Geophysical Research Abstracts
Vol. 15, EGU2013-3868, 2013
EGU General Assembly 2013

Glider monitoring reveals high sub-seasonal variability at a key 'choke' point in the thermohaline circulation of the Western Mediterranean

Emma Heslop (1), Simón Ruiz (1), John Allen (2), José Luís López-Jurado (3), Joaquín Tintoré (1,4)

(1) IMEDEA (CSIC-UIB), c/ Miquel Marquès 21, 07190 Esporles, Islas Baleares, Spain (eheslop@imedea.uib-csic.es), (2) University of Portsmouth, School of Earth and Environmental Sciences, Burnaby Building, Burnaby Road, Portsmouth, PO1 3QL, UK, (3) IEO-COB, Moll de Ponent s/n., 07015 Palma de Mallorca, Islas Baleares, Spain, (4) SOCIB (Balearic Islands Coastal Ocean Observing and Forecasting System), Naorte, Bloc A 2ºp. pta. 3, ParcBit, 07121 Palma de Mallorca, Islas Baleares, Spain

It is becoming increasingly important to understand sub-seasonal variability in our ocean circulation, in order to place historical observations in context and detect the signature of climatic oscillations and change, and to improve the biogeochemical modelling of our ocean system. Flow variability and dynamic processes at inter-basin 'choke' points in the circulation system, such as Drake Passage in the Southern Ocean and the Fram Straits between the Arctic Sea and the North Atlantic Ocean, have an influential role in the patterns of heat, salt and watermass exchange between ocean basins and are particularly important locations to monitor variability at a variety of scales. The Ibiza Channel in the Western Mediterranean is one such 'choke' point in the basin scale circulation of the Mediterranean Sea, where an important north south exchange of water masses is known to influence the spawning grounds of commercially important fish stocks. Here autonomous underwater gliders are proving particularly effective at capturing the signature of sub-seasonal variability and the dynamics of an sub-basin exchange, previously only monitored at a seasonal level through ships surveys or at a coarse resolution with sparse moorings.

Here we show the results of monthly glider monitoring of the Ibiza Channel in 2011– 2012, although due to technical issues the glider timeseries is not continuous for the whole period, we are nevertheless able to see days-weeks variability in the transport of different watermasses, on a scale comparable to that of the previously identified seasonal cycle. With the high spatial and temporal resolution of glider data, potential 'modes' of circulation are also identified with the aim of simplifying the complex pattern of flows previously observed at this dynamically complex location. This high variability is placed in the context of historical observations from the Instituto Español de Oceanografía (IEO-COB) program of seasonal ship surveys, to demonstrate the value of glider monitoring at key transects and circulation 'choke' points.