

Planktonic Foraminiferal Isotopic Composition: Sediment Trap Results from the South China Sea

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This study reports particulate fluxes and isotopic compositions of planktonic foraminiferal shells collected from sediment trap moorings at the SEATS (18°N; 116°E) in the northern South China Sea. Sinking particles were collected from three consecutive deployments conducted from August 8, 2004 to February 16, 2005 (KK-3), from April 1, 2005 to October 10, 2005 (KK-4), and from November 15, 2005 to May 26, 2006 (KK5). Although three depths were moored for each deployment, only samples from the upper most level of sediment trap were adopted for this study (515 m, 519 m, and 661 m, respectively). Two common subtropical species, *Globigerinoides ruber* and *Globigerinoides sacculifer* were applied for this study. Generally secular variations of $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ between these two species are coherent with each other. Isotopic gradients for both $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ between two species are significant smaller in winter season (November to April) than summer (May to October). A relatively C^{13} -enriched of *G. sacculifer* interval during the first half of KK4 deployment (April 2005~June 2005) is corresponding with an anomalous particle mass flux peak by an order of magnitude. The contemporary $\delta^{18}\text{O}$ signal shows a progressive depletion trend, indicating a SST warming and/or a decreasing of salinity. In addition, foraminiferal isotopic data of four species from two deep-moored traps were examined. One was moored at 3451 m in 2004/2005 and the other one was at 3500 m in 2013/2014. Overall the $\delta^{18}\text{O}$ values fall in the same range for two moorings except for the significant enrichment of two shallow species in October, 2013. The $\delta^{13}\text{C}$ compositions of four species, however, are consistently depleted in 2013/2014 than those of samples collected in 2003/2004. Causes other than Suess effect need to be explored.