

## ABSTRACT

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**Semi permanent bottom cyclonic circulation on the edge of the eastern Agulhas Bank, The Plume Model, and implications for upwelling and kingklip spawning**

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A recently retrieved bottom-mounted ADCP deployed on the shelf edge (240m) off Mossel Bay has produced results that are contradictory to the findings of two rotor current meters deployed in 1996 of Plettenberg Bay and St Francis. Data from the latter clearly indicated that a permanent eastward bottom (counter) current exists on the edge (220m) of the EAB, which reaches velocities of about  $65 \text{ cm.s}^{-1}$ . Transient current reversals in this flow lasting 1-3 days were found to commonly occur as a result of passing cyclonic eddies in the boundary region of the Agulhas Current. It was thought by Beal and Bryden (1997), that this bottom counter current must be the shallow edge of a deeper (core at 1200m) eastward flow found on the slope. The new data collected to the west in the Agulhas Bight show a semi-permanent westward barotropic flow! These disparate flows can only coexist if a permanent cyclonic eddy exists in the region of the rotor current meters, somewhere between  $22^{\circ}\text{E}$  and  $25^{\circ}\text{E}$ . Results of the recently adapted PLUME model show that such an eddy should exist here, and that this is driven by the interaction of the Agulhas Current and topography of the Agulhas Bight. The dynamics of this eddy may explain the persistence of shelf edge upwelling along the EAB and be used by kingklip for egg and larval retention.