

Faunal changes of benthic foraminifera to the mid-Oligocene Oi events in the eastern equatorial Pacific (Leg 199)

Hiroyuki Takata[1]; Ritsuo Nomura[2]

[1] ReCCLE, Shimane Univ.; [2] Shimane Univ.

Deep-sea paleoceanographic condition during the late Paleogene varied considerably, under the influence of fluctuation in volume of the Antarctic ice sheets and of deep water formation in the Southern Ocean. Several glacial events with stable oxygen isotopic shift (Oi events) occurred during the Oligocene. Development of the gateways in the Southern Ocean have been thought to relate to these glacial events, whereas recent studies suggested that million yr. - order orbital forcing also affected not only such glacial events but also the carbonate compensation depth or surface carbonate production in the eastern equatorial Pacific (e.g. Coxall et al., 2005; Wade and Palike, 2004). Sites 1218 (4826m water depth) and 1219 (5063m water depth) of ODP Leg 199 in the East Equatorial Pacific Ocean provide the opportunity for conducting a detailed study of faunal change, because the drilled sections contain well-preserved foraminifera in almost all samples. The objectives of our study are to investigate the Oligocene faunal succession of benthic foraminifera and to consider their relation to paleoceanographic changes at abyssal depths in the East Equatorial Pacific Ocean.

Based on factor analysis, three factor assemblages were recognized. The Factor 2 assemblage is characterized by *Cibicidoides* spp. and *Oridorsalis umbonatus*, and was common in the lower part of the lower Oligocene, whereas the Factor 1 assemblage, characterized by *Nuttallides umbonifer*, was abundant mainly in the upper part of the lower Oligocene and the upper Oligocene. The Factor 3 assemblage, dominated by *Pseudoparrella exigua*, was common around the Oligocene / Miocene boundary. The Factor 1 and 2 assemblages show several relatively short-term fluctuations throughout the Oligocene, mainly associated with Oi events (Miller et al. 1991; Pekar et al., 2002 [Geology]). The Factor 2 assemblage occurred abundantly around Oi1b and Oi2, whereas peak abundances of the Factor 1 assemblage were observed around Oi2a, Oi2b and Oi2c. Thus, relatively short-term fluctuations of these benthic foraminifera at abyssal depth of the eastern equatorial Pacific Ocean are likely related to Oi events. Species diversity shows fluctuations with these Oi events. *N. umbonifer*, the dominant species of the Factor 1 assemblage, is related to Southern Ocean deepwater flow and / or carbonate undersaturation of deep waters. Therefore we suggest that changes in the characteristics of the deep watermass may be responsible for such relatively short-term fluctuations in foraminiferal assemblages.