

## Surface productivity variations based on coccolithophore assemblages in the Santos Basin during the last 35,000 years

**Marcus V. Hirama, Giulia S. Molina, Felipe A. L. Toledo, Karen B. Costa**

Oceanographic Institute of the University of São Paulo, São Paulo, Brazil; marvinhir@gmail.com, giuliamolina@usp.br, ftoledo@usp.br, karen.costa@usp.br

In order to estimate marine primary productivity (PP) in the near-surface environment and relate it to variations in the major elements (Ti, Fe, Ca, Al, K) over the last 35,000 years, this work involved a quantitative analysis of coccolithophore species from the marine sediment core GL-1109, from the continental slope of the Santos Basin at a depth of 848 m. The Ti/Ca, Fe/Ca, Fe/K and Al/Si results showed that PP had a correlation with these ratios during periods of low sea level, but did not seem to be related after the last marine transgression. During a glacial period, PP was strongly influenced by species such as *Emiliana huxleyi* and *Gephyrocapsa* spp. During MIS 2, *Gephyrocapsa* spp. reached greater abundances. During MIS 3 and the first half of MIS 1, the decrease in major-element ratios influenced the decrease in PP. In addition, we identified some coccolithophore assemblages. The assemblage differences were based on greater or lower relative abundances of species in glacial and interglacial periods. The typical glacial assemblage contained a greater abundance of *Gephyrocapsa* spp., *Syracosphaera* spp., *Rhabdosphaera* spp., *Pontosphaera* spp. and *Tetralithoides quadrilaminata*, among others. *Tetralithoides quadrilaminata* occurred only during a glacial period. A typical interglacial assemblage primarily contained *E. huxleyi*, *Umbilicosphaera* spp., *Umbellosphaera* spp. and *Florisphaera profunda*. Finally, we attempted to correlate the variation in coccolithophore species to the Younger Dryas and Heinrich 1/2/3 climatic events. However, the taxa did not present a clear pattern of abundance variation during these events.