



## **Construction Land Expansion and Transfer of Gravity Center from 1984 to 2016 : A study on Beijing - Tianjin - Hebei Urban Agglomeration**

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With the economic development and technological innovation, urban planning and construction has already broken through the shackles of the natural conditions such as topography and geomorphology, and the social factors such as politics and location have been affected by the urbanization process in the process of urbanization. At the same time, the synergies between urban development and local economy, national policy, industrial distribution and so on are also paid more attention.

As the third pole of Chinese economy after the Pearl River Delta and the Yangtze River Delta, the Beijing-Tianjin-Hebei Metropolis Circle has attracted extensive attention on experts and scholars in its urban development and location. In recent years, studies on urban development have not only analyzed the spatial characteristics of urban or urban agglomerations, but also discussed the relationship between urban development and certain elements or phenomena.

This paper presents a multi-threshold and multi-feature extraction method for building land using the optical characteristics of different landforms, based on Landsat remote sensing images from 1984 to 2016. The method selected Automated Water Extraction Index (AWEI), Normalized Difference Vegetation Index (NDVI), Soil Extraction Index (SOEI) and Normalized Difference Built-up Index (BUEI) to extract the construction land. It is an example study area of Beijing to extract the construction land in 30 years and to do a examine research. Using the ArcGIS software to calculate, we can get the coordinates of the city center of gravity in Beijing in various years. It can be seen that the center of gravity of built-up area and the movement of the center of gravity in Beijing. The results showed that the construction land in Beijing has an increasing tendency in recent 30 years. The main characteristic of expansion is the way of high-speed outward development. From 1984 to 1999, the center of gravity of the city shifted to the northeast, and from 2000 to 2016 the center of gravity shifted to the southeast. In the further study, we would do a research in the whole area in Beijing-Tianjin-Hebei and pay more attention to built-up land expansion prediction.