Taphonomic changes of diatom flora inferred from sediment trap and surface sediment samples taken in Omura Bay, western Japan

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Time-series samples were collected by sediment trap in Omura Bay, western Japan from June 1998 to June 1999. Diatom flora and annual flux of each taxon in these trap samples and surface sediments taken beneath the sediment trap were compared for investigating taphonomic changes of diatom frustules. The resulting flux of total marine planktonic diatoms in the sediment sample was 2.8 40f the annual sinking flux calculated from the trap samples, and varied among each taxon from less than 0.1 to 16.5. This fact suggests major decrease of the frustules possibly occurred at boundary zone of seawater and surface sediments. Therefore, we should consider taphonomic changes of the flora to quantify past diatom productivity and interpret paleoecological information from diatom fossils.

Time-series samples were collected by sediment trap at Nagayo-ura in Omura Bay, western Japan from June 1998 to June 1999. Diatom flora in these trap samples and surface sediments taken beneath the sediment trap were analyzed and compared each other for investigating taphonomic changes of diatom frustules. The diatom flora in the trap samples was mostly composed of marine planktonic taxa, so they were presumed to be autochthonous remains. On the other hand, benthic diatoms with no pigments in their frustules from the sediment samples were considered to be allochthonous remains transported by bottom water currents. Then annual fluxes of marine planktonic diatoms were derived from both of the trap and the sediment. The resulting fluxes in the sediment samples were much smaller than the annual sinking flux calculated from the trap samples. This investigation suggests major decrease of the frustules possibly occurred at boundary zone of seawater and surface sediments. The preservation rate (annual flux from the surface sediment sample/ annual flux from the trap sample) was estimated 2.8 0.000000or total marine planktonic diatoms, and varied among each taxon from less than 0.1 to 16.5. So the abundance and composition of the fossilized flora in the sediments are much different from the original one which lived in surface water. Therefore, we should consider taphonomic loss of diatom frustules to quantify past diatom productivity and interpret paleoecological information from diatom records in sediments. The sediment trap methods can greatly attribute to development of paleoenvironmental studies from demonstrating the present sedimentary environments.