

Geochemical Identification of Small River Particle from the Oceanic Island and Its Deposition on the East China Sea Continental Shelf

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Huge quantity of suspended particles were exported from small rivers on oceanic islands to the ocean annually. With extremely high river suspended load, the quantity of small river particles could reach as much as those world large rivers draining a much greater area from the continent. However, questions were raised on where exactly these large quantity of sediment deposited after entering the ocean. Some reports favor deposition occurred on the continental shelf based on clay mineralogy while other preferred export to the slope region based on grain sizes variations. One other report stated the shelf region could be the final end deposition area, however, questioning the validity of river suspended load because higher river loads were derived from region subjected to intense human activities and farming on land. In order to better define small river particle deposition on shelf, we are using both geochemical and Pb-210 measurements to better define areas of recent deposition and possible sources of sediments. We have performed 34 stations Pb-210 measurements as well as measurement of 80 stations on compositions of metals (Al, Fe, Mn, Zn, Cu, Pb, Cd), organic carbon, carbonate contents and grain sizes. Burial fluxes were calculated to better define sediment deposition.

Our results show that three different types of sediments existed in the study region: 1) coastal China; 2) coastal Taiwan, and 3) midshelf sand. Coastal China area is characterized with high metal contents with mostly fine grained sediments; midshelf region with lower metal contents and rich in coarse-grained quartz sand. Coastal Taiwan sediments are relatively higher in carbonate content with silty sediments. High sedimentation rates were found near coastal China. Our data indicated that a large fraction of fine-grained sediments were not deposited near Taiwan but most likely off the shelf region.