



Assessing critical runoff values for the generation of a buoyancy induced coastal current off the western Iberian Peninsula

I. Martins (1), A. Silva (1), A. Santos (1), L. Bastos (2)

(1) Instituto Hidrográfico, Lisboa, Portugal, (2) Centre of Marine and Environmental Research, Porto, Portugal (marina.martins@hidrografico.pt / Fax: +351 210 943 299 / Phone: +351 210 943 041)

The current regime over the shelf off the Portuguese coast has been studied using different techniques (remote sensing, hydrographical surveys, in situ current measurements) for decades now. Although important results have been achieved, it is recognised that existing models failed in describing the current along the northwest Iberian shelf under extreme conditions. The goal of this work is to characterize the hydrology of the area of potential development of a Northwest Iberian Coastal Current (NICC) and assess the relative importance of wind and runoff in the current forcing. The observations took place when river flow was 500-600 m³/s, and a frontal system crossed the area. Although the presence of estuarine induced buoyancy was evident in the hydrographic structures, their modifications responded mainly to the wind. A northward current was present only during the period of southerlies, and buoyancy revealed too weak to counteract the wind reversal. These results suggest that a very high river flow is required to sustain a coastal current confirm its intermittent character and points to its dependence of the wind forcing.