



Intense mesoscale variability in the Sardinia Sea

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From the 6 to 25 June 2014, the REP14-MED sea trial was conducted by CMRE, supported by 20 partners from six different nations. The at-sea activities were carried out onboard the research vessels Alliance (NATO) and Planet (German Ministry of Defense), comprising a marine area of about $110 \times 110 \text{ km}^2$ to the west of the Sardinian coast. More than 300 CTD casts typically spaced at 10 km were collected; both ships continuously recorded vertical profiles of currents by means of their ADCPs, and a ScanFish[®] and a CTD chain were towed for almost three days by Alliance and Planet, respectively, following parallel routes. Twelve gliders from different manufacturers (Slocum, SeaGliderTM and SeaExplorer) were continuously sampling the study area following zonal tracks spaced at 10 km. In addition, six moorings, 17 surface drifters and one ARVOR float were deployed. From a first analysis of the observations, several mesoscale features were identified in the survey area, in particular: (i) a warm-core anticyclonic eddy in the southern part of the domain, about 50 km in diameter and with the strongest signal at about 50-m depth (ii) another warm-core anticyclonic eddy of comparable dimensions in the central part of the domain, but extending to greater depth than the former one, and (iii) a small (less than 15 km in diameter) cold-core cyclonic eddy of Winter Intermediate Water in the depth range between 170 m and 370 m. All three eddies showed intensified currents, up to 50 cm s^{-1} . The huge high-resolution observational data set and the variety of observation techniques enabled the mesoscale features and their variability to be tracked for almost three weeks. In order to obtain a deeper understanding of the mesoscale dynamic behaviour and their interactions, assimilation studies with an ocean circulation model are underway.