

## **Characterizing dissolved organic matter in lakes along the middle and lower reaches of Yangtze River, China: Insights into the effect of anthropogenic activities**

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Yangtze River is the China's longest river and provides the most important freshwater resources to nearly one third of the population in China. The middle and lower reaches of the Yangtze floodplain contain around 25% of the population of China and are responsible for 24% of the whole national agricultural production. Lakes along the middle and lower reach of Yangtze River are always subjected to intense anthropogenic disturbance, such as aquaculture development, draining for agriculture production and sewage wastewater. The intense anthropogenic activity along this region should alter the quantity and quality of dissolved organic matter (DOM) in the lakes, which plays an important role in aquatic systems.

In this study, surface water samples were collected from 64 lakes along the middle and lower reaches of Yangtze River. Absorbance spectroscopy and excitation emission matrix fluorescence with parallel factor analysis (EEM-PARAFAC) were used to characterize the dissolved organic matter (DOM). With the assistance of EEM-PARAFAC, one terrestrial humic-like component, one microbial humic-like component, one tyrosine-like component and one tryptophan-like component were identified. The absorbance index, the fluorescence index and EEM components were related to the water chemistry (concentration of nitrogen and phosphorus, pH and DO). The population intensity and the land use in the regions are examined to understand better how these factors influence DOM characteristics in lakes. This study provides the information on the influence of anthropogenic activities on the DOM characterization and thus the aquatic ecosystems.