

Radiolarian faunal changes since the late Early Miocene in the eastern equatorial Pacific Ocean (ODP Sites 845 and 1241)

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The purpose of this study is to reveal quantitative changes of radiolarian faunal assemblages and their flux to the sea floor since the late Early Miocene in the eastern equatorial Pacific Ocean (ODP Sites 845 and 1241), and to discuss the relationship between radiolarian faunal changes and paleoceanographic changes in the tropical regions.

Sediments recovered from these sites are predominantly nannofossil ooze with planktonic foraminifers, well-preserved radiolarians and diatoms. 184 morphotypes of radiolarians are identified at two sites. Because the low latitude species commonly occurred at the two sites, the low latitude Cenozoic zonation of Sanfilippo and Nigrini (1998) is adopted. The geomagnetic time scale of Ogg and Smith (2004) has been applied throughout this study.

The studied sequence was divided into 14 zones from the RN16 to RN4 Zones at Site 845, and 12 zones from the RN17 to RN6 Zones at Site 1241. The radiolarian faunal assemblages and their fluctuation pattern in relative abundance of major species are very similar between the two studied sites. The dominant species are *Stichocorys delmontensis*, *S. peregrina*, *Didymocyrtis antepenultima*, *D. penultima*, *D. tetrathalamus*, *Larcopyle buetschlii*, *Lithelius minor*, *Tetrapyle octacantha*.

Species richness, species diversity and equitability were relatively higher during the late Early Miocene to Early Pliocene. These indexes decreased since the Late Pliocene. Species diversity was controlled more by equitability fluctuations than by species richness. Five episodes of radiolarian faunal changes were identified based on the degree of overlap.

The most significant faunal turnover of radiolarians was marked at about 7 Ma. This faunal turnover coincides in timing with the positive shifts in oxygen isotope values of benthic foraminifera. Hence, our data suggests that the radiolarian faunal changes occurred in association with cooling episodes at the latest Miocene.