Exploring spatial and temporal changes of the Yangtze River nutrient sources, biogeochemistry and exports to East China Sea

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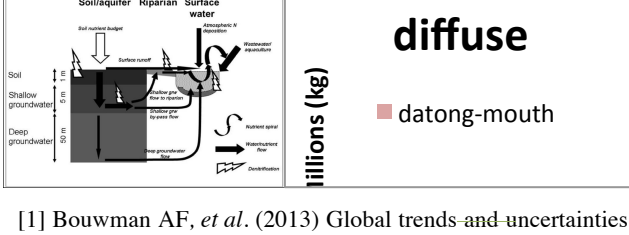
The purpose of this study is to investigate the impact of spatial-temporal changes on the Yangtze River biogeochemistry, and the subsequent nutrient export to the East China Sea for the period 1900-2010. To achieve this, an integrated spatially explicit model is used. The model based on coupled hydrology-nutrient delivery to surface water and in-stream retention. The model includes all the components of river basin soils, shallow groundwater, deep groundwater, riparian zones, floodplains, streams, rivers, lakes, and reservoirs.

We will present the whole model system [1], and 1) identify the nutrient sources in the Yangtze River considering point and diffuse sources, through an analysis of nutrient data over the period 1900-2010; 2) compare nutrient concentrations and export at different stations along the mainstream including Zhutuo station Yichang station (the nearest station after Three Gorge Dams) and Datong station (free from ECS tidal effects); (3) use the spatially explicit model to explore the stream lakes and reservoirs nutrient retention and to infer its importance, spatial variability and trens during 1900-2010.



[1] Bouwman AF, *et al*. (2013) Global trends ~~and~~ uncertainties in terrestrial denitrification and N2O emissions. *Philosophical Transactions of the Royal Society B: Biological Sciences* **368**(1621).