

Calcareous nannoplankton thanatocoenosis distribution in the southwestern Atlantic Ocean: New evidence in the western Malvinas Current gyre

Lucia Rivas, Juan Pablo Pérez Panera

CONICET-YPF Tecnología, 1923 Berisso, Buenos Aires, Argentina; lucia.rivas@ypftecnologia.com, juan.p.panera@ypftecnologia.com

Marta Alperin

National University of La Plata, Faculty of Natural Sciences and Museum, 1900 La Plata, Buenos Aires, Argentina; alperin@fcnym.unlp.edu.ar

Gabriela Cusminsky

National University of Comahue, CONICET – INIBIOMA, 8400 San Carlos de Bariloche, Río Negro, Argentina; gcusminsky@gmail.com

The coccolith thanatocoenoses were qualitatively and quantitatively analysed from 34 surface samples collected during a north-south transect along the Argentine continental margin. The aim of this study was to identify biogeographical distribution patterns in relation to actual surface-water environmental parameters, such as temperature, nutrient availability and salinity. A preservation index based on the differential dissolution between robust *Calcidiscus leptoporus* versus delicate *Emiliana huxleyi* and *Gephyrocapsa* small spp. was applied, and we estimated that there was no carbonate dissolution in the study region. In general, *E. huxleyi* is the most abundant species in the study area. The cluster analysis results, based on the relative abundance of *E. huxleyi*, *G. muelleriae*, *C. leptoporus* and *Gephyrocapsa* small spp., revealed two main groups (A and B), separated at 14 units of linkage distance. Group A, which is restricted to off the southwestern Malvinas Islands (53°S), is dominated by *G. muelleriae* (>57%). Group B, which is dominated by *E. huxleyi* (>85%), is distributed in two geographical areas: 1) in the south (55°S, near Sloggett Canyon); and 2) in the north (between 40°S and 47°S). These two groups reflect the characteristics of the overlying surface waters, and their distributions appear to be controlled by temperature and nutrient availability. Moreover, Group A, which is dominated by *G. muelleriae*, is geographically constrained to the previously-proposed Malvinas Current gyre area. *Gephyrocapsa muelleriae* has a strong negative correlation with temperature and salinity, and a positive correlation with nutrients. Our results are consistent with the existence of a western Malvinas Current gyre that transports cold, nutrient-rich Antarctic waters and upwells near the western Burdwood Bank area.