

## Estimation of Primary Production Derived Sinking Organic Matter in a Shallow Coastal Sea

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Sediment trap have popularly been used to reveal various phenomena occurring in the coastal sea and many variable findings have been obtained. However, some uncertain technical problems are still remaining. One of them is difficulty in separation of re-suspension and sinking particles. To give some answers to the problems, in 1999 and 2000, we carried out sediment trap experiments in Suo-sound, the Seto Inland sea, Japan. The purposes of our experiment are as follows; the origin of particulate organic matters collected by sediment traps in shallow coastal sea, and an estimation of primary production derived organic matter flux. Gross particulate organic carbon (Org.C) fluxes varied between 0.68 and 3.42 gC/m<sup>2</sup>/day. They showed significant correlation with mass fluxes and aluminum fluxes ( $r=0.91$  and  $0.92$ , respectively,  $p<0.001$ ,  $n=9$ ), however, independent of pigments fluxes such as chlorophyll *a* (Chl.*a*) fluxes. Because of aluminum can be regarded as a typical terrestrial derived element, it seemed that particulate organic matter collected by sediment traps were mainly consist of terrestrial and/or re-suspended particulate origin. In addition, it implies that contributions of primary production derived organic materials are relatively small in the gross Org.C fluxes. Org.C contents collected by the sediment trap particles were varied between 22.4 and 70.7 mgC/g dry weight that relatively high values when the small amount of gross Org.C fluxes were observed. The variations of Org.C contents were significantly correlated with pigments contents such as Chl.*a* contents, expressing as  $\text{Org.C (mg/g)}=76.5 \cdot \text{Chl.a (mg/g)}+26.0$  ( $r=0.95$ ,  $p<0.001$ ,  $n=9$ ). These results show that Org.C contents are strongly corresponding with phytoplankton derived organic materials and, moreover, a part of Org.C fraction that derived primary production can be estimated as Chl.*a* times a factor. In the present study, we estimated primary production derived Org.C fluxes by multiplying gross Chl.*a* fluxes by the mean Org.C:Chl.*a* ratio (76.5) assuming that Chl.*a* better reflects the newly produced organic material because of terrestrial and re-suspension effects are probably negligible. The estimated primary production derived Org.C fluxes varied between 0.31 and 0.76 gC/m<sup>2</sup>/day. They occupied  $35.1 \pm 21.2\%$  of gross Org.C fluxes, and which was considered about 60% of water column primary production that is preliminary estimated by Chl.*a* concentrations in the water column.