



## **Living planktonic foraminifera as indicators of hydrologic conditions in the Ross Sea (Antarctica)**

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Knowledge on distribution, life cycle and habitat of living planktonic foraminifera is an essential prerequisite for understand and interpret environmental signals preserved within the sedimentary record.

In this study, we present data on live assemblages collected in the Southern Ocean. Plankton tows and hydrographic measurements were taken in the upper 250 m of the water column at different sites in the Ross Sea (site B) and at the Polar Front of the Pacific Ocean (site O) during austral summers 1998-2003, onboard the R/V *Italica* (BIOSESO and ABIOCLEAR Italian Projects).

During micropaleontological observations we discriminated between *N. pachyderma* dextral (d.) and *N. pachyderma* sinistral (s.). In addition for *N. pachyderma* s. we distinguished four morphs: the first one (A1) has a thickened test and depressed sutures; the second morph (A2) is represented by specimens characterised by a subspheric and heavily encrusted test; the third morph (B1) has a thin and lobate walled test; the fourth one (B2) represent the juvenile stage of *N. pachyderma* s. and is characterised by a smaller average size.

The microfauna collected in the Ross Sea (site B) is characterized by the dominance of *N. pachyderma* s. (morphs A1 and A2), whereas low occurrences of *Turborotalia quinqueloba*, *N. pachyderma* d. and *Neogloboquadrina dutertrei* were noted in the first 50 m of the water column. The water column at this station is characterised by

a marked and shallow stratification and a marked thermocline which seems to be a barrier for the distribution of the species along the water column.

The depth and the intensity of the Deep Chlorophyll Maximum (DCM) influence foraminiferal distribution: *N. pachyderma* s. shows abundance peaks at or just below the DCM while *G. bulloides* peaks above the DCM. Coiling direction of *N. pachyderma* seems to be not controlled exclusively by S.S.T: probably the two coiling types are different genetically.

At the ocean station (site O) the assemblage show increasing diversification: *T. quinqueloba*, *G. bulloides*, *N. pachyderma* d. and few specimens of *Globigerinita uvula* characterize the planktonic microfauna. There is a predominance of not encrusted morphs (B1 and B2).

At this station the mixed surface layer is deeper than in the Ross Sea (60-70 m), the pycnocline and the thermocline less marked.

Results document that diversity of planktonic foraminifera, number of specimens and variations in test morphology are related to regional differences in water properties (temperature, salinity, productivity, concentration of CO<sub>2</sub>).