

## Deep-sea benthic life and related biological processes as a response to organic matter fluxes in the ocean. Recent results in the North Atlantic Ocean. (Abstract)

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Deep-sea benthic community structure in sedimentary environment of the Atlantic ocean has been established at different levels of organization: the general level including the totality of the benthic fauna and the single organism level to describe the role of nutrition of deposit feeders like holothurians at the sediment-water interface.

Spatial variations of the trophic conditions (supply of organic matter) in six different geographic areas are compared with the quantitative distribution of the three large dimensional categories of abyssal fauna obtained from an intensive sampling strategy during 12 cruises. Meiofaunal, macrofaunal and megafaunal (mainly deposit feeders) abundances have between themselves and with the food input, significant correlations and a constant linear (for meio and macrofauna) or exponential (for megafauna) relationship between sampling sites. Therefore the general structure of the deep-sea benthic communities tends to be in equilibrium with the trophic resources.

The role of deposit feeders to consume and recycle the organic matter can be estimated from nutrition studies of holothurians. Holothurians select the richest particles and assimilate, with the help of bacterial activity, near 20% of the the ingested organic matter, mainly proteins and lipids and several tens of milligrams of organic carbon during the intestinal transit. But time's scale studies and *in situ* experiments with manned submersibles have been developed in order to evaluate the spatial and temporal variations of the energetic needs in the deep-sea ecosystem.

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