

Paleoceanography for the last 772ky in the western South Atlantic by means of calcareous nannofossils

Felipe A.L. Toledo

Oceanographic Institute of the University of São Paulo, LaPAS – South Atlantic Paleoceanography Laboratory, São Paulo, Brazil; ftoledo@usp.br

Juliana P. Quadros

Oceanographic Institute of the University of São Paulo, LaPAS – South Atlantic Paleoceanography Laboratory, São Paulo, Brazil; jupq82@gmail.com

Edmundo Camillo, Jr.

Oceanographic Institute of the University of São Paulo, LaPAS – South Atlantic Paleoceanography Laboratory, São Paulo, Brazil;

Edmundocamillo@gmail.com

Karen B. Costa

Oceanographic Institute of the University of São Paulo, LaPAS – South Atlantic Paleoceanography Laboratory, São Paulo, Brazil; karen.costa@usp.br

Changes in paleoceanography and paleoproductivity patterns from MIS 18 to the Holocene were identified by analyzing coccolithophore assemblages from core KF-18, which is located on the Brazilian continental margin. During the Mid-Brunhes Event (MBE) (MIS 15-9), assemblages were characterized by higher nannoplankton abundances, lower diversity, and a bloom of the opportunistic genus *Gephyrocapsa* (mainly *G. caribbeanica*). Variations in coccolithophore abundance have been related to glacial–interglacial cycles, as well as to glacial terminations when the greatest calcium carbonate concentrations occurred, and several species showed higher relative abundance values. Our study suggests that there was an increase in productivity during terminations and increased percentages of *Coccolithus pelagicus* at MIS 8-6. *Coccolithus pelagicus* sharply decreased around 170ky, which was concurrent with abundant occurrences of *Emiliania huxleyi*, *Cyclcoccolithus leptoporus*, *Rhabdosphaera* spp., *Syracosphaera* spp., and *Umbilicosphaera*

spp. *Coccolithus pelagicus* is regarded as a good indicator of cold and nutrient-rich waters, while *Rhabdosphaera* spp., *Syracosphaera* spp., and *Umbilicosphaera* spp. are more related to warm and oligotrophic environments. These changes in the coccolithophore record may be linked to the displacement of the South Atlantic High (SAH) pressure system. Changes in the relative impact of different water masses are strongly dependent upon the regional wind field, which affects the upper-level circulation mainly through latitudinal displacement of the bifurcation of the South Equatorial Current. In the study area, this displacement impacted the Brazil Current's (BC) strength and the intensity of the upwelling regime. Periods of reduced productivity mainly occurred during a strengthened BC, when the SAH was above the study area, and peak productivity occurred when the atmospheric cell moved northward, which probably intensified the penetration of polar advections and favored the influence of colder, nutrient-rich water.