



Transports and Froude number estimations at Tarifa Narrows, Strait of Gibraltar

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An intensive vessel-mounted ADCP survey was carried out on November 2003 at Tarifa Narrows, Strait of Gibraltar, to investigate the cross-strait structure of the flow. The survey was made during two one-day periods, at different stages of the spring-neap tidal cycle. A 2-D tidal model has been used to assimilate the measurements to a synoptic dataset.

The exchanged transports have been estimated using the model velocities. The interface depth was estimated by using the zero velocity interface and defining its upper and lower bounds with the help of historical salinity data. The estimated transports are in reasonable agreement with historical estimates, and their differences can be explained by taking into account the influence of subinertial meteorologically forced and fortnightly fluctuations on the flow.

We have computed time-latitude plot and time series of the composite Froude number at Tarifa for both periods. These Froude numbers estimations give values lower than one. Thus, we find subcritical conditions at the whole Tarifa Narrows section during the complete tidal cycle, pointing to the fact that during the survey the exchange was submaximal