

**A benthic foraminiferal record documenting the onset of eutrophication
in the Northern Adriatic Sea**

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The vertical distribution of benthic foraminifera in a core in front of the Po delta (Fig. 1) has been studied in detail. According to our age model, based on ²¹⁰Pb and ¹³⁷Cs analyses of a core on the same location, this core documents the last 160 years. The isotope profiles further show that sediment mixing is largely limited to the top cm of the sediment, suggesting that this core should provide an extremely detailed record.

Benthic foraminiferal patterns and grainsize analysis indicate a number of substantial changes in sedimentation rate, food and oxygen availability in the benthic ecosystem. Changes occurring at about 1840 and 1880 can be attributed to man-induced changes in the main outflow canals of the Po river. The first led to an important reduction of the marine vegetation cover which had been present up to that date. The second one resulted in the present-day situation in which the Po outflow is passing the studied core locality closely.

From 1900 onwards, the benthic foraminifera indicate a steadily increasing nutrient load. This trend is interpreted as the effect of the anthropogeneous eutrophication, due to agriculture and waste water disposal. A marked faunal transition around 1930 indicates the intensification of eutrophication.

Around 1960 the first signs of an increasing importance of anoxic events can be recognized in the benthic record. The faunal changes in the last decade, which were described to changes in preservation potential, indicate that more intense or more prolonged anoxia started about 10 years ago, and that the ecological health of the northern Adriatic is still in decline.

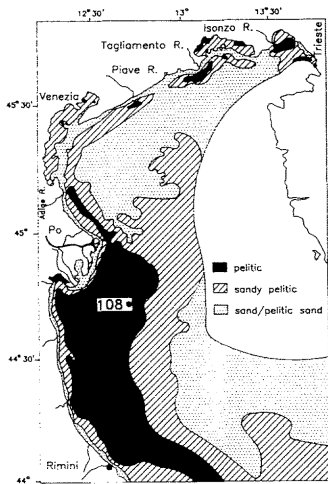


Fig. 1.- Location of core station 108 (water depth 32 m), plotted on a simplified surface sediment map (after BRAMBATI, CIABATTI, FANZUTTI, MARABINI and MAROCCO (1983): A new sedimentological textural map of the northern and central Adriatic Sea. *Boll. Oceanol. Teor. Applic.*, 4, 267-271).