Geophysical Research Abstracts, Vol. 7, 05729, 2005
SRef-ID: 1607-7962/gra/EGU05-A-05729

Internal tide influence on sediment resuspension in Nazaré Submarine Canyon and adjacent areas

A. C. Garcia *(1), H. Coelho (1), P. C. Leitão (1), H. Stigter (2), T. van Weering (2), R. Neves (1)

(1) Maretec / Instituto Superior Técnico, Av. Rovisco Pais, 1049-001 Lisboa, Portugal (2) Department of Marine Chemistry and Geology, NIOZ, P.O. Box 59, 1790 AB Den Burg, Texel, The Netherlands

Based on the results of CTD surveys performed during several cruises namely the Pelagia Cruises 204 (01 to 23 November 2002), 218 (11 to 31 October 2003) and 225 (14 April to 14 Mai 2004), for the EUROSTRATAFORM project, we checked internal tides as a process of resuspension of fine sediments inside Nazaré Canyon and adjacent areas.

Repeated CTD profiles in the same station for a tidal cycle, alerted to the presence of internal tides inside canyon.

Resuspension by internal tides is promoted when the angle of propagation of the wave energy equals the bottom slope. Maps indicating the most favourable place for this process to occur were drawn.

Simulations using the hydrodynamical MOHID model, developed by our team at IST, (http:// www. mohid.com) were performed. Results on currents gave us important results on the circulation patterns in the canyon, witch are responsible for the transport of fine suspended matter resuspended by internal tides. Results on Velocity Modulus, permitted to identify beans of higher energy corresponding to internal tide energy propagation and to visualize the most probable places for waves to break, this results were in agreement with the maps drawn previously.

Results on fine sediments in the water column are in agreement with the previous results and with CTD data. The model reproduced important intermediate and bottom nepheloid layers also identified during the CTD surveys.

Shear Stress simulation also permitted to observe places were resuspension near the bottom is more probably to occur.

The results obtained with the model are in good agreement with CTD data and permit to start to drawn patterns for sediment transport inside Nazaré Submarine Canyon .

* Funded under the research grant SFRH/BD/1346/2000