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Study of Mesoscale Eddies in the Gulf of Lion and their role in the coastal-offshore exchanges.

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The main objective of LAgrangian Transport EXperiment (LATEX) project (2008-2011) is to study the influence of mesoscale structures on shelf-offshore exchanges in the Gulf of Lion (GoL). The LATEX strategy combines use of data from Lagrangian drifters, satellite images and hull-mounted ADCP data with numerical modeling. In this work, we simulate the mesoscale structures, occurring at the interface between the continental slope and the coastal margin in the GoL, by using a realistic numerical model. Numerical studies show a clear influence of mesoscale eddies on matter and energies transfers between the coastal zone and open sea. The features of the eddies such as their size, position and behaviour issued from the numerical modeling help us set up the sampling strategy of the cruises. The in situ measurements allow us to validate the numerical results and furthermore, combined with the modeling results, to well understand the eddies's dynamics. A numerical Lagrangian diagnostic tool is applied to analyze the model outputs. Qualitative and quantitative simulations are made in order to evaluate the eddies' potential impact on the coastal-offshore transfer of matter and energy.