

Living Polycystine Radiolarian Vertical Distribution in Southern Japan

*Kenji Marc Raymond Matsuzaki¹, Takuya Itaki², Saiko Sugisaki²

1. Department of Earth and Planetary Science, Graduate School of Science, the University of Tokyo, 2. Geological Survey of Japan, AIST, Marine Geology Research Group / Institute of Geology and Geoinformation

Polycystine radiolarians are one of the planktic micro-organism (Protista), bearing siliceous test, widely distributed in the world ocean. Their geographic and vertical distributions have been investigated in many regions, such as tropical and equatorial area of the Atlantic Ocean, Gulf of Mexico, Western Equatorial Pacific and subarctic area of the Northwest Pacific. However, we have a lack of studies, which aim to clarify radiolarian vertical distributions in area influenced by the Kuroshio Current (Northwest Pacific). The Kuroshio Current (KC) is a western boundary current of the Pacific Ocean, which bifurcates from the northward flow of the North Pacific Equatorial Current, carrying warm and oligotrophic water to the northeastern Asia. The KC is well-known for be relatively thick (could reach few hundred meters of thickness depending on area) and thus have a consequent influence on the regional oceanography and distribution of marine organisms. Therefore, in this study, we propose to elucidate how the KC influence the radiolarian species vertical distribution analyzing plankton tow samples collected off southern Japan. We have investigated samples collected during the cruise KT08-10 of R/V Tansei-maru and cruise KS15-4 R/V Shinsei-maru in spring 2008 and 2015 respectively. During the KT08-10, plankton tow samples could be collected at five stations in the northern East China Sea (ECS), an area influenced by a branch of the KC the so-called Tsushima Warm Current, while during the KS15-04, plankton tows samples could be collected at three stations in the Kyushu Palao-Ridge, an area influenced by the KC. The deepest samples collected in ECS reach 700 m (near the seafloor of this area), while in the Kyushu Palao Ridge, we could collect samples until 3000 m. In both area, the surface water is characterized by subtropical species such as *Tetrapyle circularis* group and *Didymocyrtis tetrathalamus*. However, colonial radiolarians seem to be more abundant in the Kyushu Palao Ridge. The sub-surface of the ECS is characterized by high abundances of *Eucecryphalus* sp. (200-300 m). However, the abundances of this species are much lower in the Kyushu Paleo Ridge, inferring that a *Eucecryphalus* sp. likely suggest sub-surface water proper to the ECS. For these water depths (200-300 m), *Pterocorys carnitatum* dominate the assemblage in Kyushu Paleo Ridge. *Pterocorys* group is generally associated to the sub-surface of the North Pacific Subtropical Gyre, so we may speculate that in Kyushu Paleo Ridge we have some influence of the Subtropical Gyre. Intermediate to deep-water depths are characterized by relatively high abundances of *Cycladophora davisiana* in the Kyushu Paleo Ridge, while this species is absent in the ECS. Few factors may be considered such as the depth of the seafloor in the ECS, and provincialism.

Keywords: Radiolaria, Vertical Distribution, Kuroshio Current