Identifying sources of organic matter in the urban river in Beijing, China by using stable isotope model

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Identifying sources of organic matter (OM) by carbon and nitrogen isotope techniques can provide important information of the river erosion and pollution assessment. In this paper, the carbon and nitrogen isotope composition and spatial distribution characteristics of various samples including surface water, sediment, suspended particles, soil, and plants samples have been studied on source and destination of OM from the North Canal in Beijing, China. Samples were analyzed for elemental and stable isotope composition of nitrogen (N) and carbon (C); moreover, a standard water analysis was conducted. The multivariate mixture models for these sources contribution ratio was used for qualitative discussion on the OM sources. There was significant difference of $\delta^{13}C$ of sediment between in wet season and in dry season. The values of $\delta^{13}C$ of sediments in wet season are much lower than those in dry season. $\delta^{15}N$ of sediment showed the similar pattern. The potential sources for particulate organic matter buried in rivers usually include aquatic plants (e.g., phytoplankton), zooplankton, terrestrial plants ($C_3$and C_4), soil OM. Based on End-member model, OM in sediments are from external runoff from the catchment (~58.37%) and C_4 plant (41.63%). OM in suspended particles are mainly from internal macrophytes (77.63%) and the aquatic plankton (22.37%) in river.

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[2] Xiao *et al* (2010) *Geochemical Journal*, **44**(3): 181-187.