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Inner-shelf cross-shore Lagrangian transports. A numerical study.

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We present preliminary results of an ongoing study about Lagrangian transports in the inner-shelf. For many species with a planktonic stage and recruiting in the rocky shore, crossing the inner-shelf becomes a critical issue. In particular, during upwelling conditions when offshore drift is favored the question of which physical mechanism may promote the onshore transport is of central interest.

We conduct a semi-realistic high resolution (0.25 km) numerical study of Lagrangian transports across the inner-shelf under upwelling-favorable wind forcing conditions focusing the shelf area on the Southwestern Portuguese coast in the lee of Cape Sines.

The simulations cover a fifteen days period forced by typical summer period winds (including a conspicuous breeze cycle) and tides. A good representation of the features that characterize the entire study region as well as their evolution was achieved. Still the vertical distribution of the temperature field has proven to be very sensitive to the scale of stratification imposed in the model. Model results consistently show weaker stratification than field observations. Preliminary analysis indicate that the structure of the cross-shore flow varies significantly in the daily cycle and locally within a scale of few kilometers in association with local topography and the presence of the cape.