Benthic foraminiferal density and faunal composition in the Southern Adriatic Sea The relation with the expected downward organic flux

H.C. de STIGTER, F.J. JORISSEN[1] and A.M. BORSETTI[2]

[1]Department of Geology, Institute of Earth Sciences, University of UTRECHT **(The Netherlands)**
[2]Istituto di Geologia Marina del CNR, BOLOGNA **(Italy)**

Assemblages of living (Bengal rose stained) benthic foraminifera were examined from the top 1cm of sediments from the shelf, slope and deep basin of the Southern Adriatic Sea, recovered in box-cores during cruise AD-91 of the Istituto di Geologia Marina of Bologna, in March 1991.

Over the depth-gradient covered by sampling, ranging from 146 m to 1200 m waterdepth, some remarkable changes can be noticed in the overall abundance and composition of benthic foraminiferal fauna's, which may reflect changes in the quantity and quality of the supply of organic food to the benthic ecosystem.

An overall decrease is observed in the abundance of living benthic foraminifera going from the shelf down into the deep basin. Assuming that the abundance of epifaunal foraminifera is proportional to the flux of organic food arriving at the seafloor, which flux according to SUESS (1980) is an inverse function of waterdepth (z), we tested if benthic foraminiferal abundance can be described as a function of 1/z.

The overall decrease in foraminiferal abundance with depth did not match the expected 1/z relationship. After subdividing the fauna in a group of non-opportunistic calcareous perforate taxa, a group of opportunistic calcareous perforate taxa, and a group of arenaceous and miliolid taxa, however, a fairly good correspondance was found between predicted and observed foram abundances for the first-mentioned group (Fig. 1). Notable discrepancies are seen on the steepest part of the basin slope, which has smaller populations than expected, and at the base of the slope, which has larger than expected populations. This phenomenon may be explained by downslope displacement of organic matter.

Opportunistic calcareous perforate taxa (among which species of *Bolivina*, *Bulimina* and *Uvigerina* are dominant) are most abundant on the shelf, where they compose almost one-third of the total fauna, but decrease rapidly both in absolute and relative number in the deeper water. It may be speculated that these taxa thrive on the short bursts of fresh organic detritus available in the shallow shelf waters.

The group of arenaceous and miliolid taxa, on the other hand, becomes increasingly dominant towards deeper water, and notably the epifaunal tree-like *Rhizammina* is very abundant at the base of the slope and in the deep basin. This clearly reflects the commonly observed shift from predominantly deposit-feeding foraminiferal faunas in shallow waters where food abounds to predominantly suspension-feeding faunas in deeper waters with a more scarce food regime (JONES and CHARNOCK, 1985).

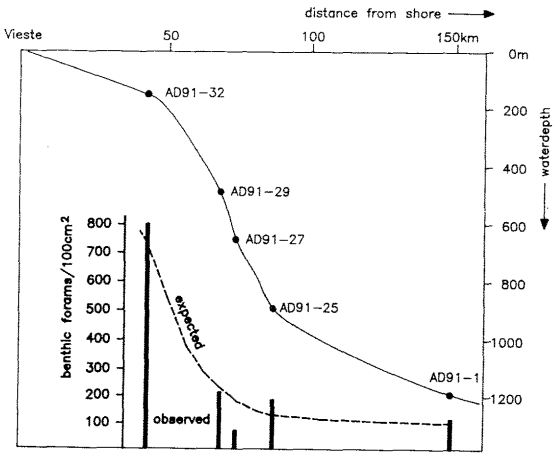

Figure 1. Bathymetric profile of the studied depth-transect, with box-core sites indicated. Bars below sites indicate the observed abundance of non-opportunistic calcareous perforate foraminifera, dashed line represents the expected abundance.

REFERENCES

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