Paleoceanographic implications of radiolarian fossil assemblages in sediments from shallow water depths

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Radiolarian fossil analyses have been usually carried out using materials from deep-sea sediment sample, which is expected abundant occurrence of their fossils. However, if the condition is better, radiolarian fossils can be preserved even in the near shore sediments from shallow water depths. Such radiolarian assemblages from the shallow waters provide important information about paleoceanographic condition.

Radiolarian fossils can be used as indicators of surface and deep-water environments because of their discrete living depths for each species. In the present day, radiolarian assemblages in the Japan Sea are characterized by warm water species in shallow depths related to the Tsushima Current, while the cold-water species dominates in intermediate and deep waters related to the Japan Sea Proper Water [JSPW]. However, there is no guarantee that their depth zonation was same as the present day from analysis based on deep-sea sediments. On the other hand, radiolarian assemblages in sediments from shallow depths must be composed of only shallow dwellers, and doesn't include deep dwellers. Therefore, it is expected that comparison of radiolarian assemblages between deep-sea and shallow water sediments provide us important information about the past depth zonation of radiolarians.

IODP Site U1427 is located at 330 m water depth in the Japan Sea off Tottori, southwestern Japan. In this site, abundance of *Cycladophora davisiana*, which is a deep dwelling species related to deeper than 1,000 m of the present JSPW, increased during some intervals including MIS-12. This means that habitat depth of this species had shifted to shallower than 300 m in these periods, probably related to declined ventilation with low salinity surface water.

Keywords: Coastal environment, Tsushima Current, Japan Sea Proper Water

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