

The Eastern Boundary Current System between the Canary Islands and the African Coast

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ABSTRACT

To study the Eastern Boundary Current system off Northwest Africa in detail several CTD/ADCP-sections and long-term mooring work were carried out in the channel between Lanzarote and Africa. The observations are compared with a fine resolution model, which was developed in the framework of the CANIGO project. The water masses, which are observed in this area, are characterised and classified in density ranges. The current field shows a high spatial and temporal variability with maximum velocities of about 35 cm/s. Seasonal means as well as currents averaged across the channel are only a few cm/s. In the surface water a steady southward flow in the middle of the channel indicates the Canary Current in this area. During fall a strong northward current is observed close to the African shelf. Though the Canary Current strengthens during summer and fall due to an increase of the trade winds, the transport in the channel decreases or turns northward during that time due to the enhanced poleward current at the eastern side. A northward undercurrent with a mean velocity of +2.3 cm/s is observed at the African slope in 950 m depth. The poleward transport of AAIW increases during fall and a strong influence of relatively fresh AAIW is observed during that time. Most of the observations fit well to the results of the CANIGO model, but the occurrence of MW at the bottom of the channel and the corresponding southward flow cannot be resolved by the model.