
Foraminifera and microphytobenthos responses to anthropogenic manipulation of a wild oyster reef

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Résumé

Spatio-temporal distribution of foraminifera and microphytobenthos (MPB) related to sediment geochemistry was studied at the vicinity of two wild oyster reefs in an intertidal area of the French Atlantic coast. Partial release of organic and inorganic nutrients through oyster excretion enriches the nutrients fluxes leading to MPB bloom around the reef. In order to understand the consequence of the oyster input on the spatial structuration of the different benthic biological compartments, oysters from one of the two reefs were removed (5 tons) in July 2014, while the second one taken as a control, remained undisturbed. A time-series of satellite images has been analysed to describe the spatial structures of MPB around the reefs and its dynamic. Around the reefs before and after the anthropogenic manipulation, we analysed the geochemistry of the sediment pore-water as well as the foraminifera. In this study, we show an impact of this anthropogenic manipulation on the early diagenesis process and on the foraminifera and microphytobenthos compartments. Particular strong and quick responses of benthic foraminifera are recorded, suggesting the high potential of intertidal benthic foraminifera to monitor transitional marine environments. The decrease of the MPB biofilm around the reef where the oysters have been removed suggests the existence of a top-down control between MPB and oyster communities. This study shows that oyster reefs significantly modify the structure and functioning of adjacent intertidal sediment.

Mots-Clés: oyster reef, microphytobenthos, foraminifera, geochemistry

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