
Late Quaternary Coccolith Records in the South China Sea and East Asian monsoon dynamics

Xiang Su^{*1}, Luc Beaufort², and Chuanlian Liu

¹Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE) – Aix-Marseille Univ, CEREGE, UMR 6635, 13545 Aix en Provence cedex 4, France, CNRS, CEREGE, UMR 6635, 13545 Aix en Provence cedex 4, France, IRD, CEREGE, UMR 161, 13545 Aix en Provence cedex 4, France, Collège de France, CEREGE, 13545 Aix en Provence cedex 4, France – Europôle de l'Arbois, BP 80, 13545 Aix-en-Provence Cedex 04, France, France

²Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE) – Aix-Marseille Univ, CEREGE, UMR 6635, 13545 Aix en Provence cedex 4, France, CNRS, CEREGE, UMR 6635, 13545 Aix en Provence cedex 4, France, IRD, CEREGE, UMR 161, 13545 Aix en Provence cedex 4, France, Collège de France, CEREGE, 13545 Aix en Provence cedex 4, France – Europôle de l'Arbois, BP 80, 13545 Aix-en-Provence Cedex 04, France, France

Résumé

Coccolithophorid assemblages over the past 260 ka were analyzed in three IMAGES cores (MD05-2901, MD05-2904 and MD05-2897) from the western, northern and southern South China Sea (SCS). The results revealed changes in the predominant coccolith species with a resolution averaging ~ 0.2 kyr since the Late Quaternary. The upper ocean structure fluctuations were reconstructed using the abundance of the coccolithophore *Florisphaera profunda*. The nutricline in the SCS showed relatively strong temporal and spatial variability. On the long-term scale, the nutricline depth in the SCS decreased from 260 to 70 ka. After 70 ka, the nutricline became shallower gradually. On the glacial-interglacial scale, the variations in nutricline depth show different patterns in different area. In the northern SCS, the nutricline was deep during glacial periods and shallow during interglacials, while it was similar with the southern SCS only except MIS 7. In the western SCS, the glacial-interglacial variations were not significant. Spectral analysis of the relative abundances of *F. profunda* shows similar trends at the three sites. In addition to the obliquity (40ka) and precession (23,19ka), we also find a 30 ka cycle. The coccolith records of the three cores were compared with ODP Site 1143 in the southern SCS and MD97-2141 in the Sulu Sea to discuss the possible causes of the variations in coccolith assemblages and upper ocean structure. We suggested that the East Asian Winter Monsoon dominates the nutricline variations in the northern and southern SCS. However, the western upwelling area might be controlled by the both of summer and winter monsoon.

^{*}Intervenant