



## **Particulate transport processes from the Tokyo Bay to the Open Ocean**

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The Tokyo bay is one of the most eutrophicated embayment in the world with a high primary productivity. A large quantity of dissolved and particulate materials is exported out of the bay, but transport processes of particulate matter from the bay to the open ocean are not clear because of their complicated movements. In this study, a sediment trap was deployed at the mouth of the Tokyo Bay from 1995 to 2002, with time resolution of one week, in order to monitor the variability in quantity and composition of sinking particles flowing out of the inner Bay. In addition, monthly variations in composition of superficial sediments and suspended particles in the surface layer of the inner bay were measured to differentiate the biogeochemical processes associated with particle transformation and transport. The fluxes and organic compositions of sinking particles at the bay mouth suggested they are mainly originated from sediments in the inner bay but their seasonal variabilities are derived from the suspended particle in the surface layer of the inner bay. These origins of trapped particles indicated the transport process which particles produced in the inner bay sink and enter bay-wide bottom water circulation, admix with resuspended superficial sediments, drop off at the shelf edge with tidal movement. A closer analysis of the temporal variability revealed other transport processes which intrusion of warm water affected by Kuroshio occurs mixing of sediment in the bay and provides large fluxes of sinking particles at the bay mouth and freshwater supplied by heavy rainfall in summer appears to accelerate estuarine circulation and results in increased contribution of suspended particles from the surface layer of the inner bay. The rough estimate of the contribution rate of particle transport processes suggested 60% of sinking particles in the bay mouth by tidal movement and 20% by Kuroshio intrusion.