

Characteristics and Sources of Eutrophication in the Pearl River Estuary

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24-h time series and synchronization of vertical profiles of $\text{NO}_3\text{-N}$, $\text{NO}_2\text{-N}$, $\text{NH}_3\text{-N}$, $\text{PO}_4\text{-P}$, $\text{Chl-}a$, salinity, temperature and other chemical parameters were taken at 10 stations in March, 1998 in the Pearl River Estuary in order to analyze the status and characteristics of eutrophication. The results confirmed that inorganic nitrogen mainly come from the runoff of four river channels, and also the land-based sources from the area near Shenzhen Bay. NO_3 is the main form of inorganic nitrogen in most area, and NH_3 is the main form near Shenzhen Bay. The concentrations of inorganic nitrogen were general above 0.30mg/L (the second grade of seawater quality standard in China) in the estuary, and more than 0.50 mg/L (the forth grade of seawater quality standard of China) in most part. Inorganic phosphorus from four river channels was not the main sources, but land-based sources from the area near Shenzhen Bay were obvious, and other land-based sources near the estuary brought by coast current and flood tide current were also main the contributions. The concentrations of inorganic phosphorus were generally lower than 0.015mg/L (the first grade of seawater quality standard) except the area near Shenzhen Bay. The ratios of N/P were generally high, and it was higher in the north than in the south. The highest ratio was high than 300, and the lowest one was more 30. This indicated that inorganic phosphorus was a limiting nutrient in the estuary.