



The Trend of Water Quality of Yangtze River Based on Water Function Zones

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In order to realize the rational development, scientific management and effective protection of water resources, the Chinese government adopts the water function zoning management system to protect water resources. Over the past decade, the water quality in China has become better, and the most areas whose water quality under the goal of water function zone has become better heading to the goal required by this system. However, water quality in a few areas that was better than the goal has getting close to the goal. As a result, this study presents the concept of the trend balance of water quality based on the water function zoning management system. To verify these trend balance points, this study takes the main stream of the Yangtze River as the research area and the time evolution trend of the Yangtze River water quality was studied based on the analysis of big data. The Dickey-Fuller Test was used to test the stability of the water quality time series. It was found that more than 90% of the river sections whose DO and TP have stabilized, and 60% of the sections whose CODMn, NH₃-N, BOD₅, Pb, and OIL have stabilized, indicating that the water quality of the main stream of the Yangtze River has a steady trend in time evolution. That proves the water quality of the mainstream of the Yangtze River exists trend balance points, which means the water quality will tend to be an equilibrium state that gradually approaches the control target of this system and ultimately fluctuates up and down.

Keywords: water function zoning management system; the Yangtze River; big data