

Taxonomic study of the Miocene species *Paragloborotalia siakensis* at IODP Site U1338 in the Eastern Equatorial Pacific

Hiroki Okada^{1*}, Hiroki Hayashi¹

¹Interdisciplinary Graduate School of Science and Engineering, Shimane University

Paragloborotalia siakensis (LeRoy) is an important index species of the middle Miocene. The top occurrence of this species defines the upper boundary of Zone N.14 (Blow, 1969). However, many workers have regarded this species as a junior synonym of *Globorotalia mayeri* (Cushman and Ellisor) (e.g. Bolli and Saunders, 1982). Recently, Zachariasse and Sudijono (2012) examined many specimens from the type area of *P. siakensis* and re-examined both holotypes of *P. siakensis* and *G. mayeri* using SEM microphotography. They concluded that these two species should be distinguished from each other. Further re-examinations have been required to identify the biostratigraphic and paleoceanographic significance of each species.

The species identified as *P. siakensis* and *G. mayeri* occurs dominantly in Miocene sequences around the Eastern Equatorial Pacific (e.g. Kennett et al., 1985). In this study, we conducted a taxonomic study of *P. siakensis* obtained from IODP Site U1338 in the Eastern Equatorial Pacific by means of morphometric methods. According to our results, the population from Site U1338 should be compared with the holotype of *P. siakensis*. In contrast, no specimen similar to the holotype of *G. mayeri* was detected.

We also investigated temporal size changes of *P. siakensis* from the middle Miocene interval of Site U1338. The maximum diameter of *P. siakensis* shows significant reducing ("dwarfing" of Witting, 1997) at cooling intervals inferred by alkenone and isotope data (Rousselle et al., 2013). Several planktonic foraminiferal species show such dwarfing patterns (Wade and Olsson, 2009) induced by environmental stress. It is possible to say that dwarfing of *P. siakensis* at Site U1338 might be induced by a shallowing of the thermocline in the Eastern Equatorial Pacific toward La Nina-like conditions.

Keywords: planktonic foraminifera, Integrated Ocean Drilling Program, Eastern Equatorial Pacific, biostratigraphy, taxonomy