

Heavy metals in a shallow estuary of the Venice Lagoon

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The understanding and description of the processes which occur in shallow water estuaries is a question of fundamental importance to evaluate the environmental impact of pollutants transported by rivers into the Lagoon of Venice. The contribution of pollution from rivers and channels flowing into the lagoon is significant and it occurs in zones where water exchange due to tides is less with respect to other parts of the lagoon.

A study of the chemical-physical characteristics of the water-sediment environments was made in the estuarine area of the most polluted river flowing into the northern lagoon. The scope of the research is to give a complete explicative picture of environmental conditions and the definition of chemical and physical mechanisms which determine the transport, sedimentation, mobility and diffusion of heavy metals in shallow brackish water.

The entity and evolution of the saline field generated by tide in the estuary are observed through temperature and, especially, salinity measured in pre-fixed points in the area. This facilitated the description of the different water mass movements in response to the tidal wave under different conditions.

The variation of heavy metal distributions in river waters, close to the mouth, was analyzed by the P.I.X.E. technique at different depths and by granulometric separation. Salinity and pH were used as reference tracers of the saline intrusion along the vertical profile of the river.

Heavy metal concentrations were analyzed by the A.A.S. technique in the upper sediment layers (5 cm) in the area of the river mouth. These reflect - on average - both the interactions occurring at the water-sediment interface and the dynamics of fresh and marine waters which influence the net flow at the interface. The method allowed to directly take into account the concentration gradients existing between the interstitial and surface waters, which influence the mobility of heavy metals, and thus determine the role of sediments as pollution sources, even in long-term effects.

Correspondingly, the geochemical speciation of sediment samples collected give indications on the release of sediment to water environments and on the possibility of using concentrations present in this latter by the biota.

The physical and geological nature of estuarine sediments was determined by granulometric analyses and by measuring the redox potential and the compaction indices on surface sediment samples.

The final aim of the research is to construct a simulation model of the mechanisms involved, which would allow to control environmental conditions by monitoring some physical-chemical and toxicological parameters at a restricted number of points in a shallow estuarine area.

Relationship between Foraminifera and sediment distribution (Po River Delta, Italy)

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A study has been carried out about benthic foraminiferal assemblages collected in the "Canarin" lagoon (Po river delta) and from the shoreline to the 10m isobath during 1972, 1973, 1974 and 1985 (fig. 1).

The grain size and analyses permit the plotting of maps (Shepard and Nota textural classification).

A significant visualization of the foraminifera frequency and the areal, textural and depositional variations of sediment is obtained only with the Nota classification (fig. 2).

The Shepard classification do not shows good results.

The aim of this poster is to indicate the use of a textural classification that is not famous but very useful in many

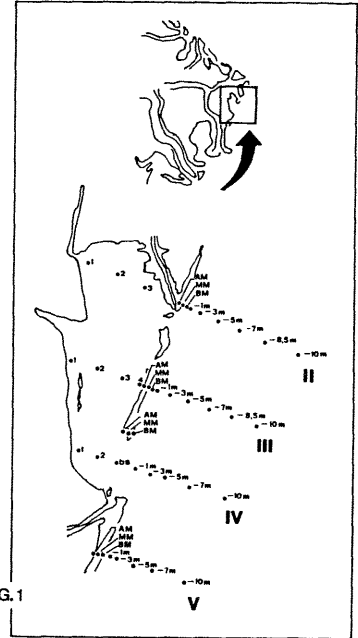


FIG.1

