ABSTRACT

Morris, T. and M.J. Roberts (2005)

The Maputoland- Delagoa Bight cyclonic gyre – a potential spawning and nursery ground for transboundary fish stocks.

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Historical hydrographic data collected in the late 1970s and early 1980s showed the existence of a semi-permanent doming in the thermocline in the middle of Delagoa Bight (near Maputo). Satellite imagery suggested that a cyclonic circulation was prevalent in the region. In a new study, hydrological data collected during a cruise in May 2004 confirmed the existence of an upwelling dome with a chlorophyll maximum sitting above the thermocline. High levels of chlorophyll were also observed along the northern coast of the Bight. A satellite tracked surface drifter released off Inhance Island confirmed the cyclonic circulation showing velocities greater than 60cm s^{-1} and retention in the gyre of 6 weeks before it expelled into the Agulhas Current. Once in the main stream of the current it traveled south-west down the east coast of South Africa reaching the Agulhas Bank region within 10 days. During a second cruise in September 2004, the gyre was initially absent both in terms of circulation and vertical hydrographical data. Two weeks later there were signs of it beginning to spin up again. Four satellite tracked surface trackers deployed along an offshore orientated line began to move in a cyclonic fashion with the two closer to land grounding on the northern shore of the Bight. The offshore drogues were expelled from the Bight 12 days later and moved southwards towards Durban. One became entrapped in the Richard Bay upwelling cell 3 days later and grounded near St Lucia. The other followed a similar track as the May tracker and traveled down the full length of the Agulhas Current and into the retroflection. These data suggest that the Maputoland-Delagoa Bight is a major, semi-closed, trans-boundary oceanographic province (ecosystem) on the east coast, which acts as a primary production center and potentially is a nursery ground for many of the sparid and other line fisheries species found along the east coast of South Africa. It is clearly connected to other ecosystems further down stream such as the Sodwana coral reef complex, Natal shelf, Aliwal Shoal, Transkei and the Agulhas Bank ecosystem. It is also possible that it acts as a trap for biota moving south from the Mozambique Channel.