



Acoustic imaging of the Mediterranean water outflowing through the Strait of Gibraltar

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Acoustic reflectivity acquired with multichannel seismic reflection (MCS) systems allow to detect and explore the thermohaline structure in the ocean with vertical and lateral resolutions in the order of 10 m, covering hundreds of kilometers in the lateral dimension and the full-depth water column. In this work we present a MCS 2D profile that crosses the Strait of Gibraltar, from the Alboran Sea to the internal Gulf of Cadiz (NE Atlantic Ocean). The MCS data was acquired during the Topomed-Gassis Cruise (European Science Foundation TopoEurope), which was carried out on board of the Spanish R/V Sarmiento de Gamboa in October 2011. The strong thermohaline contrast between the Mediterranean water and the Atlantic water, characterizes this area and allows to visualize, with unprecedented resolution, the acoustic reflectivity associated to the dense flow of the Mediterranean water outflowing through the prominent slope of the Strait of Gibraltar. During the first kilometers, the dense flow drops attached to the continental slope until it reaches the buoyancy depth at 700 m. Then, it detaches from the sea floor and continues flowing towards the Atlantic Ocean, occupying the layer at 700-1500 m deep and developing clear staircase layers. The reflectivity images display near seabed reflections that could well correspond to turbidity layers. The XBT data acquired coincident in time and space with the MCS data will help us in the interpretation and analysis of the acoustic data.