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# Landscape Ecology Pattern Gradient Analysis and Comparison of Desakota Regions Features in Three Asian-Pacific Regional Major Cities

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## 1 Landscape Ecology Pattern Gradient Analysis and Comparison of Desakota Regions Features in Three Asian-Pacific Regional Major Cities*

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**Abstract**

Three major cities in Asia-Pacific Region: Shanghai, China, Manila, the Philippines and Hanoi, Vietnam, are selected as our research region. In support of remote sensing and GIS technology, the pattern dynamics and its related urbanization features of these three cities in nearly recent twenty years were studied, with a mean of gradient analysis with six landscape matrix indexes such patch density, etc. It is demonstrated that:

(1) Patch density, Shannon diversity index and the absolute distance to the city center have a high correlation. The correlation between patch density can achieve as high as 0.928, and the max number for Shannon diversity is 0.914;

(2) In the process of urbanization, regional landscape pattern of these three cities has changed significantly, with an increasing of patch density and strengthening of fragmentation;

(3) In land use transect, landscape index can detect the gradient of the city and show the process of urbanization with the peak. In the research period, the curve's peak of landscape index shows a movement, reflecting the progress of urbanization direction;

(4) The three cities were discovered with different development characteristics, and different stages of development features, and were found typical in Asia. Metro Manila was found in the highest stage of urbanization, and with the earliest suburb urbanization. Shanghai was demonstrated a high stage of urbanization and an obvious suburb urbanization. In contrast, Hanoi appears a lower stage of urbanization and unobvious suburb urbanization. These conclusions can be corroborated in the demographic, economic and other statistical information. Compared with similar studies, a typical longer time span and larger spatial scope is appeared in our research. The selected cities also well reflected the development features of urbanization in the Asia-Pacific region.

**Key Words: Landscape Pattern, Gradient analysisUrbanizationDesakota regionsShanghaiHanoiMetro Manila**

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