

Lifestyle of adherent benthic foraminifers in the open ocean based on stable of isotope records

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Colonization of new habitat of benthic foraminifers is related to their diversion, survival strategies and evolutions. However their dispersal mechanisms are not well documented and still poorly understood. Last year, we reported a new lifestyle of neritic benthic foraminifera: They had lived on the stems of hydrozoan attaching to observational moorings in the Pacific Ocean. This is a new insight of dispersal strategy of benthic foraminifera to the open ocean. However there are no evidences whether benthic foraminifera developed their calcareous shells in the water column or not. Here we report the new evidences of benthic foraminiferal lifestyles based on micropaleontological and geochemical methods.

Physical and biogeochemical observational mooring systems (POPSS & Sediment trap) were deployed on July, 2012 at the Station S1 (30N, 145E, water depth: 5,900m). Moored periods were from July 2012 to July 2013 (1 year). Hydrozoan attaching on the both mooring systems were observed at the surface of the winch, sensor buoy, sediment trap and float at shallower depths (~200 m) and we could not observed hydrozoan at the 500 m water sediment trap. More than 300 individuals of benthic foraminifers attached of the surface of hydrozoan body. At least, fourteen living benthic foraminifers were identified under the microscope and faunal assemblages were basically same (calcareous, agglutinated, and sessile) with that of previous year. We performed the stable isotope analysis for these calcareous specimens including some porcellanic benthic and planktic foraminifera. As the results, oxygen and carbon isotopes of calcareous benthic foraminifera showed remarkably lighter and heavier values than planktic foraminifera, respectively. It suggested that calcareous benthic foraminifera in this study built their calcareous shells at shallower water depth than planktic species.

Keywords: adherent benthic foraminifera, Stable isotopes, Lifestyle, Hydrozoan