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# The impact of the mesoscale dynamics on the coastal upwelling ecosystem : an idealized study of the Canary current system

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In coastal upwelling systems such as the Canary current system, an intense primary production occurs along the coast thanks to the strong nutrient input. The ocean color images observed from space by the SeaWiFS program shows large fluctuations of the width of the high surface chlorophyll coastal band. The basic mechanism is well understood : The coastal upwelling brings nutrient into the photic layer allowing the phytoplankton growth, which is advected offshore by Ekman current and grazed by the zooplankton. The ocean color images reveal the existence of filaments of recently upwelled waters where the primary production is maximum. It suggests that mesoscale and submesoscale dynamics play a significant role in the export of coastal water and in the control of the width of the highly productive coastal band. An idealized model of the African coast coupling a 6-components ecosystem model (LOBSTER) to a primitive-equations ocean circulation model (NEMO) is set up to investigate the role of the mesoscale dynamics. 2-dimensional runs (cross shore direction - depth) excluding the formation of eddies and filaments are compared to fully 3D runs. The spatial resolution is progressively increased to study the impact of meso- and submesoscale processes.