents an approach to measure and map the urban sprawl pattern in China in the past four years using MODIS data and one-class support vector machine (SVM) classifier designed by the authors. We develop a set of land use patterns based quantitative indicators to measure urban sprawl by reviewing the existing indicators of continuity, concentration, clustering, centrality and nuclearity of urban areas. Then the urban change information from 2000 to 2005 is captured using MODIS remote sensing data and one-class SVM classifier. We reveal and analyze the spatial patterns of urban sprawl in China in different levels of country and region. The results have demonstrated that these indicators and approaches are very useful and effective for the monitoring of urban sprawl.

Keywords: Urban sprawl, One-class SVM, MODIS, Measurement, China