DELTA FORAMINIFERAL ASSEMBLAGES: A COMPARISON AND THEIR VALUE IN PALEOENVIRONMENTAL RECONSTRUCTIONS

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Introduction

In order to perform accurate paleoenvironmental reconstructions a deep knowledge of foraminiferal assemblages and their ecological traits is certainly needed. In fact, benthic foraminifera are a group of organisms which is useful to understand the past environment, being sensitive because they connect the surface and the marine environment. Foraminifera are much more numerous than planktic species and can provide high level of palynology. Benthic foraminifera are excellent proxies in deep-sea deposits because they show a typical richness and diversity with the bottom depth: the oxygen availability and the water current (nature and intensity) are fundamental for the distribution of the different foraminiferal species. All the environmental changes, due to changes in the marine environment influenced through time.

A comparison between benthic foraminiferal assemblages from the Ombrone River delta (Tuscany) and the Po River delta (Liguria) during the last glacial period, the Transgression of the Adriatic Sea (7500 B.P.) and the Posidonia Oceanica belt (2000 B.P.) respectively using the same statistical technique (Correspondence Analysis) allowed us to confront these assemblages.

Discussion

The CA (Fig. 2) carried out on the samples of the Ombrone River shows three clearly defined groups of species, the Yoldia evansi Assemblage (19%), which shows a negative correlation with V. 1, and a Posidonia Oceanica Assemblage (81%). The samples of the Posidonia Oceanica Assemblage show a positive correlation with the environmental variables and a modern oceanic vegetation. The Posidonia Oceanica Assemblage is characterized by the presence of X. echinata, which is a characteristic species of Posidonia Oceanica. The presence of Posidonia Oceanica is indicative of the deposition of sediments in the Ombrone River delta.

The CA (Fig. 3) carried out on the samples of the Po River shows two clearly defined groups of species, the Yoldia evansi Assemblage (61%), which shows a positive correlation with V. 1, and a Posidonia Oceanica Assemblage (39%). The samples of the Posidonia Oceanica Assemblage show a positive correlation with the environmental variables and a modern oceanic vegetation. The Posidonia Oceanica Assemblage is characterized by the presence of X. echinata, which is a characteristic species of Posidonia Oceanica. The presence of Posidonia Oceanica is indicative of the deposition of sediments in the Po River delta.

The similarity between the two assemblages consists in the shallow depth and in the presences of environmental variables and macrofossils. The main difference consists in the fact that the Posidonia Oceanica assemblage shows a significant increase in the abundance of Posidonia Oceanica in the Ombrone River delta.

The ecological Assemblage mainly consists of Yoldia evansi (13.3-15.6% with X. echinata, which is a characteristic species of Posidonia Oceanica). The presence of Posidonia Oceanica is indicative of the deposition of sediments in the Ombrone River delta.

Concluding remarks

Although the catchment basin of the Po River and the Ombrone River are very different when it comes to environmental factors, the comparison between the two samples shows very similar results. The main difference consists in the fact that the Posidonia Oceanica assemblage shows a significant increase in the abundance of Posidonia Oceanica in the Ombrone River delta.

The presence of Posidonia Oceanica is indicative of the deposition of sediments in the Ombrone River delta. The presence of Posidonia Oceanica assemblage indicates a shallow water environment, typical of the Ombrone River delta.

Materials and Methods

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