

Spatial Trends of Urbanization of China's Major Cities

Using Remote Sensing Data

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ABSTRACT: During the last two decades, China has been experiencing astonishingly intensive urbanization process, in terms of both urban population boost and urban area expansion. In this process, urban sprawl is the most adopted urbanization form of the majority of China's major cities, which caused severe encroachment of arable lands and urban environmental problems as well. With the huge population, the per capita area of arable lands of China is far below the world average, and land resource becomes highly limited and essential in this developing country. Therefore, the land developing mode of urban sprawl should be replaced by the paradigm of compact city in China, especially for its big cities that are in large demand of land resources.

This research evaluated spatial trends of land development of China's 32 provincial capital cities from the year 2000 to 2010, using remotely sensed image data, in order to investigate whether China has slowed down its pace of urban land-use expansion and shown emphasis on infill development of existed urban centers. As the census data of China's built-up urban areas are not either consistent or unreliable, and land-use maps are unavailable for the year 2010, Landsat TM image data were used to extract built-up areas of provincial capital cities, and change detection were implemented to reveal urban land-use expansion. As to investigation of infill land development trends, nighttime DMSP/OLS image data were utilized. The change of light intensity on DMSP/OLS data of different time could be used to reflect the trends of infill development intensity of urban areas. Results showed that urban sprawl still acted as the major way of urban land development. However, infill development intensity increased during the decade.