

Identification of Watershed Landscape Character Types in Middle Yangtze River within Wuhan Metropolitan Area

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Abstract : In China, the middle reaches of the Yangtze River are well-developed, boasting a wealth of different types of watershed landscape. In this regard, landscape character assessment (LCA) can serve as a basis for protection, management and planning of trans-regional watershed landscape types. For this study, we chose the middle reaches of the Yangtze River in Wuhan metropolitan area as our study site, wherein the water system consists of rich variety in landscape types. We analyzed trans-regional data to cluster and identify types of landscape characteristics at two levels. 55 basins were analyzed as variables with topography, land cover and river system features in order to identify the watershed landscape character types. For watershed landscape, drainage density and degree of curvature were specified as special variables to directly reflect the regional differences of river system features. Then, we used the principal component analysis (PCA) method and hierarchical clustering algorithm based on the geographic information system (GIS) and statistical products and services solution (SPSS) to obtain results for clusters of watershed landscape which were divided into 8 characteristic groups. These groups highlighted watershed landscape characteristics of different river systems as well as key landscape characteristics that can serve as a basis for targeted protection of watershed landscape characteristics, thus helping to rationally develop multi-value landscape resources and promote coordinated development of trans-regions.

Keywords : GIS, hierarchical clustering, landscape character, landscape typology, principal component analysis, watershed

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