



Geochemistry of Water and Suspended Particulate in the Lower Yangtze River: Implications for Geographic and Anthropogenic Effects

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ABSTRACT

The lower Yangtze River undergoes intense anthropogenic activities and various natural progress compared to the upper-middle reaches. We explore the aqueous geochemistry of ions and elements of suspended particulate in order to recognize the effects of natural conditions and anthropogenic inputs on rivers. These results show that total dissolved solids of water in the lower Yangtze River are similar as those in the upper-middle reaches of mainstream, but higher in tributaries. The major elements of suspended particulate in high-flow regime (HFR) have approximate concentrations with those in low-flow regime (LFR). But remarkable high concentrations of trace elements in tributaries exhibit regardless of HFR or LFR. Multivariate statistics show the suspended particulate matter (SPM) of mainstream presents similar characteristics in flood season and diverse characteristics in dry season. While SPM of tributaries reveals different results. The majority of suspended matter originates from municipal and industrial discharge both in flood season and dry season, and a part from road runoff in flood season, showing an effect of hydrological regime. Mining activity induces remarkably high concentrations of metals regardless of HFR or LFR. Therefore, the geochemistry of SPM in the lower reach of Yangtze River are significantly affected by the anthropogenic input of different sources, which is different from the upper-middle Yangtze River.

KEYWORDS

Suspended Particulate; Major Element; Trace Element; Hydrological Regime; The Yangtze River

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