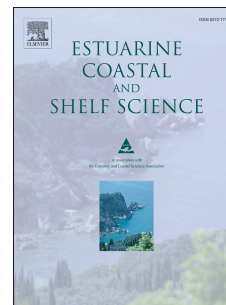


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# Sources of settling particulate organic carbon during summer in the northern Taiwan Strait

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**Abstract:** The settling of particulate organic carbon is significant for the vertical transfer and burial of organic carbon. Using time-series sediment traps, we collected settling particulate matter in the near-bottom layer (8 mab [meters above bed]) over eight continuous days in the continental shelf waters of the northern Taiwan Strait and analyzed the particulate organic carbon content. The observational results indicated that the deposition flux in the continental shelf waters during the summer in the north-eastern Taiwan Strait is  $0.86 \text{ g/m}^2\cdot\text{d} \sim 10.68 \text{ g/m}^2\cdot\text{d}$ ; the corrected deposition flux is lower than the measured value by approximately 4.5%~30.6%. The particulate organic carbon (POC) content and  $\delta^{13}\text{C}_{\text{org}}\text{‰}$  value are 0.589%~0.741% and -20.74‰~-22.61‰. The  $\delta^{13}\text{C}_{\text{org}}\text{‰}$  indicated that the settling particulate matter was primarily from marine sources at a contribution rate of 70%~88%. Settling particulate matter primarily came from the re-suspension of bottom sediment which accounted for 65%~85% of settling particulate matter. The rising thermocline and halocline near the bottom can strengthen the contribution of re-suspension to the settling particulate organic carbon.

**Key words:** particulate organic carbon (POC); sediment trap; re-suspension; Taiwan Strait

## 1. Introduction

Suspended particles found in marine environments have important ecological functions. The distribution and mass flux of suspended particles are important subjects in global flux research (e.g., LOICZ, JGOFS, GLOBEC). Suspended particles play an important role in both regional biogeochemical cycles and in global carbon cycle (Price, et al., 1999; Boyd & Trull, 2007; Honjo et al., 2008). There are two major approaches for the observation of suspended particle distribution and flux. In the first approach, large-scale *in situ* surveys or remote sensing techniques are used to

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