

MESO- & SUB-MESOSCALE PHYSICO-BIOGEOCHEMICAL DYNAMICS IN A COASTAL NW MEDITERRANEAN SEA: QUANTIFYING & UNDERSTANDING ECOSYSTEM STRUCTURE & TRANSPORT (SEAQUEST)

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We present the results from the SeaQUEST campaign that took place near the Gulf of Lion (GoL) from 6 to 10 Apr 2016 and combine them with remote sensing observations and results from a 3D coupled hydrodynamic-biogeochemical model. Our aim was to study the effects of the Northern Current (NC) - a slope current that bounds and controls shelf circulation - in shaping and modulating the local ecosystem.

Our analyses show how the NC acts as a physical barrier for cross-shelf exchanges, effectively creating three distinct ecosystems with very different compositions in terms of biology and nutrients: a coastal system, that is relatively rich in nutrients and largely driven by river run-off from the Rhone river; an off-shore system which is mainly driven by seasonal stratification; and the NC system itself which differs from the previous two in both its physical and biogeochemical characteristics.

This relatively stable system can be disturbed when strong external forcing is applied. During our cruise we could observe such an event in the shape of a Mistral (strong northerly wind) event. We combined these observational results with a more thorough long term modelling analysis in order to examine the stability and inter-annual variability of the system. By improving our understanding we may gain further insights into how future climate change may impact upon a region that is of high economic (fisheries/aquaculture/tourism) and ecological relevance.