Moreover, organisms capable of producing such toxins have been found. A bloom of *Ostreopsis* spp. (a potential producer of palytoxin) occurred on the south coast of Portugal. BMAA production by a diverse number of strains in three major Portuguese estuaries was found. And the presence of SPX in Portuguese coastal waters has also been ascertained.
The detection of new vectors, particularly those potentially used as food by human beings, suggests that monitoring of marine toxins should be extended to other species and that regulated limits of toxin should be closely monitored.

TURECOTOX AND ECOALFACS PROJECTS: CONTRIBUTIONS OF TWO GEOHAB ENDORSED PROJECTS

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From 2009 to 2013, the TURECOTOX (CTM2006-13884-C02-00/MAR) and ECOALFACS (CTM2009-09581) projects, endorsed by GEOHAB, focused on the interactions between small-scale turbulence and the biology of toxigenic dinoflagellates (toxin-producing HABs). Research included ecophysiological experiments and fieldwork in two contrasting areas: the Galician Rías Baixas (upwelling systems, Atlantic coast) and the microtidal estuary of Alfacs bay in the Ebro Delta (coastal embayment, stratified system, Mediterranean Sea).

Laboratory experiments with cultures showed how small-scale turbulence can modulate different ecophysiological processes including growth rate, cell cycle patterns, asexual encystment, nucleic acids, toxin and DMSP cell quota and infection by parasites. However, the cellular mechanisms underlying the observed responses are still unknown.

In the Rías, the population dynamics (division rate, viability, mortality) of *Dinophysis* spp. and their behavior (vertical migration, mixotrophy) were studied with the same spatio-temporal scale than the fine-scale hydrodynamical processes (water velocities, shear, vertical diffusion, turbulence). For the first time, data on the formation, maintenance and dissipation of thin layers of *Pseudo-nitzschia* spp. were obtained in this area.

In Alfacs bay, several modeling approaches (3D hydrodynamic model combined with a Lagrangian particle-tracking module) validated by continuous records of physical and meteorological data have been implemented to understand how the complex circulation dynamics may facilitate water retention and thus phytoplankton biomass accumulation in the inner part of the bay. We hope that most undergoing efforts will improve the understanding of the link between physical dynamics and biological and ecological processes (growth, mortality, migration) of selected HAB taxa and/or functional groups in the bay.