

Re-evaluate particulate organic carbon flux in the East China Sea

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Fluxes of particulate organic carbon (POC) in the East China Sea (ECS) have been reported to decrease from the inner continental shelf towards the outer continental shelf. Recent research has shown that POC fluxes in the ECS may be overestimated due to active sediment resuspension. To better characterize the effect of sediment resuspension on particle fluxes in the ECS, rare earth elements (REEs) and organic carbon (OC) were used in separate two-member mixing models to evaluate trap-collected POC fluxes. The ratio of resuspended particles from sediments to total trap-collected particles in the ECS ranged from 82-94% using the OC mixing model, and 30-80% using the REEs mixing model, respectively. These results indicate that REEs may be better proxies for sediment resuspension than OC in high turbidity marginal seas because REEs do not appear to undergo degradation during particle sinking as compared to organic carbon. Our results reveal that REEs can be used as tracers to provide quantitative estimates of POC fluxes in marginal seas.

Keywords: carbon cycle, POC, East China Sea, sediment trap