

Abstract

Development of end-to-end models to describe the dynamics of exploited marine ecosystems in the Eastern Channel

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We present here two end-to-end models, OSMOSE and ATLANTIS, which are being developed within the EU-funded VECTORS project, to evaluate the effects of spatial management and spatial interactions between human activities on the marine ecosystem of the Eastern Channel. Trophic interactions are central to both models but modelled differently. OSMOSE is a spatially-explicit (6' x 6' grid), individual-based model, including 14 species amounting 75% of the total estimated fish biomass and interacting through opportunistic size-based predation. Plankton and benthic preys are also included, in an aggregated fashion, via coupling to a bio-physical model and forcing spatial fields, respectively. The structure established for the ATLANTIS model in the Eastern Channel is composed of 38 spatial polygons referring to the Channel biological, physics and economic characteristics. 40 functional groups, from phytoplankton to mammals, interact through sized based predation and preys accessibility. The Eastern Channel ATLANTIS model also builds in spatial interactions between fishing fleets, aggregate extractions, maritime traffic, as well as prevailing area-based management. The underlying information feeding in both models mainly builds on information drawn from surveys, fishers' log-books and mappings processed within the EU-funded CHARM3 project.