

ALESSANDRA ASIOLI (\*) & LEONARDO LANGONE (\*)

## RELATIONSHIP BETWEEN RECENT PLANKTIC FORAMINIFERA AND WATER MASS PROPERTIES IN THE WESTERN ROSS SEA (ANTARCTICA)

**ABSTRACT:** ASIOLI A. & LANGONE L., *Relationship between recent Planktic Foraminifera and water mass properties in the Western Ross Sea (Antarctica)*. (IT ISSN 0391-9838, 1997).

Planktic foraminifera collected in floating traps were studied in two stations of the Western Ross Sea. The assemblage is composed of one species (*Neogloboquadrina pachyderma*) of which two morphs were distinguished: the first with thin and lobate test constitutes the juvenile stage and is present in the uppermost levels of the water column. The other morph has heavily encrusted test and is represented by a small number of specimens occurring at depth greater than that of the chlorophyll maximum. The depth of the chlorophyll maximum seems to be responsible for the foraminiferal abundance peak, thus confirming the hypothesis that this species is linked to the chlorophyll maximum. We found no relationship between foraminifera distribution and the physical parameters of the water column emerged, or with the biogenic fluxes. Intrusions of modified Circumpolar Deep Water are shown by the presence of dextral coiling specimens.

**KEY WORDS:** Planktic foraminifera, Floating traps, Chlorophyll, Biogenic fluxes, Ross Sea.

**RIASSUNTO:** ASIOLI A. & LANGONE L., *Relazione tra i Foraminiferi planctonici recenti e caratteristiche delle masse d'acqua nel Mare di Ross occidentale (Antartide)*. (IT ISSN 0391-9838, 1997).

Sono stati studiati i Foraminiferi planctonici presenti in trappole flottanti in due stazioni del Mare di Ross occidentale. Essi sono rappresentati unicamente da due morfotipi della specie *Neogloboquadrina pachyderma*: quello con guscio sottile e lobato costituisce lo stadio giovanile e si trova nei livelli più superficiali della colonna d'acqua; quello pesantemente incrostato costituisce lo stadio adulto ed è rappresentato da pochi individui a profondità superiori al massimo di clorofilla. La profondità del massimo di clorofilla sembra essere responsabile dei picchi di abbondanza degli individui, confermando l'ipotesi che tale specie è legata al massimo di clo-

rofila. Non è stata notata una correlazione tra la distribuzione dei foraminiferi con i parametri fisici della massa d'acqua, né con i flussi biogenici. Le intrusioni di Circumpolar Deep Water modificata sono testimoniate dal ritrovamento di individui dextrorotanti.

**TERMINI CHIAVE:** Foraminiferi planctonici, Trappole flottanti, Clorofilla, Flussi biogenici, Mare di Ross.

### INTRODUCTION

In polar marine environments, seasonal advance and retreat of sea ice is thought to control the phytoplankton blooms and to play a key role in maintaining high productivity (e.g., Smith & Nelson, 1985). Although the Ross Sea (Antarctica) display unusually high levels of new production (Nelson & alii, 1996), recent results show that the annual production is low, and intense blooms are episodic and limited in time. The occurrence of such episodes is more likely early in the austral summer, in connection with the seasonal sea ice melting. In this period, marginal ice zones are subject to continuous modifications in position, length and shape. The ice melting produces a stratification of the water column that triggers the phytoplankton bloom with the enhanced availability of light and nutrients (Smith & Nelson, 1985).

The purpose of the Italian project Rossmize is to characterise the temporal and spatial changes of primary production, biogenic export fluxes and seabed accumulation along a N-S transect in the Ross Sea during the seasonal sea ice retreat. Nutrient concentration, light attenuation and zooplankton distribution were also studied to provide a better understanding of their role in controlling the spring algal bloom. In this context, we deployed at stations 11c and 15c (fig. 1) a sediment trap array, floating for 12-13 hours, to measure fluxes of the major biogenic components in the upper water column. Here we discuss data relative to abundance and composition of the foraminifera assemblage collected by floating traps, relating the results to the characteristics of the water masses and biogenic fluxes.

(\*) Istituto di Geologia Marina del Cnr, via P. Gobetti 101 - 40129 Bologna, Italy.

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