Geophysical Research Abstracts
Vol. 15, EGU2013-3407-1, 2013
EGU General Assembly 2013

Mediterranean Water eddies in a high-resolution long-term simulation

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The Mediterranean Outflow (MO) off the southwestern Iberian Peninsula has been simulated using a realistic model. As the MO flows along the southwestern Iberian slopes it becomes unstable, originating vortices with a core of Mediterranean Water (MW) centered between 600 and 1000 m. Several of these eddies have been studied in the ocean using *in situ* measurements and floats. They are long-lived structures (2 yrs on average) that often break up or merge while interacting with currents and seamounts. Are these vortices the main mechanism driving the Mediterranean salt tongue?

The output from a high-resolution and long-term MO simulation is analysed here to provide a census of modelled MW eddies. For the whole domain of study, the formation rates of eddies that survived for at least 90 days with minimum salinity anomalies of 0.12, 0.2 and 0.3 psu are of 12, 9 and 6 MW eddies yr^{-1}, respectively; 12%, 5% and 3% of which are cyclones. About 70% of the population is born in the southwestern Iberian slopes, but several robust MW eddies originate in points of convergence of the main pathways into the open ocean. The longest-lived cyclones propagate northwestwards, while shorter-lived cyclones either recirculate in the Gulf of Cadiz or move to west into the Horseshoe seamounts. As the MW eddies drift away from their birthplace, their radius tends to increase gradually from 15 to 30 km. The thickness of a meddy contracts by approximately 100 m, by the end of a 1000 km journey away from its origin. In general, the properties of eddies born in the slopes upstream and downstream of the Cape St. Vincent are distinct.