Geophysical Research Abstracts
Vol. 14, EGU2012-8516-1, 2012
EGU General Assembly 2012

A statistical study of MO eddies in a 20 yrs high resolution simulation

A. Barbosa Aguiar (1), A. Peliz (1), A. Teles-Machado (1), and X. Carton (2)

(1) Centro de Oceanografia, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal (aaaguiar@fc.ul.pt), (2) Laboratoire de Physique des Océans, UMR6523 UBO/CNRS/IFREMER/IRD, UFR Sciences, Université de Bretagne Occidentale, 29200 Brest, France

The Mediterranean Outflow (MO) has been modelled using a realistic model (ROMS) of the circulation off south-western Iberian Peninsula. The model was run at high resolution for 20 years. As the MO flows along the Portuguese coastal shelf it destabilizes and gives origin to eddies with a Mediterranean Water (MW) core. Such eddies can be easily detected due to their large salinity and temperature anomalies. Several of these eddies have been studied in the ocean using *in situ* measurements and floaters. Although most of the structures with a MW core signature are anticyclones (AC) and usually referred to as meddies, some cyclones (C) have also been observed exhibiting weaker anomalies and shallower cores than typical meddies. These vortices are lense-like shaped, with a characteristic dynamic horizontal extension of 100 km but only 1 km long in depth. They are long-lived structures (2 yrs on average) that often break up after colliding with seamounts and are thus believed to be important for MW dispersion in the Iberian basin.

Here we present a statistical study of modelled eddies and compare our results with observations. Both AC and C eddies with a MW core have been detected in a 3:1 ratio approximately. Using an eddy tracking algorithm (based on the Okubo-Weiss parameter) we were able to track the eddies through their lifetime and this allowed us to identify the main formation sites and main paths of propagation. We estimate a rate of formation of 15-20 yr^{-1}, AC and C altogether, which is in agreement with previous observation-based estimates of 17 meddies yr^{-1}. Our results suggest that there is a higher incidence of AC (C) formation downstream (upstream) of Cape St Vincent. We also show the spatial distribution and statistics of the main physical characteristics of the eddies such as size, lifetime, propagation velocity and distance travelled.