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ECOLOGICAL SENSITIVITY AND ITS DRIVING FACTORS IN THE YANGTZE RIVER DELTA, CHINA

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Abstract

Based on climate data, remote sensing data, elevation data and landscape data, six index factors including climate sensitivity, vegetation sensitivity, terrain sensitivity, landscape resource sensitivity, water resource sensitivity and human activity sensitivity were selected to construct an ecological sensitivity evaluation index system for the evaluation of ecological sensitivity in the Yangtze River Delta. The geographic detector was employed to explore the influencing factors and interactions of landscape ecological sensitivity. The results showed that the comprehensive sensitivity of landscape ecology gradually decreased from the middle of the study area to the surrounding areas, and the extreme sensitive, high sensitive, medium sensitive, light sensitive and insensitive areas accounted for 8.93%, 20.83%, 27.93%, 27.30% and 15.01% of the total study area, respectively. The Moran's I index of comprehensive sensitivity of landscape ecology was 0.4103, P value was less than 0.01, and Z value was greater than 2.58, indicating that its spatial distribution showed a significant positive correlation and clustered distribution. High and high aggregation was distributed in rivers, lakes and other water system areas. Geographic detectors were used to detect the ecological sensitivity of the Yangtze River Delta landscape with single-factor detection and two-factor detection, respectively. Among the single-factor detections, the river buffer distance and lake buffer distance had the most significant effects on the ecological sensitivity of the landscape in the Yangtze River Delta, indicating that the water resource sensitivity had the strongest explanatory power on the ecological sensitivity of the landscape in the study area. In the two-factor detection, when the water sensitivity factor works with either factor, the explanatory power of landscape ecological sensitivity is strong.

Key words: ecological sensitivity; geographic detectors; spatial autocorrelation; Yangtze River Delta

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