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Dynamics of nutrient cycling and ecosystem health in the Yellow Sea

(Title in lowercase letter)

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Abstract

Text word limit: < 300 words

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This research examines nutrient cycling patterns and ecosystem health in the interconnected marine systems of the Yellow Sea, East China Sea, and South China Sea. Field sampling and remote sensing data collected between 2020 and 2024 were analyzed across multiple transects to assess spatial and temporal variations in nutrient concentrations, primary productivity, and biodiversity. Preliminary results indicate significant regional differences in nitrate and phosphate cycles, influenced by riverine discharge, atmospheric deposition, and anthropogenic activities. Shifts in phytoplankton community structure were observed, with implications for higher trophic levels and fisheries resources. These findings contribute to a better understanding of regional marine ecosystem functioning and support the development of integrated management strategies for sustainable marine resource use.

Keywords (*Max. 5*): Nutrient cycling, Ecosystems, Yellow Sea, East China Sea, South China Sea,