

Biogeochemical Characterization of Surface Sediments Along the Pearl River Estuary Transect

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The Pearl River is the second largest river in Southern China, flowing through a highly populated and economically developed region, and discharging into the South China Sea through the Pearl River Estuary. The Estuary can be considered as a large-scale, natural biogeochemical laboratory, characterized by pronounced physicochemical gradients of nutrients, salinity, terrestrial organic matter inputs, and other parameters.

This presentation will showcase some preliminary findings of a study with an objective to biogeochemically characterize surface sediments from the Pearl River Estuary, along the transect from the river mouth to the coastal South China Sea. To this end, microbial community structure analysis was combined with the ultra-high resolution FTICR-MS characterization of lipid biomarkers, with the goal to correlate the identified chemical species to their source organisms (e.g. Archaea, phytoplankton, etc.), and the shifting environmental parameters along the transect.

Initial results reveal biogeochemical changes from the river mouth to the open sea, including salinity driven shifts of archaeal community, indicators of anthropogenic inputs, and of primary productivity. These findings will be discussed in the context of future research into source-to-sink characterization of the detected organic species, and the development of an integrated biogeochemical model for the Pearl River Estuary.