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IDENTIFICATION OF URBAN BOUNDARIES BASED ON REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM: A CASE IN WUHAN

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ABSTRACT:

The urban-rural divide is the basis for the correct assessment of the urbanization. Due to the rapid changes in urban-rural fringe, it is difficult to identify urban boundary in China. Yet the division method prevailed in China cannot be applied to current urban development and economic situation. Defining city boundaries in urban-rural fringe is an enthralling challenge for urban planners. The density of construction land use is decreasing from urban center to countryside. Therefore, the key point of urban and rural land division is to find the critical ratio value of the density at the urban-rural fringe. This paper presents a feasible technical methods for identifying boundaries based on artificial land cover. A three-step method is proposed here:1）detect urban core area in different membership levels. In this study, three levels of urbanized area are used for the division. 2) Select samples covering all range of the urban-rural fringe based on our understanding of urban. 3) A build-up area density threshold is located on the statistical analysis of the samples. The method is tested on Wuhan city to identify its morphological boundaries and to track boundary changes over space and time. Spatial analysis capabilities of geographic information system (GIS) are used to model the density of urban construction land use and urbanization trend in the case study of Wuhan. Results show a successful division method to define the urbanized area. Different level of urbanized area may exhibit different density thresholds. The greater level, the greater the density threshold.