

# Evolution of the bottom water ecological condition in the northern East China Sea during the last 400 kyr inferred from relative abundances of *Cycladophora davisiana* (IODP Exp. 346 Site U1429)

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*Cycladophora davisiana* Ehrenberg is an extant polycystine radiolarian species. This species is cosmopolitan, however, its relative abundance rarely exceeds 5% of the total assemblage, excepting the Sea of Okhotsk and its adjacent area of the North Pacific, where its relative abundance reach 40% of the total assemblage. In the North Pacific, *C. davisiana* lives at intermediate water depths, in the so-called North Pacific intermediate water (NPIW), formed by the subsidence of low-salinity and cold waters from the Okhotsk Sea. Higher abundance of *C. davisiana* is generally observed in low-salinity, cold and well ventilated water of the Bering Sea and the Okhotsk Sea.

On the other The East China Sea (ECS) is a marginal sea influenced by warm-oligotrophic water of the Kuroshio Current (KC) and discharges of fresh water from the Yangtze River especially during summer. These two oceanographic features are likely paced by the East Asian summer/winter Monsoon system. This sea is highly sensible to the glacio-eustatic sea level variation as most of its superficies lies above a continental shelf. Therefore, the reconstruction of the paleoceanography of this area for the Pleistocene is interesting for estimate how such sea-level variations influenced a shallow marginal sea.

During Integrated Ocean Drilling Program (IODP) Expedition 346, cores were retrieved from the ECS (Site U1429), and preliminary data show that radiolarian were abundant and well preserved (Tada et al., 2015). While *C. davisiana* is absent and/or have a relative abundance lower than 1% in surface sediment of this area, the reports of IODP Exp. 346 showed that its abundance exceeds 5% for older periods. Therefore, in this study we have analyzed changes in *C. davisiana* relative abundances from sediment cores retrieved at Site U1429 to discuss the meaning of this increase. Based on recent age-depth model of Site U1429, drastic changes in *C. davisiana* relative abundances occurred at ca. 150 ka (mid Marine Isotopic Stage 6). According to recent studies, *C. davisiana* inhabit the bottom water of the northern ECS and higher abundances of *C. davisiana* infer oxygen richer environment. Therefore, our data suggest that the period between 0 and 150 ka was characterized by poorly oxygenated bottom water, while during the period between 150 and 400 ka, the bottom water was likely richer in oxygen.

Keywords: East China Sea, Bottom Water, Primary Productivity, *C. davisiana*