Geophysical Research Abstracts, Vol. 8, 10580, 2006
SRef-ID: 1607-7962/gra/EGU06-A-10580

Surface distributions of foraminifera from Ross Sea (Antarctica): modern analogues for paleoenvironmental studies

C. Morigi (1); I. Pancotti (1); A. Sabbatini (1); M. Ravaioli (2); A. Negri (1)

(1) Dipartimento di Scienze del Mare, Università Politecnica delle Marche, Via Brecce Bianche, 60131 Ancona, Italy; (2) ISMAR-CNR, Via Gobetti 101, 40127 Bologna, Italy. e.mail: c.morigi@univpm.it

Foraminifera are major components of benthic communities in cold oceans as well as in the deep-sea. In these low-temperature environments, this group plays an important role in the initial breakdown of organic material at the sediment surface and in the cycling of organic carbon within the benthic community. Recent sediment samples collected during the austral summer 1997-98 and 2000-01, in the Ross Sea (63°-75° S, Antarctica) were analysed for the benthic foraminiferal content to study the microfaunal distribution patterns and ecological preferences. Analyses of living (Rose Bengal stained) and dead foraminifera were carried out in twelve surface sediment samples. The benthic foraminiferal assemblage has been evaluated using standard meiofaunal techniques and size fraction 63-150 and >150 micron was analysed; all the species were counted and identified. Standing stock and diversity were calculated for biocoenosis and compared with the results of tanatocoenosis. Agglutinated foraminifera, mainly multilocular forms in addition to the less commonly studied soft-shelled monothalamous foraminifera, dominate the living assemblage. Unilocular forms include spherical or flask-shaped agglutinated specimen, which are assigned provisionally to the family Saccamminidae and subfamily Psammosphaeridae. Unilocular species with agglutinated shells (Family Astrorhizidae) are particularly abundant in the central part of the studied area. The biocoenosis's standing stock is higher in the southern area from a minimum of 6.75 n/ml (bc 19; 593 m water depth) to a maximum of 48.2 n/ml (bc DI; 1213 water depth). Diversity is low (4 - 55 species per samples) whereas dominance is usually high in many samples where several species are represented by few specimens. In the southern area multilocular agglu-

tinated foraminifera dominate the dead assemblage, whereas in the northern area there is a prevalence of calcareous foraminifera. Our analyses allow distinguishing two areas characterised by different microfauna (living and dead): the northern area where the calcareous benthic microfauna prevails (Trifarina angulosa and Ehrenbergina glabra) and a southern area where agglutinated taxa dominate. Monothalamous foraminifera are abundant in the biocoenosis, of the southern area. We hypothesize that the two-fold distribution of the dead assemblage correspond to two different hydrographic settings, and in particular it reflects the depth of the calcite lysocline. In fact, in the southern area the dominance of agglutinated foraminifera suggests the presence of corrosive bottom water whereas the increase of calcareous taxa in the northern area point to a deepening of the level where carbonate dissolution becomes detectable.