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揚子江河川水の同位体比および濁度の時空変化とその東シナ海への影響
Variabilities of isotope ratios and turbidity of the Yangtze River water and their impacts on the East China Sea

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Water discharge and suspension load of a river are potentially recorded in sediments in the drainage and / or the river mouth. Isotope composition of fossil calcareous skeletons and detrital provenance and flux reconstructed from the sediment samples could provide us useful proxies for paleoclimatic study. Sediment load from the Yangtze River to the East China Sea (ECS) from the delta to the Okinawa Trough have been widely used to reconstruct the East Asian summer monsoon (EASM) in the past since the water discharge from the Yangtze would be highly affected by monsoon rain, which could deliver much fresh water and sediment to the ECS. The past impact of fresh water from the Yangtze could be reconstructed from stable oxygen isotope signal recorded in the fossil calcareous skeletons found in the ECS sediments, which has also been used as proxy for EASM.

Theoretically, sediment provenance and its yield could be changed from time to time depending on the distribution of precipitation which would control the balance of water discharges from the tributaries. Change in the precipitation distribution also affects the water isotopic composition of each tributary and then the main stream of the Yangtze. Although such variability could change the end-member composition and concentration of the fresh water and sediment load provided to the ECS, paleoceanographic studies in this region have not considered well about the potential change in the basic condition. Therefore, we need to know the water isotope and sediment budget along the Yangtze main stream with regards to the inputs from its major tributaries in order to understand the potential effects from the change in the distribution of the EASM precipitation.

For this purpose, we have started a systematic sampling of the Yangtze River water to determine the stable oxygen and hydrogen isotope ratios and suspension loads as well as the ECS surface water since summer in 2011. We will report the seasonal variations of isotope and turbidity of the River water in comparison with the distribution of surface water mass in the ECS.

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