A high resolution model of ocean circulation over the Nazaré Canyon

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During the first two years of EUROSRATAFORM the numerical results together with the *in situ* data obtained have showed that several physical processes are important in ressuspension and transport of sediments within submarine canyons. To achieve a more complete picture of the circulation over the Nazaré canyon we need to take into account processes with spatial and temporal scales of the internal tides and simultaneously large scale processes like the variability of the slope current associated to seasonal wind forcing.

Taking into account the constraints expressed above, a regional model with a resolution of 25 km was implemented. This model supplies boundary conditions for a local nested model of the Nazaré canyon with a resolution of 1.5 km. The work was based on MOHID modelling system (http://www.mohid.com) which includes modules for hydrodynamics, sediment transport and ecology and permits eulerian and lagrangian simulations. The model allows for the use of several vertical discretizations and variable horizontal grids, including nested models.

Both regional and local models consider atmospheric and tidal forcing as boundary conditions as well as large scale transports at open boundaries. For the regional model these transports were computed from Levitus climatological fields (with a quarter degree of resolution).

Here we present preliminary results obtained with this model configuration. Our results depict most of the major characteristics of the circulation over the Nazaré Canyon

at very different frequencies: internal tide generation and propagation through the canyon, enhanced upwelling during Spring and Summer, downwelling flow in the outer part of the canyon associated to the Mediterranean Water, etc...