



Vertical motion and chlorophyll patterns from a high-resolution glider experiment in the Balearic Sea

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We present the results of a multi-platform experiment carried out in May 2009 along the northwest coast of Mallorca Island. The strategy allowed to investigate the mesoscale and sub-mesoscale processes associated with the Balearic Current, the main oceanographic feature of the area. A mission using 2 Slocum gliders was performed simultaneously in combination with other type of measurements (drifters, CTDs from ship and remote sensing data). In this experiment the coastal glider operated between surface and 200 m while the deep (1000 m maximum depth), was set-up to reach only 600 m. The autonomous platforms covered an area of 50x40 km² collecting 811 hydrographic (temperature and salinity) and bio-geochemical (turbidity, oxygen and chlorophyll) profiles. The horizontal resolution in the along track direction was around 0.3 km for the coastal glider and around 1.1 km for the deep glider and about 4 km between gliders tracks. The preliminary analysis of in-situ and remote sensing data reveals the presence of an anomalous anticyclonic eddy near the northwest coast of Mallorca island of about 60 km diameter. This structure blocked the usual path of the Balearic Current along the coast, deflecting the main north-eastward flow to the north. The relative fresh waters from Atlantic origin (37.4 PSU) found in previous studies near the coast were not detected in this experiment. Instead, the signature of the Mediterranean Water (salinity of 38 PSU and higher), typical from open ocean water, was dominant in the study area. The influence of this anomalous anticyclonic eddy on the chlorophyll distribution is investigated diagnosing the quasi-geostrophic vertical motion.