Radiolarian assemblages from surface sediments of the Northwestern Pacific Ocean

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The western margin of the North Pacific Ocean is characterized by the influence of the Kuroshio Current, which transport warm and saline water from the lower latitude and also by the Oyashio Current, transporting cold and less saline water from the subarctic regions. Near the Sanriku coast (Tohoku, Japan), both currents are mixed causing high productivity. Polycistine radiolarians are siliceous skeleton-bearing planktic microorganism, widely distributed in the world ocean. Their geographic distributions have been well documented in the North Pacific, where their fossils preservations in the deep-sea sediments are very high. Past studies in the North Pacific show that radiolarian species are very sensitive to the changes in oceanographic conditions such as temperature and salinity (e.g. Kamikuri et al., 2008).

In this study we propose to focus on the impact of the Kuroshio and Oyashio Current on the radiolarian distributions in the western margin of the North Pacific Ocean. In this context, we have analyzed 78 surface sediment samples collected from the coast off Okinawa Islands to the southern Sea of Okhotsk by the cruises of the Geological Survey of Japan. The samples were treated with H₂O₂ and HCl in order to remove organic and carbonate matters. Then the samples were sieved using a 45 µm screen before to be mounted on microscopic slides. We have counted 300 to 600 specimens per samples. As a principal result, the area from the coast off Okinawa Islands to off Bōsō Peninsula is characterized by high abundances of *Tetrapyle ocatacantha* group, *Didymocystis tetrathalamus* and *Phorticium pylonium/polycladum* group, while the assemblage in the southern Sea of Okhotsk is characterized by high abundances of *Antarctissa?* sp.1 and *Rhizoplegma boreale*.

On the other hand, the radiolarian assemblages of Sanriku coast is characterized by high abundances of *Rhizosphaera medianum*. In order to clarify the geographical distributions of the important radiolarian species in the studied area, we have also conducted multivariate factor analysis on the radiolarian species presenting relative abundance higher than 1 percent of the total assemblage, which vertical distributions are well known. We obtained three dominant groups. The most important group (factor-score 1), is characterized by high abundances of subtropical species (e.g. *Tetrapyle ocatacantha* group and *Didymocystis tetrathalamus*). This factor-score is likely related to high sea surface temperature.

Reference: